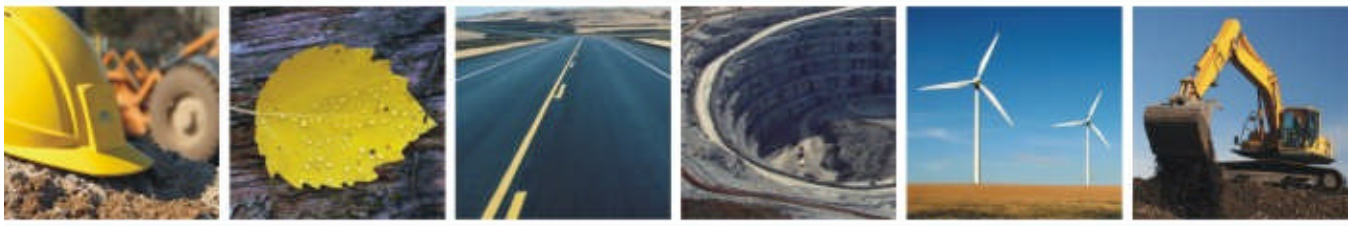
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA (PWGSC)

PHASE III ENVIRONMENTAL SITE ASSESSMENT, NOTTINGHAM ISLAND
NUNAVUT



REPORT

JANUARY 2013
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EXECUTIVE SUMMARY

EBA Engineering Consultants Ltd. operating as EBA, A Tetra Tech Company (EBA) was retained by Public Works and Government Services Canada (PWGSC) to conduct a Phase III Environmental Site Assessment (ESA) at a former weather station on Nottingham Island, Nunavut (Figure 1 and 2) hereafter referred to as "the Site". The ESA is conducted as part of a program to determine environmental impacts at the site, complete hazardous and non-hazardous materials inventory, complete an Environmental Screening Assessment, and develop a Remedial Action Plan (RAP). This report is specific to the Phase III ESA component of the project. The Environmental Screening Assessment and RAP will be prepared as separate report documents at a later date as per the Terms Of Reference. EBA understands that PWGSC Northern Contaminated Sites Group is managing the current project on behalf of Aboriginal Affairs and Northern Development Canada (AANDC).

Objectives

The objectives of the ESA work included:

- Obtaining historical information specific to the site;
- Characterizing and quantifying all hazardous and non-hazardous wastes;
- Conducting soil, sediment and water assessment and sampling at previously identified impacted areas at the site;
- Completing a detailed site survey including a bio-inventory of flora and fauna;
- Identifying potential borrow sources, potential landfill and landfarm locations, and evaluating site access roads and airstrip;
- Facilitating and providing archaeological assessment; and
- Documenting all information into a Phase III ESA report.

Fieldwork

The fieldwork was completed between August 6th and August 16th, 2012. Time on-site was limited, only two and a half days were spent performing the ESA on-site, due to inclement weather. The on-site fieldwork was completed on August 11, 14 and 15, 2012. The field teams were divided into geotechnical, archaeological, and environmental disciplines. The teams traveled each day to the Site from Ivujivik, QU with the Canadian Coast Guard using a Bell 212 helicopter.

Nottingham Island - Findings and Conclusions

Summary of Geotechnical Findings

The geotechnical site investigation evaluated available borrow sources, identified potential landfill and landfarm locations and, assessed site accessibility. A total of 16 hand-excavated testpits were advanced and, 12 composite samples were collected from select testpits.

A total of 2,500 m^3 of granular material appears to be available from three borrow sources. About 75% of the identified material lies within Borrow C which is not readily accessible and would require a 3.0 km road to be built from the site. Apart from a small volume of gravel in Borrow A, the identified materials are predominantly gravelly sand with a trace of fine-grained material. About 30-40% of the sand-sized particles were calcareous marine shell fragments, which compromises the strength of the material.

Two locations were evaluated for a possible landfill and landfarm. Landfill A is located approximately 150 m east of the site and is approximately 1,500 m^2 in size. Landfill A is not ideally suited for a landfill facility. Potential Landfill/Landfarm B is located approximately 300 m east of the site and is approximately 4,500 m^2 in size. Landfill/Landfarm B is suitable for both a landfill and a landfarm, and could likely be expanded to the north and to the east if required.

Summary of Soil and Water Impacted Areas

There are several APECs that have environmental impacts associated with historical site activities. A summary of the impacts are provided below:

- PHC impacts to soil that exceed the applicable criteria are present in APECs 3, 4, 9, 11, 12, 14, 17 and the Pipeline. The total estimated volume of PHC only impacted material is 2260 m^3.
- Metals impacts to soil that exceed the applicable criteria are present in APECs 1, 3, 4, 6, 9, 11, 12, 13, 16, 18, 21 and the pipeline. The total estimated volume of metal only impacted material is 143 m^3.
- Co-contaminated soil impacted with both metals and PHCs in excess of the applicable guidelines is present in APECs 3, 4, 11, 12, 13 and the pipeline. A total estimated volume of co-contaminated soil is 216 m^3.
- Surface water in exceedance of the applicable criteria is found in APECs 2, 9, 12, 14, 16, 17, 19, 21, 24, and 25. The total estimated volume of impacted water in APECs 2, 9, 14, 17 and 21 is 484 m^3.
- The geotechnical site investigation concluded that granular materials investigated at site are of limited quantity, and of marginal quality for the purpose of constructing a landfill or LTU.

Summary of Hazardous and Non-Hazardous Materials

Both hazardous and non-hazardous materials were found throughout the site.

- The hazardous materials included heating oil, asbestos, total lead paint, leachable lead paint, batteries, compressed gas cylinders, creosote soaked wood, mercury, PCBs, amongst others. The total, uncrushed volume of hazardous material is 779.2 m^3 and 2,521 litres of hazardous liquids.
- The non-hazardous materials included wood, metal pieces, brick and brick mortar, cables, concrete, insulations materials, glass, porcelain, rubber, amongst others. The total, uncrushed volume of non-hazardous material is 77 drums (all drums from site with organic liquid waste removed) and 1,316 m^3.

Detailed inventoried items can be found in Table 34 of this report.

Recommendations

Hydrocarbon impacted soils contain lighter end mobile hydrocarbons including Type B hydrocarbons and BTEX. Since lighter end PHCs are relatively more volatile and biodegradable they can potentially be treated on site by landfarming. Landfarming should be included in the preparation of a RAP as an on-site remediation option. Contaminated soil could also be transferred off-site to an approved waste facility for treatment and should be considered in the RAP.

Metal impacted soils and co-contaminated soils should be included in the preparation of a RAP for the site. The impacted soil should be transferred off-site to an approved waste facility.

Surface water identified in APECs 2, 9, 12, 14, 16, 17, 19, 21, 24 and 25 is considered not suitable for land surface discharge due to the metal exceedances of applicable guidelines or background ranges. The volume has been estimated on a limited data set and may be naturally elevated. Further information for impacted water is required prior to remedial activities to determine a total volume. Delineation was not achieved during the limited time available on-site during the Project.

Hazardous materials will be included in the RAP for the Site. The hazardous material is required to be handled properly, contained and removed for disposal off-site to an approved waste facility.

Non-hazardous materials will be included in the RAP for the Site. The non-hazardous material is required to be collected and disposed of in an on-site landfill or transferred to an off-site approved waste facility.

NCSCS Classification Update

The CCME National Classification System for Contaminated Sites (NCSCS) (2008) worksheet was completed to qualitatively derive a ranking score to evaluate the potential human health and ecological risks resulting from the presence of contamination on the site.

Based upon the findings of the Phase III ESA, Nottingham Island Weather Station NCSCS has been classified as a Grade C with a certainty percentage of 75%. The total NCSCS score for the site is 74.6 indicating a Class 1 ranking for high priority for action.

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ACRONYMS & ABBREVIATIONS

AANDC – Aboriginal Affairs and Northern Development Canada
ACM – Asbestos Containing Material
AMSRP – Abandoned Military Site Remediation Protocol
APEC – Area of Potential Environmental Concern
BG – Background Sample
BM – Building Material
BTEX – Benzene, Toluene, Ethylbenzene, and Xylene
CCME – Canadian Council Ministers of the Environment
CEPA – Canadian Environmental Protection Act
CR – Concrete Sample
CSA – Canadian Standards Association
CWQG – Canadian Water Quality Guidelines
Earthtech – Earthtec Ltd., A Tyco International Ltd. Company
EBA – EBA, A Tetra Tech Company
EC – Environment Canada
ESA – Environmental Site Assessment
FCSAP – Federal Contaminated Sites Action Plan
FWAL – Fresh Water Aquatic Life
GPS – Global Positioning Device
INAC – Indian and Northern Affairs Canada
L – Litre
m – Metre
mbs – Meters below surface
MDL – Minimum Detection Limit
MWAL – Marine Water Aquatic Life
NCSCS- National Classification System for Contaminated Sites
NU – Nunavut
PCB – Polychlorinated Biphenyl
PHC – Petroleum Hydrocarbon
PID – Photoionization Detector
PPE – Personal Protective Equipment
PQL – Practical Quantitation Limit
PSA – Particle Size Analysis
PT – Paint Sample
PWGSC – Public Works and Government Services Canada
QA/QC – Quality Assurance / Quality Control
QC – Quebec
RPD – Relative Percent Difference

SARA – Species at Risk Act
SB – Soil Bore Sample
SW – Surface Water Sample
TCLP – Toxicity Characteristic Leaching Procedure
TP – Test Pit
USCS – Unified Soil Classification System
WESA – WESA Inc.

1.0 INTRODUCTION

1.1 General

EBA Engineering Consultants Ltd. operating as EBA, A Tetra Tech Company (EBA) was retained by Public Works and Government Services Canada (PWGSC) to conduct a Phase III Environmental Site Assessment (ESA) at a former weather station on Nottingham Island, Nunavut (Figures 1 and 2) hereafter referred to as "the Site". The ESA was conducted as part of a program to determine environmental impacts at the site, complete a hazardous and non-hazardous materials inventory, complete an Environmental Screening Assessment, and develop a Remedial Action Plan (RAP). A Phase II ESA was conducted by WESA Inc., on behalf of Aboriginal Affairs and Northern Development Canada (AANDC) in 2010. The WESA Phase II ESA report identified the following;

- A total volume of impacted soil of 1,415 m^3;
- A total volume of impacted water of 15 m^3;
- A total volume of building material with lead based paint of 100 m^3;
- A total volume of building material impacted with asbestos of 240 m^3; and
- A total volume of non-hazardous building debris of 380 m^3.

The objective of the EBA Phase III ESA is to further delineate the impacted areas identified in the WESA Phase II ESA and develop a RAP for the Site. This report is specific to the Phase III ESA component of the project. The Environmental Screening Assessment and RAP will be prepared as separate report documents as per the terms of reference. EBA understands that, through the Contaminated Sites Program, AANDC is responsible to manage a number of contaminated properties that are no longer maintained by the original occupant. PWGSC Northern Contaminated Sites Group is managing the current project on behalf of AANDC.

1.2 Authorization

EBA is authorized for undertaking the Phase III ESA and RAP at the Site under PWGSC's Call-up No. EW699-130409/001/NCS and subsequent amendment (s).

1.3 Objectives

The objectives of the ESA work include:

- Obtain historical information specific to the Site;
- Characterize and quantify all hazardous and non-hazardous wastes;
- Conduct soil and water assessment and sampling at previously identified impacted areas at the Site;
- Complete a detailed site survey including a bio-inventory of flora and fauna;
- Identify potential borrow sources, potential landfill and landfarm locations, and evaluate site access roads and airstrip;

- Complete an archaeological assessment; and
- Document all information into a Phase III ESA report.

1.4 Project Team

The team assembled to complete this project is well qualified and presents the appropriate range of disciplines and experience to fulfill all project requirements. The project team is identified below in Table 1.

Table 1: Project Team

Personnel	Role
Rory Farrell, M.Sc.	Project Manager / Field Assessment Lead/Senior Reviewer
Kelly Ostermann, M.Sc., P.Ag.	Senior Reviewer (Environmental)
David Das, Ph.D.	Back up Project Manager / Corporate Sponsor
Ed Grozic, M.Eng., P.Eng.	Senior Geotechnical Engineer / Senior Reviewer (Geotechnical)
Shane Dooley, Dip Tech.	Senior Reviewer (Hazardous Materials)
Sean Whitaker, B.Sc., C.Chem.	Field Assessor / Report Writer
Kumari Karunaratne, Ph.D.	Field Assessor / Report Writer
Karla Langlois, B.Sc., BAEM, P.Biol.	Field Assessor / Report Writer
Michele Crawford, B.Sc., CIE	Field Assessor / Report Writer
Katie Fryk, P.Geo., EPt	Report Writer

2.0 SITE DESCRIPTION

The Site is located about 140 km southwest of Cape Dorset, NU at approximately 63.111974 N latitude and 77.938633 W longitude. The nearest community is Ivujivik, Quebec, located approximately 80 km to the south of the Site. The Site is situated on the banks of the Hudson Strait. The Site consists of 17 structures, two empty above ground storage tanks, a number of antennae and a large amount of debris scattered around the site. Off-site features include debris piles, a roadway, a communication tower and nearby lakes/surface water features (Photos A1-A3).

2.1 Site History

The site previously acted as a former Department of Transport weather station and radio transmitter station, originally established in 1884 and was decommissioned in 1970. Nottingham Island was named by the English explorer Henry Hudson (Grant 2011) in the 1600s. The island has been used historically for hunting and fishing by the surrounding Inuit communities.

As part of the previous Phase I and II ESAs conducted by Earth Tech Inc., and WESA Inc., a records review was included in each ESA report. EBA analyzed the data found within the two ESA records review and determined that no further information regarding Site history could be found. The following is a summary of their historical records review:

- Earth Tech performed a records review through Jeff Holwell, AANDC Land Administrator. It was determined that the Nottingham Island radio/navigational aid station was built in 1927. Its purpose was to provide accurate data to open the Hudson Strait to shipping. The Site was abandoned in 1970 and was purchased by the West Baffin Eskimo Co-operative ltd. The island has been uninhabited since 1970;
- Dunbar and Greenaway (1956) "Arctic Canada from the Air" reported on establishing meteorological stations along the Hudson Strait on behalf of the Department of Transport. In 1957 the station was manned by 12 full time staff members;
- Nunatsiaq News (George 2005) reported in the 1940s that several Inuit families worked at Nottingham Island. The article also reported that in the 1930s and 40s, hunters from Nunavik travelled to Nottingham Island for annual walrus hunts.

The Site has been abandoned since 1970 with occasional visitors to the island for hunting and fishing from the regional Inuit communities.

In the WESA and Earthtech Phase II ESA reports the buildings were identified as belonging to the West Eskimo Co-operative Ltd. The West Eskimo Co-operative ltd was renamed the Cape Dorset Co-operative and is part of the Baffin Islands Co-operative. Both Co-operatives are operated by a parent firm, Arctic Co-operatives Ltd (Arctic Co-Operatives Limited 2007). To determine the ownership of the buildings on-site, EBA contacted the Cape Dorset Co-operative to gain further information regarding the transfer of the buildings. No information was available from the Cape Dorset Co-operative regarding the buildings on Nottingham Island. During the Phase III ESA field program signage was noted on the majority of the buildings, a sample of this signage can be seen in Photo H-18. The signs stated that the buildings belong to the Cape Dorset Co-operative in both Inuktitut and English.

2.2 Regional Geology

Nottingham Island lies in the Churchill Province of the Canadian Shield, and is composed of Proterozoic quartz-feldspar gneiss. During the last glacial maximum, ice flowed to the east in the Hudson Straight, and the southwestern half of Nottingham Island is covered by glacial drift composed of sand, silt, and gravel and often contains marine shells (Blackadar 1970). The island lies in the continuous permafrost zone and ground ice is expected to be low (Heginbottom et al. 1995). The seasonally thawed layer above permafrost, known as the active layer, ranges in thickness due to vegetation, moisture and geology. At the time of the site investigation in August 2012, the active layer was measure by EBA during the Geotechnical Assessment and is at least 0.5 m thick at the site.

2.3 Topography

Nottingham Island slopes gently to the southwest from the north. The northeast coast is rugged with steep slopes and elevations exceeding 180 m above sea level (masl). The southeast and southwest coasts are low, with innumerable off-shore shoals. Within a 5 km radius of the Site, the relief is restricted to 40m of variation in elevation.

2.4 Hydrology

Drainage on Nottingham Island is controlled primarily by bedrock, with lakes and streams lying between the slightly elevated bedrock outcrops. The low-lying parts of site are poorly drained and the majority of the Site consists of saturated ground. There are many isolated ponds throughout the Site, during high water periods it is anticipated that drainage will flow toward Hudson Strait. During the site assessment in August 2012, the active layer was saturated and late-lying snow banks were observed.

2.5 Regional Climate

Climate data is available for Nottingham Island between 1927 and 1970 (Environment Canada 2012). The mean annual air temperature over this period was -8.8°C. July is the warmest month with average temperatures between 4 and 13 °C. February is the coldest month with average temperatures between -22 and -29 °C. The annual total precipitation ranged from 107 to 509 mm over the record period. Fog is common in late summer and autumn in this region, which was experienced during the Phase III ESA field program with restricted site access by helicopter on three of the six days available for the site investigation.

2.6 Vegetation and Ecology

Nottingham Island lies in the Wager Bay Plateau Ecoregion. Vegetation cover in this region is characterized by nearly continuous shrub tundra vegetation, consisting of dwarf birch, willow, northern Labrador tea, *Dryas* spp., and *Vaccinium* spp. Dwarf birch, willow, and alder occur on warm microsites; wet sites are dominated by willow and sedge. Rock outcrops are covered in lichen (Ecological Stratification Working Group 1995). Terrestrial habitats on Nottingham Island support wildlife species, including fox (both red and Arctic), snowshoe hare, weasel, waterfowl, raptors, shorebirds, and other upland nesting bird species (Ecological Stratification Working Group 1995). However, wildlife most characteristic on and around the island include marine species, particularly polar bear, walrus, seals, and whales (Ecological Stratification Working Group 1995).

2.7 Groundwater Usage and Drinking Water Supply

Groundwater was not encountered at the Site during the Site assessment. The Site is predominately surficial soil covering bedrock within a continuous permafrost zone. Active melting of surface ice and pooled surface water were prevalent on the Site.

The former drinking water supply could not be determined during the site assessment; all former infrastructures have been removed. Surficial water is anticipated to be the former source of potable water at the Site. During the field program a water quality assessment was conducted for two potential potable water sources, Lake 2 and Lake 3, the suitability of these lakes as remedial potable water sources will be discussed further in the RAP. The locations of the regional lakes are shown in Figure 2.

2.8 Records Review

Two ESAs have been completed at the Site and were utilized in the EBA 2012 data gap analysis (Appenidx A). These two reports are summarized below.

2.8.1 Phase I/II Environmental Site Assessments Remote Sites in Nunavut - Cape Dorset 2 (Nottingham Island), Earth Tech Inc.

The Site was visited in 2007 on behalf of Aboriginal Affairs and Northern Development Canada (AANDC) as part of a multiple Site ESA program in the region conducted by Earth Tech Inc. The site assessment was limited, only two hours were spent on site due to weather conditions. The Site was determined to consist of 17 buildings and structures in various states of repair including waste piles throughout the Site. A total of eight soil samples, two asbestos samples and four paint samples were collected. According to the Federal Contaminated Sites Action Plan (FCSAP) Contaminated Site Classification System, the site was scored 56 with a National Classification System for Contaminated Sites (NCSCS) score of 38. Based upon the NCSCS score Nottingham Island was considered a Low Priority for Action. As part of the scope of work a RAP was included with the Phase I/II ESA. A major recommendation was further investigation to delineate the Site due to limited information.

2.8.2 Comprehensive Phase II Environmental Site Assessments SB029 - Cape Dorset 2 (Nottingham Island) WESA

WESA performed a Phase II ESA on behalf of AANDC as a follow up to the Earth Tech recommendations, in October, 2010. A total of 77 samples were collected from the Site. The sampling program consisted of 39 soil samples, ten surface water samples, one sediment sample, fourteen paint samples and thirteen building material samples. The WESA analytical data is presented in Appendix B. Based upon the findings of the Phase II ESA, WESA updated the NCSCS score to 77.1 which designates it as a Class 1 Site, High Priority for Action. A RAP was included as part of the Phase II ESA with a Class D cost estimate. WESA concluded that further delineation is required since the vertical and horizontal extent of the impacts were not fully identified.

The field programs conducted by Earth Tech and WESA were both limited in scope due to short time available on site. Prior to completing the 2012 field program EBA conducted a records review and data gap analysis based upon the Earth Tech and WESA reports. The summary table from the EBA 2012 data gap analysis is included in Appendix A (Table A1 and A2). The gap analysis was conducted to ensure efficiency and targeted sampling during the 2012 sampling program.

3.0 SELECTION OF APPLICABLE GUIDELINES

The following sections outline the rationale for the selection of applicable assessment guidelines for soil, water and hazardous materials, as well as background assessment for soil and water, to determine which parameters may be naturally elevated at the Site. For the purpose of the program (including the ESA and the RAP) the Abandoned Military Site Remediation Protocol (AMSRP) has been adopted by PWGSC and AANDC for the purposes of assessment and remediation. The AMSRP has been developed as a protocol document specific to northern contaminated sites and therefore is considered applicable for use at this Site. The AMSRP takes into account the unique situation of northern sites while still meeting the clean-up objectives stated by the Federal Contaminated Site Management Working Group through previously conducted risk assessments. For those contaminants not included in the AMSRP, the appropriate Federal and Territorial regulations were applied for the assessment and remediation of the Site. A summary of the applied criteria can be found in Appendix A, Table A3.

3.1 Land Use Determination

In the event that the AMSRP does not satisfy the assessment requirements of this program, land use based criteria will be applied. Land use defines the current and future potential usage of the site and categorizes the Site as either agricultural, residential/parkland, commercial or industrial.

AANDC have classified the Site as Agricultural/Wildland. Based upon this land use classification the Protection of Environmental and Human Health (PEHH) (CCME 2007) defines Agricultural/Wildland as:

- The land use category where the primary land use is related to the capability of the land or facility and are agricultural in nature or activities related to the feeding and housing of livestock. Wild lands are grouped with agricultural due to similarities in receptors that would be expected to occur and similar need for a high level of protection to ensure ecological functioning (CCME 2007).

The Government of Nunavut (GN) *Contaminated Site Remediation Guidelines* (2009) defines agricultural land use as:

- The land in which the primary activity is related to the productive capability of the land. This includes lands that provide habitat for transitory wildlife and birds as well as greenhouses (GN 2009).

Because of the nature of the Site and AANDCs classification, the agricultural/wild land criteria will apply in the event that the AMSRP has not established criteria for comparison.

3.2 Grain Size Designation

A fine-grained soil is defined as having a median grain size (D50) of 75 micrometers (µm) or less, whereas a coarse grained soil has a D50 of 75 µm or greater. EBA conducted particle size analysis (PSA) through Maxxam Analytics and it was determined that the PSA of samples is coarse grained. This information corroborated the EBA geotechnical evaluation which looked at various locations across the Site for PSA. This analysis was performed by EBA Yellowknife Geotechnical Laboratory. The majority of the geotechnical samples are coarse grained as indicated in the PSA logs. Underlying the sand is bedrock with occasional silt/clay layers separating the sand and bedrock. Overall the site is defined as coarse grained.

3.3 Background Soils

Due to naturally elevated metal concentrations found throughout northern contaminated sites, ten background soil samples were collected for comparative purposes. Metal parameters that exceeded the AMSRP and CCME guidelines included barium, copper, cadmium, lead, tin, selenium and zinc. The site is in an area of exposed bedrock with limited surficial soil cover. There have been no historical operations of mining activities on Nottingham Island. This indicates that metal concentrations may be naturally elevated. During the assessment, the ten background samples were taken at locations away from the Site. EBA analyzed these samples to determine metals that may be naturally elevated.

To have a statistically significant population the ten background samples were collected to determine a distribution range for comparison to on-site metal impacted samples. Site specific criteria for selenium will be used for comparison, since background samples for this metal are above CCME and / or AMSRP. The results are presented in Appendix C.

3.4 Surface Water

The surface water quality data was evaluated against the Canadian Water Quality Guidelines (CWQG) for both freshwater and marine water aquatic life. Marine water aquatic life (MWAL) guidelines were applied to samples collected from Hudson's Strait as well as in the pooled surface water that have the potential to drain into Hudson's Strait during high water conditions. In the event that MWAL guidelines had not been established the freshwater water aquatic life (FWAL) guideline was applied. Samples collected from stations in distinct surface runoff water bodies with no connection to the marine environment were compared against the FWAL criteria.

3.5 Applicable Exposure Pathways

3.5.1 Human Pathways

The Site is currently occupied with abandoned weather station structures, including areas formerly used as residences. The majority of the Site consists of outcrop exposures with limited soil cover typically found in topographic lows. Soil dermal contact and ingestion pathways are considered applicable at the Site. The vapour inhalation pathway is also considered applicable due to the presence of buildings at the Site as well as the potential for new shacks or cabins to be built at the site in the future. However, the groundwater protection pathway was excluded since groundwater was not identified during the site program; only surficial pooling of water. There are no records indicating groundwater was used for potable water at the Site.

3.5.2 Ecological Pathways

The Site, currently designated as agricultural/wildland use, has various amounts of arctic vegetative cover with humic soil development. Under this current land use, the eco soil contact pathways are applicable. Given that there is significant surficial water in contact with the soil and the Site is located in close proximity to Hudson Strait, the protection of water quality for Aquatic Life must also be considered.

3.6 Summary of Applicable Soil and Water Assessment Guidelines

The primary document that analytical results are compared to is:

- Abandoned Military Site Remediation Protocol (AMSRP) (AANDC 2008).

In the event that the AMSRP did not have defined guidelines the following guidelines were used for comparison against laboratory analytical results:

- CCME, Canadian Soil Quality Guidelines, CCME, September 2007 update, coarse grained with the exception of selenium.
- Site Specific Criteria for Selenium, determined by background sampling (EBA 2012).
- CCME, Canadian Water Quality Guidelines for the Protection of Aquatic Life *(Freshwater and Marine water), Update 7.1, 2012*.
- Government of Nunavut Contaminated Site Remediation *Update 2003.*

The above referenced guidelines provide a generic set of guidelines against which the laboratory analytical results are compared to provide a general Site condition.

3.7 Summary of Applicable Hazardous/Non-Hazardous Assessment Guidelines

Analytical results for the Phase III ESA will be compared with applicable AMSRP, federal and / or territorial guidelines. Table 2 summarizes the proposed criteria:

Table 2: Summary of Applicable Hazardous Assessment Guidelines

Publisher	Title	Description	Year
INAC	Abandoned Military Site Remediation Protocol	Drum content guideline	2009
GN	Environmental Guideline for Waste Lead and Lead Paint	Lead paint waste guideline	2011
GN	Environmental Guideline for Waste Paint	Paint waste guideline	2010
GN	Environmental Guideline for Mercury-Containing Products and Waste Mercury	Mercury disposal guideline	2010
GN	Environmental Guideline for the General Management of Hazardous Waste	Reference and waste guidelines	2010
GN	Environmental Guideline for Industrial Waste Discharges	Waste and aqueous content in drum discharges guideline	2002
GN	Environmental Guideline for the Burning and Incineration of Solid Waste	Guidelines for incineration considerations	2010
GN	Environmental Guideline for Waste Asbestos	Guideline required for abatement	2011
GN	Environmental Guideline for Waste Batteries	Guideline and disposal options	2011
GN	Environmental Guideline for Waste Solvent	Waste solvent disposal options	2011
GN	Environmental Guideline for Waste Antifreeze	Waste antifreeze disposal options	2011
CEPA	PCB Regulations	Waste remediation and landfill guideline	1999
EC	Industrial Treated Wood Users Guidance Document	Management of treated wood	2004
GN	Environmental Guideline for Ozone Depleting Substances	Disposal criteria and waste management guideline	2011

3.7.1 Drum Content

For potential on-site disposal or incineration, or off-site disposal of drum products, the AMSRP is used to classify drum content. Drum contents were first visually evaluated as being either aqueous or organic-based. The aqueous samples were then analyzed for potential on-site or off-site disposal, whereas, the organic samples were analyzed for potential on-site incineration or off-site disposal. Samples that are classified as aqueous and are less that 2% glycol or alcohol are eligible for on-site disposal based on Nunavut's *Environmental Guidelines for Industrial Waste Discharges* (GN 2002).

3.7.2 Asbestos Containing Material (ACM)

There are no federal guidelines that define Asbestos Containing Material (ACM), as well there is no definition provided in the AMSRP. The *Nunavut Environmental Guideline for Waste Asbestos* (GN 2011) provides guidelines of asbestos containing waste storage and handling. It defines an ACM as material that contains 1% or greater by volume of asbestos. Asbestos may be found in the form of the serpentine (Chrysotile) or an amphibole (Crocidilite, Tremolite, Amosite, Anthophyllite or Actinolite).

3.7.3 Lead/Polychlorinated Biphenyl's Amended Paint

The AMSRP provides guidelines for acceptable total lead and leachable lead in paint. Leachable lead in paint as determined by Toxicity Characteristic Leachate Properties (TCLP) is considered hazardous when levels are greater than 5 mg/L. Lead-based painted components as determined by Environmental Protection Agency (EPA) analytical method 200.8 – Elements by ICP, that are classified as hazardous material shall be collected and transported off-site, in accordance with the Nunavut's *Environmental Guidelines for Industrial Waste Discharges* (GN 2002), to a licensed hazardous waste disposal facility.

The Nunavut *Environmental Guidelines for Waste Lead and Lead Paint* defines lead paint as "paint or other similar structural coating material containing greater than 600 parts per million (ppm, 0.06% by weight) lead (GNU 2011)". The guideline also state that products containing lead in excess of 600 ppm are to be considered hazardous waste, and must follow the Nunavut *Environmental Guideline for the General Management of Hazardous Waste* (GN 2011).

The AMSRP specifies that paint containing polychlorinated biphenyl's (PCB) in excess of 50 ppm is to be considered hazardous waste. PCB Regulations, (Canadian Environmental Protection Act, 1999, SOR/2008-273 Current to: October 2, 2012) Subsection 1(2) of the PCB Regulations requires that the concentration of PCBs in a solid composed of several matrices be calculated using the mass of the matrix in which the PCBs are located.

As well, the GN does have an advisory against burning wood and other materials that contain PCBs (GN 2010).

4.0 METHODS

4.1 Logistics

EBA field personnel mobilized and were based out of Ivujivik, Nunavik, QU with accommodations at the Co-Op hotel from August 7 to 16, 2012. The fieldwork was completed on August 11, 14 and 15, 2012. Several days were spent on stand-by in Ivujivik either due to lack of safety supplies and/or unfavourable weather conditions. EBA personnel were able to access the Site with the Bell 212 Canadian Coast Guard Helicopter. Once on-site, the field teams were divided into their respective disciplines; geotechnical, archaeological, and environmental.

Two local bear monitors accompanied EBA field staff to the Site for safety considerations. Three bears had been found and relocated off of the coast of Ivujivik, QU two days prior to the team arriving in the community. Bears were not observed on Nottingham Island during the 2012 field program.

4.2 Pre-Field Hazard Assessment and Safety Meetings

In accordance with EBA safety policies, a safety meeting was held with all EBA staff prior to commencing field work. The safety meeting was completed upon the EBA team's arrival in Ivujivik. Prior to beginning the assessment, Coast Guard helicopter safety training was conducted to ensure safe passage to site over the ocean. Upon arriving at site, a tailgate meeting was held outlying the safety protocols and procedures that were to be followed each work day. Representatives from PWGSC and AANDC were in attendance at the safety kick-off meeting at the beginning of the field program. Upon arriving at the Site, EBA established a remote communication procedure with the off-site check-ins using SPOT devices and satellite phones. A muster station was established and EBA's remote on-site communication check-ins began with all on-site team members using hand held radios following an hourly check in procedure. Fieldwork was conducted in pairs for safety purposes, with similar technical disciplines teaming up to work together.

4.3 Soil Assessment Methodology

EBA conducted the Phase III ESA, in accordance with the substance and intent of the Phase II Environmental Site Assessment guideline documents produced by the CSA:

- CSA Z769-00, Phase II Environmental Site Assessment Guidelines (CSA 2008R).

Soil sampling was conducted to delineate soil impacts previously identified in the EBA 2012 Data Gap Analysis found in Appendix A. Additional assessment areas were added after the completion of on-site reconnaissance. A total of 74 soil samples were collected and submitted for laboratory analysis based upon field screening and visual observations. Of the 74 samples, 64 were taken on-site with ten additional background samples. Sample analysis included the following: 64 were analyzed for petroleum hydrocarbons (PHCs) and CCME metals, three worst case scenario samples were then selected for leachable analysis for landfill suitability, 14 samples were submitted for polychlorinated biphenyl (PCB) analysis based upon the gap analysis. The ten background samples were analyzed for CCME metals. These parameters were chosen based upon the gap analysis and approved by PWGSC and AANDC prior to the commencement of work.

Soil boreholes were dug using a hand auger at areas across the Site, and soil type was logged according to the Unified Soil Classification System (USCS). Information collected to characterize the soil at each soil borehole location included soil type, soil texture, color, structure, and potential odour. Soil samples were generally collected from below 0.1 metres below ground surface (mbgs) to a maximum depth of 0.5 mbgs, with the majority of the samples collected at the identified APECs. 51 soil boreholes were recorded using a Global Positioning System (GPS), but due to weather constraints 23 soil boreholes could not be recorded using GPS and these locations were marked on the corresponding site map based upon field notes. Each soil borehole was marked with a pin flag and labelled with a consecutive location number.

Field screening for PHCs was conducted using a Minirae photoionization detector (PID) for the presence of volatile hydrocarbons. For each sample a zip lock bag is taken and sealed trapping volatile hydrocarbons within the bag. The bag is then allowed to warm releasing volatile hydrocarbons into the headspace of the zip lock bag. A hole is then punctured into the zip lock bag and the headspace measured using the PID, this result is qualitative and used to indicate the presence/absence of PHCs.

Sampling equipment was wiped clean between sampling events to prevent cross contamination. All personnel involved in the collection of samples reviewed sampling protocols prior to the start of the site assessment. Soil was stored in 125 mL jars without headspace for all hydrocarbon samples and ziploc bags for metals samples. Samples for hydrocarbon analysis were placed into coolers and kept cool (below 4ºC) prior to and during shipment to the laboratory. Samples were submitted with chain of custody (COC) forms to Maxxam Analytics (Maxxam), Montreal, QC.

4.4 Water Assessment Methodology

The aim of the surface water quality sampling programs was to obtain reliable data to determine existing water quality conditions at the time of the field event, and to prevent contamination and deterioration of the samples before analysis to the degree possible. Water quality sampling stations were positioned along lakes and drainage channels, upstream and downstream of known APEC sites. Surface water quality sampling stations were pre-determined during the gap analysis, and were adjusted based on on-site reconnaissance.

A total of 14 surface water quality samples were collected in and near the Site. The surface water quality samples were collected consistent with standard grab-sampling methods, including:

- water quality samples were collected into the current or wind, and off-shore as much as possible without disturbing the bottom sediment;
- disposable, powder less, nitrile gloves were worn while handling all the bottles and equipment;
- care was taken to avoid touching the inner portions of the sterile sample bottles and preservative bottles and caps with gloved hands;
- during sampling the bottle was plunged into the water (at arm's length from the sampler) in a horizontal position to minimize collection of bottom sediment. Samples were preserved upon reception at the laboratory;
- slowly inverting the sample bottles several times to distribute the preservative throughout the sample;
- securing the samples from each station in a Ziploc bag to prevent possible contamination from other samples during transport;
- samples were shipped to the laboratory as soon as possible to meet the recommended laboratory hold times for parameter analysis (where possible, due to transportation from the remote study area);
- samples were transported in laboratory-issued portable coolers with ice packs, to ensure that the samples remain below 4 °C during transport;
- ensure samples remain upright and secured in the cooler, and the cooler is sealed prior to shipping; and
- chain-of-custody (COC) forms were prepared and shipped with the water quality samples to the laboratory for analysis.

Water quality samples were submitted to Maxxam Analytics in Montreal and analyzed for routine parameters, nutrients, CCME metals, PHCs, and PCB analysis.

Duplicate water quality samples were collected in the field using source water from randomly chosen stations. The duplicate samples were collected to test the validity and precision of sampling procedures and laboratory methodology. These duplicate samples represent 10 percent (%) (or greater) replicate sampling, and were analysed for the full suite of parameters. Duplicate samples were compared to their respective field samples using a Relative Percent Difference (RPD) Assessment.

4.5 Bio-Inventory Methodology

The biophysical components of the local and regional areas at the Site were described using three different strategies: random walking transects, an aerial reconnaissance survey, and traditional knowledge interviews. The biophysical inventory across the local and regional areas was limited in extent due to time restrictions as a result of poor weather.

The biophysical assessment, involving random walking transects in each APEC was used to document the existing vegetation species present and species composition, as well as wildlife occupancy based on visual detections and sign (*e.g.* browse, scat, bones).

The aerial reconnaissance survey, using a Bell 212 Canadian Coast Guard helicopter was utilized to gain a regional understanding of the dominant land features, ecosystem units, and any sensitive wildlife areas (*ie.* nesting and denning sites) across the region. As encountered, areas of particular focus during the aerial reconnaissance were:

- Eskers, notable as potential carnivore denning habitat;
- Cliffs and cliff ledges, notable as potential cliff-nesting raptor habitat, such as Peregrine Falcons; and
- Marine shorelines.

Traditional knowledge interviews were conducted as a record of current and historic wildlife occupancy and distribution in the local and regional area. Suitable local persons and elders available for the interviews were suggested by the Town Manager and the bear monitors on-site. Bird and wildlife field guides (Sibley 2005; Kays and Wilson 2009) were used to facilitate discussions during the interviews.

Information collected in the biophysical inventory will form the basis of the Environmental Screening Report, which will be submitted under separate cover.

4.6 Hazardous and Non-Hazardous Materials Methodology

4.6.1 Drum Contents

EBA typically samples drum contents for classification of material to identify the appropriate disposal option as defined in the AMSRP. Prior to sampling, drums are inspected for, but not limited to;

- Drum pressurization (bulging/ visual dimples);
- Crystals forming on the exterior around any openings;
- Visual identification of leaks, holes or stains;
- Identifiers that provide information on potential contents;

- Composition and type of drum (steel/poly and open/bung);
- Condition, estimated age if labeled, exterior rust; and,
- Sampling accessibility (is the drum vertical, horizontal, buried, etc).

Drums that exhibited evidence of pressurization and crystal formation are not sampled by EBA. EBA field technicians identify onsite any drums exhibiting the above features and determine if they are safe for sampling. Compromised drums that are not sampled, are recorded for drum location and estimation of contents.

Drums were identified by EBA in the gap analysis and sampling plan prior to mobilizing to Site. Once on-site barrels are identified with the label recorded on the lid and drum. This allows for identification in case lids are moved at a later date.

For metal drums not sitting directly on earth, the drum is grounded using grounding wires, alligator clips and a grounding rod or metal structure if practical.

Prior to opening of any lid, EBAs standardized drum opening equipment is applied to the bung or drum ring and an electrical conductive current path was allowed time to form. EBA uses spark resistant tools for the opening of equipment.

When a drum is opened the contents original state is recorded within the field notes. This allows the field technician to record state, quantity, phases whenever possible and it includes the color of the contents.

Liquid waste samplers are used to retrieve contents from the drum. The EBA drum sampling protocol is provided in the Nottingham Island Health and Safety Plan (EBA 2012). The level of personal protective equipment (PPE) utilized for drum sampling is C Level Protection. This includes a half face mask with defender filter cartridges and a face shield on one person and a full face mask with defender filter cartridges on the other person. Thick rubber gloves and disposable Tyvex suits and booties are also worn. Other precautions, such as wash buckets, absorbent pads and eye wash kits should be located adjacent to the drum being sampled.

4.6.2 Asbestos Containing Material (ACM), Lead and PCB Containing Paint and Asbestos and PCB containing concrete

The following outlines sampling procedures conducted for collecting suspected asbestos containing building materials samples, lead and PCB containing paints and asbestos and PCB containing concrete:

- Spread a plastic drop cloth, where appropriate, under the surface to be sampled and set up other equipment (e.g., ladder) to collect surfacing material;
- Put on protective equipment (half-face respirator with Defender Multi-Purpose Cartridge and P100 Particulate Filters, nitrile gloves, Tyvek suits with a hood were worn if the sampling was conducted within an enclosed area);
- Labeled each bulk sample bag with a specific ID number, sample location, date and type of material sampled. Recorded the information on a sampling data form;

- Marked the location of the sample on the sampling diagram/ building floor plan and recorded the sample ID number on the plan diagram as well. Photographed the sample collection site for project records and inclusion into the assessment report;
- Moistened the area where the sample was to be extracted (sprayed the immediate area with water and reapplied water during sampling to minimize particulate release);
- For paint samples: Extracted the paint sample using a chisel and paint scraper, which scraped off the material directly into a Ziploc bag. Sample size was a minimum of 3 grams;
- For asbestos samples: Extracted the sample using a clean knife and other similar devices, which cut out, or scraped off a small piece of the material. Penetrateed all layers of material down to substrate, while not disturbing adjacent materials. Put the material directly into a Ziploc bag. Sample size was a minimum the size of a thumbnail;
- For concrete samples: Extracted the sample using a hammer and chisel, which broke off small pieces of the material. Penetrated all layers of the material down to the substrate. Put the material directly into a Ziplock bag and double bagged every sample. Sample size was a minimum of one third of a bag for asbestos analysis and 5 grams for PCB analysis;
- Repeated the above steps at each sample location. Double bagged the sample bags to ensure minimum potential for particulate release;
- Discarded protective clothing, cartridge filters, and drop cloth in a labelled disposal bag. Removed the half mask respirator and applied duct tape to the P100 filters to ensure minimum potential for particulate release. Sealed and retained the bag until it could be properly disposed of; and,
- Completed the laboratory COC. Under analysis required, wrote the applicable analysis to be conducted, depending on the sample.

4.6.3 Materials Inventory

An inventory of hazardous and non-hazardous items at each site was recorded and photographed. Each item was compared with the previous WESA data. Each item or groups of items were classified by material type, either non-hazardous or hazardous, then the material description (wood, metal, etc.). The total volume of each material description was calculated and the condition was noted when relevant.

Drum volume was calculated based on a field assessment of 25%, 50%, 75%, or full for each drum.

5.0 SOIL ASSESSMENT

The soil field program consisted of the advancement of 64 soil boreholes on-site and 10 soil boreholes off-site for a total of 74 soil boreholes. A total of 74 samples were collected from the soil boreholes from various locations across the Site.

5.1 Ground Conditions

Ground conditions encountered in test pits consisted of coarse grained calcareous sand overlying bedrock. A vegetated top layer with humic development was consistent over the undisturbed Site. Occasional clay

and silt was encountered overlying bedrock underneath the coarse grained sand. The Site was saturated with moisture from active layer melt with localized pooling prevalent on-site. Soil boreholes, upon completion, would fill with water within one hour post sampling. A total of 64 soil boreholes were advanced to refusal on-site to a maximum depth of 0.5 meters below ground surface (mbgs). Refusal was at bedrock or cobbles, no permafrost was encountered during the soil assessment. Soil borehole logs are included in Appendix E

5.2 Background Soil Sampling

Metal parameters that exceeded the AMSRP and CCME guidelines included barium, copper, cadmium, lead, tin, selenium and zinc. The site is in an area of exposed bedrock with limited surficial soil cover. There have been no historical operations of mining activities on Nottingham Island. This indicates that metal concentrations may be naturally elevated. During the assessment, ten samples were taken at locations away from the Site and are considered background samples. EBA analyzed these samples to determine metals that may be naturally elevated. Table 3 is a summary of the background soil conditions, individual samples can be found in Appendix C, Table E1

Table 3: Background Metal Soil Concentrations

Parameter	Applicable Guideline	Criteria (mg/kg)	Number of Background Samples Analyzed	Concentration Range (mg/kg)
Barium	CCME Agricultural	500	10	16 -150
Cadmium	AMRSP Tier 2	5	10	ND- 0.3
Copper	AMRSP Tier 2	100	10	1-13
Tin	CCME Agricultural	5	10	1-2
Lead	AMRSP Tier 1	200	10	1-4
Selenium	CCME Agricultural	1	10	ND-1.7
Zinc	AMRSP Tier 2	500	10	7-27
ND-Non Detectable Result				

To have a statistically significant population ten background samples were collected to determine a distribution range for comparison to on-site metal impacted samples. Site specific criteria for selenium will be used for comparison, since background samples for this metal are above the CCME guidelines. Soil metal concentrations in excess of the concentration range are considered impacted and will be discussed within the results Section 5.3.

5.3 Results

Soil analytical results are presented in Appendix C, Table E3 (PHC results), Table E4 (Metal and PCB results) and Table E5 (Landfill Suitability). Copies of certified lab reports are provided in Appendix D WESA analytical results for soil have been included in the 2012 EBA data set. WESA data tables can be found in Appendix B. Soil sample exceedances are described in the following sections according to their APEC or nearest APEC. APECs, structures, and sample locations are shown on Figures E1 to E7. Figure E7

provides a composite view of the main site. A summary of the criteria exceedances by APEC are presented in Table E6 in Appendix C. Samples were compared to applicable guidelines and also to background soil value ranges. Background samples were taken from areas not showing any disturbance by human activities, background range results are presented in Table E1. Samples that exceeded guidelines are described below: all other samples submitted for laboratory analysis were either below applicable criteria, below background range or below lab detection limits.

5.3.1 APEC 1 Storage Shed 01

APEC 1 was described in the WESA Phase II ESA report as Storage Shed 01. APEC 1 is located centrally on the Site as seen in Figure E-2. Four soil samples were collected within the APEC but none exceeded applicable guidelines; WESA collected two samples that exceeded guidelines. A summary of samples exceeding applicable guidelines are provided in Table 4.

Table 4: APEC 1 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 1	SB029-SS-049 WESA	Cd
	SB029-SS-050 WESA	Cd, Sn

Soil samples SB029-SS-049 (9.22 mg/kg) and SB029-SS-050 (8.87 mg/kg) exceeded AMSRP Tier 2 guideline of 5 mg/kg for cadmium.

Soil sample SB029-SS-050 (5.98 mg/kg) exceeded the CCME agricultural guideline of 5 mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable criteria, below background range or below lab detection limits.

5.3.2 APEC 2 Old Kitchen

APEC 2 was described in the WESA Phase II ESA report as the Old Kitchen. There was various scattered debris and miscellaneous wire scattered throughout the APEC. The building was in a state of disrepair and in danger of collapse. Two wood fireplaces were present within the structure and no PHC based fuel source could be found. No soil samples were collected within APEC 2 due to the limited field program. A single soil sample was collected during the WESA Phase II ESA; this sample was below the applicable guidelines. The location of the sampling point can be seen in Figure E-2.

5.3.3 APEC 3 New Radio Building

APEC 3 was described as the New Radio Building in the WESA Phase II ESA report; there was scattered debris, wire and building materials throughout the APEC. Surficial staining and PHC odour was noted during the assessment. The location and sampling points can be seen in Figure E-5. EBA collected five soil samples to further delineate the APEC. A summary of sample exceedances are provided in Table 5 below.

Table 5: APEC 3 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 3	2012-SB-44	ethyl benzene, Type B PHC, Cu
	2012-SB-45	Type B PHC
	SB029-SS-062 WESA	Type B PHC, Sn, Pb, Zn

Soil samples 2012-SB-44 (4,920 mg/kg), 2012-SB-45 (4,074 mg/kg) and SB029-SS-062 (17,530 mg/kg) exceeded the AMSRP guideline of 2500 mg/kg for Type B hydrocarbons.

Soil sample 2012-SB-44 (0.08 mg/kg) exceeded the CCME agricultural guidelines of 0.082 for ethyl benzene.

Soil samples 2012-SB-44 (540 mg/kg) and SB29-SS-062 (100 mg/kg) exceeded applicable AMSRP Tier 2 guideline of 100 mg/kg for copper.

WESA soil sample SB029-SS-062 (240 mg/kg) exceeded applicable AMSRP Tier 1 guideline of 200 mg/kg for lead.

WESA soil sample SB029-SS-062 (1300 mg/kg) exceeded applicable AMSRP Tier 1 guideline of 500 mg/kg for zinc.

WESA soil sample SB029-SS-062 (8.81 mg/kg) exceeded applicable CCME agricultural guideline of 5 mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable criteria, below background range or below lab detection limits.

5.3.4 APEC 4 Old Radio Building

APEC 4 was described in the WESA Phase II ESA as the Old Radio Building. As part of the field program an additional three soil samples were taken at the APEC. Staining and PHC odour was noted around the former fuel tank area. The sampling locations can be seen in Figure E-5. A summary of exceedance of applicable guidelines are provided in Table 6.

Table 6: APEC 4 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 4	2012-SB-40	Se
	2012-SB-41	Type B PHC
	SB029-SS-065 WESA	Type B, Ba, Cu, Sn, Pb, Se, Zn

Soil samples 2012-SB-41 (2530 mg/kg) and SB029-SS-065 (2992 mg/kg) exceeded applicable AMSRP guideline of 2500 mg/kg for Type B hydrocarbons.

Soil samples 2012-SB-40 (4.2 mg/kg), SB029-SS-065 (2.2 mg/kg) and SB029-SS-067(2.2 mg/kg) exceeded applicable CCME agricultural guideline of 1 mg/kg for selenium and are above the background concentration range.

WESA soil sample SB029-SS-065 (1450 mg/kg) exceeded the applicable CCME agricultural guideline of 750 mg/kg for barium.

WESA soil sample SB029-SS-065 (57 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for tin.

WESA soil sample SB029-SS-065 (145 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 5 mg/kg for cadmium.

WESA soil sample SB029-SS-065 (345 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 100 mg/kg for copper.

WESA soil sample SB029-SS-065 (2270 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 200 mg/kg for lead.

WESA soil sample SB029-SS-065 (3120 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 500 mg/kg for zinc.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.5 APEC 5 Outhouse

After visual inspection and based upon the gap analysis, no samples were taken at the outhouse during the Project. The location of APEC 5 can be seen in Figure E-5.

5.3.6 APEC 6 Storage Shed 02

APEC 6, identified in the WESA report as Storage Shed 02, had various spools of wire and transistors scattered throughout the APEC and inside the structure. No samples were taken during the assessment due to time constraints as a result of weather. A single sample taken by WESA in the Phase II ESA and has been incorporated into the data set. The location of the sampling point can be found in Figure E-5. A summary of the sample exceedance are provided in Table 7.

Table 7: APEC 6 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 6	SB029-SS-067 WESA	Se

WESA soil sample SB029-SS-067 (2.2mg/kg) exceeded applicable CCME guidelines of 1 mg/kg for selenium and is above the background concentration range. The sample is above the background concentration range for selenium.

5.3.7 APEC 7 Storage Building

APEC 7 was identified by WESA as the Storage Building. Three samples were taken to delineate the former fuel tank during the assessment. A single sample was taken by WESA and has been incorporated into the dataset. The location of the sampling points can be found in Figure E-5. All samples submitted for

laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.8 APEC 8 Chicken Coop

APEC 8 was identified by WESA as the Chicken Coop; two samples were taken from around the fuel tanks east of the structure. The location of the sampling locations can be found in Figure E-5. All samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.9 APEC 9 Bunkhouse

APEC 9 was identified by WESA as the Bunkhouse. The APEC had various scattered building debris surrounding the perimeter of the building. The location is shown in Figure E-3. Four samples were collected to delineate the APEC with an additional four samples collected by WESA that have been incorporated into the data set. A summary of samples exceeding applicable guidelines is provided in Table 8.

Table 8: APEC 9 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 9	2012-SB-22	Sn
	SB029-SS-052 WESA	Type B PHC, Sn
	SB029-SS-056 WESA	Sn
	SB009-SS-057 WESA	Cu

WESA soil sample SB029-SS-052 (6030 mg/kg) exceeded the applicable AMSRP guideline of 2500 mg/kg for Type B hydrocarbons.

WESA soil sample SB029-SS-057 (249 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 100 mg/kg for copper.

Soil samples 2012-SB-22 (9 mg/kg), SB029-SS-052 (6.84 mg/kg), SB029-SS-056 (12.2 mg/kg) and SB029-SS-057 (14.8 mg/kg) exceeded the applicable CCME agricultural criteria of 5 mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.10 APEC 10 Generator Building

APEC 10 was identified by WESA as the generator building; the former camp generators were still present inside the structure. Former fuel distribution inlets, from the pipeline, had been removed but existing infrastructure could be identified on the west side of the generator building. Various spare parts and oil filters were scattered throughout with an accumulation on the south side of the structure. Surface staining

and PHC odour was identified during the assessment. The staining was noted on the southern side of the structure near a bend in the former fuel distribution pipeline, this area was delineated in 2012 by two samples 2012-SB-14 and 2012-SB-15. The location of the sampling points can be found on Figure E3. Four soil samples were collected in APEC 10 by EBA. An additional three samples were included from the WESA study. A summary of samples exceeding applicable guidelines is provided in Table 9.

Table 9: APEC 10 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 9	SB029-SS-042	Sn

WESA soil sample SB029-SS-042 (18.9 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for tin.

All samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.11 APEC 11 and APEC 12 House and Garage/ Shed

APEC 11 was defined by WESA as the House and Garage; APEC 12 was defined by WESA as the Shed. These APECs will be discussed together due to their proximity and common sampling points that provided delineation of the area. There was considerable debris surrounding the APECs including a Caterpillar excavator, drums and waste debris. Soil staining was noted around the former fuel distribution line and in association with the scattered drums within the debris. PHC odours were noted within the soil boreholes advanced during the field program. The location of the sampling points can be found in Figures E-4. A total of nine soil samples were collected by EBA. An additional seven samples collected by WESA have been included in the data set. The exceedances of the applicable guideline are provided in Table 10.

Table 10: APEC 11 and 12 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 11/12	2012-SB-8	Type B PHC
	2012-SB-9	Type B PHC
	2012-SB-57	Type B PHC
	2012-SB-58	Benzene, Toluene, Ethylbenzene, Type B
	2012-SB-59	Type B PHC
	2012-SB-60	Type B PHC
	2012-SB-62	Type B PHC, Pb
	SB029-SS-031 WESA	Type B PHC, Pb
	SB0029-SS-032 WESA	Type B PHC, Pb
	SB029-SS-033 WESA	Type B PHC, Pb
	SB029-SS35 WESA	Benzene, Toluene, Ethyl benzene, Pb, Sn
	SB029-SS-037 WESA	Sn
	SB029-SS-038 WESA	Benzene, Pb, Se

Soil samples 2012-SB-8 (17,281 mg/kg), 2012-SB-9 (6,700 mg/kg), 2012-SB-57 (5,625 mg/kg), 2012-SB-58(2,995 mg/kg), 2012-SB-59 (6,000 mg/kg), 2012-SB-60 (6,125 mg/kg), 2012-SB-62 (4,509 mg/kg), SB029-SS-031 (5,885 mg/kg), SB029-SS-032 (11,011 mg/kg) exceeded the applicable AMSRP guideline of 2500 mg/kg for Type B hydrocarbons.

Soil sample 2012-SB-58 (0.16 mg/kg) exceeded the applicable CCME agricultural guideline of 0.03 mg/kg for benzene.

Soil sample 2012-SB-58 (0.71mg/kg) exceeded the applicable CCME agricultural guideline of 0.37 mg/kg for toluene

Soil sample 2012-SB-58 (0.12 mg/kg) exceeded the applicable CCME agricultural guideline of 0.082 mg/kg for ethyl benzene.

Soil samples 2012-SB-62 (1,000 mg/kg), SB029-SS-031 (260 mg/kg), SB029-SS-032 (3,890mg/kg), SB029-SS-033 (4,620mg/kg), SB029-SS-035 (260 mg/kg) and SB029-SS-038 (1,460 mg/kg), exceeded the applicable AMSRP Tier 2 guideline of 200 mg/kg for lead.

Soil samples SB029-SS-038 (2.1 mg/kg) exceeded the CCME agricultural guideline of 1 mg/kg for selenium and is above the background concentration range.

WESA soil samples SB029-SS-035 (11 mg/kg) and SB029-SS-037 (6.22 mg/kg) exceeded the applicable CCME agricultural criteria of 5 mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.12 APEC 13 House

WESA identified APEC 13 as the House. Some scattered building debris, a former fuel tank and various steel fuel drums were scattered throughout the APEC. EBA collected three soil samples to delineate APEC 13. An additional sample collected by WESA was included in the data set. The location and sampling configuration can be found in Figure E-4. Exceedances of the applicable guidelines are provided in Table 11.

Table 11: APEC 13 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 13	2012-SB-3	Sn, Pb
	2012-SB-4	Benzene, Sn
	SB0290SS-030 WESA	Pb, Sn

Soil sample 2012-SB-04 (0.061 mg/kg) exceeded the applicable CCME agricultural guideline of 0.037 mg/kg for benzene.

Soil samples 2012-SB-3 (460 mg/kg) and SB029-SS-030 (387 mg/kg) exceeded the applicable AMSRP guideline of 200 mg/kg for lead.

Soil sample 2012-SB-3 (390 mg/kg), 2012-SB-4 (10 mg/kg) and SB029-SS-030 (39.5 mg/kg) exceeded the CCME agricultural guideline of 5mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable criteria, below background range or below lab detection limits.

5.3.13 APEC 14 Above Ground Storage Tanks

APEC 14 was defined by WESA as the above ground storage tanks whilst various debris and pipes were located within the APEC from the former fuel distribution line. Staining and PHC odour were noted during the assessment. A helipad was also included in the APEC upon visual inspection of the Site. Ten soil samples were collected by EBA during the assessment, an additional two soil samples collected by WESA have been included in the data set. The location of APEC 14 and the sampling configuration can be seen in Figure E-2. Exceedances of the applicable guidelines are provided in Table 12.

Table 12: APEC 14 Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 14	2012-SB-25	Type B PHC
	2012-SB-27	Type B PHC
	2012-SB-29	Type B PHC
	SB029-SS-046 WESA	Type B PHC

Soil samples 2012-SB-25 (5,730 mg/kg), 2012-SB-27 (12,120 mg/kg), 2012-SB-29 (3,300 mg/kg) and SB029-SS-046 (9,180 mg/kg) exceeded the applicable AMSRP guideline of 2,500 mg/kg for Type B hydrocarbons.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.14 APEC 15 Cold Storage Area

APEC 15 was defined by WESA as the former Cold Storage Area. EBA did not collect a sample from this area during the assessment due to poor stability issues from the former underground structure. The location of APEC 15 can be found in Figure E-2.

5.3.15 APEC 16 Debris Area 1

APEC 16 was defined by WESA as Debris Area 1. Upon visual inspection the remains of a burnt building were found in Debris Area 1. The Debris Area was also the terminal extent of the fuel distribution line from the above ground storage tanks (APEC 14). EBA collected four samples to delineate the area. The location of sampling points can be found in Figure E-4. Exceedances of the applicable guidelines are provided in Table 13.

Table 13: Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 16	2012-SB-2	Pb
	2012-SB-54	Sn

Soil sample 2012-SB-2 (250 mg/kg) exceeded the applicable AMSRP guideline of 200 mg/kg for lead.

Soil sample 2012-SB-54 (7 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for tin.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.16 APEC 17 Debris Area 2

APEC 17 was defined by WESA as Debris Area 2. Various pieces of steel piping from the fuel distribution line and wood debris were scattered throughout the APEC. A surficial pool of shallow water was located to the east of the APEC. Two soil samples were collected as part of the assessment. A single sample collected by WESA was incorporated into the dataset for the APEC. The location can be found in Figure E-3. A summary of the samples exceeding applicable guidelines provided in Table 14.

Table 14: Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 17	2012-SB-12	Type B PHC

Soil sample 2012-SB-12 (3,620 mg/kg) exceeded the applicable AMSRP criteria of 2500 mg/kg for Type B hydrocarbons.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.17 APEC 18 Debris Area 3

APEC 18 was defined by WESA as Debris Area 3 and consisted of various pieces wood and metal debris. Two soil samples were taken during the assessment. A single sample was previously taken by WESA and incorporated into the dataset. Location can be found on Figure E-2. Exceedances are provided in Table 15.

Table 15: Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 18	SB029-SS-048 WESA	Ba, Cd, Cu, Sn, Mo, Ni, Pb, Se, Zn, Sb

WESA soil sample SB029-SS-048 (1060 mg/kg) exceeded the applicable CCME agricultural guideline of 750 mg/kg for barium.

WESA soil sample SB029-SS-048 (386 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for tin.

WESA soil sample SB029-SS-048 (17.3 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for molybdenum.

WESA soil sample SB029-SS-048 (4.4 mg/kg) exceeded the applicable CCME agricultural guideline of 1mg/kg for selenium and was above the background concentration range.

WESA soil sample SB029-SS-048 (140 mg/kg) exceeded the applicable CCME agricultural guideline of 20 mg/kg for antimony.

WESA soil sample SB029-SS-048 (19.2 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 5 mg/kg for cadmium.

WESA soil sample SB029-SS-048 (30,000 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 100 mg/kg for copper.

WESA soil sample SB029-SS-048 (153 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 100 mg/kg for nickel.

WESA soil sample SB029-SS-048 (6,250 mg/kg) exceeded the applicable AMSRP Tier 1 guideline of 200 mg/kg for lead.

WESA soil sample SB029-SS-048 (23,900 mg/kg) exceeded the applicable AMSRP Tier 2 guideline of 500 mg/kg for zinc.

All other samples submitted for laboratory analysis were either below applicable guidelines, below background range or below lab detection limits.

5.3.18 APEC 19 Debris Area 4

WESA defined APEC 19 as Debris Area 4; there was various scattered debris and barrels along the beach front including steel, wood, and bricks. Empty steel drums were scattered across the beach. This area appeared to be a staging area for movement to and from the Site. A single sample was previously taken by WESA. The sampling location can be found in Figure E-6. The sample was below applicable guidelines and below background range.

5.3.19 APEC 20 Debris Area 5

WESA defined APEC 20 as Debris Area 5; there was various scattered debris and barrels including steel and wood. A single sample was previously taken by WESA. The sampling location can be found in Figure E-6. The sample was below applicable guidelines and below background range.

5.3.20 APEC 21 Debris Area 6

WESA defined APEC 21 as Debris Area 6; there were various building materials, machine parts and metal debris within the debris area. Two samples previously taken by WESA were used for delineation of the debris area. The sample locations can be found in Figure E-6. A summary of the exceedance of the applicable guidelines are provided in Table 16.

Table 16: Soil Exceedances

APEC	Sampling Point	Exceedance
APEC 21	SB029-SS-071 WESA	Ba, Sn

Soil sample SB029-SS-071 (1230 mg/kg) exceeded the applicable CCME agricultural guideline of 750 mg/kg for barium.

Soil sample SB029-SS-071 (8.17 mg/kg) exceeded the applicable CCME agricultural guideline of 5 mg/kg for tin.

All other samples were either below applicable criteria, below background range or below lab detection limits.

5.3.21 APEC Pipeline (Fuel Distribution)

A former fuel distribution line was identified that had not been included in the WESA ESA. Soil staining and PHC odours were noted during the assessment along the pipeline route. Three samples were taken by EBA to delineate the fuel distribution line between APECs 10, 11, and 12. The pipeline is identified in Figures E-2, E-3 and E-4. A summary of the exceedances are provided in Table 17.

Table 17: APEC Pipeline Soil Exceedances

APEC	Sampling Point	Exceedance
Pipeline	2012-SB-64	Type B PHC
	2012-SB-11	Type B PHC
	2012-SB-63	Type B PHC,Pb
	SB029-SS-039 WESA	Pb, Zn

Soil samples 2012-SB-64 (9,180 mg/kg), 2012-SB-11 (6,300 mg/kg) and 2012-SB-63 (2,503 mg/kg) exceeded the applicable guideline of 2,500 mg/kg for Type B hydrocarbons.

Soil sample 2012-SB-63 (240 mg/kg) and SB029-SS-039 (409 mg/kg) exceeded the AMSRP guideline of 200 mg/kg for lead.

Soil sample SB029-SS-039 (524 mg/kg) exceeded the applicable AMSRP guideline of 500 mg/kg for zinc.

All other samples were either below applicable guidelines, below background range or below lab detection limits.

5.4 Discussion

Soil impacts include both petroleum hydrocarbon and metals at various APECs across the Site. The soil field program consisted of the advancement 64 soil boreholes on-site and 10 soil boreholes off-site for a total of 74 soil boreholes. A total of 74 samples were collected from the test pits from various locations across the Site.

To determine the total volume of impacted soil the following assumptions were made in each calculation;

- Vertical depth of impact: is anticipated to be 0.5 mbgs which represents the active layer and/or the estimated depth to bedrock. Soil borehole logs are found in Appendix E, representing the ground conditions identified on-site. 0.5 mbgs was the deepest level achieved during the soil assessment, with active melt being encountered from 0.3 to 0.5 mbgs. Soil depths ranged from 0.1 to 0.5 mbgs during the soil assessment. A conservative estimate of 0.5 mbgs has been used in the calculation of depth due to the limited time available on-site.
- Surface area: the major surface features on-site were identified during the detailed site survey. 51 soil boreholes were recorded by the surveyor using Global Positioning System (GPS). Due to weather constraints 23 soil boreholes could not be recorded using GPS. These locations were marked on the corresponding site map based upon field notes and in relation to the 51 known locations. The contamination plumes were then extrapolated based upon analytical data to determine a total surface area using GPS referenced site features and soil borehole sampling points.
- A series of single sample point exceedances were identified based upon samples being included in the dataset from previous ESAs. The surface area for these single point exceedances has been estimated based upon visual observations during the assessment. In the event of a single point exceedance a surface area of 1-5 m^2 has been applied.

5.4.1 Petroleum Hydrocarbon Impacted Areas

The majority of the soil impacts encountered at the Site are Type B hydrocarbons related to fuel and fuel distribution. Type B hydrocarbons are defined in the AMSRP as lighter end or more volatile hydrocarbon products such as diesel and is approximately equal to the sum of F1 to F3 fractions. The primary Type B hydrocarbon contamination is focused along the former fuel distribution line which extends along the western portion of the Site. All samples analyzed following the pipeline route contained elevated levels of PHCs, this represents the primary volume of PHC contaminated soil. Samples exceeding the AMSRP criteria are noted in Figures E-1, E-2, E-3 and E-7. Secondary localized PHC impacts were also identified at individual above ground storage tanks associated with home fuel storage. All areas of impacts are shown in Figures E2-E7. Table 18 represents the samples that exceeded the applicable CCME/AMSRP guidelines.

Table 18: Y22101291 Nottingham Island Soil Exceedances by APEC

APEC	Sampling Point	Exceedance	Surface Area (m^2)	Vertical Depth of Impact (mbgs)	Volume of PHC Impacted Soil (m^3)
APEC 3	2012-SB-44	Ethylbenzene, Type B	172	0.5	86
	2012-SB-45	Type B			
	SB029-SS-062 WESA	Type B			
APEC 4	2012-SB-41	Type B	51	0.5	26
	SB029-SS-065 WESA	Type B			
APEC 9	SB029-SS-052 WESA	Type B	8	0.5	4
APEC 11/12	2012-SB-8	Type B	4148	0.5	2074
	2012-SB-9	Type B			
	2012-SB-57	Type B			
	2012-SB-58	Benzene, Toluene, Ethylbenzene, Type B			
	2012-SB-59	Type B			
	2012-SB-60	Type B			
	2012-SB-62	Type B			
	SB029-SS-031 WESA	Type B			
	SB0029-SS-032 WESA	Type B			
	SB029-SS35 WESA	Benzene, Toluene, Ethylbenzene			
	SB029-SS-038 WESA	Benzene			
APEC 13	2012-SB-4	Benzene	33	0.5	17
APEC 14	2012-SB-25	Type B	108	0.5	54
	2012-SB-27	Type B			
	2012-SB-29	Type B			
	SB029-SS-046 WESA	Type B			
Apec 17	2012-SB-12	Type B	included in APEC 11/12	included in APEC 11/12	included in APEC 11/12
Pipeline	2012-SB-64	Type B	included in APEC 11/12	included in APEC 11/12	included in APEC 11/12
	2012-SB-11	Type B			
	2012-SB-63	Type B			
Total Volume of All PHC Contaminated Soil					**2260 m^3**

PHC impacts were determined based upon the 2500 mg/kg limit for Type B hydrocarbons as stated in the AMSRP. APECs 3, 4, 9, 11, 12, 13, 14, 17 and the pipeline had exceedances of Type B hydrocarbons. The total volume of PHC impacted soil is estimated to be 2260 m^3 and includes co-contaminated soil which is discussed in Section 5.4.3.

5.4.2 Metal Impacted Areas

Metal impacted volumes associated with historical site activities are presented in Table 19.

Table 19: Y22101291 Nottingham Island Soil Exceedances by APEC

APEC	Sampling Point	Exceedance	Surface Area (m^2)	Vertical depth of Impact (mbgs)	Volume of Metal Impacted Soil (m^3)
APEC 1	SB029-SS-049 WESA	Cd	117	0.5	59
	SB029-SS-050 WESA	Cd, Sn			
APEC 3	2012-SB-44	Cu	42	0.5	21
	SB029-SS-062 WESA	Cu,Pb,Se,Sn,Zn			
APEC 4	2012-SB-40	Se	52	0.5	26
	SB029-SS-065 WESA	Ba,Cu,Sn,Pb,Se,Zn			
APEC 6	SB029-SS-067 WESA	Se	2	0.5	1
APEC 9	2012-SB-22	Sn	7	0.5	4
	SB029-SS-056 WESA	Sn	8	0.5	4
	SB029-SS-057 WESA	Cu, Sn	33	0.5	17
APEC 10	SB029-SS-042	Sn	5	0.5	3
APEC 11/12	2012-SB-57	Se	194	0.5	97
	2012-SB-62	Pb			
	SB029-SS-031 WESA	Pb			
	SB0029-SS-032 WESA	Pb			
	SB029-SS-35 WESA	Pb, Se, Sn			
	SB029-SS-037 WESA	Sn			
	SB029-SS-038 WESA	Pb, Se			
APEC 13	2012-SB-3	Sn, Pb	43	0.5	22
	2012-SB-4	Sn			
	SB0290SS-030 WESA	Pb, Se, Sn			
APEC 18	SB029-SS-048 WESA	Ba,Cd,Cu,Sn, Mo,Ni,Pb,Se,Zn,Sb	10	0.5	5
APEC 16	2012-SB-2	Pb	33	0.5	17
	2012-SB-54	Sn	5	0.5	3
Pipeline	SB029-SS-039 WESA	Pb,Zn	158	0.5	79
	2012-SB-63	Pb			
APEC 21	SB029-SS-071 WESA	Ba,Sn	2	0.5	1
		Total Volume of All Metal Contaminated Soil			**359 m^3**

The APECs that show soil metal impacts related to historical site activities include APEC 1, 3, 4, 6, 9,10, 11, 12, 13, 16, 18, 21 and the Pipeline. Only samples that were above both background levels and guidelines are considered impacted. The total estimated volume of metal impacted soil is estimated at 359 m^3 and includes co-contaminated soil that will be discussed in Section 5.4.3.

5.4.3 Co-contaminated Soils

Co-contaminated soil for the purpose of the assessment are defined as soils that are impacted by PHCs and metals in excess of the applicable guidelines and/or background concentrations. Table 20 provides a summary of these co-contaminated areas.

Table 20: Co-contaminated Soil- Hydrocarbons and Metals

APEC ID	Surface Area (m^2)	Vertical depth of Impact (mbgs)	Volume of Co-contaminated Soil (m^3)
APEC 3	42	0.5	21
APEC 4	22	0.5	12
APEC 11/12 and Pipeline	353	0.5	176
APEC 13	14	0.5	7
Total Volume of Co-contaminated Soil			**216 m^3**

Co-contaminated soil has been identified in APECs 3, 4, 11, 12, 13 and the Pipeline. The total amount of co-contaminated soil at Nottingham Island is 216 m^3. Co-contaminated soil requires special consideration for remediation and will be further discussed in the RAP.

5.4.4 Total Volume of Soil Impacts

The total impacted areas that will be required to be addressed are:

- Volume of impacted soils with PHCs only: 2045m^3
- Volume of impacted soils with metals only: 143 m^3
- Volume of co-contaminated impacted soil (PHCs and Metals): 216m^3

6.0 WATER ASSESSMENT

The water sampling program included fourteen water samples collected at various locations within the Site and Hudson Strait. Twelve APECs were found to have water quality guideline exceedances.

6.1 Background Water Concentrations

Two water samples, 2012-SW-11 (Lake 3) and 2012-SW-10 (Lake 4) were collected from lakes away from the Site. The results for all surface water samples are presented in Appendix C. The location of these lakes can be found in Figure 2. Table 21 is a summary of parameters that are elevated above CCME guidelines.

Table 21: Water Quality Parameters Exceeding CCME FWAL Criteria

Parameter	Applicable Guideline	Criteria (mg/L)	Number of Background Samples Analyzed	Concentration Range (mg/L)
Fluoride	CCME FWAL	0.12	2	0.2
Dissolved Zn	CCME FWAL	5	2	ND-0.36
ND-Non Detectable Result				

Concentrations in excess of the natural background concentration range and above the applicable criteria are considered impacted. Samples within the range of background metals but above the applicable criteria are considered naturally elevated and not impacted.

6.2 Results

During the surface water quality sampling program, the time available on-site was restricted due to poor weather conditions. Surface water quality samples were collected at priority stations, pre-determined by the gap analysis and on-site reconnaissance. Existing field conditions, including water pH, EC, dissolved oxygen, and surface temperatures were not collected at the time of the field event due to weather related timing constraints on site.

At the time of the assessment, ponded surface water was present throughout the Site, at or near many APECs. In addition, the drainage channel through the former weather station site (previously outlined by WESA) was predominantly dry and was restricted to shallow (less than 6 cm depth), disjointed pools. During high water conditions this drainage channel is assumed to drain into Hudson Strait, but could not be confirmed during the site assessment.

A total of 14 surface water quality stations were sampled at and near (both upstream and downstream) the APECs (Figures E1 to E7). In summary, water quality samples were collected from eight APECs and two background lakes (potential potable water sources). By incorporating the water quality data collected by WESA in 2010 (includes APECs that had no water at the time of the 2012 field event) water quality data exists for 11 APECs.

The results of the water analysis are presented in Appendix C, Table E2, copies of the lab reports are provided in Appendix E. Specific exceedances of the applied guidelines are described below. CCME FWAL and MWAL were utilized in the analysis of the results.

6.2.1 APEC 2 Old Kitchen

WESA defined APEC 2 as the Old Kitchen. A large area of surficial ponded water was located north of APEC 2 and 18 and a single sample 2012-SW-02 was collected from the pond. The sampling location can be found in Figure E-2. A summary of the exceedances of the applicable guidelines are provided in Table 22.

Table 22: APEC 2 Surface Water Exceedances

APEC	Sampling Point	Exceedance
APEC 2	2012-SW-02	Total Cu

2012-SW-02 (0.0067 mg/L) exceeded the applicable CCME FWAL guidelines of 0.004 mg/L for total copper.

6.2.2 APEC 3 New Radio Building

WESA defined APEC 3 as the New Radio Building; pooled surficial water was present at the time of the WESA site investigation. WESA collected a sample of the pooled water SBO29-SW-060. The sampling location can be found in Figure E-5. This sample was below applicable guidelines.

6.2.3 APEC 9 Bunkhouse

WESA defined APEC 9 as the Bunkhouse. During the WESA assessment surficial water was present and sample SB029-SW-059 was collected by WESA. The sampling location can be found in Figure E-3. This area was noted as a drainiage channel during the EBA assessment but was dry and could not be sampled. The drainage channel runs from the north of the site running along the east side of APEC 9. A summary of the exceedances is provided in Table 23.

Table 23: APEC 9 Surface Water Exceedances

APEC	Sampling Point	Exceedance
APEC 9	SB029-SW-059 WESA	Total Al, Cu, Pb, Se

WESA sample SB029-SW-059 (0.19 mg/L) exceeded the applicable CCME FWAL guidelines of 0.1 mg/L for total aluminum.

WESA sample SB029-SW-059 (0.0043 mg/L) exceeded the applicable CCME FWAL guidelines of 0.004 mg/L for total copper.

WESA sample SB029-SW-059 (0.381 mg/L) exceeded the applicable CCME FWAL guidelines of 0.3 mg/L for total lead.

WESA sample SB029-SW-059 (0.0012 mg/L) was elevated to the applicable CCME FWAL guideline of 0.0012 mg/L for selenium.

6.2.4 APEC 12 Shed

WESA defined APEC 12 as a former Shed with surficial pooling. At the time of the assessment surficial pooling was identified at the APEC, sample locations can be found in Figure E-4. Two samples have been collected from the pooled water, 2012-SW-09 and WESA sample SB029-SW-034. A summary of the guideline exceedances is provided in Table 24.

Table 24: APEC 12 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
APEC 12	2012-SW-09	Dissolved Ag, Zn Total Zn
	SB029-SW-034 WESA	None (detectable PCBs)

2012-SW-09 (0.130 mg/L) exceeded the applied CCME FWAL guideline of 0.03 mg/L for total zinc.

2012-SW-09 (0.0004 mg/L) exceeded the applied CCME FWAL guideline of 0.0001mg/L for dissolved silver.

2012-SW-09 (0.15 mg/L) exceeded the applied CCME FWAL guideline of 0.03 mg/L for dissolved zinc.

WESA sample SB029-SW-034 did not exceed the applied CCME FWAL criteria however PCBs were noted within the water. There are currently no established criteria for PCBs in water but they are classified as an endocrine disruptor with significant effect on bio-receptors under the Canadian Environmental Protection Act.

6.2.5 APEC 14 Above Ground Storage Tanks

APEC 14 was defined by WESA as the above ground storage tanks, various debris and pipes were within the APEC from the former fuel distribution line. A helipad was also included in the APEC upon visual inspection of the Site. One water sample was taken from the ponded water SB029-SW-055 (WESA). The sample locations can be found in Figures E-2. A summary of the guideline exceedances is provided in Table 25.

Table 25: APEC 14 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
	SB029-SW-055 WESA	Total Al, Cu, Fe

WESA water sample SB029-055 (2.31mg/L) exceeded the CCME FWAL guideline of 0.1 mg/L for total aluminum.

WESA water sample SB029-055 (0.0074 mg/L) exceeded the CCME FWAL guideline of 0.004 mg/L total copper.

WESA water sample SB029-055 (3.4 mg/L) exceeded the CCME FWAL guideline of 0.3 mg/L for total iron.

APEC 16 Debris Area 1

APEC 16 was defined by WESA as Debris Area 1. Upon visual inspection the debris area was the remains of a burnt building. The debris area was also the terminal extent of the fuel distribution line from the above ground storage tanks (APEC 14). Three water samples were collected from Hudson Strait to determine water quality in this area. The samples were taken from Hudson Strait which is considered a marine environment, thus CCME marine water aquatic life (MWAL) guidelines have been applied for comparison as stated in Section 3.4. In the absence of MWAL criteria FWAL criteria have been applied for comparison. Water samples, 2012-SW-06, 2012-SW-07 and 2012-SW-08 were collected during the assessment, the location of the samples can be seen in Figure E-4. A summary of the guideline exceedances is provided in Table 26.

Table 26: APEC 16 Surface Water Exceedances

APEC	Sampling Point	Exceedance MWAL/FWAL
APEC 16	2012-SW-06	Fluoride Total Al, Fe
	2012-SW-07	Fluoride Total Fe, Pb, Dissolved Al (and detectable PCBs)
	2012-SW-08	Fluoride Total Fe

Water samples 2012-SW-06 (0.9 mg/L), 2012-SW-07 (0.9 mg/L) and 2012-SW-08 (0.9 mg/L) exceeded the applied CCME MWAL/FWAL guideline of 0.12 mg/L for fluoride. These samples are above guideline and background concentration.

Water sample 2012-SW-06 (0.110 mg/L) exceeded the applied CCME MWAL/FWAL guideline of 0.1 mg/L for total aluminum.

Water samples 2012-SW-06 (0.32 mg/L), 2012-SW-07 (2.2 mg/L) and 2012-SW-08 (2.2 mg/L) exceeded the applied CCME MWAL/FWAL guidelines of 0.3 mg/L for total iron.

Water sample 2012-SW-07(0.11 mg/L) exceeded the CCME MWAL/FWAL guidelines of 0.007 mg/L for total lead.

Water sample 2012-SW-07 (0.000013 mg/L) had detectable PCBs within the water sample. There are currently no established criteria for PCBs in water but they are classified as an endocrine disruptor with significant effect on bio-receptors under the Canadian Environmental Protection Act.

6.2.6 APEC 17 Debris Area 2

APEC 17 was defined by WESA as Debris Area 2. Various pieces of steel piping from the fuel distribution line and wood debris were scattered throughout the APEC. A surficial pool of shallow water was located to the east of the APEC. Four surface water samples have been collected from APEC 17: 2012-SW-13 (EBA),

2012-SW-12 (EBA), SB029-SW-044 (WESA) and SB029-SW-055 (WESA). The location can be found in Figures E-3. A summary of exceedances is provided in Table 27.

Table 27: APEC 17 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
	SB029-SW-044 WESA	None (detectable PCBs)

Water sample SB029-SW-044 (0.0000045 mg/L) did not have any exceedances of the CCME FWAL criteria however trace amounts of PCBs were detected within the sample. There are no applicable criteria for PCBs in water but they are classified as an endocrine disruptor with significant effect on bio-receptors under the Canadian Environmental Protection Act.

All other samples submitted for laboratory analysis were either below applicable criteria, below background range or below lab detection limits.

6.2.7 APEC 19 Debris Area 4

WESA defined APEC 19 as Debris Area 4; there was various scattered debris and barrels along the beach front including steel wood and bricks. This area appeared to be a staging area for movement to and from Site. Three water samples, 2012-SW-03, 2012-SW-04 and 2012-SW-05 were collected from Hudson Strait to identify any impacts resulting from the Debris Area 4. The samples were taken from Hudson Strait which is considered a marine environment, thus CCME marine water aquatic life (MWAL) guidelines have been applied for comparison as stated in Section 3.4. In the absence of MWAL criteria FWAL criteria have been applied. The location and sampling configuration can be found in Figure E-6. A summary of exceedances is provided in Table 28.

Table 28: APEC 19 Surface Water Exceedances

APEC	Sampling Point	Exceedance MWAL/FWAL
APEC 19	2012-SW-03	Fluoride
	2012-SW-04	Fluoride, Dissolved Se
	2012-SW-05	Fluoride (and detectable PCBs)

Water samples 2012-SW-03 (0.9 mg/L), 2012-SW-04 (0.9 mg/L) and 2012-SW-05 (0.8 mg/L) exceeded the applied CCME MWAL/FWAL guideline of 0.12 mg/L for fluoride. These samples are above the guideline and background concentration range and are considered impacted.

Water sample 2012-SW-04 (0.001 mg/L) was elevated to the CCME MWAL/FWAL guideline of 0.001 mg/L for dissolved selenium.

Water sample 2012-SW-05 (0.000018 mg/L) contained trace amounts of PCBs. There are no applicable criteria for PCBs in water but they are classified as an endocrine disruptor with significant effect on bio-receptors under the Canadian Environmental Protection Act.

6.2.8 APEC 21 Debris Area 6

WESA defined APEC 21 as Debris Area 6; there were various building materials, machine parts and metal debris within the Debris Area 6. An area of pooled surface water was present within the APEC. Two water samples were collected at APEC 21; 2012-SW-01 (EBA) and SB029-SW-072 (WESA). The location can be found in Figure E-6. A summary of exceedances is provided in Table 29.

Table 29: APEC 21 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
APEC 21	2012-SW-01	Total Al, Cu Dissolved Al
	SB029-SW-072 WESA	Fluoride Total Al, Cu, Fe

Water sample 2012-SW-01 (0.2 mg/L) and SB029-SW-072 (0.691 mg/L) exceeded the applicable CCME FWAL guideline of 0.1 mg/L for total aluminum.

Water sample 2012-SW-01(0.0029 mg/L) and SB029-SW-72 (0.008 mg/L) exceeded the applicable CCME FWAL guidelines of 0.002 mg/L for total copper.

Water sample 2012-SW-01 (0.21 mg/L) exceeded the applicable CCME FWAL guideline of 0.1 mg/L for dissolved aluminum.

Water sample SB029-SW-072 (0.76 mg/L) exceeded the applicable CCME FWAL guideline of 0.12 mg/L and background concentration range for fluoride.

Water sample SB029-SW-072 exceeded the applicable CCME FWAL guideline for total iron at 0.651 mg/L compared to 0.3 mg/L.

6.2.9 APEC 24 Lake 01

WESA defined APEC 24 as Lake 01 located to the east of the Site. A trail is used to access Lake 01 from the Site. The location of Lake 01 can be found in Figure 2. A single sample collected by WESA SB029-SW-074 was taken from Lake 01. A summary of the exceedances is provided in Table 30.

Table 30: APEC 24 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
APEC 24	SB029-SW-074 WESA	Chloride

Water sample SB029-SW-074 (120 mg/L) was elevated to the CCME FWAL guideline of 120 mg/L for chloride.

6.2.10 APEC 25 Lake 02

WESA defined APEC 25 as Lake 02 located to the west of the Site. A former road surface is used to access the lake from the Site. The location of the lake can be found in Figure 2. Two (2) water samples have been collected from APEC 25; 2012-SW-14 (EBA) and SB029-SW-075 (WESA). A summary of the exceedances is provided in Table 31.

Table 31: APEC 25 Surface Water Exceedances

APEC	Sampling Point	Exceedance CCME FWAL
APEC 25	2012-SW-14	Total Fe
	SB029-SW-075 WESA	Chloride

Water sample 2012-SW-14 (1.1 mg/L) exceeded the applicable CCME FWAL guideline of 0.3 mg/L for total iron.

Water sample SB029-SW-075(191 mg/L) exceeded the applicable CCME FWAL guideline of 120 mg/L for chloride.

6.3 Discussion

Water quality impacts are present at nine APECs across the Site. APECs 2, 9, 12, 16, 17, 19, 21, 24 and 25 had concentrations above natural background levels and in exceedance of the applicable CCME guidelines for water. PCBs were detected in APECs 12, 16 and 19. Table 32 is a summary the estimated impacted water on-site.

Table 32: Water Quality Impact Summary

APEC	Sampling Point	Exceedance	Surface Area (m^2)	Estimated Depth of Water (m)	Volume of Metal Contaminated Soil (m^3)
2	2012-SW-02	Total Cu	1094	0.35	383
9	SB029-SW-59	Total Al, Cu, Pb, Se	-	-	3 (WESA volume)
12	2012-SW-09	Total Zn, Dissolve Ag, Zn	14	0.35	5
	SB029-SW-034	Detectable PCBs			
14	SB029-SW-055	Total Al, Cu, Fe	14	0.35	5
16	2012-SW-06	F, Total Al, Fe	-	-	Hudson Strait
17	SB029-SW-044	Detectable PCBs	189	0.4	76
19	2012-SW-03	F	-	-	Hudson Strait
	2012-SW-04	F, Dissolved Se			
	2012-SW-05	F, Detectable PCBs			
21	2012-SW-01	Total Al, Cu Dissolved Al	30	0.4	12
	SB029-SW-072	F, Total Al, Cu, Fe			
24	SB029-SW-074	Cl	-	-	Lake 01

Table 32: Water Quality Impact Summary

APEC	Sampling Point	Exceedance	Surface Area (m^2)	Estimated Depth of Water (m)	Volume of Metal Contaminated Soil (m^3)
25	2012-SW-14	Total Fe	-	-	Lake 02
	SB029-SW-075	Cl	-	-	
		Total Estimated Volume			**484 m^3**

Elevated metals may be a result of regional geology influencing the surficial ponds throughout the Site. There is limited soil veneer overlying bedrock, which has the potential to effect water quality. Table 33 are background concentrations of metals in soil for the elements above guidelines in water.

Table 33: Background Metal Soil Concentrations

Parameter	Number of Background Samples Analyzed	Concentration Range (mg/kg)
Aluminum	10	1,500-6,800
Copper	10	1-13
Tin	10	1-2
Lead	10	1-4
Selenium	10	ND-1.7
Zinc	10	7-27
Iron	10	2,900-13,000
ND: Non Detect		

The limited time available on-site did not allow for a detailed water quality sampling campaign, estimations of impacts have been identified on a limited data set from both the EBA and WESA ESAs. The water on-site may have been a result of regional geology, or affected from historic site activities. Further information is required to determine a source of impact.

Fluoride and Chloride are abundant in marine water environments, the water on the island is classified as freshwater, however due to proximity to the ocean elevated anions are common on coastal lakes and rivers. It has been noted that concentrations of fluoride can range from 0.86 mg/L up to 1.4 mg/L within marine environments (McNeely et al 1979). The concentrations shown in the Strait were within this concentration range, further investigation is required to determine if the elevated anions are due to historic site activities or are naturally occurring.

Due to the limited sampling campaign and time available on-site further assessment is needed to fully determine the total volume of impacted water. Based upon the current information available, a total of 484 m^3 of water is considered impacted, this is an estimation based upon the information available.

7.0 BIO-INVENTORY

The existing vegetation assemblages across the site range from dry exposed bedrock-lichen to wet sedge-willow. Common vegetation species includes snow willow (*Salix reticulate*) (and other willow species), mountain avens (*Dryas species*), river beauty (*Chamerion latifolium*), crowberry (*Empetrum nigrum*), long-stalked chickweed (*Stellaria longpipes*), three-toothed saxifrage (*Saxifraga tricuspidata*), alpine bistort (*Polygonum viviparum*), flame-tipped lousewort (*Pedicularis flammea*), polar grass (*Arctagrostis latifolia*) (and other grass species), water sedge (*Carex aquatilis*) (and other sedge species), rush species (*Juncas species*), moss, and lichen. In general, the vegetation on Site appears healthy, and no observable signs of stress were noted except within a couple of the APEC areas. Vegetation cover ranges from 90 to 97% of the Site, except in the bedrock-lichen dominated areas where the vegetation cover averages approximately 60% due to the boulder cover.

Goose droppings and grazing areas is evidence of wildlife using the Site. Snow buntings are the only wildlife species observed occupying the Site at the time of the field assessment; however, a Pacific loon and a few herring gulls were seen flying over the Site (EC 2012).

Of the wildlife species potentially occurring on Nottingham Island, a total of four have special conservation status under the federal Species At Risk Act (SARA), and are summarized in Table 34 below. No wildlife of special conservation status was seen at the time of the field event.

Table 34: Species with SARA Status at Nottingham Island

Common Name	Scientific Name	SARA Status	General Habitat
Red Knot	*Calidris canutus rufa*	Endangered	Barren windswept ridges, and freshwater and marine shorelines
Peregrine Falcon	*Falco peregrinus anatum/tundrius*	Special Concern	Arctic tundra and coastal areas. Nests on cliff-ledges.
Short-eared Owl	*Asio flammeus*	Special Concern	Open tundra and lowland habitat
Bowhead Whale	*Balaena mysticetus*	Special Concern	Ice edges in Arctic bays, straits, and estuaries.
Polar Bear	*Ursus maritimus*	Special Concern	Arctic coastal areas and islands, sea ice.

Approximately 60 km of shoreline and inland areas were flown north-northwest of the Site during the aerial reconnaissance survey. During this time, the dominant land feature across the region surveyed was exposed bedrock interspersed with dry lichen dominated habitat, small and medium sized lakes, and wet lowlands. No sensitive wildlife areas, including nests or dens, were observed; however, suitable habitat exists. Waterfowl and waterbirds were the only wildlife species encountered during the aerial survey, with the majority of wildlife observations occurring along the Hudsons Strait shoreline. Cliff habitats to potentially support nesting raptors such as peregrine falcons exist adjacent to the Site. In addition, suitable nesting habitat may be present to support short-eared owls and red knot. Polar bear maternity dens may also occur on Nottingham Island in valleys and other areas that accumulate a suitable amount of snow.

Interviews were conducted with Mr. Peter Iyaituk, Mr. Qalingo Ainalik, and Mr. Salimuni Qavavauk, of Ivujivik Quebec, at the time of the field program. During the interviews, wildlife known or expected to be present on Nottingham Island were identified including red and Arctic fox, snowshoe hare, weasels, and lemming species. Marine mammals also reported as occurring on or near Nottingham Island, included polar bears, killer whale, bowhead whale, narwhal, beluga, walrus, as well as ringed, bearded and harp seals. Local knowledge indicated that caribou, muskox, and wolves were not known to occur on Nottingham Island. In addition, a total of 27 bird species were identified as occurring or expected to occur. This information was gleaned during the interviews with local community members.

Local hunting, fishing, and gathering occurs on Nottingham Island, particularly for walrus, ringed seal, Arctic char, and eider feathers. Trapping is not known to occur. Walrus hunting occurs primarily in the fall even though walrus are reported to occupy the shorelines along Nottingham Island during the entire open water season. Walrus hunting may occur wherever walrus occur; however, known hunts focus primarily on the southeast shoreline of Nottingham Island. Similarly, seal hunting may occur year round wherever seals occur. Lakes north of the Site are reportedly fished for Arctic char. Specific lake locations where Arctic char fishing occurs are not known; however, Arctic char may be expected to occur in all lakes of suitable habitat. Gathering of eider feathers to later sell for profit occurs on the Fraser Island (a federally designated Important Bird Area), immediately northwest of Nottingham Island.

Based on the local interviews, no sensitive wildlife nesting or denning areas are known on Nottingham Island, including maternal polar bear dens. Nonetheless, peregrine falcons, a species of special conservation status, may nest wherever appropriate cliff nesting habitat exists. In addition, a large concentration of nesting common eiders is known to occur on Fraser Island, and would be sensitive to potential disturbances during nesting season.

Nottingham Island and the surrounding marine environment have been identified as a “Biological Hot Spot” in Nunavut, and is possibly a biologically sensitive area (Nunami Stantec 2012).

Further details of the Bio-Inventory will be included in the Environmental Screening Assessment which will be reported under a separate cover.

8.0 HAZARDOUS MATERIALS RESULTS AND DISCUSSION

EBA conducted the HAZMAT field assessment based upon the results of the data gap analysis (EBA 2012). Photos A1 to A-3 provide an aerial view of the site. Photos H-1 to H-54 provides a visual representation of the types of materials inventoried at the Site. Table H1 summarizes the total hazardous and non-hazardous materials and Table H2 summaries the total volumes of uncrushed and crushed hazardous and non-hazardous materials at the Site APECs. Figures H1 – H5 show sample locations, debris and buildings on site at the time of assessment.

8.1 Asbestos

Thirty-five potential asbestos containing material samples (ACM) were collected within the Site at APECs 1-10 and 13, and all samples were analysed. Analytical results of the 35 potential ACM samples are provided in Tables H1 in Tables H1 in Appendix C and in the original lab format in Appendix D. Table 35 is a

summary of samples that exceed the applicable guidelines and are considered to contain ACM; all other samples are below guidelines:

Table 35: ACM Sample Exceedance

Type of Material	APEC and Building Description	Sample ID
Attic insulation	APEC 1 (Storage Shed 01)	2012-BM-02
	APEC 7 (Storage Building)	2012-BM-25
	APEC 8 (Chicken Coop)	2012-BM-26
Beige vinyl floor tile	APEC 2 (Old Kitchen)	2012-BM-09
Panels	APEC 1 (Storage Shed 01)	2012-BM-03
	APEC 3 (New Radio Building)	2012-BM-12
	APEC 9 (Bunkhouse)	2012-BM-31
	APEC 10 (Generator Building)	2012-BM-33
Siding	APEC 7 (Storage Building)	2012-BM-24
Gasket on furnace	APEC 9 (Bunkhouse)	2012-BM-30
Green shingles	APEC 5 (Outhouse)	2012-BM-18
	APEC 6 (Storage Shed)	2012-BM-19
Light fixture backing	APEC 3 (New Radio Building)	2012-BM-10

Based on analytical confirmation for samples collected by WESA and EBA, homogeneous materials and similar building construction dates, it is likely that all of the building materials in Table 36 are an ACM:

Table 36: ACM Volumes by the Type of Material

Type of Material	APEC and Building Description	Uncrushed Volume (m^3)
Asbestos attic insulation	APEC 1 (Storage Shed 01), 3 (New Radio Building), 7 (Storage Building and adjacent shed), 8 (Chicken Coop), 11 (House and Garage) and 13 (back of House)	158.5
Fibre glass insulation[1] (Asbestos contaminated)	APEC 1 (Storage Shed 01), 3 (New Radio Building), 7 (Storage Building and adjacent shed), 11 (House and Garage) and 13 (back of House)	162
Asbestos panels[2]	APEC 1 (Storage Shed 01), 3 (New Radio Building), 7 (Storage Building and adjacent shed), 9 (Bunkhouse), 10 (Generator Building), 11 (House and Garage), 12 (Shed) and 13 (back of House).	25
Asbestos vinyl floor tiles	APEC 3 (New Radio Building)	0.5
Light fixture backings	APEC 3 (New Radio Building) and APEC 11 (House and Garage)	0.02
Asbestos asphalt shingles	APEC 5 (Outhouse), APEC 6 (Storage Shed) and APEC 8 (Chicken Coop)	0.9
Asbestos exterior white siding	APEC 1 (Storage Shed 01), 3 (New Radio Building), 7 (Storage Building and adjacent shed) and 11 (House and Garage)	14
Asbestos furnace gaskets	APEC 9 (Bunkhouse)	0.1

Notes:
1. The asbestos attic insulation may have dropped overtime from the openings in the attic perimeter into the walls, causing the fibreglass wall insulation to become asbestos contaminated. The fibreglass wall insulation could only be asbestos contaminated if the attic insulation of that same building is asbestos containing material.
2. The remaining asbestos panels (48.5 m^3) also are coated with total and leachable lead amended paint and are included in the Section 5.2.2 (Lead and PCB Containing Paint).

8.2 Lead and PCB Containing Paint

Fifteen paint samples were collected from the Site at APECs 1-4, 8-10, 12 and 14 and all samples were analysed. Analytical results are provided in Tables H2 in Appendix C and in the original lab format in Appendix D.

All samples submitted for total lead analysis were above the applicable guidelines, except for the blue paint sample collected from the furnace in APEC 1 (Storage Shed). All sample submitted for leachable lead analysis (TCLP) were above the applicable guidelines, except for the interior white paint in APEC 3 (New Radio Building), APEC 4 (Old Radio Building) and APEC 8 (Chicken Coop), the grey/blue/yellow/red paint on the generators in APEC 10 (Generator Building) and the white/red paint on the ASTs in APEC 14 (AST Farm). All samples submitted for PCB analysis were below the applicable guidelines. Table 37 details the analysis completed on each sample and the parameters that were above and below the applicable guidelines:

Table 37: Paint Analysis and Exceedance

Paint Description	Substrate Description	APEC and Building Description	Parameters Analyzed[1]	Sample ID
Blue paint	Furnace	APEC 1 (Storage Shed)	Total lead, leachable lead and PCBs	2012-PT-01
Green paint	Exterior wood trim	APEC 2 (Old Kitchen)	**Leachable lead** (WESA analysed **total lead** and PCBs in their window trim paint sample PS-0009)	2012-PT-02
Red paint	Exterior wood trim	APEC 3 (New Radio Building)	**Leachable lead** (Insufficient amount of the sample available)	2012-PT-03
White paint	Interior asbestos panels	APEC 3 (New Radio Building)	Total lead and **leachable lead** (WESA analysed PCBs in their interior white paint sample PS-0011)	2012-PT-04
Yellow paint	Interior asbestos panels	APEC 3 (New Radio Building)	**Leachable lead** (WESA **total lead** and PCBs in their interior white paint sample PS-0013)	2012-PT-05
White base coat	Interior asbestos panels	APEC 3 (New Radio Building)	**Total lead and leachable lead** (WESA analysed PCBs in their interior white paint sample PS-0011)	2012-PT-06
White paint	Electrical box	APEC 3 (Shed adjacent to the New Radio Building)	**Total lead and leachable lead** (Insufficient amount of the sample available)	2012-PT-08
White paint	Interior particulate board	APEC 4 (Old Radio Building)	Leachable lead	2012-PT-09
White paint	Exterior wood siding	APEC 4 (Old Radio Building)	**Total lead, leachable lead** and PCBs	2012-PT-07
White paint	Interior particulate board	APEC 8 (Chicken Coop)	**Total lead**, leachable lead and PCBs	2012-PT-10
Red paint	Exterior wood trim	APEC 9 (Bunkhouse)	**Total lead, leachable lead** and PCBs	2012-PT-11
White/grey paint	Interior asbestos panels	APEC 10 (Generator Building)	**Total and leachable lead** (WESA analysed PCBs in their interior white paint sample PS-023)	2012-PT-12

Table 37: Paint Analysis and Exceedance

Paint Description	Substrate Description	APEC and Building Description	Parameters Analyzed[1]	Sample ID
Grey/blue/yellow/red paint	Generators	APEC 10 (Generator Building)	**Leachable lead** (WESA analyzed PCBs in their interior white paint sample PS-024)	2012-PT-13
Orange paint	Trailer and tracked vehicle	APEC 12 (Shed)	**Total lead, leachable lead** and PCBs	2012-PT-14
White/red paint	AST's exterior	APEC 14 (AST Farm)	**Total lead,** leachable lead and PCBs	2012-PT-ASTs

Notes:

1. The parameter exceeding the applicable guideline is bolded and underlined.

Based on WESA and EBA samples, it is likely that all of the following paints contain total lead above applicable guidelines (leachable lead results are below applicable guidelines): Approximately 4 m^3 of interior particulate boards observed in APEC 4 (Old Radio Building), approximately 3 m^3 of interior particulate boards observed in APEC 8 (Chicken Coop), approximately 3 m^3 of generators observed in APEC 10 (Generator Building), approximately 146 m^3 of two ASTs observed in APEC 14 (AST Farm).

The two ASTs in APEC 14 (AST Farm) will likely require demolition prior to removal from Site.

Based on WESA and EBA samples it is likely that all of the painted materials contain total and leachable lead above the applicable guidelines as shown in the following Table 38:

Table 38: Total Lead and Leachable Lead Paint Volumes by the Type of Painted Substrate

Painted Substrate	Uncrushed Volume (m^3)	APEC and Building Description
Exterior and interior wood	10	APEC 1 (Storage Shed 01)
Exterior and interior wood	45	APEC 2 (Old Kitchen)
Exterior and interior wood	5	APEC 3 (New Radio Building and adjacent shed)
Metal	6	
Interior asbestos panels	11	
Exterior and interior wood	4	APEC 4 (Old Radio Building)
Metal	1	
Exterior and interior wood	2	APEC 5 (Outhouse)
Exterior and interior wood	1	APEC 7 (Storage Building and adjacent shed)
Exterior and interior wood	0.2	APEC 8 (Chicken Coop)
Exterior and interior wood	7	APEC 9 (Bunkhouse)
Metal	18	
Interior asbestos panels	25	
Exterior and interior wood	40	APEC 10 (Generator Building)
Metal	10	
Interior asbestos panels	12.5	
Exterior and interior wood	10	APEC 11 (House and Garage)
Equipment	8	APEC 12 (Shed)
Exterior and interior wood	14	APEC 13 (House)
Metal	3	
Interior particulate board	3	
Equipment	16	
Exterior and interior wood	4	APEC 20 (Building within Debris Area 05)
Equipment	4	APEC 26 (Hudson Strait shoreline)

8.3 Concrete

One concrete sample was collected from the Site at APEC 4, just east of the Old Radio Building. This sample was analysed for asbestos content and PCBs and it is below the applicable guidelines. The concrete inventoried on site is non-hazardous and volumes are included in Other Materials in Section 9.3. Analytical results are provided in Table H3 in Appendix C and in the original lab format in Appendix D.

8.4 Drum and AST Contents

A total of 77 drums (205L capacity each) were inventoried throughout, and adjacent to the Site. A total of 620L of aqueous contents was visually identified in 13 of these drums in APECs 10 (Generator Building), 14

(AST Farm) and N/A (Drums from the ASTs (73000 L capacity each) to the Hudson Strait). Those without content were visually identified in APECs 1, 7, 8, 11, 13 and 26.

A total of eight ASTs (900L capacity each) were inventoried on Site, with a total of 1400 L of organic contents (assumed to be weathered heating oil) in four of these ASTs. These eight ASTs were all located adjacent to buildings. Those with content were in APEC 7 (Storage Building), APEC 8 (Chicken Coop), and two in APEC 9 (Bunkhouse). Those without content were in APEC 1 (Storage Shed), APEC 3 (New Radio Building), APEC 11 (House and Garage) and APEC 13 (House).

A total of two ASTs (73000L capacity each) within APEC 14 (AST Farm) were inventoried on Site, with no contents visually identified. Both tanks side hatches were not present during the assessment allowing for a visual inspection. A liquid waste sampler is used to retrieve contents from the drum within the AST Farm (APEC 14). However, the drum appeared to contain weathered diesel and did not have sufficient volumes of content for sampling. Therefore, this drum was re-sealed and the equipment was disposed of after the single use. Due to time constraints, with limited drum content on-site, no other drum contents samples were collected.

A total of 620 L of organic liquid waste has been identified on site, due to the relatively small amount of suspected aqueous content it may be assumed that all drum and AST content on Site is considered hazardous.

Alternatively, additional sampling may be performed on the drum aqueous content, if applying for a water permit and in order to compare to applicable waste water criteria.

8.5 Batteries

Fourteen batteries totalling approximately 0.28 m^3 were inventoried throughout the Site. These batteries all appeared to be black cased, lead acid car batteries. They were in varying degrees of condition, some were fully intact and enclosed, while others were completely broken apart. Four were observed in APEC 4 (Old Radio Building) with one exhibiting crystallization on the exterior, three in APEC 10 (Generator Building), one in APEC 12 (House), one adjacent to APEC 15 (Food Cache Storage), one in APEC 18 (Debris Area 03), three in APEC 19 (Debris Area 04), one in APEC 26 (Hudson Strait shoreline). Battery contents are to be considered dangerous according to the Transportation of Dangerous Goods Act and Regulations.

8.6 Fire Extinguishers

One fire extinguisher (0.1 m^3) was inventoried in APEC 8, adjacent to the Chicken Coop. The fire extinguisher was intact, painted red and appeared to be partially full. Its contents are to be considered dangerous, according to the Transportation of Dangerous Goods Act, which lists Ozone Depleting Substances are under Class 2; Non-flammable Gas.

8.7 Mercury Vapor in Fluorescent Lights

Approximately 0.5 m^3 of fluorescent lights were inventoried in two buildings. Approximately 0.3 m^3 was observed in APEC 9 (Bunkhouse) and 0.2 m^3 was observed in APEC 10 (Generator Building). Most of the lights are intact, however, some were broken. Fluorescent lights with silver ends are assumed to contain mercury vapour. Mercury vapour is to be considered hazardous according to the Transportation of

Dangerous Goods Act and Regulations and the Environmental Guidelines for Industrial Waste Discharges (GN 2002).

8.8 Compressed Gas Cylinders

Two gas cylinders totalling 100L were inventoried in APEC 26 (Hudson Strait shoreline) and adjacent to the AST Farm. Both were intact, one appeared to contain some unknown content, while the other was partially full of liquid. This was determined by the weight of the cylinders. The contents are to be considered hazardous until the contents can be safely identified.

8.9 PCBs in Light Ballasts

Approximately 2.6 m^3 of light ballasts were identified within the buildings. Approximately 1 m^3 at APEC 9 (Bunkhouse), 1 m^3 at APEC 10 (Generator Building) and 0.6 m^3 at APEC 6 (House and Garage). These Canadian General Electric ballasts were coded 17A240A and compared to the Identification of Light Ballasts Containing PCBs (EC 1991). This document indicates that the Canadian General Electric switched to non-PCB ballast capacitors after March 1978 and that "it is probably PCB containing," since the last letter in the code is A. Therefore, given this information, these ballasts are confirmed as being PCB containing. PCBs are to be considered dangerous according to the Transportation of Dangerous Goods Act, which lists PCBs under Class 9; Miscellaneous Products, Substances or Organisms.

8.10 Creosote Soaked Wood

Approximately 5 m^3 of creosote soaked wood was inventoried in three APECs. Approximately 0.5 m^3 was observed on a log in APEC 11 (adjacent to the House and Garage), 2 m^3 was observed on the bottom of upright and laying poles in APEC 20 (Debris Area 05) and 2.5 m^3 was observed on the bottom of upright and laying poles in various debris throughout, and adjacent to the Site. The creosote appeared to be weathered. Creosote soaked wood is to be considered toxic according to the Industrial Treated Wood Users Guidance Document (Industrial Treated Wood Users Guidance Document 2004).

8.11 Equipment Contents

Approximately 501 L of equipment contents were inventoried throughout the Site. These contents can include all fluids used in motorized equipment, such as antifreeze, oil and fuel. Approximately 500 L was observed in the three generators and adjacent drum in the Generator Building (APEC 10). Approximately 1 L was observed in the tracked vehicle adjacent to the Shed (APEC 12). The fluids may be weathered, but are considered hazardous, similar to the drum and AST contents.

8.12 Mercury, PCBs and lead solder in electrical components

Approximately 5 m^3 of mercury, PCBs and lead solder was inventoried within capacitors, electrical panels and electrical boxes within the buildings throughout the Site. Approximately 2 m^3 was observed in the New Radio Building and small shed (APEC 3), 0.5 m^3 was observed in the Old Radio Building (APEC 4), 1 m^3 in the Storage Building (APEC 7), 0.5 m^3 in the Bunkhouse (APEC 9) and 1 m^3 in the Generator Building (APEC 10). These volumes include the mercury, PCBs and lead solder and substrates. These substrates are

considered dangerous, according to the Transportation of Dangerous Goods Act, which lists lead in sheeting products and PCBs under Class 9: Miscellaneous Products, Substances or Organisms.

9.0 NON-HAZARDOUS MATERIALS RESULTS AND DISCUSSION

Photos A1 to A-3 provide an aerial view of the site. Photos H-1 to H-54 provides a visual representation of the types of materials inventoried at the Site. Table G1 summarizes the total hazardous and non-hazardous materials and Table G2 summarizes the total volumes of uncrushed and crushed hazardous and non-hazardous materials at the Site APECs. Figures H1 – H5 shows sample locations, debris and buildings on site.

9.1 Unpainted wood

Unpainted wood was observed mostly in the walls and attics of the intact buildings, and smaller amounts were observed within debris piles and areas throughout the Site. The unpainted wood volume is estimated at 898 m^3. Most buildings on Site are intact, and will require demolition prior to removal from Site, these buildings are: APEC 1 (Storage Shed 01), 2 (Old Kitchen), 3 (New Radio and adjacent shed), 4 (Old Radio), 5 (Outhouse), 6 (Storage Shed) 7 (Storage Building and adjacent shed), 8 (Chicken Coop), 9 (Bunkhouse), 10 (Generator), 11 (House and Garage), 12 (Shed), 13 (House) and APEC 20 (Building within Debris Area 05).

9.2 Metals

Metal debris (mostly rusted) was observed at most of the APECs. This metal consisted mostly of food cans, oil fired warm air furnaces, ducting, electrical lines, water lines, external fence cover, cables, electrical boxes, flooring, metal sheeting, metal poles, vents, household items and a variety of equipment. The volume is estimated at 111.5 m^3.

9.3 Other Non-Hazardous Materials

Other materials observed in most APECs were: black felt, brick and brick mortar, cables, concrete, all on-site drums with organic liquid removed for transport (900L), exterior metal siding (that is not ACM), fibreglass insulation (that is not ACM), flooring (this is not ACM), glass windows, porcelain, rubber, ASTs (900L) and asphalt shingles (this are not ACM). The volumes of Other Materials are provided in the following Table 39:

Table 39: Other Non-Hazardous Materials Volumes

Type of Material	Volume (Uncrushed / m^3),
Black felt	10.8
Brick and brick mortar	18
Cables	17
Concrete	21.5
Drum (205L)	77 drums
Exterior siding	19
Fibre glass insulation	176
Flooring	18

Type of Material	Volume (Uncrushed / m^3),
Glass windows	1.5
Porcelain	2.5
Rubber	0.5
ASTs (900L)	4
Asphalt shingles	17.7

9.4 Summary of Hazardous and Non-hazardous Materials Totals

Table 40 following summarizes the hazardous and non-hazardous materials at the Site APECs.

Table 40: Nottingham Island Inventory Table Totals

Material Type	Material Description	Volume (Uncrushed / m^3), except drums and liquids
Non-Hazardous	Unpainted wood	898
	Metal	111.5
	Black felt	10.8
	Brick and brick mortar	18
	Cables	17
	Concrete	21.5
	Drum (205L)	77 drums
	Exterior siding	19
	Fibre glass insulation	176
	Flooring	18
	Glass windows	1.5
	Porcelain	2.5
	Rubber	0.5
	ASTs (900L)	4

Table 40: Nottingham Island Inventory Table Totals

Material Type	Material Description	Volume (Uncrushed / m^3), except drums and liquids
Hazardous	Aqueous content in drum (205L)	620 L
	Organic contents in ASTs (900L)	1400 L
	Asbestos asphalt shingles	0.9
	Asbestos floor tiles	0.5
	Asbestos furnace gasket	0.1
	Asbestos Insulation	158.5
	Asbestos Light Backings	0.02
	Fibre glass insulation (Asbestos contaminated)	162
	Asbestos panels	28
	Asbestos siding	14
	Asbestos, total lead and leachable lead containing on panels	48.5
	Batteries	0.28
	Compressed gas cylinder	100L
	Creosote soaked wood	5
	Equipment contents	501 L
	Fire Extinguisher	0.1
	Mercury in fluorescent lights	0.5
	Mercury, PCBs and lead solder in electrical components	5
	PCBs in light ballasts	2.6
	Total lead paint on particulate board	7
	Total and leachable lead paint on particulate board	3
	Total and leachable lead paint on equipment	28
	Total and leachable lead paint on metal	38
	Total and leachable lead paint on wood	128.2
	Total lead paint on ASTs (73000L each)	146
	Total lead painted generators	3

Notes:
1. Volumes of total and leachable amended paint includes the painted substrate
2. Drums volumes are numbers of drums, not m^3
3. Liquid volumes are in litres, not m^3

10.0 FIELD AND LABORATORY QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC)

The purpose of QA/QC is to determine the reliability of laboratory analytical results. Field QA/QC is completed using standard laboratory protocols for sample collection and handling. Standard laboratory protocols include the use of blind field duplicates to determine the accuracy of field collection protocols.

Relative Percent Difference (RPD) is calculated by comparing the analytical results to the duplicate samples to determine the average difference for the sample and their corresponding duplicate. Note that when the analytical results are less than five times the Minimum Detection Limit (MDL), RPDs are not calculated. This is because these analytical results are considered to be too quantitatively variable; this limit is known as the Practical Quantitation Limit (PQL). Duplicate water quality samples were collected at stations 2012-SW-02 and 2012-SW-11.

To determine the reliability of the water quality, duplicate samples and, therefore, the precision of the sampling and analytical methods, a RPD assessment was conducted between the duplicates and the field samples (Tables E7 and E8). Since analytical error increases near the detection limit, only the results five times greater than the detection limit were considered applicable to the RPD assessment. Results that were not applicable to the RPD assessment (those less than five times the detection limit) are considered unreliable for QA/QC purposes.

Based on the RPD assessment, all water quality parameters collected and analyzed in the duplicate samples were considered reliable with the following exceptions: total dissolved solids levels in Duplicate 1 (collected with samples at station 2012-SW-02), conductivity, total alkalinity, magnesium, and calcium levels in Duplicate 2 (collected with samples at station 2012-SW-11). However, these parameters were not considered to impact the results of the remaining parameters analyzed. Overall, the sampling and analytical methods employed were considered acceptable.

As part of the laboratories internal QA/QC, data qualifiers are used to ensure data integrity and sample processing efficiency as stated in a laboratories policies and guidelines set out under ISO17025. The use of qualifiers allows for an interpretation of results and flags data that may be suspect.

Maxxam Analytics was contacted by EBA to clarify the qualifiers presented in the analytical reports. A summary and discussion of data qualifiers is presented below;

Hydrocarbon Fraction F2-F4:

Maxxam Response: *The F2-F4 surface water samples were received unpreserved. The hold time for F2-F4 if not preserved is 7-days. The samples were received (and preserved upon reception) on 17-August. They were collected on 15-August. We would have had until 22-August to preserve them to meet the hold time. There should be no issue here.* Samples results are therefore accepted and considered reliable based upon the response from Maxxam Analytics.

Ammonia Samples

Maxxam Response: *The surface water samples for ammonia were received unpreserved. Preserved samples must be analyzed within 28 days. Samples received unpreserved must be analyzed within 3 days. The samples were received (and preserved upon reception) on 17-August. They were collected on 15-August. We would have had until 18-August to preserve them to meet the hold time. There should be no issue here.* Based upon the Maxxam Analytics response the ammonia results are not considered suspect and are considered reliable.

pH Hold Time

Maxxam Response: *The surface water samples for pH were already past hold time when received. The hold time of pH varies by jurisdiction. In Alberta we are using a 7-day hold time while, for example, in BC the regulators say 15 minutes. The samples were collected on 15-August and were analyzed on 17-August and 20-August. In the province of Quebec this has been flagged as an issue.* EBA recognizes the analytical restraints of short hold times in pH. Due to weather constraints field monitoring of pH could not be conducted. The pH values shall be assessed as potentially biased but within an acceptable variability.

F1- BTEX

Maxxam Response: *The surface water samples for F1 and BTEX were received in an inappropriate container. It looks like one glass bottle was received for the organic parameters. If this is the case, sub sampling would have been required. Manipulation and sub sampling of the samples may have led to a low bias in the F1 and BTEX parameters. In addition, the larger the sample container, the more challenging it is to achieve "zero headspace", also potentially creating a low bias.* Maxxam Analytics did not provide sample containers, this occurred because of a location change from Cape Dorset to Ivujivik. Based upon the Maxxam response F1-BTEX results are considered suspect. All results should be considered biased low and treated as uncertain.

Total Metals

Maxxam Response: *The surface water samples for metals were received unpreserved. The hold time for metals once preserved is 6-months. The samples were received (and preserved upon reception) on 17-August. They were collected on 15-August. While it is a best practice to preserve metals immediately upon collection, there are concessions in the methods that allow for preservation upon arrival due to dangerous goods shipment requirements. There should be no issue here.* Based upon the Maxxam response metals results are not suspect and are considered reliable.

11.0 GEOTECHNICAL ASSESSMENT

11.1 Introduction

The purpose of the geotechnical site investigation was to evaluate and characterize available borrow sources, identify potential landfill and landfarm locations, assess site accessibility constraints from a geotechnical perspective, and evaluate existing debris and landfill areas for remediation. Kumari Karunaratne, of EBA, completed the geotechnical assessment over two days - August 11 and 14, 2012.

Testpits were hand-excavated to log surficial materials at potential landfill and landfarm locations and borrow sources. A total of 16 testpits were excavated. A total of 12 composite samples were collected from select testpits, and sent to EBA's Yellowknife Laboratory for particle size analysis. The testpit locations were recorded using a Garmin eTrex Legend HCx GPS. The dimensions of the landfill, landfarm and borrow sources were determined using either a tape measure or a series of GPS waypoints.

11.2 Aerial Photography

Air photos (1:20,000 scale) taken in 1949 of the Site were obtained from the National Air Photo Library. The air photos were reviewed prior to the field assessment to identify potential borrow sources, landfill, and land farm locations. These sites were assessed in the field.

Surficial geology mapping of the general area using PurView technology was completed by Shirley McCuaig, P.Geol. of EBA. The PurView system incorporates 3D visualization and ArcGIS technologies, which allows the terrain scientist to view traditional aerial photography in a digital environment with the aid of specialized 3D glasses. Aerial photographs were scanned using a high resolution scanner, merged with DEM data and uploaded to a computer. The scientist can then zoom in and out to observe and map the landscape in detail. Traditional air photos captured at 1:60,000 scale, for example, can be viewed at scales of 1:2,000 or greater, thereby allowing the surficial geologist to do a much better job of delineating landscape features. Mapping was done directly on a computer. The mapping was also compared with more recent remotely sensed imagery. Field photographs and field data were also used to refine the mapping.

The surficial geology mapping completed for the Site is presented on Figure G1. The terrain around the site consists of bedrock outcrops, surrounded by glaciomarine and organic deposits, and small lakes and ponds (Photo G1). The bedrock is undulating to ridged, forms steep-sided ridges in areas, and is glacially-eroded and highly jointed. The glaciomarine deposits are composed typically of gravelly sand with trace fines, and some areas are covered with up to 50% boulders. These deposits contain marine shell fragments and form blankets and thin veneers. Organic deposits occur in areas of poor drainage. Recent marine deposits can be found along the coast.

11.3 Geotechnical Assessment Methodology

The following sections describe the methods of the geotechnical investigation. Figure G2 shows the locations of the testpits, available borrow sources, and potential landfill/ landfarm locations. The lab test results are presented in Appendix F, along with a table summarizing the testpits, collected samples and geotechnical lab test results. The characteristics of the borrow sources are summarized in Table 35, and the characteristics of the landfill/landfarm are summarized in Table 36. Photos of geotechnical significance (Photo G1 to G40) are presented in the photo pages.

11.3.1 Site Description

The Site lies on the north shore of a shallow and narrow east-west inlet (Photo G2) on the southwestern shore of Nottingham Island. The inlet is approximately 1250 m long and 100 to 300 m wide, and a narrow beach extends along its north shore. The beach is littered with wood and metal debris and is 30% covered with surface boulders less than 1 m in size (Photos G3 and G4). The site extends northward from the beach approximately 250 m. The site slopes gently south to the beach, and the ground surface is covered with mosses and stunted vascular plants (Photo G5).

To determine conditions at the site, EBA excavated six testpits to depths of 0.25 to 0.5 m along a north-south transect through the site (Figure G2), and collected samples from four of the testpits (TP04_S02, TP07_S03, TP08_S04, and TP09_S05). An organic layer about 0.10 m thick overlies the mineral soil at the

site. The testpits show that the soil varies from sand with a trace of gravel to sand and gravel, and contains marine shell fragments (Photo G6). Particle size analysis test results are presented in Appendix F. Most of the site is poorly drained, and all the testpits encountered water except two (TP08 and TP09). At the time of the site assessment there were several areas of ponded water at the site. Water did not accumulate in the testpits at the borrow sources because the terrain was elevated and well-drained, nor at the landfill/landfarm locations because the active layers were well-drained or perhaps the testpits were not sufficiently deep.

The north side of the site is bound by a large steep-sided bedrock ridge approximately 15 m high (Photo G7). The rock outcrops to the east and west are lower, rising 5 to 10 m above the surrounding terrain (Photo G8). The northeast corner of the site opens up into a wide flat-bottomed valley of glacial marine sediment that extends northeast towards Lake #1 (Photo G9).

11.3.2 Site Accessibility

Trails

A rough trail runs east-west along the north end of the site from the old kitchen (APEC 2) and continues northeast to Lake #2. The trail is approximately 2.7 m wide and there is no embankment. On the east side of Lake #2, the trail continues, but is in poor condition with ruts and subsidence in poorly-drained areas (Photos G10 to G14). The trail in its present condition is only accessible by ATVs, and is not trafficable along some sections. The present trail would need to be upgraded before heavy equipment could traffic on it. Most of the trails surrounding the buildings on site have subsided and are overgrown with moss and would not support heavy equipment in their present condition.

Beach Landing

The weather station was accessed by boat when it was operational. On the beach immediately south of the site, there is a landing area consisting of a metal-framed crib filled with small boulders and cobbles (Photo G15 and G16). There is a ramp of wooden boards leading from the beach to the site (Photo G17). These boards are covered with moss. The beach landing area would need to be assessed by the selected contractor prior to cleanup to determine whether current site access would be suitable, especially with regards to depth of water in this area.

Helipad

EBA accessed the site using a Bell 212 helicopter operated by the Canadian Coast Guard. The helicopter landed south of the bunkhouse. There is also a helipad outlined with painted white stones located south of the above ground storage tanks as shown in Photo G18, which was not used because of nearby site debris.

Airstrip

There is conflicting information in previous documents regarding the presence of an airstrip at the site. There is no gravel airstrip in close proximity to the Site, and no evidence of there ever being one.

11.4 Geotechnical Results

11.4.1 Potential Borrow Sources

Three potential borrow sources were investigated during the site assessment. They are shown on Figure G2 and summarized in Table 35. The thickness of the borrow sources is unknown, and permafrost was not encountered in any of the testpits that were excavated to a maximum depth of 0.5 m. A borrow thicknesses of 0.3 m was assumed for calculating the estimated volume of the granular material available unless otherwise stated.

Potential Borrow A

Potential Borrow A is located approximately 200 m east of the site (Figure G2). The borrow source is bound to the north by glaciomarine sediment, and to the south, west, and east by the bedrock outcrop that lies north of the beach, and (Photos G19 to G22). The source is approximately 150 m^2 in area; 10 m wide, 15 m long, and rises about 2 m above the adjacent terrain to the north. Assuming an excavation depth of 1.0 m, Borrow A contains approximately 150 m^3 of available material. EBA excavated one testpit to a depth of 0.5 m and collected a composite sample from the side wall (TP12_S08). The testpit contained fine to coarse angular gneissic gravel (86%), with some sand (Appendix F). The material was angular, well-drained, and uniform to the depth of testpit. There were 30-40% angular cobbles and small boulders (<0.5 m) on the surface, and boulder sized material may be present at depth but was not encountered in the testpit. Unlike other surficial material observed during the site assessment, the material in Borrow A was unweathered and only sparsely colonized by lichen. This suggests that the clasts have been fractured recently, possibly produced by crusher when the weather station was operational. To access this site from the trail, a 150 m haul road could be constructed over glaciomarine sediment, and 200 m of the trail would need to be upgraded to support heavy equipment. Although the quantity of material in Borrow A is limited, it is accessible and close to the site.

Potential Borrow B

Potential Borrow B is located approximately 500 m east of the site (Figure G2). The borrow source lies at the eastern end of the bedrock ridge that lies north of the site, and is bound to the east by a ridge of large boulders (Photos G23 to G26). The borrow material forms a bench that slopes moderately to the north and to the south, and is approximately 15% covered with small boulders (<0.5 m). The source is approximately 1,800 m^2 in area; 30 m wide, 60 m long, and rises about 2 m above the adjacent terrain. Assuming an excavation depth of 0.3 m, Borrow B is estimated to contain approximately 540 m^3 of material. EBA excavated two testpits to depths of 0.4 m and collected composite samples from the side walls (TP13_S09 and TP14_S10). The testpits contained about 30% gravel and 70% sand with a trace of fines (Appendix F). The gravel was subangular, and the material was well-drained, and uniform with depth. About 30-40% of the sand-sized particles were calcareous marine shell fragments. Borrow B lies about 100 m north of the existing trail, and a haul road would need to be constructed over well-drained glaciomarine sediment to access this borrow material, and 500 m of the trail would need to be upgraded to support heavy equipment.

Potential Borrow C

Borrow C is located approximately 2.7 km east of the site (Figure G2). This borrow source lies at the base of, and parallel to, a steep-sided rock ridge, and is bound to the north by a small lake, as shown on Photos

G27 to G30. The source is approximately 6,250 m^2 in area; 25 m wide and 250 m long and was about 1.5 m higher than the adjacent lake. The source is estimated to contain about 1,875 m^3 of granular material based on an average depth of excavation of 0.3 m over the delineated area. EBA excavated three testpits to 0.3 m and collected a composite sample from the side wall of one of the testpits (TP01_S01). The testpits contained similar material – sand and gravel with a trace of fine-grained material (Appendix F). The gravel was fine to coarse and subangular, and the deposit was damp, but well-drained, well-graded, and contained 30-40 % marine shell fragments. The surface of Borrow C was covered in cobbles and boulders (<1.0 m), and the coverage was not uniform. In some areas cobble/boulder coverage was 100% (Photo G27), and other areas were free of oversize material. Although Borrow C contains the most material, development of this source would require a 3.0 km haul road to be built over poor-drained glaciomarine and organic deposits. Development may also be restricted because of the proximity of a water body to Borrow C, as shown on Figure G2.

Borrow sources at the Site are scarce and limited to a few small deposits. A total of 2,500 m^3 of granular material appears to be available from the three sources. About 75% of the identified borrow lies within Borrow C which is not readily accessible due to its distance from site. Apart from a small amount of gravel in Borrow A, the material is predominantly gravelly sand with a trace of fine-grained material, and contains 30-40% calcareous shell fragments. The shell fragments present in the borrow material compromises the strength of the material. Testpits should be excavated in the prospective borrow areas using a large excavator at the time of construction to further characterize the material and determine the depth (thickness) of the deposits.

Based on the surficial geology mapping of the area, it appears that other glaciomarine deposits could be available near the Site. Deposits similar to Borrow B were observed in narrow steep-sided bedrock valleys further from the site, and are labelled on Figure G1 as "Glaciomarine-blanket" (GMb). These deposits were not easily accessible, and due to time restraints, were not investigated during the field program. However they may represent additional borrow sources worthy of further investigation if required. Given the known information, it appears that granular materials are of limited quantities at the site and of marginal quality for the purpose of constructing a landfill or landfarm facility. Table 41 below provides a summary of borrow sources:

Table 41: Summary of Borrow Sources Identified for Phase III Environmental Site Assessment - Former Weather Station, Nottingham Island, NU

Borrow Source	Estimated Quantity	Material Description	Notes
Borrow A	150 m^3	Gravel with some sand	- 150 m haul road required - 200 m of the trail would need to be upgraded
Borrow B	540 m^3	Gravelly sand with a trace of fines	- 100 m haul road required - 500 m of the trail would need to be upgraded

Borrow C	1,875 m^3	Gravelly sand with a trace of fines	- 3.0 km haul road required - May be limited by proximity to water body

11.4.2 Potential Landfill and Landfarm Locations

Potential locations for a non-hazardous waste landfill and a landfarm treatment unit (LTU) were investigated. It is understood that these facilities could be constructed at the site for disposal of non-hazardous demolition and surface debris and treatment of PHC impacted soil. Suitable locations for these facilities were assessed based on a variety of factors, including:

- Size of available area;
- Acceptable soil and foundation conditions;
- Limited surface runoff through the area;
- Relatively level topography;
- Does not impede natural drainage in the area;
- Appropriate distances from natural water bodies and water courses; and
- No adverse ground conditions that could affect the underlying permafrost.

Only two locations were evaluated for a possible landfill/ landfarm locations, as shown on Figure G2. Both locations are east of the site and in close proximity to the debris and impacted soil areas. The characteristics of the potential landfill/ landfarm locations are summarized in Table 38.

Potential Landfill A

Landfill A is located approximately 150 m east of the site (Figure G2). Photos G31 to G36 show Landfill A. This potential landfill area is bounded to the north and south by bedrock outcrops 5 to 10 m high, and is open to the east and west. The area identified is approximately 1500 m^2; 30 m wide and 50 m long. EBA excavated two testpits to 0.3 m and 0.4 m depth, and collected composite samples from the side walls (TP10_S06 and TP11_S07). The testpits contained 60 to 70% sand, 10 to 25% gravel, and some (11 to 18%) fine-grained material (Appendix F). The gravel was subangular, moist, and uniform with depth. The surface is 70-80 % covered with cobbles and small boulders less than 0.5 m in size that are embedded in the surface. The oversize material was closely spaced and it was challenging to fine an area large enough to excavate the testpits in the surrounding finer-grained material. This location was identified as a potential landfill location prior to the site assessment because it is close to site, accessible and relatively level. However, during the site assessment it was determined that this area is not ideally suited for a new landfill for several reasons: (1) high boulder coverage across the site, (2) poorly-drained to the east, (3) ponded water at the foot of the outcrops that surround it, and (4) patterned ground (sorted circles and mud boils) were observed in the area, and are evidence of frost susceptible soil conditions.

Potential Landfill/Landfarm B

Potential Landfill/Landfarm B is considered an acceptable location for a new landfill or landfarm. This area is located approximately 300 m east of the site (Figure G2), and photos G37 to G40 show the site

characteristics. EBA excavated two testpits to a depth of 0.3 m, and collected composite samples from the side walls (TP15_S11 and TP16_S12). The testpits contained 60 to 70% sand, 25 to 35% gravel, and a trace (5%) fine-grained material (Appendix F). The gravel was subangular, and the material was moist, and uniform with depth. There were some large boulders, about 1 m in size, on the surface. This area lies directly south of the trail and is flat, open, well-drained and slopes gently to the southwest towards to coast. The locations identified for Landfill/Landfarm B is approximately 4500 m^2; 45 m wide and 100 m long. However, if additional space was required, the area could likely be expanded up to 30 m to the north and 100 m to the east as shown on Figure G2. The expanded area may have some sections that are poorly-drained, but the overall drainage of the location is satisfactory because the area slopes to the south. A cut/fill approach is not recommended for this location because it lies on glaciomarine sediment which can be fine-grained and poorly drained. The trail provides limited access to the potential landfill/landfarm area, and would need to be upgraded for haul truck traffic to construct a facility at the site.

Although additional potential landfill/landfarm areas were not investigated given the limited time on site, Landfill/Landfarm B is promising.

Table 42: Summary of Landfill/Landfarm identified for Phase III Environmental Site Assessment

Landfill/ Landfarm	Estimated Quantity	Material Description	Notes
Landfill A	1,500 m^2	Sand with some gravel and fines	- close to site and easily accessed by trail - poorly-drained - covered with small boulders - frost susceptible soil sediment
Landfill/ Landfarm B	4,500 m^2	Gravelly sand with a trace of fines	- close to site and easily accessed by trail - could be expanded - area slopes to the south to facilitate drainage - boulders on surface would need to be removed

12.0 ARCHAEOLOGICAL REPORT

Golder Associates completed an Archaeological Impact Assessment (AIA) at the Site on behalf of EBA working for PWGSC to ensure historical sites were categorized in the event that a borrow source is needed. The AIA is provided in Appendix H.

13.0 SUMMARY AND RECOMMENDATIONS

13.1 Overall Summary

There are several APECs that have environmental impacts associated with historical site activities. A summary of the impacts are provided below:

- PHC impacts to soil that exceed the applicable criteria are present in APECs 3, 4, 9, 11, 12, 14, 17 and the Pipeline. The total estimated volume of PHC only impacted material is 2260 m^3;
- Metals impacts to soil that exceed the applicable criteria are present in APECs 1, 3, 4, 6, 9, 11, 12, 13, 16, 18, 21 and the pipeline. The total estimated volume of metal only impacted material is 143 m^3;
- Co-contaminated soil impacted with both metals and PHCs in excess of the applicable guidelines is present in APECs 3, 4, 11, 12, 13 and the pipeline. A total estimated volume of co-contaminated soil is 216 m^3;
- Surface water in exceedance of the applicable criteria is found in APECs 2, 9, 12, 14, 16, 17, 19, 21, 24, and 25. The total estimated volume of impacted water, based upon a limited data set, in APECs 2, 9, 14, 17 and 21 is 484 m^3; and,
- The geotechnical site investigation concluded that granular materials investigated at site are of limited quantity, and of marginal quality for the purpose of constructing a landfill or LTU.

Both hazardous and non-hazardous materials were found throughout the site.

- The hazardous materials included heating oil, asbestos, total lead paint, leachable lead paint, batteries, compressed gas cylinders, creosote soaked wood, mercury, PCBs, amongst others. The total, uncrushed volume of hazardous material is 779 m^3 and 2,521 litres of hazardous liquids; and,
- The non-hazardous materials included wood, metal pieces, brick and brick mortar, cables, concrete, insulations materials, glass, porcelain, rubber, amongst others. The total, uncrushed volume of non-hazardous material is 77 drums (all drums from site with organic liquid waste removed) and 1,316 m^3.

Detailed inventoried items can be found in Table 34 of this report.

13.2 Recommendations

EBA would recommend the following work items as follows:

- Landfarming should be included in the preparation of a RAP as an on-site remediation option for PHC impacted soils.
- Contaminated soil could also be transferred off-site to an approved waste facility for treatment and should be considered in the RAP.
- Metal impacted soils and co-contaminated soils should be included in the preparation of a RAP for the site. The impacted soil should be transferred off-site to an approved waste facility.
- Surface water identified in APECs 2, 9, 12, 14, 16,17, 19, 21, 24 and 25 above applicable guidelines is considered not suitable for land surface discharge due to the metal exceedances of applicable

guidelines or background ranges. The volume has been estimated on a limited data set and further sampling is required to determine if water concentrations are naturally elevated.

- Hazardous and non-hazardous materials found at the Site will be included in the RAP. The hazardous material is required to be handled properly, contained and removed for disposal off-site to an approved waste facility.

14.0 NCSC SITE CLASSIFICATION SUMMARY

The CCME National Classification System for Contaminated Sites (NCSCS)(2008) worksheet was completed to qualitatively derive a ranking score to evaluate the potential human health and ecological risks resulting from the presence of contamination on the site.

Nottingham Island Weather Station is classified as a Grade C with a certainty percentage of 75%. The total NCSCS score for the site is 74.6 indicating a Class 1 ranking for high priority for action. The detailed NCSCS worksheet is included in Appendix I of this report.

15.0 CLOSURE

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

Sincerely,
EBA Engineering Consultants Ltd.

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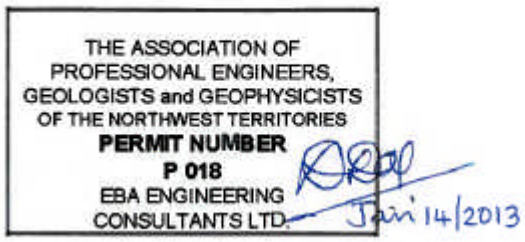

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FIGURES

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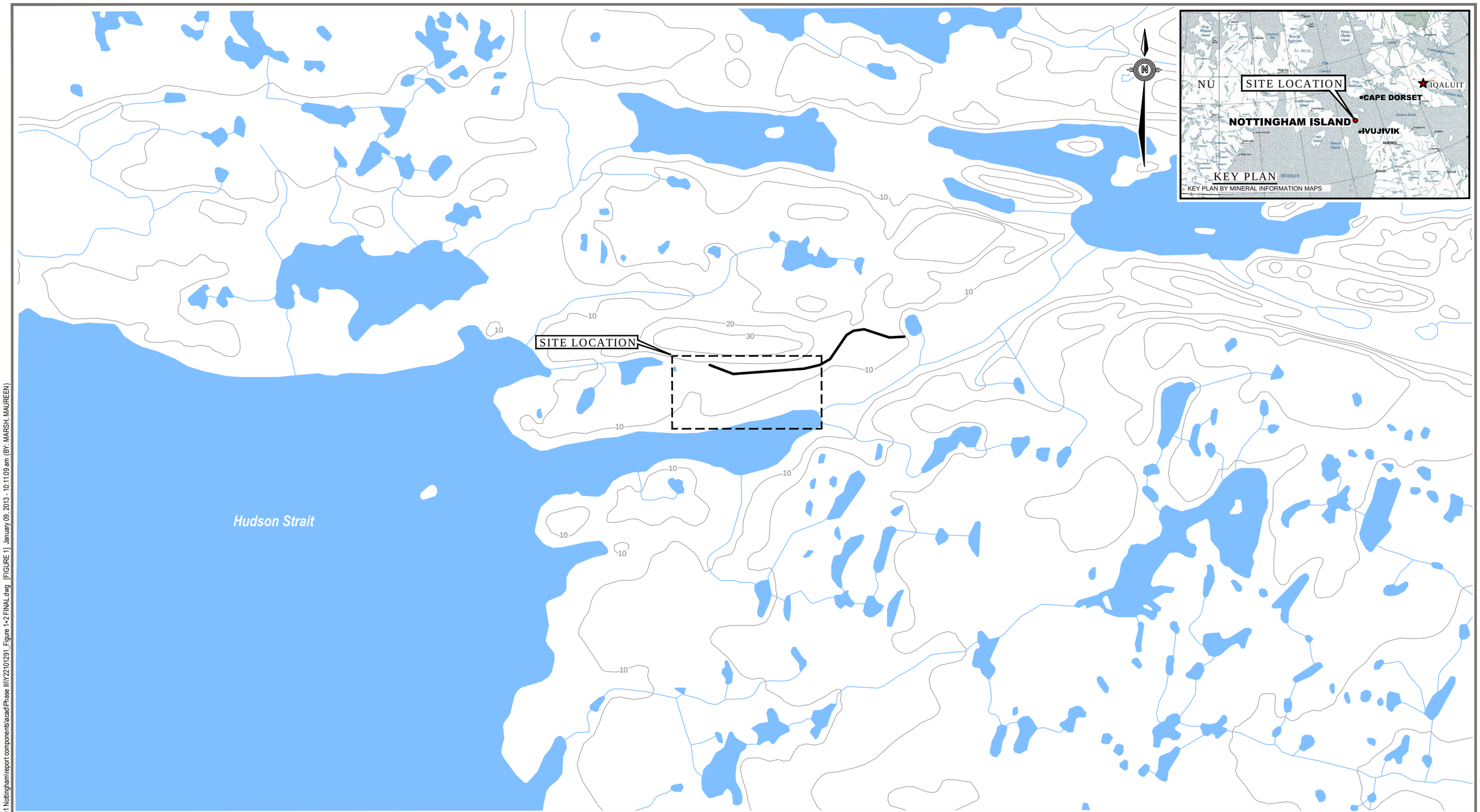
Figure 2	Site Plan Showing Areas of Interest Outside of Project Location
Figure E-1	Site Plan Showing Areas of Interest at Project Location
Figure E-2	Detailed Site Plan Showing Sample Locations
Figure E-3	Detailed Site Plan Showing Sample Locations
Figure E-4	Detailed Site Plan Showing Sample Locations
Figure E-5	Detailed Site Plan Showing Sample Locations
Figure E-6	Detailed Site Plan Showing Sample Locations
Figure E-7	Soil Contamination Areas
Figure H-1	Site Plan Showing Areas of Interest at Project Location
Figure H-2	Detailed Site Plan Showing Hazardous and Non-Hazardous Sample Locations
Figure H-3	Detailed Site Plan Showing Hazardous and Non-Hazardous Sample Locations
Figure H-4	Detailed Site Plan Showing Hazardous and Non-Hazardous Sample Locations
Figure H-5	Detailed Site Plan Showing Hazardous and Non-Hazardous Sample Locations
Figure H-6	Detailed Site Plan Showing Hazardous and Non-Hazardous Sample Locations
Figure G-1	Surficial Geology
Figure G-2	Site Plan Showing Testpit Locations and Areas of Borrow, Landfarm and Landfill



ISSUED FOR USE

0 500 m

Scale: 1: 15 000

CLIENT

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT FORMER WEATHER STATION NOTTINGHAM ISLAND, NU

SITE LOCATION PLAN

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE	DATE
EDM	January 2013

Figure 1

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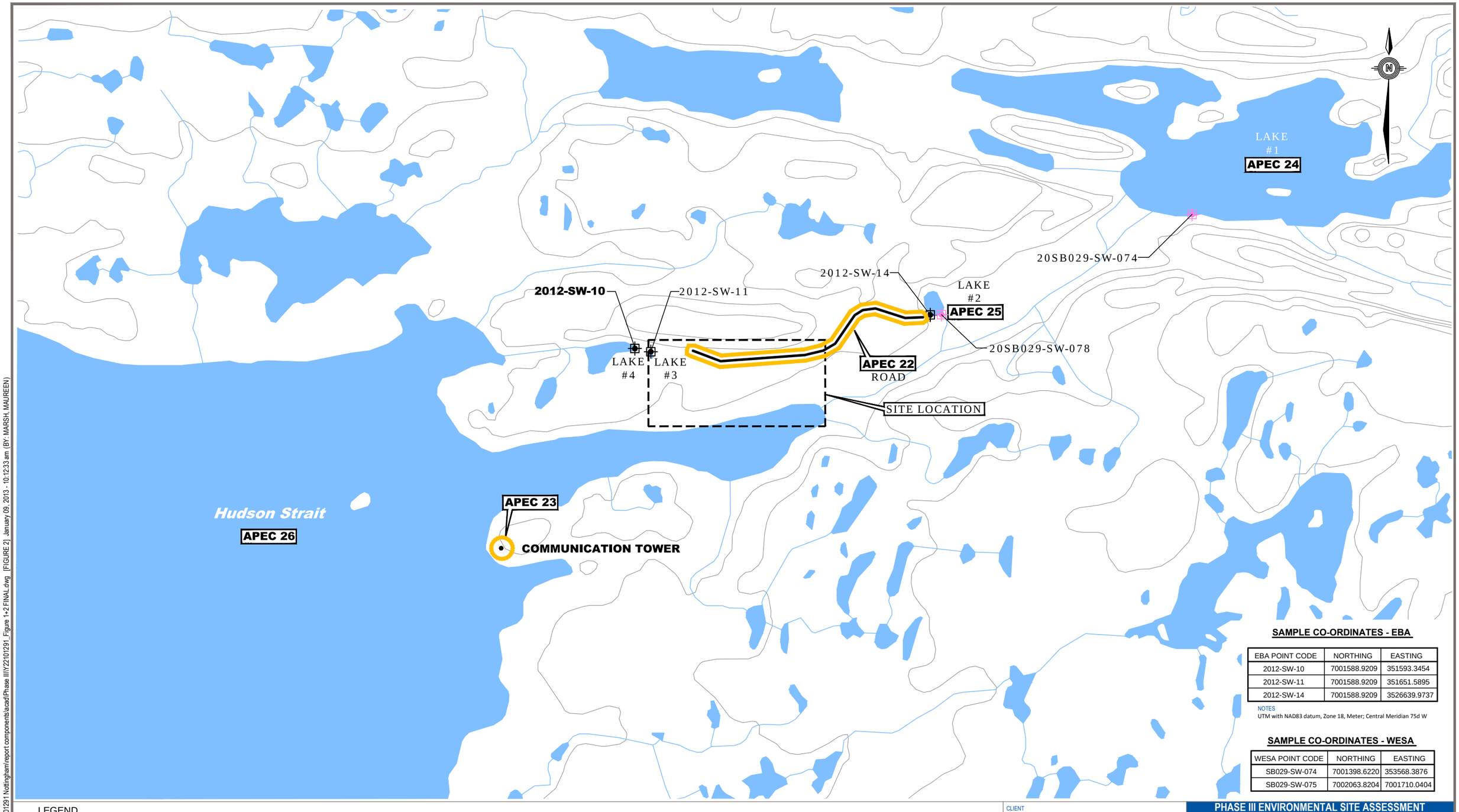

SAMPLE CO-ORDINATES - EBA

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2012-SW-10	7001588.9209	351593.3454
2012-SW-11	7001588.9209	351651.5895
2012-SW-14	7001588.9209	3526639.9737

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

WESA POINT CODE	NORTHING	EASTING
SB029-SW-074	7001398.6220	353568.3876
SB029-SW-075	7002063.8204	7001710.0404

LEGEND

-APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN

- SURFACE WATER SAMPLE LOCATION - EBA

- SURFACE WATER SAMPLE LOCATION - WESA

EBA SAMPLE
(EBA SAMPLE ID IN BLACK)

- BELOW APPLICABLE PHC CRITERIA

- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE
(WESA SAMPLE ID IN GREY)

- BELOW APPLICABLE PHC CRITERIA

- ABOVE APPLICABLE PHC CRITERIA

ISSUED FOR USE

0 500 m

Scale: 1: 15 000

CLIENT

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PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU

SITE PLAN
SHOWING AREAS OF INTEREST
OUTSIDE OF PROJECT LOCATION

A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	KL	0

OFFICE: EDM

DATE: January 2013

Figure 2

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APEC 2
APEC 18
APEC 15
APEC 14
APEC 1
APEC 17
APEC 10
APEC 9
APEC 4
APEC 6
APEC 7
APEC 5
APEC 3
APEC 8
APEC 21
APEC 22
TRAIL
APEC 20
APEC 11
APEC 12
APEC 16
APEC 13
APEC 19
HUDSON STRAIT
APEC 26

See Figure E-2
See Figure E-3
See Figure E-5
See Figure E-6
See Figure E-7
See Figure E-4

ISSUED FOR USE

LEGEND

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM
- APEC - AREA OF POTNETIAL ENIRONMENTAL CONCERN

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

0 100 m
Approximate Scale

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PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU
SITE PLAN
SHOWING AREAS OF INTEREST
AT PROJECT LOCATION

eba A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-1

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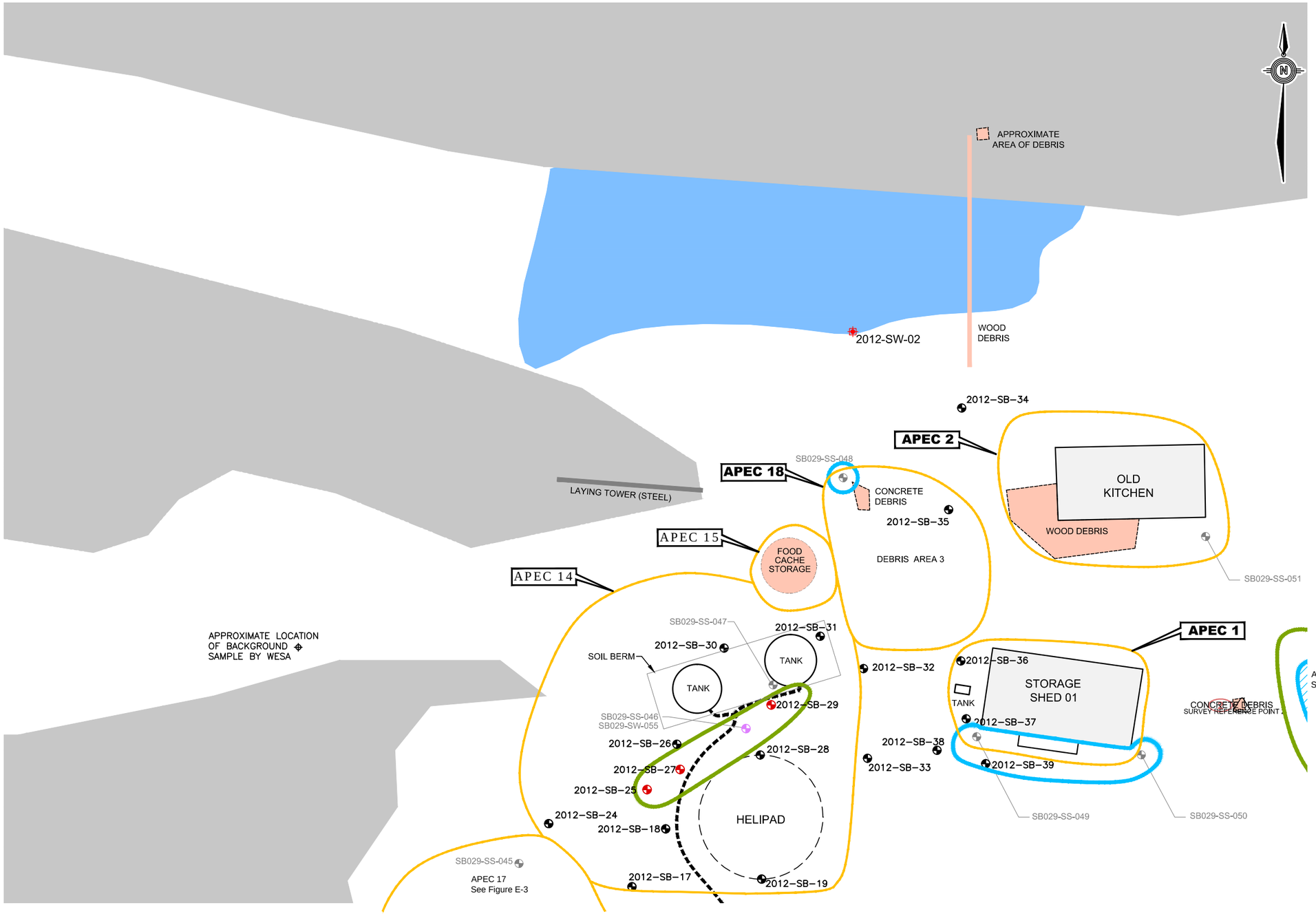

SAMPLE CO-ORDINATES - EBA

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2012-SB-19	7001517.4250	351740.5960
2012-SB-24	7001524.1770	351714.6650
2012-SB-25	7001528.3110	351726.6460
2012-SB-26	7001533.8503	351730.2652
2012-SB-27	7001530.7710	351730.6780
2012-SB-28	7001532.5230	351740.4290
2012-SB-29	7001538.6320	351741.7510
2012-SB-30	7001545.5490	351736.0160
2012-SB-31	7001546.9940	351747.7200
2012-SB-32	7001543.0510	351752.9890
2012-SB-33	7001532.1220	351753.4780
2012-SB-35	7001562.4030	351763.3680
2012-SB-36	7001543.9920	351764.8550
2012-SB-37	7001536.9290	351765.5010
2012-SB-38	7001533.1050	351761.9430
2012-SB-39	7001531.4780	351767.8670
2012-SW-02	7001584.0842	351751.8344

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

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SB029-SS-046	7001535.7561	351738.7009
SB029-SS-047	7001541.0697	351741.9925
SB029-SS-048	7001566.2878	351750.5170
SB029-SS-049	7001534.7567	351766.7829
SB029-SS-050	7001532.5437	351786.8276
SB029-SS-051	7001559.1295	351794.6585

ISSUED FOR USE

0 25 m

Scale: 1: 500

LEGEND

- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME

EBA SAMPLE (EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE (WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM

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PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU

DETAILED SITE PLAN
SHOWING SAMPLE LOCATIONS

A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-2

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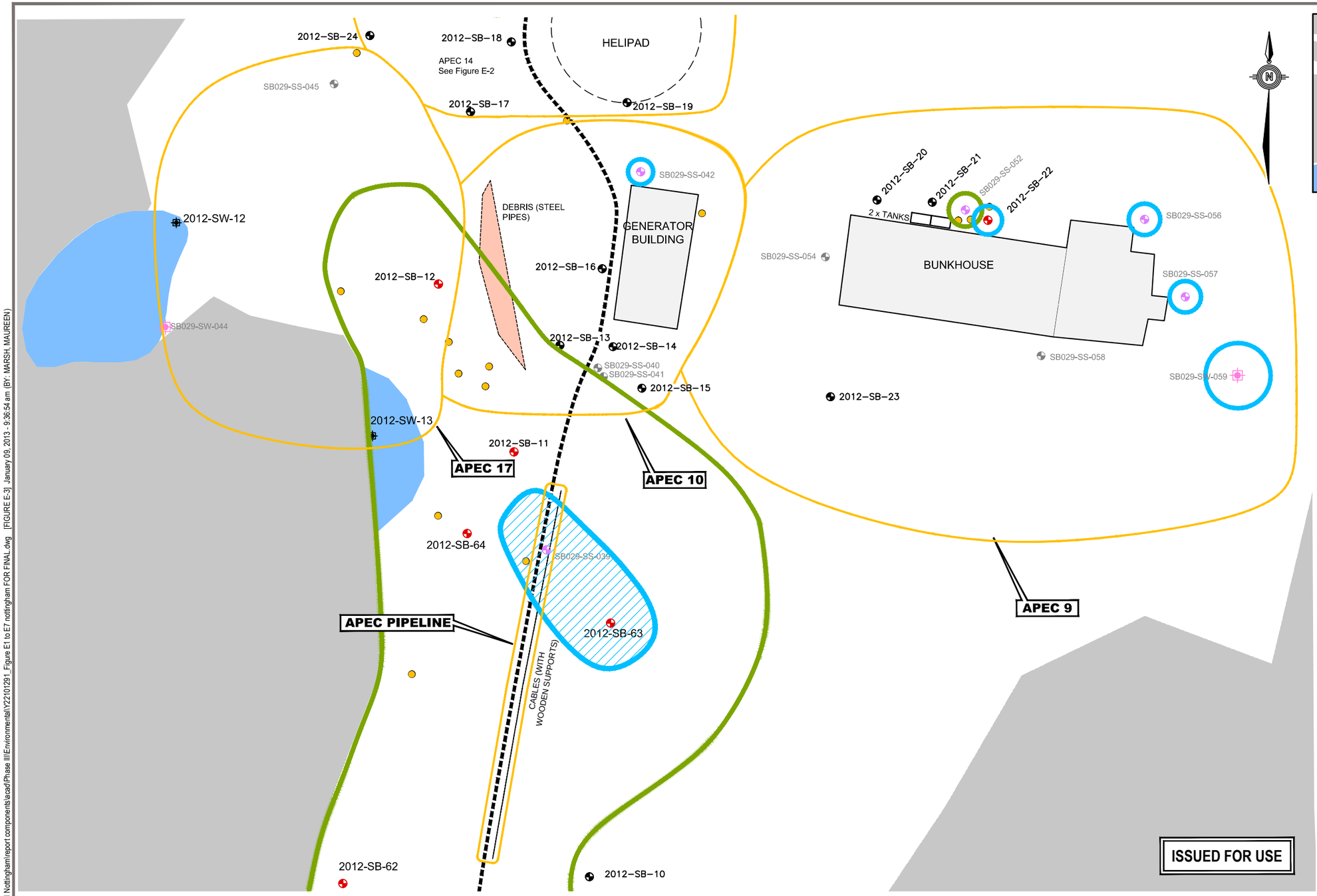

SAMPLE CO-ORDINATES - EBA

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2012-SB-14	7001492.8350	351739.1730
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2012-SB-16	7001500.6790	351738.0870
2012-SB-17	7001516.4960	351724.8060
2012-SB-18	7001523.5320	351728.9230
2012-SB-19	7001517.4250	351740.5960
2012-SB-20	7001507.6090	351765.7840
2012-SB-21	7001507.3840	351771.3460
2012-SB-22	7001505.5780	351776.9510
2012-SB-23	7001487.7890	351761.0850
2012-SB-24	7001524.1770	351714.6650
2012-SB-62	7001438.7263	351711.9373
2012-SB-63	7001464.9745	351738.9265
2012-SB-64	7001474.0004	351724.4742
2012-SW-12	7001505.3285	351695.1627
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NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

WESA POINT CODE	NORTHING	EASTING
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SB029-SS-042	7001510.4559	351741.9613
SB029-SS-045	7001519.3146	351711.0550
SB029-SS-052	7001506.6119	351774.6969
SB029-SS-054	7001501.8740	351760.5787
SB029-SS-056	7001505.6646	351792.7513
SB029-SS-057	7001497.8616	351796.8594
SB029-SS-058	7001491.9115	351782.3161
SB029-SW-044	7001494.7662	351694.0160
SB029-SW-059	7001489.9191	351802.1445

0 20 m
Scale: 1: 400

LEGEND

- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME
- CO-CONTAMINATED

EBA SAMPLE
(EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE
(WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM

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A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU

DETAILED SITE PLAN
SHOWING SAMPLE LOCATIONS

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-3

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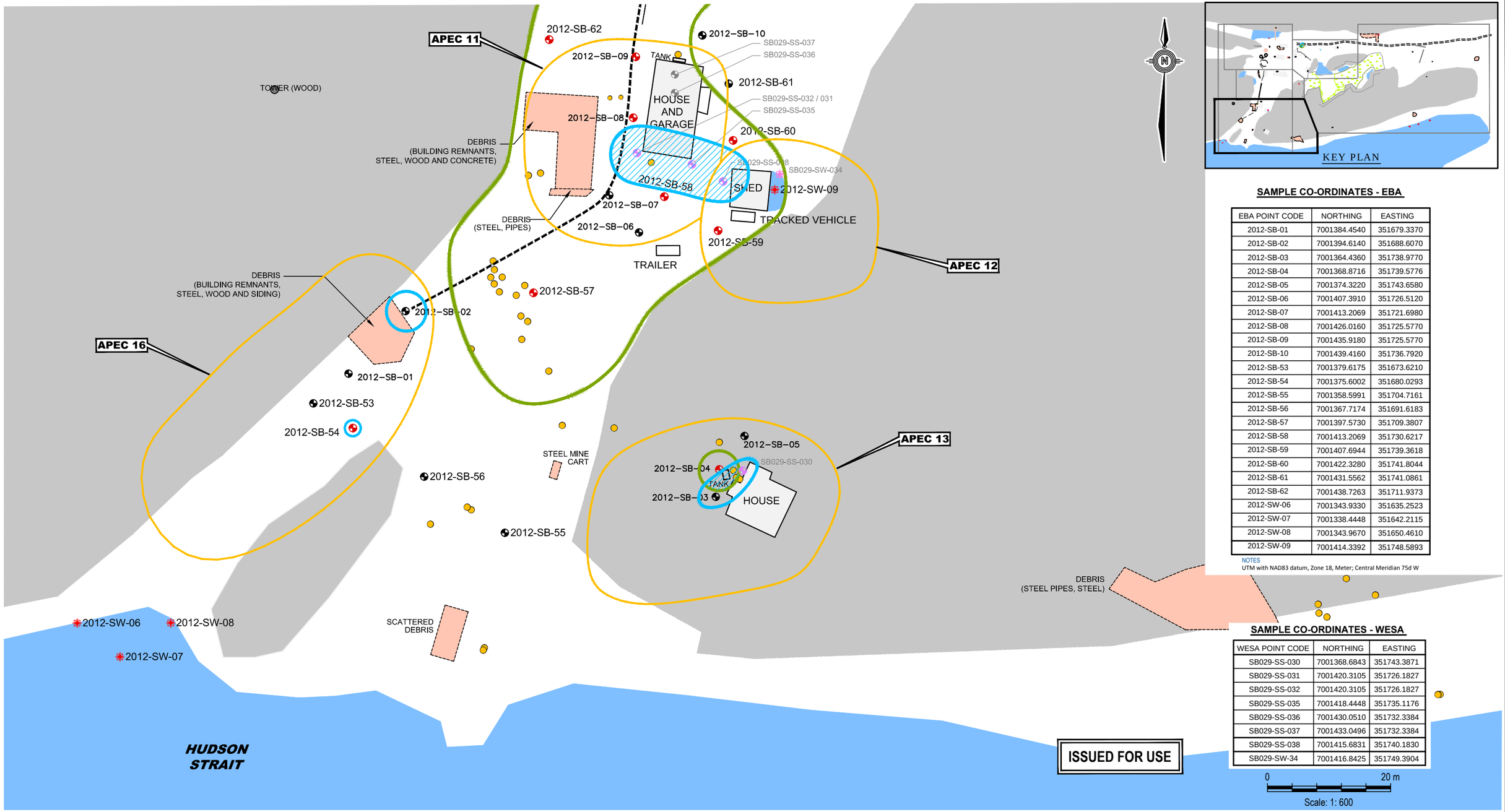

SAMPLE CO-ORDINATES - EBA

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2012-SB-04	7001368.8716	351739.5776
2012-SB-05	7001374.3220	351743.6580
2012-SB-06	7001407.3910	351726.5120
2012-SB-07	7001413.2069	351721.6980
2012-SB-08	7001426.0160	351725.5770
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2012-SB-54	7001375.6002	351680.0293
2012-SB-55	7001358.5991	351704.7161
2012-SB-56	7001367.7174	351691.6183
2012-SB-57	7001397.5730	351709.3807
2012-SB-58	7001413.2069	351730.6217
2012-SB-59	7001407.6944	351739.3618
2012-SB-60	7001422.3280	351741.8044
2012-SB-61	7001431.5562	351741.0861
2012-SB-62	7001438.7263	351711.9373
2012-SW-06	7001343.9330	351635.2523
2012-SW-07	7001338.4448	351642.2115
2012-SW-08	7001343.9670	351650.4610
2012-SW-09	7001414.3392	351748.5893

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

WESA POINT CODE	NORTHING	EASTING
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SB029-SS-032	7001420.3105	351726.1827
SB029-SS-035	7001418.4448	351735.1176
SB029-SS-036	7001430.0510	351732.3384
SB029-SS-037	7001433.0496	351732.3384
SB029-SS-038	7001415.6831	351740.1830
SB029-SW-34	7001416.8425	351749.3904

LEGEND

- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME
- CO-CONTAMINATED

EBA SAMPLE (EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE (WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM

CLIENT
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PHASE III ENVIRONMENTAL SITE ASSESSMENT FORMER WEATHER STATION NOTTINGHAM ISLAND, NU

DETAILED SITE PLAN SHOWING SAMPLE LOCATIONS

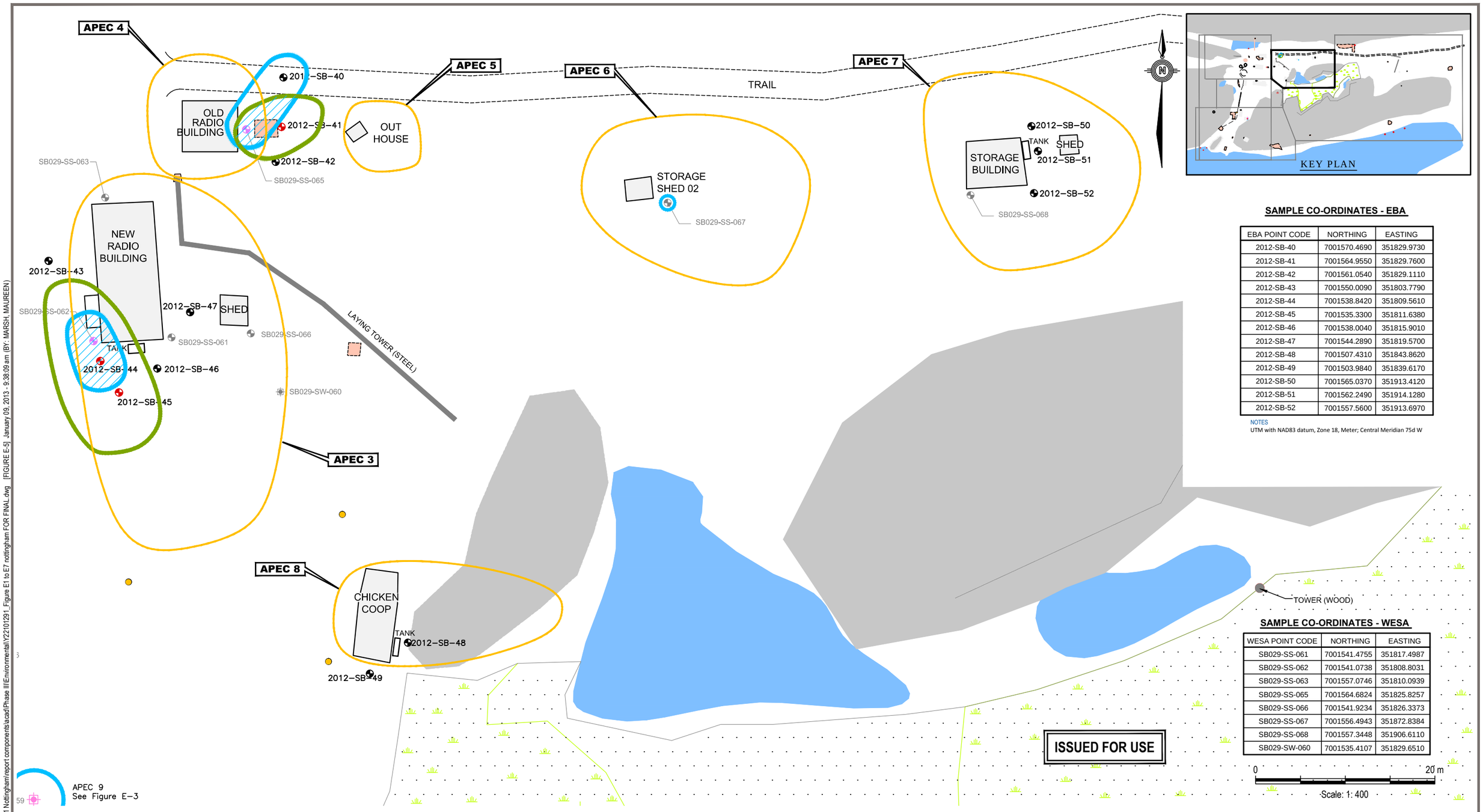
PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-4

A TETRATECH COMPANY

Q:\Edmonton\Drafting\PROJECTS\Y221\Y22101291 Nottingham\report components\acad\Phase III\Environmental\Y22101291_Figure E1 to E7 nottingham FOR FINAL.dwg [FIGURE E-4] January 09, 2013 - 9:37:42 am (BY: MARSH, MAUREEN)



SAMPLE CO-ORDINATES - EBA

EBA POINT CODE	NORTHING	EASTING
2012-SB-40	7001570.4690	351829.9730
2012-SB-41	7001564.9550	351829.7600
2012-SB-42	7001561.0540	351829.1110
2012-SB-43	7001550.0090	351803.7790
2012-SB-44	7001538.8420	351809.5610
2012-SB-45	7001535.3300	351811.6380
2012-SB-46	7001538.0040	351815.9010
2012-SB-47	7001544.2890	351819.5700
2012-SB-48	7001507.4310	351843.8620
2012-SB-49	7001503.9840	351839.6170
2012-SB-50	7001565.0370	351913.4120
2012-SB-51	7001562.2490	351914.1280
2012-SB-52	7001557.5600	351913.6970

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

WESA POINT CODE	NORTHING	EASTING
SB029-SS-061	7001541.4755	351817.4987
SB029-SS-062	7001541.0738	351808.8031
SB029-SS-063	7001557.0746	351810.0939
SB029-SS-065	7001564.6824	351825.8257
SB029-SS-066	7001541.9234	351826.3373
SB029-SS-067	7001556.4943	351872.8384
SB029-SS-068	7001557.3448	351906.6110
SB029-SW-060	7001535.4107	351829.6510

LEGEND

- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME
- CO-CONTAMINATED

EBA SAMPLE
(EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE
(WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM

CLIENT
Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU

DETAILED SITE PLAN
SHOWING SAMPLE LOCATIONS

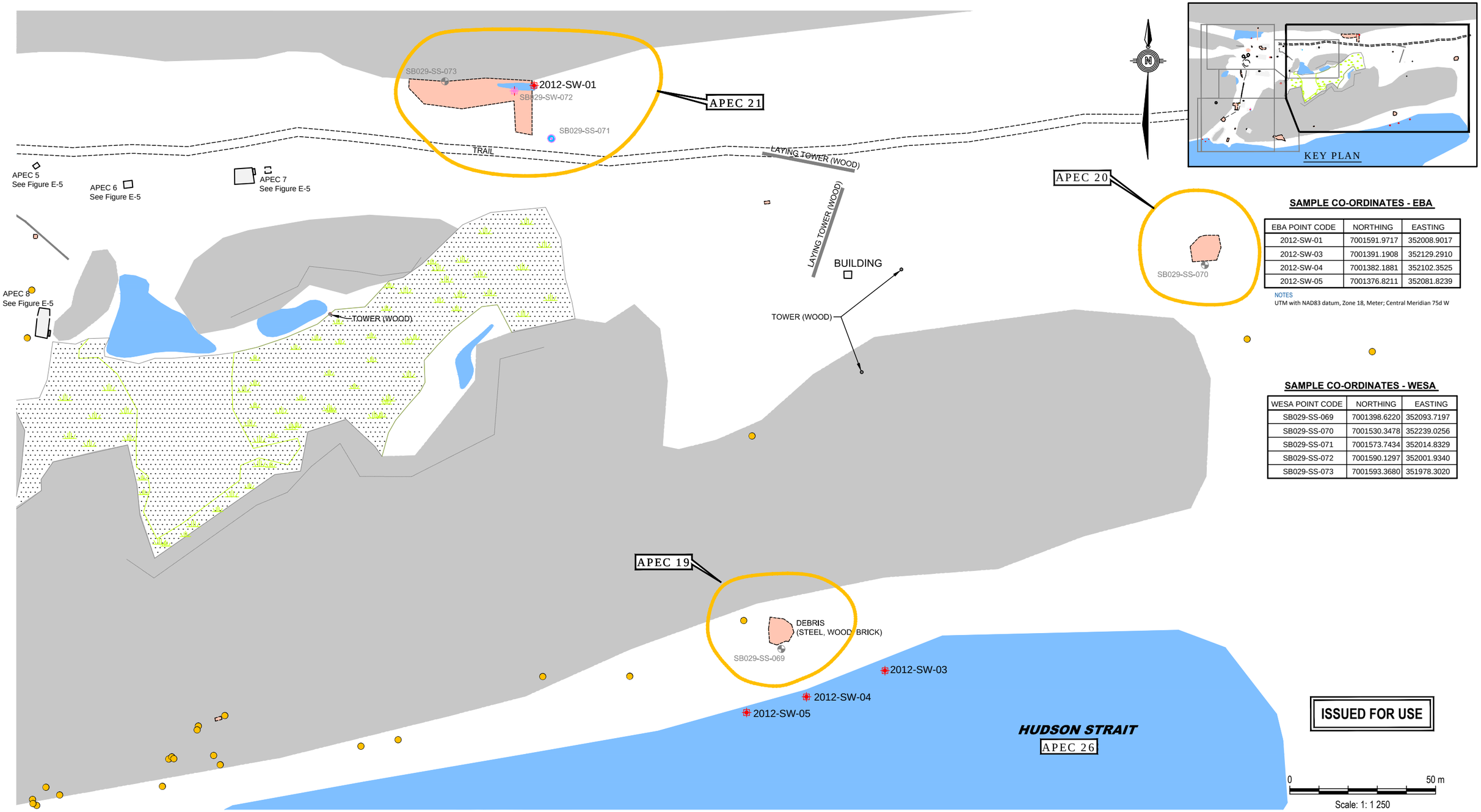
A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-5

Q:\Edmonton\Drafting\PROJECTS\Y221\Y22101291 Nottingham\report components\acad\Phase III\Environmental\Y22101291_Figure E1 to E7 nottingham FOR FINAL.dwg - [FIGURE E-5] January 09, 2013 - 9:38:09 am (BY: MARSH, MAUREEN)



SAMPLE CO-ORDINATES - EBA

EBA POINT CODE	NORTHING	EASTING
2012-SW-01	7001591.9717	352008.9017
2012-SW-03	7001391.1908	352129.2910
2012-SW-04	7001382.1881	352102.3525
2012-SW-05	7001376.8211	352081.8239

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

SAMPLE CO-ORDINATES - WESA

WESA POINT CODE	NORTHING	EASTING
SB029-SS-069	7001398.6220	352093.7197
SB029-SS-070	7001530.3478	352239.0256
SB029-SS-071	7001573.7434	352014.8329
SB029-SS-072	7001590.1297	352001.9340
SB029-SS-073	7001593.3680	351978.3020

ISSUED FOR USE

LEGEND

- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME

EBA SAMPLE
(EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE
(WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

- BUILDINGS
- DEBRIS
- WET LAND
- ROCK OUTCROP
- WATER
- POTENTIAL LANDFARM

CLIENT
Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

PHASE III ENVIRONMENTAL SITE ASSESSMENT FORMER WEATHER STATION NOTTINGHAM ISLAND, NU

DETAILED SITE PLAN SHOWING SAMPLE LOCATIONS

A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	MC	0

OFFICE: EDM
DATE: January 2013

Figure E-6

Q:\Edmonton\Drafting\PROJECTS\Y2211\Y22101291 Nottingham\report components\acad\Phase III\Environmental\Y22101291_Figure E1 to E7 nottingham FOR FINAL.dwg [FIGURE E-6] January 09, 2013 - 9:38:26 am (BY: MARSH, MAUREEN)

Q:\Edmonton\Drafting\PROJECTS\Y221\Y22101291 Nottingham\report components\acad\Phase III\Environmental\Y22101291_Figure E1 to E7 nottingham FOR FINAL.dwg [FIGURE E-7] January 09, 2013 - 9:38:46 am (BY: MARSH, MAUREEN)

KEY PLAN

APEC 14
APPROXIMATE LOCATION OF BACKGROUND SAMPLE BY WESA

2012-SW-02
WOOD DEBRIS
APEC 2
2012-SB-34
CONCRETE DEBRIS
SB029-SS-048
OLD KITCHEN
WOOD DEBRIS
SB029-SS-051
LAYING TOWER (STEEL)
2012-SB-35
DEBRIS AREA 3
APEC 15
FOOD CACHE STORAGE
APEC 18
APEC 1
2012-SB-31
SB029-SS-047
2012-SB-30
TANK
SOIL BERM
TANK
TANK
STORAGE SHED 01
CONCRETE DEBRIS
SURVEY REFERENCE POINT 2
2012-SB-29
SB029-SS-046
SB029-SW-055
2012-SB-26
2012-SB-27
2012-SB-25
2012-SB-24
2012-SB-28
HELIPAD
2012-SB-18
2012-SB-19
2012-SB-39
SB029-SS-049
2012-SB-37
2012-SB-36
2012-SB-38
2012-SB-32
2012-SB-33
SB029-SS-050
SB029-SS-045
2012-SB-17
SB029-SS-042
DEBRIS (STEEL PIPES)
2012-SW-12
GENERATOR BUILDING
2012-SB-12
2012-SB-16
2012-SB-13
2012-SB-20
2012-SB-21
SB029-SS-052
2012-SB-22
SB029-SS-056
2 x TANKS
SB029-SS-054
BUNKHOUSE
SB029-SS-057
SB029-SW-044
2012-SB-14
SB029-SS-040
SB029-SS-041
2012-SB-15
SB029-SS-058
SB029-SW-059
2012-SB-23
2012-SW-13
2012-SB-1
APEC 17
APEC 10
APEC 9
2012-SB-64
SB029-SS-039
2012-SB-63
APEC PIPELINE
CABLES (WITH WOODEN SUPPORTS)
APEC 11
2012-SB-62
2012-SB-10
2012-SB-09
TANK
SB029-SS-037
SB029-SS-036
2012-SB-61
TOWER (WOOD)
SB029-SS-032 / 031
HOUSE AND GARAGE
SB029-SS-035
2012-SB-60
2012-SB-08
DEBRIS (BUILDING REMNANTS, STEEL, WOOD AND CONCRETE)
SB029-SS-038
SB029-SW-034
2012-SB-58
SHED
2012-SW-09
APEC 16
2012-SB-07
DEBRIS (STEEL, PIPES)
2012-SB-06
TRACKED VEHICLE
APEC 12
2012-SB-59
TRAILER
2012-SB-57
DEBRIS (BUILDING REMNANTS, STEEL, WOOD AND SIDING)
2012-SB-02
2012-SB-01
2012-SB-53
2012-SB-54
2012-SB-05
APEC 13
2012-SB-04
SB029-SS-030
TANK
HOUSE
STEEL MINE CART
2012-SB-56
2012-SB-55
DEBRIS (STEEL PIPES, STEEL)
2012-SW-06
2012-SW-08
2012-SW-07
SCATTERED DEBRIS

ISSUED FOR USE

LEGEND
- SOIL SAMPLE
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- DRUM (s)
- APEC - AREA OF POTENTIAL ENVIRONMENTAL CONCERN
- APPROXIMATE LOCATION OF FORMER FUEL DISTRIBUTION LINE
- METALS PLUME
- PHC PLUME
- CO-CONTAMINATED
- BUILDINGS
- DEBRIS
- ROCK OUTCROP
- WATER

EBA SAMPLE
(EBA SAMPLE ID IN BLACK)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

WESA SAMPLE
(WESA SAMPLE ID IN GREY)
- BELOW APPLICABLE PHC CRITERIA
- ABOVE APPLICABLE PHC CRITERIA

0 25 m
Scale: 1: 750

CLIENT
Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU

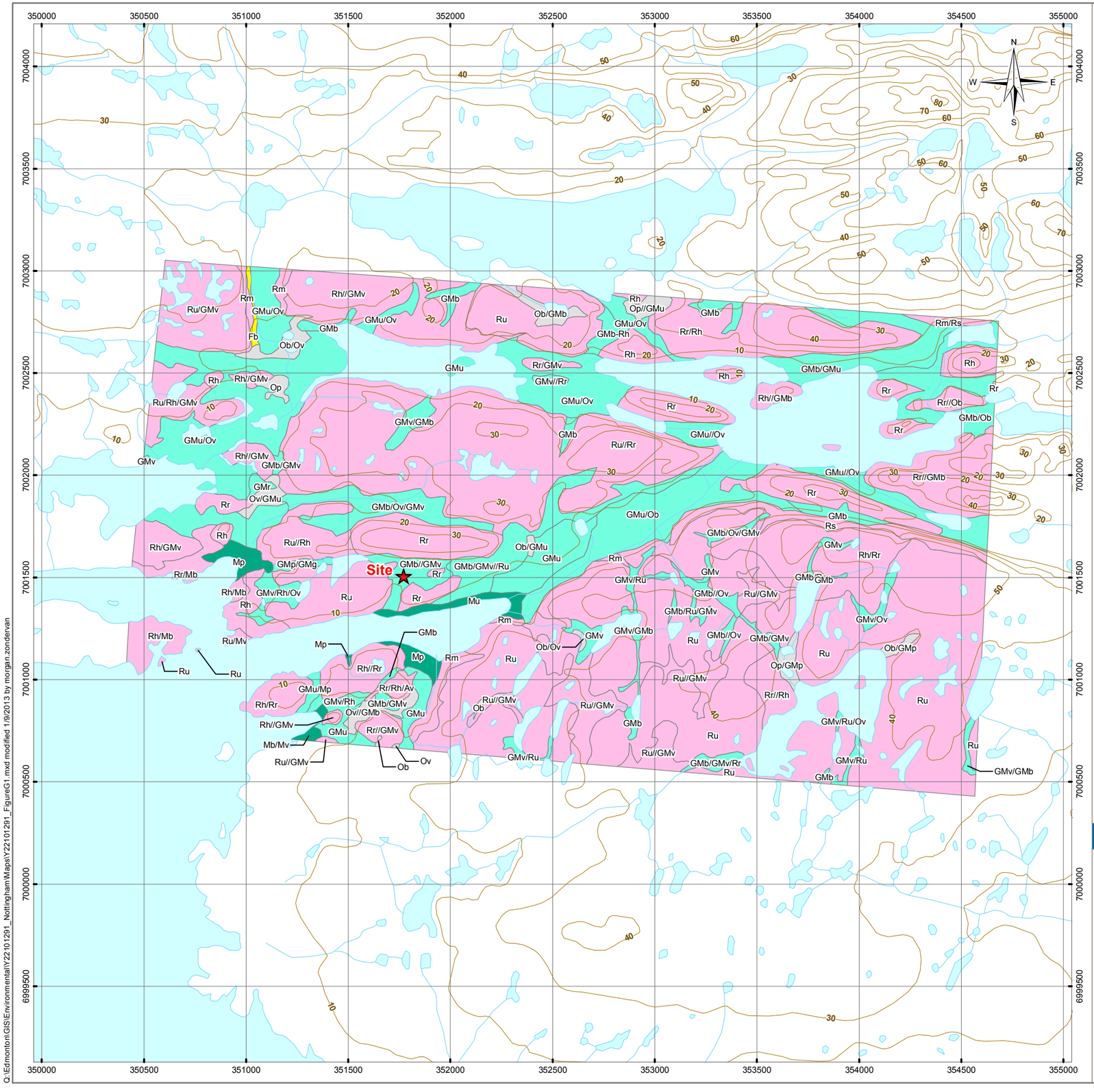
SOIL CONTAMINATION AREAS

eba A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	SW	0

OFFICE: EDM
DATE: January 2013

Figure E-7



SURFICIAL MATERIAL

O **Organic Deposit:** fibrous peat and organic mud; underlain by poorly drained sediment or bedrock. Forms veneers, blankets and plains.

F **Fluvial Deposit:** sediment deposited by modern streams in channels or as point bar or overbank deposits (synonymous with alluvial). Moderately to well sorted, bedded gravel and sand are common; silt, clay and organic matter are less common. Clasts are subround to well rounded.

M **Marine Deposit:** well sorted sand, silt and clay deposited in marine settings from suspension and turbidity currents; also beach ridges deposited by wave action and organic clay and silt deposited in lagoons and mud flats.

GM **Glaciomarine:** well sorted sand, silt and clay deposited in glaciomarine settings from suspension and turbidity currents, diamicton deposited in marine water near an ice front, and beach ridges deposited by wave action. Fine-grained deposits are commonly horizontally laminated and bedded, diamicton is massive and beach sediments are vaguely bedded and crossbedded. May include marine fossils of late Pleistocene or early Holocene age.

B **Bedrock:** quartz-feldspar gneiss of Proterozoic age; may be overlain by small, localized patches of organic or glaciomarine veneer.

SURFICIAL EXPRESSION

v **Veneer:** deposit less than 1 m thick; minor irregularities of the underlying unit (generally bedrock) are masked but the topographic form is obvious

b **Blanket:** deposit greater than 1 m thick; minor irregularities of the underlying unit (generally bedrock) are masked but the topographic form is still evident

p **Plain:** flat or relatively level landscape element; bedrock topography is masked

h **Hummocky:** random assemblage of mounds and depressions with no trend or parallelism; bedrock topography is masked

u **Undulating:** low relief, rolling terrain with no trend or parallelism; bedrock topography is masked

r **Ridge:** narrow, elongated and commonly steep-sided feature that rises above surrounding landscape; bedrock topography is masked (unless a bedrock ridge). Includes string bogs (Or).

g **Gentle Slope:** feature forms a slope of 5-15°.

m **Moderate Slope:** feature forms a slope of 16-35°.

s **Steep Slope:** feature forms a slope of more than 35°.

DELIMITERS

/ First component more common than second (e.g. Tv/Ov means till veneer covers 60-75% of polygon area, and organic veneer covers the rest).

// First component much more common than second (e.g. Tbv//Rr means a combination of till blanket and till veneer cover 80-95% of polygon area, with ridged bedrock covering the rest).

- First component approximately equal in proportion to the second.

TERRAIN CODE

Tv/Tb//GFb

First unit — Second unit — Third unit

Upper case letter = Surficial Material
Lower case letter = Surficial Expression

LEGEND

- Contour (10 m)
- Stream
- Waterbody

NOTES
Base data sources: CanVec

STATUS
ISSUED FOR USE

PHASE III ENVIRONMENTAL SITE ASSESSMENT FORMER WEATHER STATION NOTTINGHAM ISLAND, NU

Surficial Geology

PROJECTION	DATUM	CLIENT
UTM Zone 18	NAD83	PWGSC

Scale: 1:20,000
200 100 0 200 400
Metres

FILE NO.
Y22101291_FigureG1.mxd

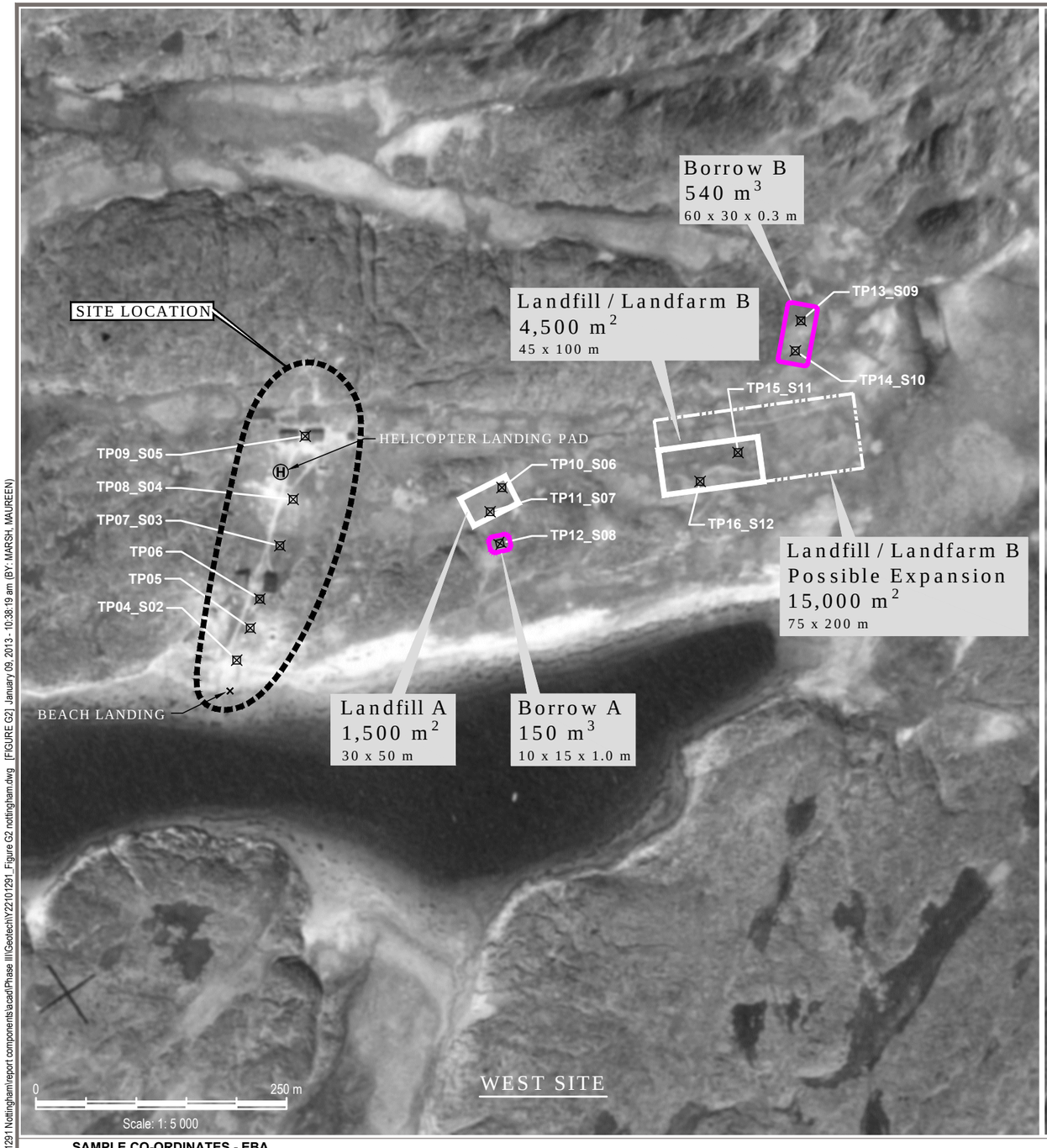
PROJECT NO.	DWN	CKD	APVD	REV
Y22101291	MEZ	SL	SMC	0

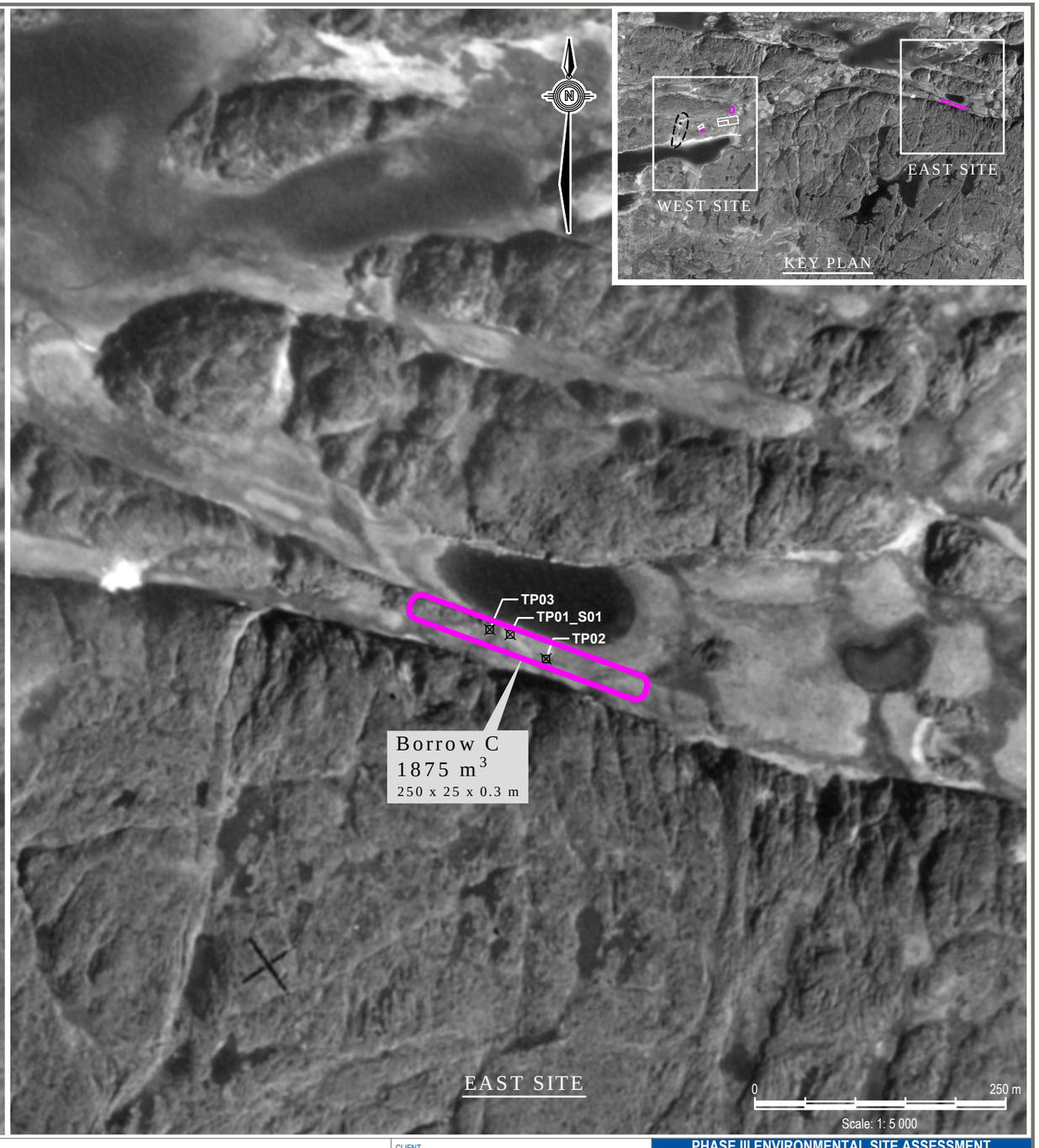
OFFICE	DATE
EBA-VANC	January 2013

eba
A TETRA TECH COMPANY

Figure G1

Q:\Edmonton\GIS\Environmental\Y22101291_NottinghamIsland\Maps\Y22101291_FigureG1.mxd modified 1/9/2013 by morgan.zondervan





SAMPLE CO-ORDINATES - EBA

EBA POINT CODE	NORTHING	EASTING
TP01_S01	7,001,730.7	354,442.2
TP02	7,001,706.2	354,477.8
TP03	7,001,735.5	354,421.7
TP04_S02	7,001,337.6	351,696.7
TP05	7,001,369.5	351,710.2
TP06	7,001,398.5	351,719.8
TP07_S03	7,001,451.6	351,739.8
TP08_S04	7,001,497.9	351,753.0

EBA POINT CODE	NORTHING	EASTING
TP09_S05	7,001,560.9	351,764.9
TP10_S06	7,001,509.5	351,961.2
TP11_S07	7,001,485.5	351,949.5
TP12_S08	7,001,453.9	351,959.2
TP13_S09	7,001,675.9	352,259.5
TP14_S10	7,001,645.9	352,253.9
TP15_S11	7,001,544.5	352,196.7
TP16_S12	7,001,515.7	352,158.9

NOTES
UTM with NAD83 datum, Zone 18, Meter; Central Meridian 75d W

ISSUED FOR USE

CLIENT

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT
FORMER WEATHER STATION
NOTTINGHAM ISLAND, NU
SITE PLAN SHOWING TESTPIT LOCATIONS AND AREAS OF BORROW, LANDFARM AND LANDFILL

PROJECT NO.	DWN	CKD	REV
Y22101291	MM	KK	0
OFFICE: EDM	DATE: January 2013		

Figure G2

O:\Edmonton\Drafting\PROJECTS\Y22\1\Y22101291 Nottingham\report components\acad\Phase III\GeotechIY22101291_Figure G2_nottingham.dwg - [FIGURE G2] - January 09, 2013 - 10:38:19 am (BY: MARSH, MAUREEN)

PHOTOGRAPHS

Photo A-1	The Site, looking East
Photo A-2	The Site, looking West
Photo A-3	The Shoreline, looking East
Photo H-1	APEC 1 - Storage Shed 01 - Exterior ACM siding and total and leachable lead paint on wood
Photo H-2	APEC 1 - Storage Shed 01 - Interior ACM wall and ceiling panels and ACM attic insulation on the ground
Photo H-3:	APEC 1-Storage Shed 01 - ACM attic insulation and fibreglass wall insulation is ACM contaminated from the attic
Photo H-4	APEC 2 - Old Kitchen - Total and leachable lead paint on exterior and some interior wood
Photo H-5:	APEC 2 - Old Kitchen - Interior debris
Photo H-6:	APEC 3 - New Radio Building - exterior ACM siding and total and leachable lead paint on wood
Photo H-7:	APEC 3 - New Radio Building - ACM light backings, ACM and total and leachable lead painted and ACM wall and ceiling panels and total and leachable lead painted metal ducts
Photo H-8:	APEC 3 - New Radio Building - Mercury, PCBs and lead solder in electrical components, and total and leachable lead paint on metal electrical
Photo H-9:	APEC 3 - New Radio Building - ACM attic insulation and fibreglass wall insulation is ACM contaminated from the attic
Photo H-10:	APEC 3 - Small Shed - attached to the New Radio Building, total and leachable lead paint on wood and electrical box inside and mercury, PCBs and lead solder in electrical components
Photo H-11:	APEC 3 - New Radio Building - Total and leachable lead paint on fallen metal pole adjacent to the New Radio Building
Photo H-12:	APEC 4 - Old Radio Building - Total and leachable lead painted wood
Photo H-13:	APEC 4 - Old Radio Building Interior - Lead acid batteries and total lead painted particulate board
Photo H-14:	APEC 5 - Outhouse - Total and leachable lead painted wood and ACM green shingles on roof
Photo H-15:	APEC 6 - Storage Shed 02 - ACM green shingles on walls and roof

PHOTOGRAPHS

Photo H-16: APEC 6 - Storage Shed 02 - Metal debris

Photo H-17: APEC 6 - Storage Shed 02 - Cables adjacent to Storage Shed 02

Photo H-18: APEC 7 - Storage Building - ACM exterior siding, ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic, and total and leachable lead painted wood

Photo H-19: APEC 7 - AST (900L) - With organic content

Photo H-20: APEC 7 - Storage Building - Interior ACM panels and mercury, PCBs and lead solder in electrical components

Photo H-21: APEC 7 - Small Shed - adjacent to the Storage Building ACM exterior siding and total and leachable lead painted wood

Photo H-22: APEC 8 - Chicken Coop - ACM shingles and total and leachable lead painted wood

Photo H-23: APEC 8 - Chicken Coop - AST (900L) with organic content

Photo H-24: APEC 8 - Chicken Coop - interior ACM insulation and total lead painted particulate board

Photo H-25: APEC 9 - Bunkhouse - Total and leachable lead painted wood and ASTs (900L) with organic content

Photo H-26: APEC 9 – Bunkhouse - ACM Total and leachable lead painted panels and wood

Photo H-27: APEC 9 - Bunkhouse Bathroom - Total and leachable lead painted metal tank

Photo H-28: APEC 9 - Bunkhouse - Furnaces ACM gaskets

Photo H-29: APEC 10 - Generator Building - Total and leachable lead painted wood and ACM exterior, bottom panels

Photo H-30: APEC 10 - Generator Building – Mercury, PCBs and lead in electrical components, PCBs in light ballasts and mercury vapour in fluorescent lights

Photo H-31: APEC 10 - Generator Building - Total lead painted and equipment contents in three generators, lead acid batteries and ACM, total and leachable lead painted panels

Photo H-32: APEC 10 - Generator Building - Total and leachable lead painted wood and fibreglass insulation (not asbestos containing)

Photo H-33: APEC 11 - House and Garage - ACM siding and total and leachable lead painted wood

PHOTOGRAPHS

Photo H-34: APEC 11 - House and Garage - ACM panels

Photo H-35: APEC 11 - House and Garage - ACM panels, ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic, ACM light backings, PCBs in light ballasts

Photo H-36: APEC 11 - Building Frame - adjacent to House and Garage

Photo H-37: APEC 12 - Shed - Total and leachable painted equipment and equipment contents

Photo H-38: APEC 12 –Shed - ACM panels inside

Photo H-39: APEC 13 - House - Total and leachable lead painted wood and metal

Photo H-40: APEC 13 - House – ACM panels and total and leachable lead painted wood

Photo H-41: APEC 13 - House - Total and leachable lead painted particulate board

Photo H-42: APEC 13 - House - Total and leachable lead painted equipment adjacent to House

Photo H-43: APEC 13 - House – Attic insulation in front, older part of house (not asbestos containing)

Photo H-44: APEC 13 - House – ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic in back, newer half of house

Photo H-45: APEC 14 - AST Tank Farm - Total lead painted ASTs

Photo H-46: APEC 14 - AST Tank Farm - AST interior

Photo H-47: APEC 15 - Food Cache Storage

Photo H-48: APEC 16 - Debris Area 01 - Burnt building

Photo H-49: APEC 18 - Debris Area 03 - Concrete cubes

Photo H-50: APEC 19 - Debris Area 04 - Main dump area contains lead acid batteries

Photo H-51: APEC 20 - Debris Area 05 - Total and leachable lead painted wood on building and creosote soaked wood on bottom of wood poles

Photo H-52: APEC 26 - Hudson Strait – Debris

Photo H-53: Various drums from ASTs to Hudson Strait

PHOTOGRAPHS

Photo H-54:	Various debris throughout site, unpainted wood staircase
Photo G-1	Terrain near the Nottingham Island Weather Station, looking west
Photo G-2	The site is located on the north shore of a shallow and narrow inlet, looking east.
Photo G-3	The beach south of the site, looking east.
Photo G-4	The beach looking northwest from helicopter.
Photo G-5	The site looking south to beach and ground surface covered in mosses and tundra vegetation.
Photo G-6	Organic layer overlying gravelly sand in testpit TP05, looking southwest.
Photo G-7	Bedrock ridge on north side of the site, looking west.
Photo G-8	Low-lying bedrock outcrops and bedrock-controlled terrain on east side of the site, looking west.
Photo G-9	Wide valley east of the site, looking east. Bedrock ridge seen in Photo G7 is on the left and Lake #1 is at the end of the valley.
Photo G-10	The trail east of the site, looking east.
Photo G-11	The trail east of the site, looking east. Boulders have been cleared and there is no embankment.
Photo G-12	The trail east of site approaching Lake #2, looking east. Moderate rutting and shell fragments visible on the trail.
Photo G-13	East of the site and east of Lake #2, looking south. Note subsidence of the trail in poorly-drained organic deposit.
Photo G-14	The trail on the east of the site between Lake #1 and Lake #2, looking southeast. The condition of the rail is poor.
Photo G-15	Landing area on the beach south of site, looking south.
Photo G-16	Beach landing south of site, looking north from helicopter
Photo G-17	Ramp of wooden boards leading from beach to the site, looking north.
Photo G-18	Helipad delineated with painted stones to the right of the fuel tanks, looking southwest.
Photo G-19	Borrow A, looking south.

PHOTOGRAPHS

Photo G-20	Borrow A, looking southwest
Photo G-21	Borrow A, looking south.
Photo G-22	Borrow A, looking west.
Photo G-23	Borrow B in the foreground of the photo, looking southeast
Photo G-24	Borrow B on right side of the photo, looking east
Photo G-25	Borrow B at base of the rock outcrop, looking west.
Photo G-26	Borrow B in the mid-ground, looking south.
Photo G-27	Borrow C, looking west.
Photo G-28	Borrow C, looking east.
Photo G-29	Borrow C, looking southwest
Photo G-30	Testpit (TP01) at Borrow C
Photo G-31	Landfill A, looking west.
Photo G-32	Landfill A, looking south. Borrow A is located in the middle of the photo, on the far side of the landfill area.
Photo G-33	Landfill A, looking north.
Photo G-34	Testpit (TP10) at Landfill A. Material was gravelly sand with some fines, fine to coarse subangular gravel, well-graded, damp, loose, brown/grey.
Photo G-35	Testpit (TP11) at Landfill A. Material was sand with some gravel and fines, fine to coarse subangular gravel, well-graded, damp, loose, medium brown.
Photo G-36	Patterned ground at Landfill A. Fine-grained material at the surface is evidence of frost susceptible soil and possibly ice-rich permafrost.
Photo G-37	Landfarm B to the right (south) of the road, looking east.
Photo G-38	Landfarm B, looking southeast.
Photo G-39	Landfarm B, looking northeast.

PHOTOGRAPHS

Photo G-40 Landfarm B, looking southeast.

Photo A1: The site, looking east

Photo A2: The site, looking west

Photo A3: The shoreline, looking east

Photo H-1: APEC 1 - Storage Shed 01 - Exterior ACM siding and total and leachable lead paint on wood

Photo H-2: APEC 1 - Storage Shed 01 - Interior ACM wall and ceiling panels and ACM attic insulation on the ground

Photo H-3: APEC 1 - Storage Shed 01 - ACM attic insulation and fibreglass wall insulation is ACM contaminated from the attic

Photo H-4: APEC 2 - Old Kitchen - Total and leachable lead paint on exterior and some interior wood

Photo H-5: APEC 2 - Old Kitchen - Interior debris

Photo H-6: APEC 3 - New Radio Building - Exterior ACM siding and total and leachable lead paint on wood

Photo H-7: APEC 3 - New Radio Building - ACM light backings, ACM and total and leachable lead painted and ACM wall and ceiling panels and total and leachable lead painted metal ducts

Photo H-8: APEC 3 - New Radio Building - Mercury, PCBs and lead solder in electrical components, and total and leachable lead paint on metal electrical boxes

Photo H-9: APEC 3 - New Radio Building - ACM attic insulation and fibreglass wall insulation is ACM contaminated from the attic

Photo H-10: APEC 3 - Small Shed - attached to the New Radio Building, total and leachable lead paint on wood and electrical box inside and mercury, PCBs and lead solder in electrical components

Photo H-11: APEC 3 - New Radio Building - Total and leachable lead paint on fallen metal pole adjacent to the New Radio Building

Photo H-12: APEC 4 - Old Radio Building - Total and leachable lead painted wood

Photo H-13: APEC 4 - Old Radio Building Interior - Lead acid batteries and total lead painted particulate board

Photo H-14: APEC 5 - Outhouse - Total and leachable lead painted wood and ACM green shingles on roof

Photo H-15: APEC 6 - Storage Shed 02 - ACM green shingles on walls and roof

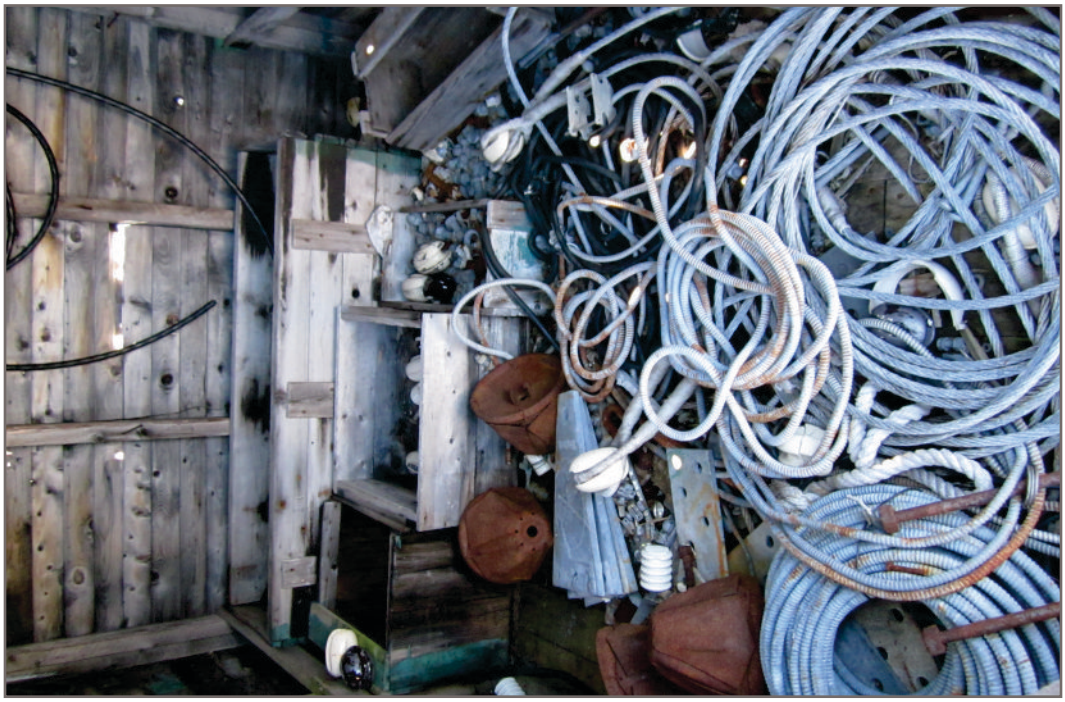


Photo H-16: APEC 6 - Storage Shed 02 - Metal debris

Photo H-17: APEC 6 - Storage Shed 02 - Cables adjacent to Storage Shed 02

Photo H-18: APEC 7 - Storage Building - ACM exterior siding, ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic, and total and leachable lead painted wood

Photo H-19: APEC 7 - AST (900L) - With organic content

Photo H-20: APEC 7 - Storage Building - Interior ACM panels and mercury, PCBs and lead solder in electrical components

Photo H-21: APEC 7 - Small Shed - adjacent to the Storage Building ACM exterior siding and total and leachable lead painted wood

Photo H-22: APEC 8 - Chicken Coop - ACM shingles and total and leachable lead painted wood

Photo H-23: APEC 8 - Chicken Coop - AST (900L) with organic content

Photo H-24: APEC 8 - Chicken Coop - interior ACM insulation and total lead painted particulate board

Photo H-25: APEC 9 - Bunkhouse - Total and leachable lead painted wood and ASTs (900L) with organic content

Photo H-26: APEC 9 – Bunkhouse - ACM Total and leachable lead painted panels and wood

Photo H-27: APEC 9 - Bunkhouse Bathroom - Total and leachable lead painted metal tank

Photo H-28: APEC 9 - Bunkhouse - Furnaces ACM gaskets

Photo H-29: APEC 10 - Generator Building - Total and leachable lead painted wood and ACM exterior, bottom panels

Photo H-30: APEC 10 - Generator Building – Mercury, PCBs and lead in electrical components, PCBs in light ballasts and mercury vapor in fluorescent lights

Photo H-31: APEC 10 - Generator Building - Total lead painted and equipment contents in three generators, lead acid batteries and ACM, total and leachable lead painted panels

Photo H-32: APEC 10 - Generator Building - Total and leachable lead painted wood and fibreglass insulation (not asbestos containing)

Photo H-33: APEC 11 - House and Garage - ACM siding and total and leachable lead painted wood

Photo H-34: APEC 11 - House and Garage - ACM panels

Photo H-35: APEC 11 - House and Garage - ACM panels, ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic, ACM light backings, PCBs in light ballasts

Photo H-36: APEC 11 - Building Frame - adjacent to House and Garage

Photo H-37: APEC 12 - Shed - Total and leachable painted equipment and equipment contents

Photo H-38: APEC 12 –Shed - ACM panels inside

Photo H-39: APEC 13 - House - Total and leachable lead painted wood and metal

Photo H-40: APEC 13 - House – ACM panels and total and leachable lead painted wood

Photo H-41: APEC 13 - House - Total and leachable lead painted particulate board

Photo H-42: APEC 13 - House - Total and leachable lead painted equipment adjacent to House

Photo H-43: APEC 13 - House – Attic insulation in front, older part of house (not asbestos containing)

Photo H-44: APEC 13 - House – ACM attic insulation, fibreglass wall insulation is ACM contaminated from the attic in back, newer half of house

Photo H-45: APEC 14 - AST Tank Farm - Total lead painted ASTs

Photo H-46: APEC 14 - AST Tank Farm - AST interior

Photo H-47: APEC 15 - Food Cache Storage

Photo H-48: APEC 16 - Debris Area 01 - Burnt building

Photo H-49: APEC 18 - Debris Area 03 - Concrete cubes

Photo H-50: APEC 19 - Debris Area 04 - Main dump area contains lead acid batteries

Photo H-51: APEC 20 - Debris Area 05 - Total and leachable lead painted wood on building and creosote soaked wood on bottom of wood poles

Photo H-52: APEC 26 - Hudson Strait - Debris

Photo H-53: Various drums from ASTs to Hudson Strait

Photo H-54: Various debris throughout site, unpainted wood staircase

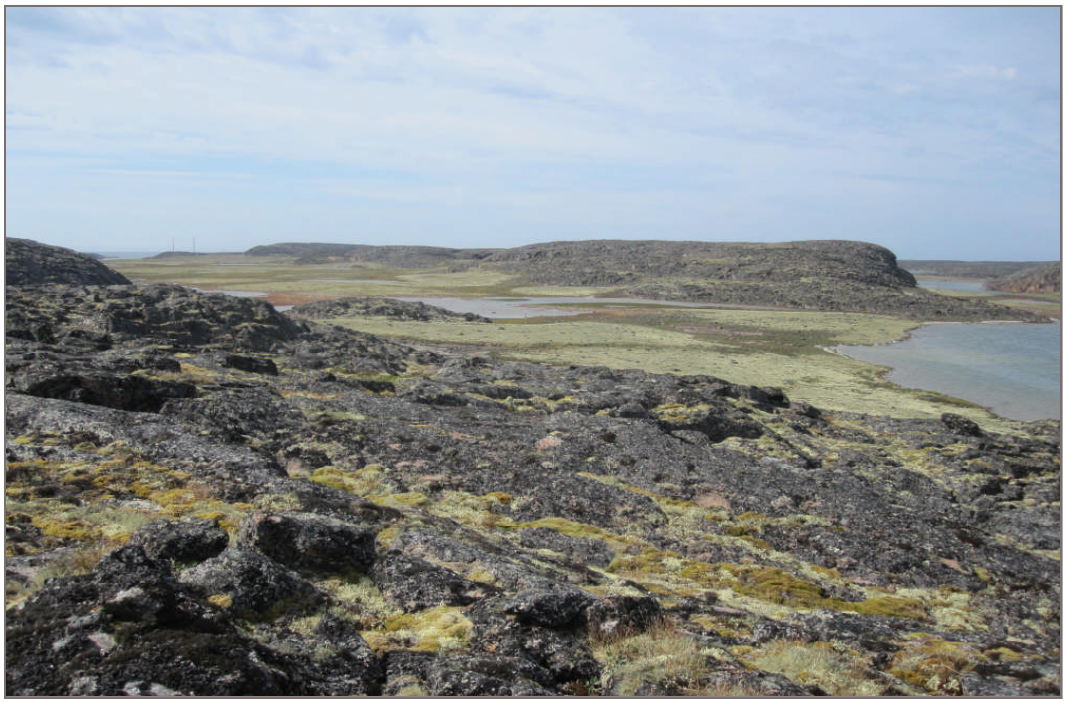


Photo G1: Terrain near the Nottingham Island Weather Station, looking west. Poles at the site are visible on the horizon on the left side of the photo. Lake #1 is on the right.

Photo G2: The site is located on the north shore of a shallow and narrow inlet, looking east.

Photo G3: The beach south of the site, looking east.

Photo G4: The beach looking northwest from helicopter.

Photo G5: The site looking south to beach and ground surface covered in mosses and tundra vegetation.

Photo G6: Organic layer overlying gravelly sand in testpit TP05, looking southwest.

Photo G7: Bedrock ridge on north side of the site, looking west.

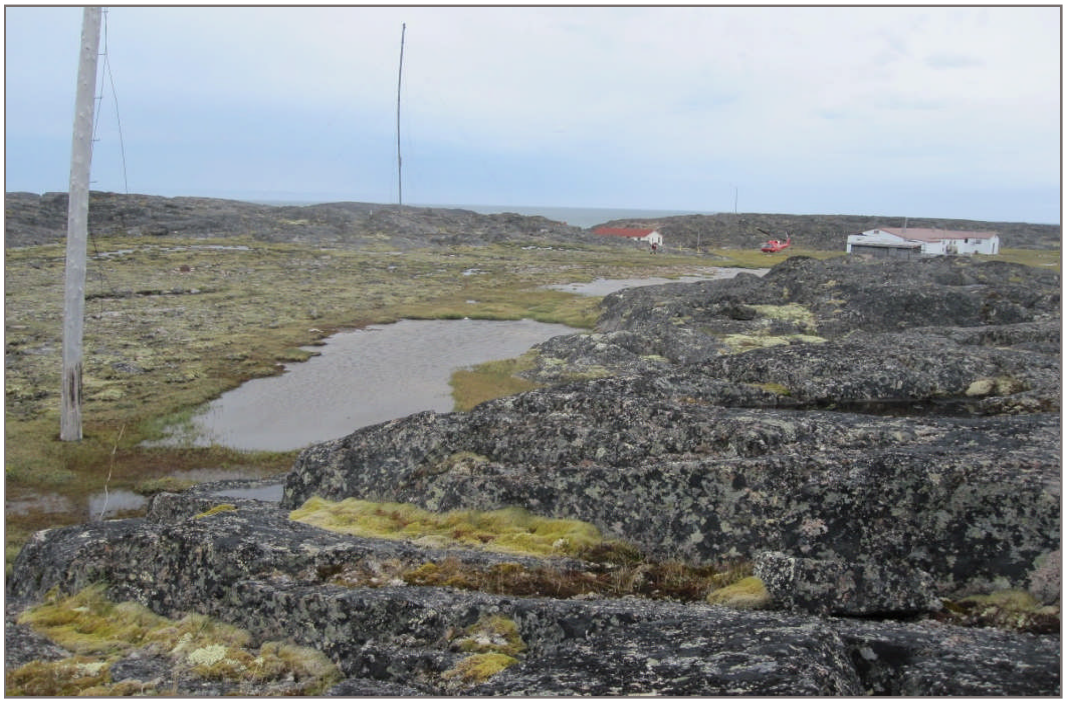


Photo G8: Low-lying bedrock outcrops and bedrock-controlled terrain on east side of the site, looking west.

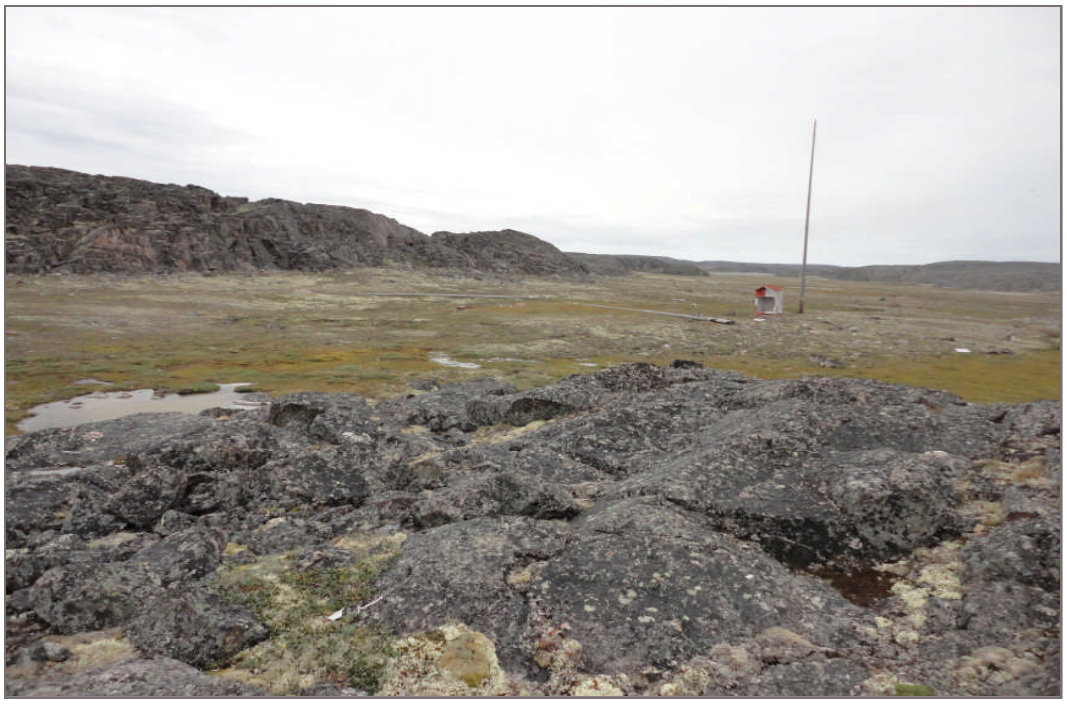


Photo G9: Wide valley east of the site, looking east. Bedrock ridge seen in Photo G7 is on the left and Lake #1 is at the end of the valley.

Photo G10: The trail east of the site, looking east.

Photo G11: The trail east of the site, looking east. Boulders have been cleared and there is no embankment.

Photo G12: The trail east of site approaching Lake #2, looking east. Moderate rutting and shell fragments visible on the trail.

Photo G13: East of the site and east of Lake #2, looking south. Note subsidence of the trail in poorly-drained organic deposit.

Photo G14: The trail on the east of the site between Lake #1 and Lake #2, looking southeast. The condition of the trail is poor.

Photo G15: Landing area on the beach south of site, looking south.

Photo G16: Beach landing south of site, looking north from helicopter.

Photo G17: Ramp of wooden boards leading from beach to the site, looking north.

Photo G18: Helipad delineated with painted stones to the left of the fuel tanks, looking southwest.

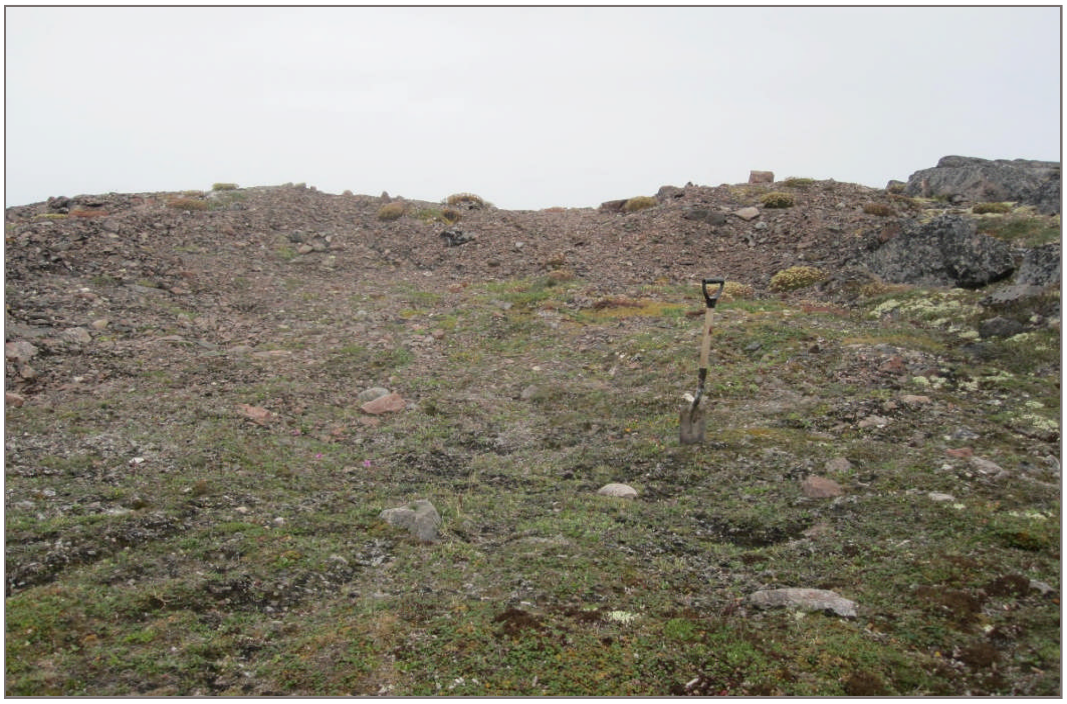


Photo G19: Borrow A, looking south.

Photo G20: Borrow A, looking southwest

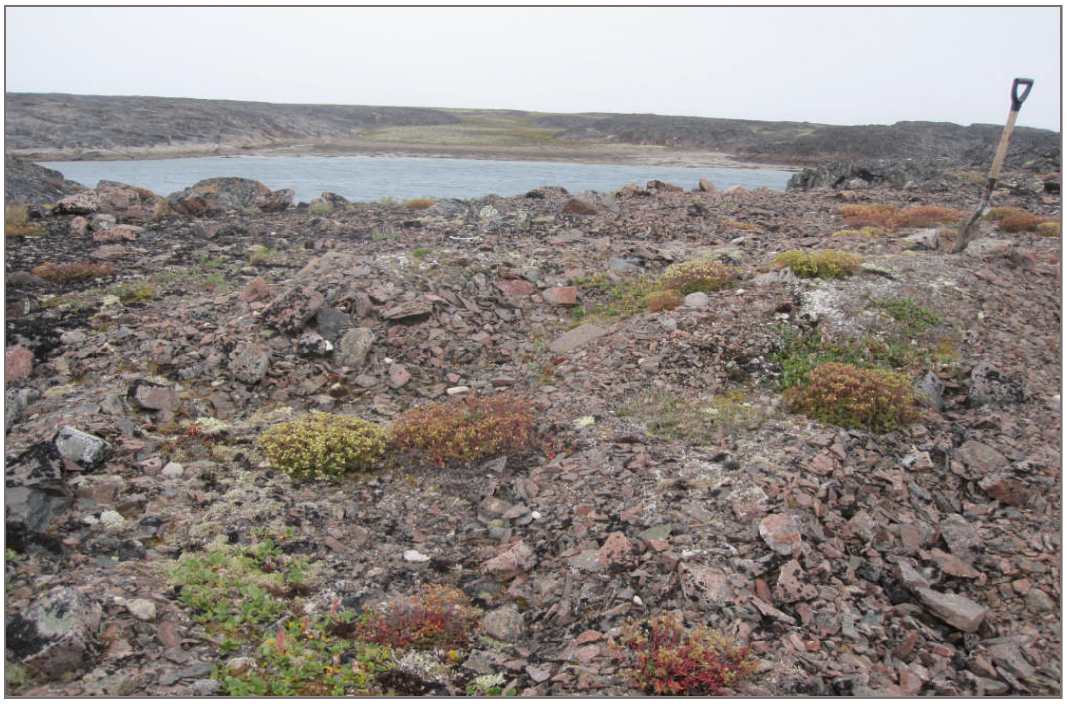


Photo G21: Borrow A, looking south.

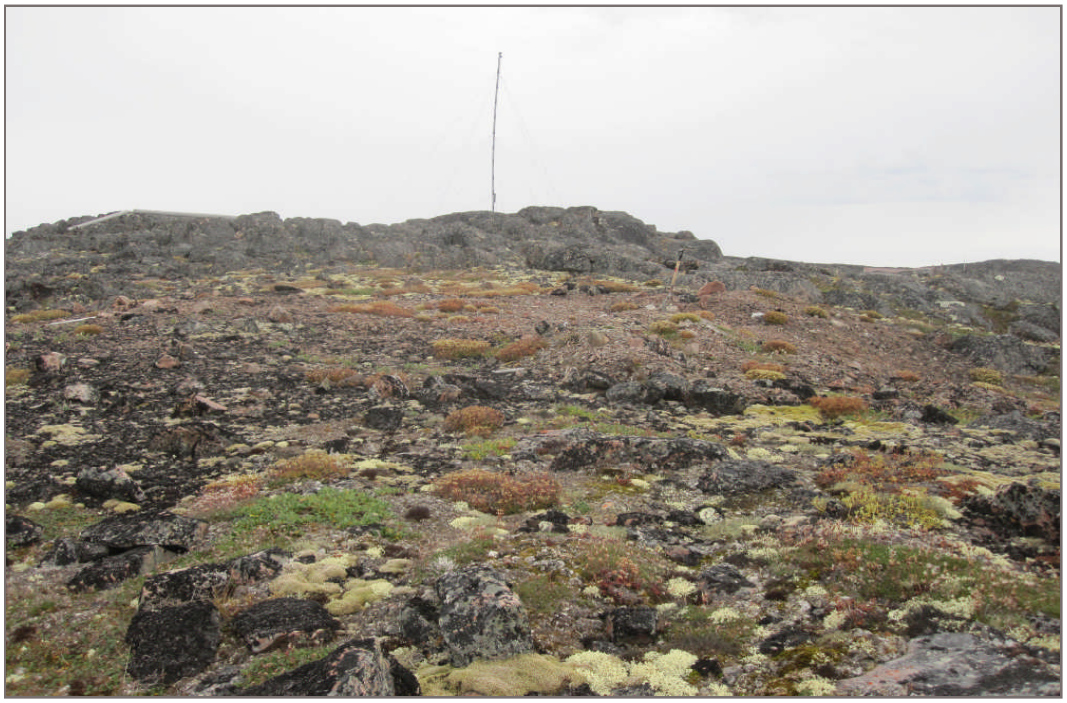


Photo G22: Borrow A, looking west.

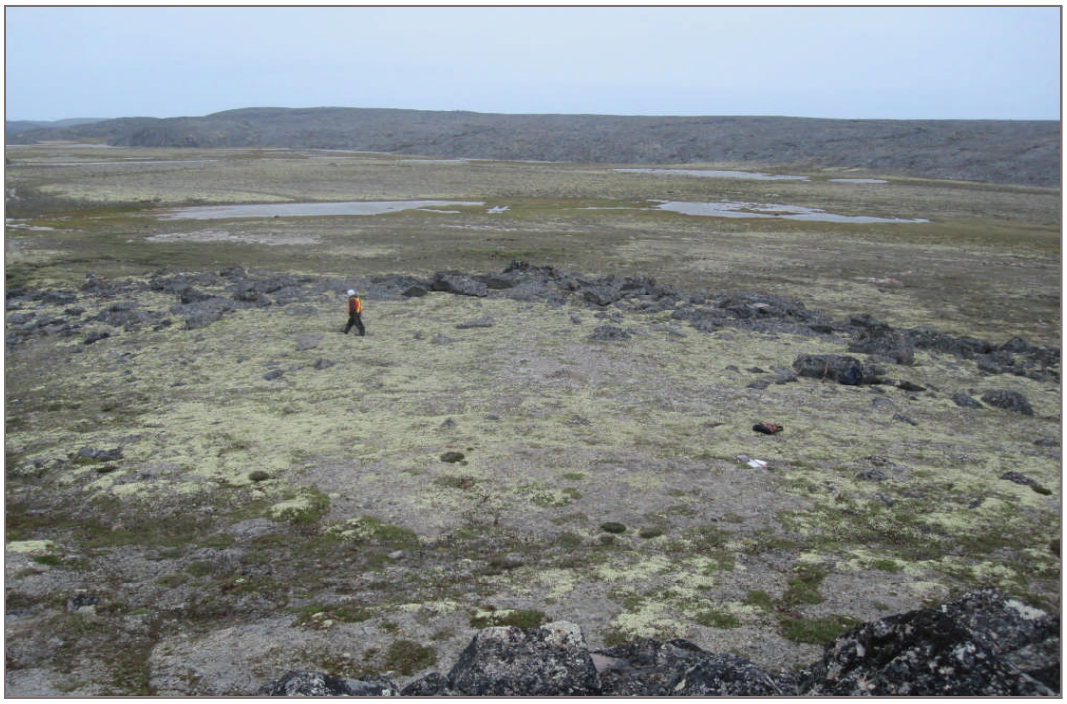


Photo G23: Borrow B in the foreground of the photo, looking southeast

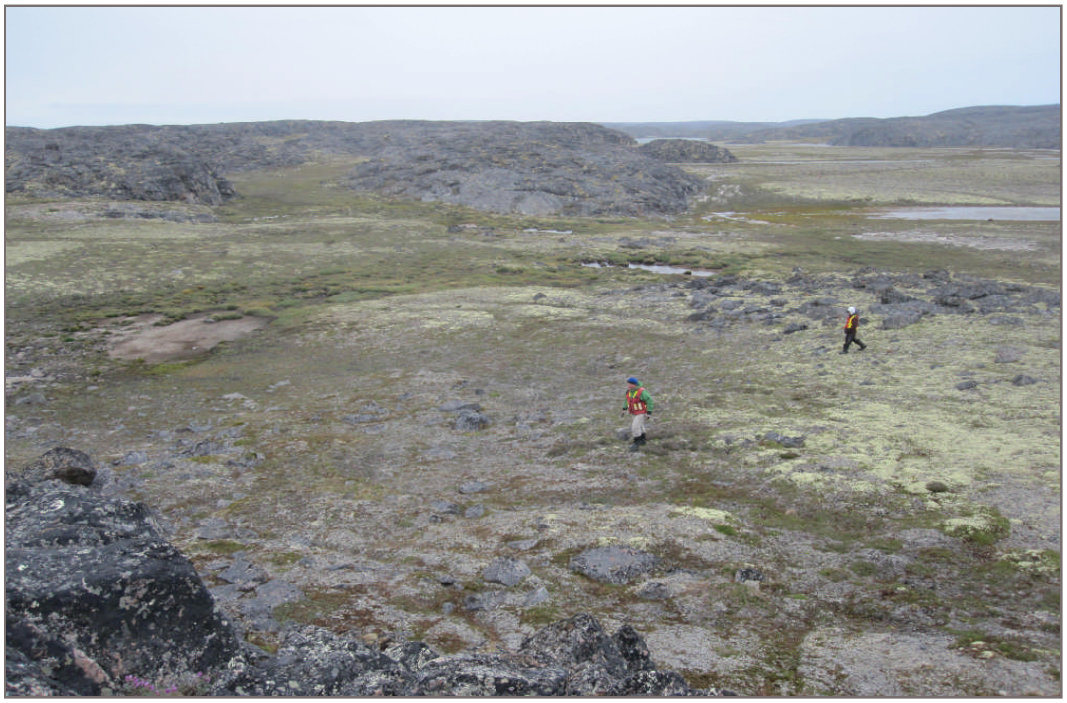


Photo G24: Borrow B on right side of the photo, looking east

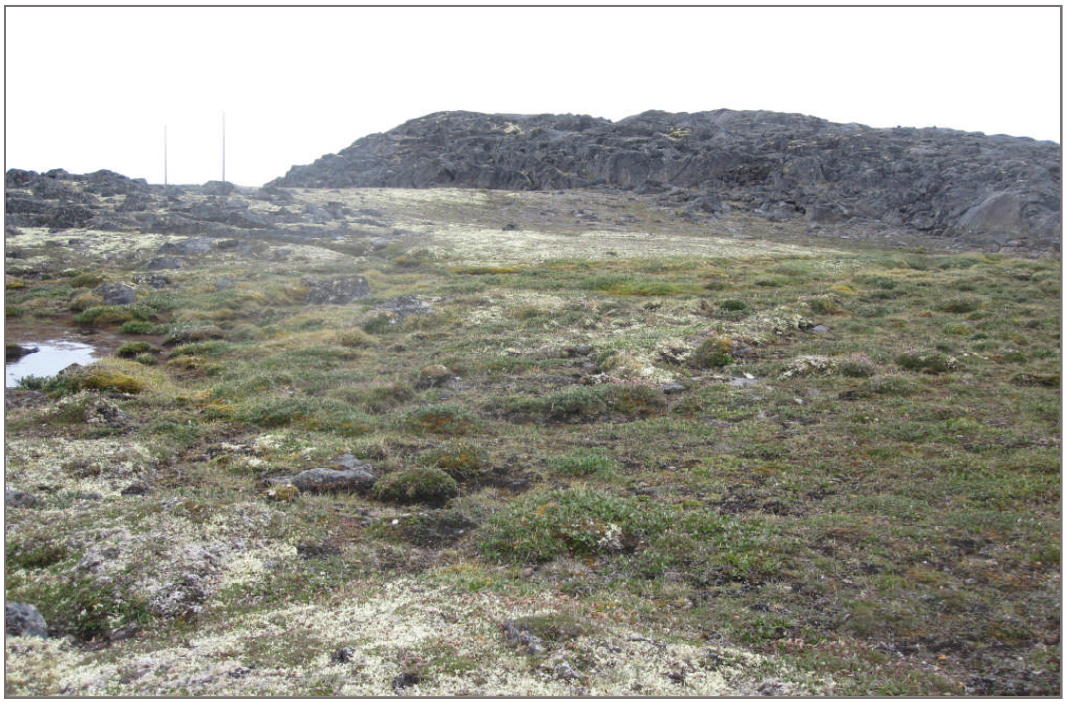


Photo G25: Borrow B at base of the rock outcrop, looking west. Poles at site are visible on left side of the photo.

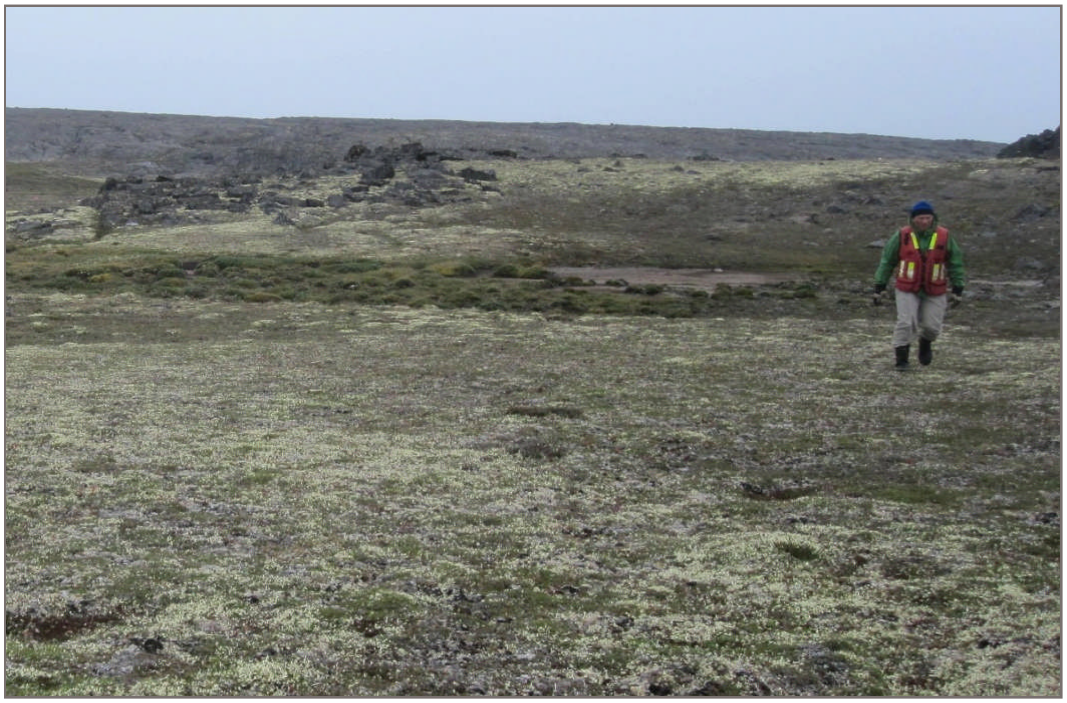


Photo G26: Borrow B in the mid-ground, looking south.

Photo G27: Borrow C, looking west.

Photo G28: Borrow C, looking east.

Photo G29: Borrow C, looking southwest.

Photo G30: Testpit (TP01) at Borrow C. Material was sand and gravel with trace fines, some subangular cobbles, fine to coarse subangular gravel, well-graded, damp, medium brown, shell fragments.

Photo G31: Landfill A, looking west.

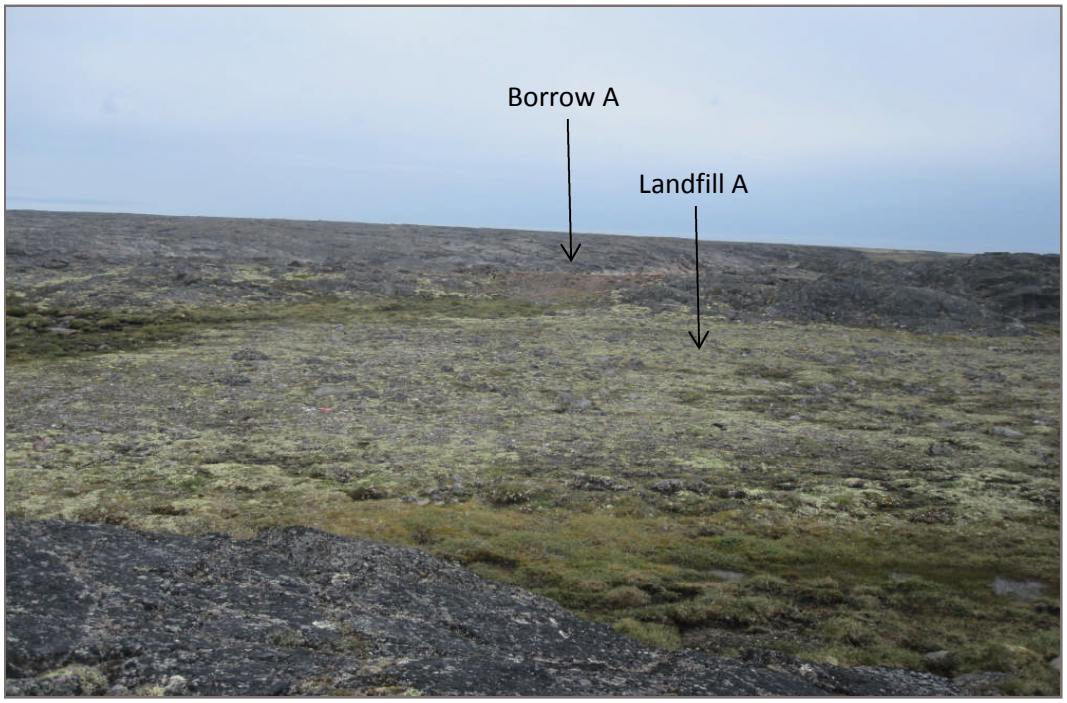


Photo G32: Landfill A, looking south. Borrow A is located in the middle of the photo, on the far side of the landfill area.

Photo G33: Landfill A, looking north.

Photo G34: Testpit (TP10) at Landfill A. Material was gravelly sand with some fines, fine to coarse subangular gravel, well-graded, damp, brown/grey. Boulders 70-80% covered the surface.

Photo G35: Testpit (TP11) at Landfill A. Material was sand with some gravel and fines, fine to coarse subangular gravel, well-graded, damp, medium brown.

Photo G36: Patterned ground at Landfill A. Fine-grained material at the surface is evidence of fine-grained, frost-susceptible soil conditions.

Photo G37: Landfarm B to the right (south) of the road, looking east.

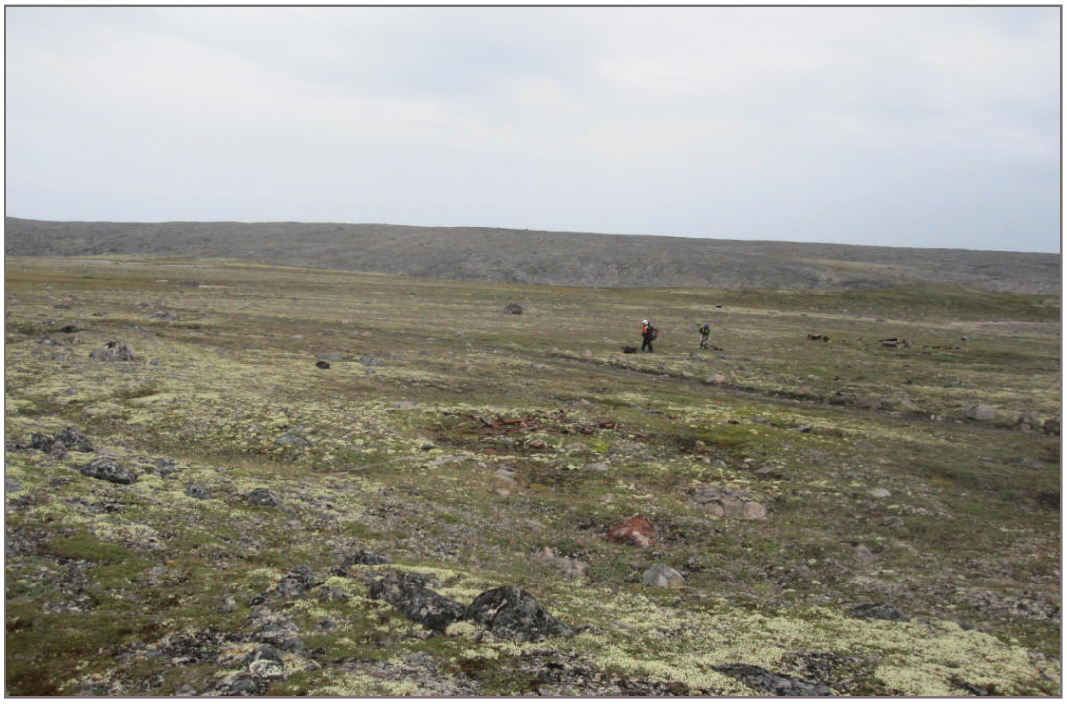


Photo G38: Landfarm B, looking southeast.

Photo G39: Landfarm B, looking northeast.

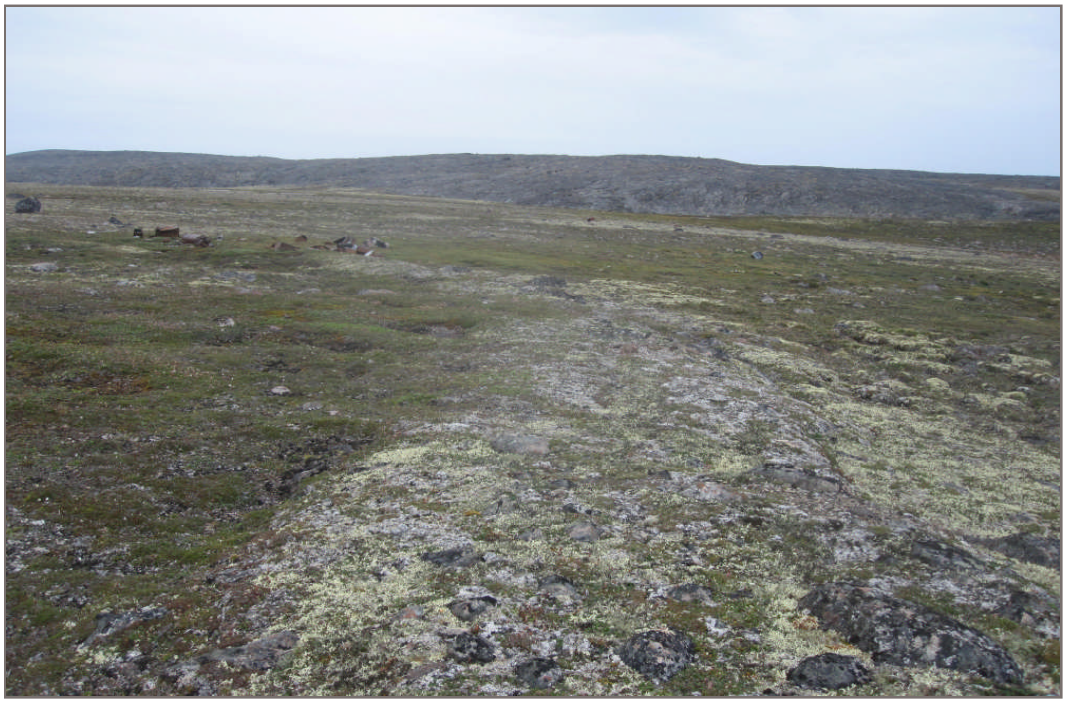


Photo G40: Landfarm B, looking southeast.

APPENDIX A

RECORDS REVIEW AND DATA GAP ANALYSIS

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

APEC ID (WESA)/Location	Contaminant of Concern	Criteria Applied to COC (WESA)	Criteria for Phase III ESA/RAP (EBA)	Location/Distance to water/sensitive receptor	Observations (staining/odours)	Number of Type/Samples/Depth/Parameter exceeding applied guideline	WESA estimated volumes	GAP Analysis	Conclusions
APEC 1 Storage Shed 01- Building Size: 9m x 17m Surrounding Features East of APEC 14-AST Tank farm Southeast of APEC 18 Debris Area 3 Fuel Storage: Indoor Furnace No AST present at time of WESA investigation (photo review)	Soil: PHCs,Metals, Water: PHC/Metals in potential drainage path	Agricultural CSQG Coarse,	AMSRP	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	Soil Samples: South of stairs SS-050(0.05-0.1)-no exceedances SW Corner SS-049(0.05-0.15)-no exceedance AST: no information regarding Historic location (photo indicates Southwest side of building) not sampled	Soil=210m3 Not broken down by APEC Total volume entire site WESA	Soil: no samples taken at the potential AST locations(photolog WESA), PSA needed to determine coarse or fine grained.	Soil: Hydrocarbon soil samples required at possible AST locations.
APEC 2 Old Kitchen Building Size: 8mx18m Surrounding Site Features: North of APEC 1, Northeast of APEC 14 AST Tank Farm Fuel Storage: None noted(photo review)	Soil: PHCs,Metals, Water: None	Agricultural CSQG Coarse,	AMSRP	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	Soil Samples: Southeast of Building SS-051 No Exceedance AST: No location noted	Soil: 4m3 not broken down by APEC Total volume entire site WESA	No comment regarding heating source. if there is a AST present it was not indicated or sampled for.	Soil: Further visual assessment for hydrocarbons: Soil samples not taken at possible AST locations if present., determination of heating source needed
APEC 3 New Radio Building(NRB) Building Size: 5mx13m and Shed East of NRB Building Size not recorded in WESA Notes Surrounding Features: Drainage Pathway to the East and south of building Located to the south of Old Radio Building and West of Old Kitchen/Storage Shed 01 Fuel Storage: AST on South Side of Building Dilapidated (Photos) Fuel Lines not defined on building	Soil: PHCs and Metals Water: Metals, possibly PHCs	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP CCME FWAL/MWAL	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact <10m to water	No odour noted	NRB: Soil Samples: Southeast of NRB: SS-061(0.05-0.1) No exceedances Southwest -SS-062(0.1-0.15) Cu, Pb, Type B hydrocarbons North SS-063(0.01-0.1) No exceedances South of Shed SS-066(0.15-0.2) No exceedances Surface Water: SW-059 Al, Cr(IV),Cu, Fe, Se SW-060-no exceedance	Soil: 12m3 not broken down by APEC Total volume entire site WESA	Soil volumes were based on limited samples all at surface. The area to the southwest of the building had Metals and PHC impacts. PSA required to confirm grain type of soil.	Soil: Further investigation is needed to delineate horizontally and vertically the Hydrocarbon impacts.

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APEC 4 Old Radio Building Building Size: 5mx6m Surrounding Features: North of drainage channel, situated between the Old kitchen to the west and storage shed 02 to the East. Fuel Storage: Possible AST location on North side of Building (photo)	Soil: Metals, PHCs may be present Water: None	Agricultural CSQG Coarse	AMSRP	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	Odours and stains noted inside building	Soil: East of Old Radio Building: SS-065(0.01-0.1) Cu, Pb, Zn- not analyzed for PHCs	Soil: 4m3 not broken down by APEC Total volume entire site WESA	Soil: One surface sample was used to determine contamination plume. SS-065 was not analyzed for PHCs. No PSA, confirmation of coarse grained needed	Soil: Further assessment for metals and samples taken for hydrocarbons are required.
APEC 5 Outhouse Building Size: 2.5mx3m Surrounding Features: Outhouse is located at Northern tip of drainage pathway, To the East of the Site is the Old Radio Building. Fuel Storage: None noted (photo review)	Soil: PHCs,Metals, Water: PHC/Metals in potential drainage path	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	No Samples:	HAZMAT not broken down by APEC Total volume entire site WESA	Soil: No Samples taken	Soil: Further assessment is required to determine if there are any impacts or plumes
APEC 6 Storage Shed 02 Building Size: 4mx5m Surrounding Features: Located between the Storage Building and the outhouse East of Drainage pathway: Fuel Storage: None Noted (photo review)	Soil: Metals, PHCs may be present Water: None	Agricultural CSQG Coarse	AMSRP	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	Soil: Southwest of corner SS-067(0.01-0.1) No exceedances for metals. No testing of PHCs.	Soil: 4m3 not broken down by APEC Total volume entire site WESA	Soil: One surface sample was used to determine contamination plume and was note tested for PHCs or other contaminates. It was not clear from the site infomation in WESA reprot if PHCs were previously stored in the Shed.	Soil: PHC samples needed to determine any impacts.
APEC 7 Storage Building Building Size: 5mx7m Surrounding Features: Located on the most eastern extreme of the site Fuel Storage: AST located on north wall(photo review)	Soil: PHCs and Metals Water: None	Agricultural CSQG Coarse	AMSRP CCME FWAL/MWAL	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact Area east of Bunkhouse <10m to water	None noted	Soil: Southwest corner of building SS-068(0.05-0.1) no exceedances for metals. PCBs/PHC/PAHs were not tested.	Soil: 0m3 not broken down by APEC Total volume entire site WESA	Soil: A single surface samples analyzed only for metals was used to determine if there were any soil impacts., no samples located at potential AST locations(photo)	Soil: Further testing at the AST is needed to identify presence of impacts

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

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APEC 8 Chicken Coop Building Size: 6mx7m Surrounding Features: Located to the East of the drainage pathway, South of the NRB and west of the bunkhouse: Fuel Storage: AST located on the North side of structure (photo)	Soil: PHCs and Metals Water: None	Agricultural CSQG Coarse	AMSRP	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	No Samples:	Soil: 0m3 not broken down by APEC Total volume entire site WESA	No soil sampling performed even though an AST was present.	Soil: Sampling around the AST is needed to determine the presence of impacts.
APEC 9 Bunkhouse Building Size: 11mx30m Surrounding Features: Located within the drainage pathway. To the west is the Generator Building, the North: Storage Shed 01, To the South is Hudson Straight. Fuel Storage: two ASTs located on the North side of the Building (photos)	Soil: PHCs and Metals Water: PHCs and Metals in drainage pathway	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	PHC odour near ASTs	Soil: North of Bunkhouse SS-052(0.05-0.1)Type B PHCs South of StairsSS-054(0.05-0.1)No exceedance for metals, not tested for PHCs Adjacent to Door on Eastside SS-056(0.05-0.15No exceedance for metals, not tested for PHCs East of Bunkhouse SS-057(0.05-0.15)Cu, not tested for PHCs South of Bunkhouse SS-058(0.05-0.1)no exceedance for metals not tested for PHCs 2 ASTs: No information was provided for them.	Soil: 420m3 Total volume entire site WESA	Soil: Type B hydrocarbons were noted in a single sample but not tested for in subsequent samples, No horizontal/vertical delineation of impacts	Soil : Further delineation of the hydrocarbon area is needed to determine extent of impact, Copper concentrations were also noted above AMSRP.
APEC 10 Generator Building Building Size: 7mx13m Surrounding Features: located between the Bunkhouse and Debris Area 02. South of the AST Tank Farm Fuel Storage: No local AST Fuel source unknown (photos) 1 barrel was located on the wall of the building, contents unknown.	Soil: PHCs Metals Water: PHCs and Metals in drainage pathway	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP GN Industrial Waste CEPA PCB GN ACM GN- Lead and Lead Paint CCME FWAL/MWAL	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	Stains noted and targeted for samples	Soil: Southeast SS-038(0.01-0.05)Benzene Southwest SS-040(0.01-0.05)No exceedances Southwest SS-041(0.2-0.25)Type B PHCs Northwest SS-042(0.01-0.1)No exceedances West of Generator SS-045(0.25-0.3) comment at 0.3 soil was "frothy"-No exceedance Water: Down gradient of landfill SW of Generator SW-044 walls-no exceedance	Soil: 229m3 not broken down by APEC Total volume entire site WESA	Soil: two samples exceeded the AMSRP soil criteria, elevated metals below guideline thresholds were noted throughout the APEC.Source of heating fuel needed. The Earth tech report indicated there was a pipeline near the Tank Farm, does it fuel the Generator Building.	Soil : Further delineation of the hydrocarbon area is needed to determine extent of impact, Background testing is needed to confirm the metals concentrations.

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

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APEC 11 House and Garage Building Size: 9mx15m Surrounding Features: The house and Garage are located to the south of the site and the terminal end of the drainage path near Hudson Straight. Standing water was identified to the Southeast. To the North is the main camp area. To the southwest is Debris Area 01. Fuel Storage: An AST and Barrel were located on the East Wall of the structure (photos)	Soil: PHCs and Metals Water: None	Agricultural CSQG Coarse	AMSRP	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	Stain noted southwest	Soil: House Southwest SS-031(0.1-0.2)Pb, Type B hydrocarbons Southwest SS-032(0.01-0.1)Pb Southeast SS-035(0.01-0.1)Pb WESA assumed the same as APEC 1 wall panels red/orange trim asphalt shingles grey paint at bottom Vinyl flooring Garage Inside Garage SS-036(0.25-0.3)-no exceedance Inside Garage SS-037(0-0.1)-F2,F3 WESA assumed the same as APEC 1	Soil: 60 m3 not broken down by APEC Total volume entire site WESA	Soil:There was limited horizontal and vertical coverage. Lead was noted in all samples taken. Hydrocarbons in SS-031 exceeded for Type B hydrocarbons.	Soil: further horizontal and vertical coverage needed to determine the extent of Lead and PHC contamination.
APEC 12 Shed Building Size: 9mx10m Surrounding Features: Located on the drainage pathway and next to standing water. To the northwest is the house and garage to the south is another house located near Hudson Straight Fuel Storage: Storage within an excavator, No AST noted from Photos	Soil: PHCs, PCBs and Metals Water: PCBs, PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP CCME FWAL/MWAL	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact Standing water near shed	none noted	Soil: North of shed SS-038(0.01-0.1)Pb Benzene Water Standing water north of Shed SW-034-no exceedance raised PCBs	Soil: 4m3 not broken down by APEC Total volume entire site WESA	Soil: Hydrocarbons were noted in the only soil sample taken. There was limited horizontal and vertical coverage.PCB require further delineation in the area. Water: Potential source of PCBs on surface/soil causing elevated PCBS	Soil: further horizontal and vertical coverage needed to determine the extent of PHC contamination. PCB testing in soil is needed to determine the source of the PCBs in water. Background metals concentrations needed for comparison of exceedances. Determine source of elevated PCBs in standing water
APEC 13 House Building Size: 5mx7m Surrounding Features: located close to the Hudson Strait, To the West is Debris Area 01, To the north is the Shed and the end of the drainage pathway Fuel Storage: 2 dilapidated ASTs located on the West Wall near the entrance (photos)	Soil: PHCs and Metals Water: None	Agricultural CSQG Coarse,	AMSRP	Buildings, no information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	none noted	Soil: North of House SS-030(0.05-0.1)Pb	Soil: 4m3 not broken down by APEC Total volume entire site WESA	Soil: Lead exceeded AMSRP in the single sample taken in the area, Pb is commonly associated with fuel from the era. Further deliniation to determine the extent of impacted area is required.	Soil: further horizontal and vertical coverage needed to determine the extent of Lead contamination. PHCs should be tested at the same time to determine if the source of Lead is from the hydrocarbons or building materials.

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

APEC ID (WESA)/Location	Contaminant of Concern	Criteria Applied to COC (WESA)	Criteria for Phase III ESA/RAP (EBA)	Location/Distance to water/sensitive receptor	Observations (staining/odours)	Number of Type/Samples/Depth/Parameter exceeding applied guideline	WESA estimated volumes	GAP Analysis	Conclusions
APEC 14 AST Tank Farm No defined Size(WESA) Surrounding Features: The Tank farm is located on a raised area within the main camp area. To the north is a cold storage and debris Area 3. To the East is the drainage pathway, Storage Shed 01, To the south is Debris Area 02, the Generator Building and the Bunkhouse: Fuel Storage: Volume not defined, Pipeline size and length undefined.(photos)	Soil: PHCs and Metals Water: PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP CCME FWAL/MWAL	Buildings, no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact <10m to water	PHC odour noted no staining observed	2 large AST assumed empty Soil: Southwest of AST SS-046(0.25-0.3) Type B PHCs Southwest of East AST SS-047(0.25-0.3)Type B PHCs Debris Pile north of AST SS-048 (0.05-0.1)Sb,As,Cd,Cr,Cu,Pb,Ni,Zn Water: SW-055- F2,F3,F4 elevated southwest of Tank farm	Soil: 340m3 not broken down by APEC Total volume entire site WESA	Soil: , Hydrocarbons were noted in the soils sample taken. There was limited horizontal and vertical coverage. Further extent is needed to determine impacts. Elevated metals from Debris Area 3 were noted in sample SS-048 The proximity to the drainage path is important to delineate as it may suggest a migration route from the AST Tank Farm	Soil: further horizontal and vertical coverage needed to determine the extent of PHC contamination.
APEC 15 Food Cache Storage No dimensions given	-	-	-	-	-	not sampled	not calculate or included in overall contamination assessment	Area used for storage when camp was inhabited,	Demolition is needed to ensure no subside
APEC 16 Debris Area 01 1 Surface Area not defined: Surrounding Features: Located within 10m north of Hudson Strait. Possible Landfill (photos)	Soil: PHCs, PCBs, Metals Water:PHCs and Metals Sediment: PHCs, Metals	Agricultural CSQG Coarse, CCME Sediment Freshwater potable, CCME Interim freshwater SQG, CCME FWAL	AMSRP	<10m to the water no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	None noted	1 Sediment Sample Toe of expected landfill: SD-029-no exceedance Drums Evidence of burned cabin contents construction material suspected landfill to the south scattered debris Rocks/Beach	not calculate or included in overall contamination assessment	Further assessment needed, no samples taken within the debris pile. Further delineation and detailed categorization of size and quanities is needed for disposal assessment, Suspected landfill to the south but not defined in report The remains of a burned cabin was noted in this area.	The size and contents of the landfill require characterization to determine the extent. Further Soil sampling is needed
APEC 17 Debris Area 02 Surface Area not defined Surrounding Features: Located south of the AST tank farm and West of the Generator building and Bunkhouse. Two areas of standing water were noted within the vicinity of the debris area (photos)	Soil: PHCs, PCBs, Metal Water: If encountered PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	none noted	Surface Water: Table B WESA indicates Sample no ID given in Table C. empty drums-suspected landfill southwest of the generator building	not calculate or included in overall contamination assessment	Further assessment needed, no samples taken, detail categorization of size needed for disposal assessment, landfill noted to the southwest but not investigated Barrels were noted within the debris area(photographs) but not sampled for contents of spillage to surrounding soil	The size and contents of the landfill require characterization to determine the extent. Further Soil sampling is needed

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

APEC ID (WESA)/Location	Contaminant of Concern	Criteria Applied to COC (WESA)	Criteria for Phase III ESA/RAP (EBA)	Location/Distance to water/sensitive receptor	Observations (staining/odours)	Number of Type/Samples/Depth/Parameter exceeding applied guideline	WESA estimated volumes	GAP Analysis	Conclusions
APEC 18 Debris Area 03 Surface Area: not defined Surrounding Features: Located Northeast of the AST next to the Food Cache(west) To the Southeast Storage Shed 01, and to the Northeast-Old Kitchen. A terminal end of the drainage path is located near the anticipated beginning of the Debris Area. (photos)	Soil: PHCs, PCBs, Metal Water: If encountered PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact located near drainage pathway and water to the north/west.	none noted	Soil: SS-048 (0.05-0.1)Sb,As,Cd,Cr,Cu,Pb,Ni,Zn Table B WESA indicates Sample no ID given in Table C. Debris Pile and remains of burned building north of ASTs	not calculate or included in overall contamination assessment	Soil: The single sample taken from the debris area demonstrated that there were elevated metal impacts associated with the debris in exceedance of the AMSRP. Further assessment needed, a sample was indicated that it was taken but no information regarding results, detail categorization of size needed for disposal assessment	Further assessment is needed to determine extent of debris field and categorize the contents Further Soil sampling is needed
APEC 19 Debris Area 04 Surface Area: not defined Surrounding Features: Located to the Southeast of site next to Hudson Strait. (photos)	Soil: PHCs, PCBs, Metal Water: If encountered PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	none noted	Soil: SS-069(0.05-0.1) no exceedance for metals. PCB and PHCs were not analyzed Debris Pile on beach	not calculated or included in overall contamination assessment	No PHCs tested, detail categorization of size needed for disposal assessment	Further assessment is needed to determine extent of debris field and categorize the contents
APEC 20 Debris Area 05 Surface Area: not defined Surrounding Features: Located to the East of the main site removed from area.	Soil: PHCs, PCBs, Metal Water: If encountered PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP	no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	none noted	Soil: SS-070(0.1-0.15) no exceedance for metals, not tested for PHC or PCBs Debris pile of east of site	not calculated or included in overall contamination assessment	No PHCs tested, detail categorization of size needed for disposal assessment	Further assessment is needed to determine extent of debris field and categorize the contents Further Soil sampling is needed
APEC 21 Debris Area 06 Surface Area: not defined	Soil: PHCs, PCBs, Metal Water: If encountered PHCs and Metals	Agricultural CSQG Coarse, CCME Interim freshwater SQG, CCME FWAL	AMSRP CCME FWAL/MWAL	<10m to the water no APEC specific information regarding surrounding vegetation (pictures indicated low growth arctic vegetation, wildlife, human contact	none noted	Soil: SS-071(0.1-0.15) no metals exceedances, not tested for PHCs or PCBs Adjacent to Bedrock SS-073(0.1-0.15)non exceedance for metals, not tested for PHCs and PCBs Water Adjacent of Bedrock SW-072 Al, Cu, Fe,Se Debris Pile east of site adjacent to bedrock	Soil: 4m3 Water:(10m3)	No PHCs tested, detail categorization of size needed for disposal assessment, Water is assumed to be from this area based on site figures, Table D does not explicitly state where water was from.	Further assessment is needed to determine extent of debris field and categorize the contents, Further Soil sampling is needed

Table A1: Y22101291 Nottingham Island Task 1 GAP Analysis

APEC ID (WESA)/Location	Contaminant of Concern	Criteria Applied to COC (WESA)	Criteria for Phase III ESA/RAP (EBA)	Location/Distance to water/sensitive receptor	Observations (staining/odours)	Number of Type/Samples/Depth/Parameter exceeding applied guideline	WESA estimated volumes	GAP Analysis	Conclusions
APEC 22 Road to East of Site Not defined in WESA report but indicated in Figure 1	Unknown	unknown	AMSRP	unknown not investigated	no investigated	Not identified in WESA study	unknown	Road area must be defined and assessed to determine if any impacts from previous site activities existed including debris piles, Hydrocarbon spills, HAZMAT disposal areas. Road area not addressed in WESA report	An assessment of the roadway including soil sampling to assess anthropogenic impacts is required
APEC 23 Offsite Communication Tower Not defined in WESA report	Unknown	unknown	AMSRP	unknown not investigated	no investigated	Not identified in WESA study, found during Earthtech Study	unknown	testing needs to be performed to determine the presence/ absence of contaminates.	Further assessment is needed Limited information
APEC 24 Lake 01	Surface Water: PHCs, Metals, PCBs Sediment: PHCs, Metals	CCME Sediment Freshwater potable, CCME Interim freshwater SQG, CCME FWAL/MWAL,	CCME FWAL/MWAL CCME Sediment Marinewater Potable	FWAL, Marine Life	NA	Water: SW-074 Se	NA	Limited sampling performed, background samples not available	Further assessment is needed for water and sediment Limited information
APEC 25 Lake 02	Surface Water: PHCs, Metals, PCBs Sediment: PHCs, Metals	CCME Sediment Freshwater potable, CCME Interim freshwater SQG, CCME FWAL/MWAL,	CCME FWAL/MWAL CCME Sediment Marinewater Potable	FWAL, Marine Life	NA	Water: SW-075 Se	NA	Limited sampling performed, background samples not available	Further assessment is needed for water and sediment Limited information
APEC 26 Hudson Strait:	Surface Water: PHCs, Metals, PCBs	CCME MWAL	CCME FWAL/MWAL CCME Sediment Marinewater Potable	MWAL, Marine Life	NA	NA	NA	No samples taken at the end of the drainage path from camp on the beach of Hudson Strait by Debris Area 01 and 04.	Further assessment is needed for water and sediment Limited information

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	Gap Analysis Recommendations	Samples to be Collected	Sample Analysis to be done
APEC 1 Storage Shed 01-Building Size: 9m x 17m Surrounding Features East of APEC 14-AST Tankfarm Southeast of APEC 18 Debris Area 3 Fuel Storage: Indoor Furnace No AST present at time of WESA investigation (photo review) Safety: only enter building with asbestos protection	ACM: **Siding BM-001- Chrysolite** Asphalt shingles(red) **Walls-interior white pannelling BM-004 Chyrsolite** Vinyl Flooring BM-003 no exceedance Flooring BM-005-no exceedance Tar Paper BM-002-no exceedance	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • 5 building materials were collected and submitted for analysis; however, some building materials observed in the photographs from the WESA report was not sampled that could potentially contain asbestos. Building materials requiring further assessment would consist of vermiculite, shingle felt paper and potential mastics (if any) in window frames. • No paint samples were collected for the building. Paint samples from Storage Shed 01 should be assessed for total lead, leachable lead and PCBs in paint.	• Similar to New radio building and storage shed 1 • ACMs: 12 1 Caulking, 2 shingle felt paper, 2 more int wall material,1 duct tape,1 furnace gaskets or insulation, 2 more vermiculite, 1 more flooring, 2 more felt paper ext. • Paint: 2 ext, 1 int.	• PLM: 12 • Paint: Total lead and PCBs and leachable lead paint (ALL): 3
"APEC 2 Old Kitchen Building Size: 8mx18m Surrounding Site Features: North of APEC 1, NorthEast of APEC 14 AST Tank Farm Fuel Storage: None noted(photo review)"	Paint: **Communication Post PS-008-lead** **Green Trim PS-009 Lead** ACM: Green Asphalt Shingles BM-006 no exceedance Red Asphalt Shingles BM-007 no exceedance	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • Further investigation is needed to assess building materials not previously sampled. • 2 building materials were collected and submitted for analysis; however, some building materials observed in the photographs from the WESA report was not sampled that could potentially contain asbestos. Building materials requiring further assessment would consist of brick mortar and potential mastics (if any) in window frames. • The exceedance in leachable lead is extremely high when comparing the concentration of total lead in the material. EBA would recommend to re-sample the two paint samples (SB029-PS-008 and SB029-PS-009) to confirm the leachable lead concentrations.	• ACM: 2 brick mortor and 2 brick, 1 caulking, 1 tar paper, 1 green shingles, 1 red shingles • Paint green ext, white paint ext, red paint int, and white paint communication post,	• PLM: 8 • Total lead and PCBs and leachable lead paint (ALL): 5

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	Gap Analysis Recommendations	Samples to be Collected	Sample Analysis to be done
APEC 3 New Radio Building(NRB) Building Size: 5mx13m and Shed East of NRB Building Size not recorded in WESA Notes Surrounding Features: Drainage Pathway to the East and south of building Located to the south of Old Radio Building and West of Old Kitchen/Storage Shed 01 Fuel Storage: AST on South Side of Building Dilapitated (Photos) Fuel Lines not defined on building	HAZMAT: WESA assumption certain building materials similar to APEC 1 Floor Tiles: BM-010-no exceedance **Yellow Paint-PS-013-Lead** **Red Paint-PS-012-Lead** **White Paint-PS-011-Lead**	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • Further investigation is needed to assess building materials not previously sampled. • 1 building materials were collected and submitted for analysis; however, some building materials observed in the photographs from the WESA report was not sampled that could potentially contain asbestos. Building materials requiring further assessment would consist of shingle felt paper and potential mastics (if any) in window frames. • EBA would recommend to re-sample the three paint samples (SB029-PS-0011, SB029-PS-012 and SB029-PS-013) to analysis for leachable lead concentrations. • Also, an inventory of potential containing materials with PCB's may be present in the electrical equipment such as transformers. •	• Similar to storage shed 1 and storage building • ACM: 1 red shingles, 1 caulking, 1 siding, 1 electric insulators, 1 cords, 1 floor tile, 2 int walls, • Paint: Yellow Paint-PS-013-Lead • Red Paint-PS-012-Lead • White Paint-PS-011-Lead • Shed: 1 white and 1 orange paint PCB and Lead • Fallen tower: 1 white paint • Organic content 1 AST • Note:Batteries, ballasts,	• PLM:8 • Paint: 3 leachable, 3 total PCB and lead, and leachable lead (ALL) • Ogranic AST: 1
APEC 4 Old Radio Building Building Size: 5mx6m Surrounding Features: North of drainage channel, situated between the Old kitchen to the west and storage shed 02 to the East. Fuel Storage: Possible AST location on North side of Building (photo) Don't enter without mould protection	HAZMAT: **exterior walls white/beige PS-015-Lead, exceeds total lead,** not leachable Particle Boards BM-014--no exceedance	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • 1 building materials were collected and submitted for analysis; however, some building materials observed in the photographs from the WESA report was not sampled that could potentially contain asbestos. Building materials requiring further assessment would consist of shingle felt paper. • EBA would recommend to re-sample the one paint sample (SB029-PS-0015) to analysis for leachable lead concentrations. Also, an inventory of potential containing materials with PCB's may be present in the electrical equipment such as transformers.	• ACM 1 particle board, 1 flooring, 1 red shingles, 1 caulking • Paint: 1 ext white walls, 1 ext green paint, • 1 concrete ACM and PCBs. • Note: battery, mould	• PLM: 4 • Paint: 2 total PCBs, lead and leachable lead (ALL) • Concrete: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	Gap Analysis Recommendations	Samples to be Collected	Sample Analysis to be done
APEC 5 Outhouse Building Size: 2.5mx3m Surrounding Features: Outhouse is located at Northern tip of drainage pathway, To the East of the Site is the Old Radio Building. Fuel Storage: None noted (photo review)	No Samples	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • No building materials were collected and submitted for analysis; Building materials requiring further assessment would consist of tar paper located between the exterior siding and the wooden walls. •	• ACM: 1 green shingles felt, • Paint: ext white and ext green,	• PLM: 1 • Paint: 2 ALL
APEC 6 Storage Shed 02 Building Size: 4mx5m Surrounding Features: Located between the Storage Building and the outhouse East of Drainage pathway: Fuel Storage: None Noted (photo review)	No Samples	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • No building materials were collected and submitted for analysis; Building materials requiring further assessment would consist of tar paper located between the exterior siding and the wooden walls. •	• ACM: 2 ext felt on wall and roof, 1 hose, • Paint: 1 white int • Organic content: 1 from 3 small drums inside	• PLM: 3 • Paint 1 ALL • Organic: 1
APEC 7 Storage Buiilding Building Size: 5mx7m Surrounding Features: Located on the most eastern extreme of the site Fuel Storage: AST located on north wall(photo review)	HAZMAT WESA Assumed same as shed 01 No Samples	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • No building materials were collected and submitted for analysis. Building materials requiring further assessment to be representative of the materials on-site would consist of exterior siding, tar paper, felt paper between roof and shingles, wall panel. Vermiculite was found in the attic (6 to 8 inch thick); however, was not sampled and requires analysis to confirm the presence of asbestos.	Similar to New radio building and storage shed 1 • ACM: 1 exterior siding, 1 tar paper, 1 felt paper between roof and shingles, 1 int. wall panel. 3 Vermiculite was found in the attic (6 to 8 inch thick), 1 caulking, 1 flooring, • Paint: ext. red trim • Organic content: 1 AST	• PLM:9 • Paint: 1 ext. red ALL • Organic: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	Gap Analysis Recommendations	Samples to be Collected	Sample Analysis to be done
APEC 8 Chicken Coop Building Size: 6mx7m Surrounding Features: Located to the East of the drainage pathway, South of the NRB and west of the bunkhouse: Fuel Storage: AST located on the North side of structure (photo)	No Samples	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • No potential asbestos containing material observed during the review of previous reports.	• Paint: 2 ext red and white • Organic content: 1 AST	• Paint 2 ALL • Organic: 1
APEC 9 Bunkhouse Building Size: 11mx30m Surrounding Fetures: Located within the drainage pathway. To the west is the Generator Building, the North: Storage Shed 01, To the South is Hudson Straight. Fuel Storage: two ASTs located on the North side of the Building (photos)	2 ASTs: No information was provided for them. HAZMAT ACM: Fibrous Siding BM-017-no exceedance Paint: **Grey over red/orange paint: PS-016-Lead** **Interior waslls White-PS-018-Lead** **Pink/light green-PS-019-Lead** **Light green/grey blue- PS-022-Lead** WESA assumption same as Shed 01 ACM **Interior panneling BM-021-Chysolite** 8 PCB Floruescent fixtures	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • **Hazmat:** 1 building materials was collected and submitted for analysis. Building materials requiring further assessment to be representative of the materials on-site would consist of exterior siding, tar paper, felt paper between roof and shingles, mastics (if any) in window frames and piping. EBA would recommend to re-sample the three paint samples (SB029-PS-0016, SB029-PS-018 and SB029-PS-022) to analysis for leachable lead concentrations.	• ACM: 1 Ext wall, 2 caulking, 1 roof, 2 int walls, 3 Vinyl Flooring 3 Ceiling, 1 underneath sink • Paint:4 Re-sample leachable: Grey over red/orange paint: PS-016-Lead, Interior waslls White-PS-018-Lead • Pink/light green-PS-019-Lead • Light green/grey blue- PS-022-Lead • Organic: 2 ASTs • Note: PCB ballasts	• PLM:13 • Paint: 4 leachable lead • Organic: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	Gap Analysis Recommendations	Samples to be Collected	Sample Analysis to be done
APEC 10 Generator Building Building Size: 7mx13m Surrounding Features: located between the Bunkhouse and Debris Area 02. South of the AST Tank Farm Fuel Storage: No local AST Fuel source unknown (photos) 1 barrell was located on the wall of the building, contents unknown.	HAZMAT: WESA assumption same as APEC9 and APEC 1 **White/Grey Paing-PS-023-Lead** **Fibrous Insulation-LIght Blue** **Grey/blue, Yellow,Red PS-024-Lead** Pb batteries	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • No building materials were collected and submitted for analysis. Building materials requiring further assessment to be representative of the materials on-site would consist of exterior siding, tar paper, felt paper between roof and shingles, wall panel. • EBA would recommend to re-sample the two paint samples (SB029-PS-0023 and SB029-PS-024) to analysis for leachable lead concentrations.	• Similar to Bunkhouse • ACM: 1 exterior siding,1 tar paper, felt paper between roof and shingles, wall panel. 1 caulking, 1 electrical insulators, 1 hose, 2 int wall and ceiling panel • Paint: 1 re-sample White/Grey Paing-PS-023-Lead, 2 random int • Organic content: 1 from 3 drums, 1 from generator, • Note: PCB ballasts, •	• PLM: 7 • Paint: 1 leachable, 2 ALL • Organic: 2
APEC 11 House and Garage Building Size: 9mx15m Surrounding Features: The house and Garage are located to the south of the site and the terminal end of the drainage path near Hudson Straight. Standing water was identified to the Southeast. To the North is the main camp area. To the southwest is Debris Area 01. Fuel Storage: An AST and Barrel were located on the East Wall of the structure (photos)	House WESA assumed the same as APEC 1 Garage WESA assumed the same as APEC 1	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • **Hazmat:** No building materials were collected and submitted for analysis. Building materials requiring further assessment to be representative of the materials on-site would consist of exterior siding, tar paper, felt paper between roof and shingles, wall panel. Vermiculite was found in the attic (6 to 8 inch thick); however, was not sampled and requires analysis to confirm the presence of asbestos.	• Similar to bunk house, generator • ACM: 1 exterior siding,1 tar paper, felt paper between roof and shingles, wall panel. 1 caulking, 2 int wall and ceiling panel • Paint: 1 ext, 1 int • Organic: check AST and 2 drums supposed to be empty • Concrete: 1 • Note: PCBs	• PLM: 5 • Paint 2 ALL

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	• Gap Analysis Recommendations	• Samples to be Collected	• Sample Analysis to be done
APEC 12 Shed Building Size: 9mx10m Surrounding Features: Located on the drainage pathway and next to standing water. To the northwest is the house and garage to the south is another house located near Hudson Straight Fuel Storage: Storage within an excavator, No AST noted from Photos		• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • • **Hazmat:** No building materials were collected and submitted for analysis. Building materials requiring further assessment would consist of the brick mortar. •	• ACM: 1 brick, 1 mortor, 1 red roof, • Organic: 1 in excavator	• PLM: 3 • Organic: 1
APEC 13 House Building Size: 5mx7m Surrounding Features: located close to the Hudson Strait, To the West is Debris Area 01, To the north is the Shed and the end of the drainage pathway Fuel Storage: 2 dilapatated ASTs located on the West Wall near the entrance (photos)	**blue trim-PS-025-Lead**	• No defined HAZMAT volumes by APEC, totals were grouped based on individual samples and then extrapolated to assumed similar buildings. Building Material=340m3 • Other HAZMAT including PCBs, Mercury, UFFI, not identified • Calculations are not defined, Limited estimates on debris • Further investigation is needed to assess building materials not previously sampled. • **Hazmat:** 1 building materials were collected and submitted for analysis. Building materials requiring further assessment to be representative of the materials on-site would consist of exterior siding, tar paper, felt paper between roof and shingles, wall panel. • EBA would recommend to re-sample the one paint sample (SB029-PS-0025) to analysis for leachable lead concentrations.	• ACM: 1 roof felt, 1 ext wall felt, 2 brick and mortor, 1 caulking, 2 int wall and 2 flooring, • Paint: 1 ext white ALL, • Organic content: 1 from 2 ASTs	• PLM: 9 • Paint: 1 ALL • Organic: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	• Gap Analysis Recommendations	• Samples to be Collected	• Sample Analysis to be done
APEC 14 AST Tank Farm No defined Size(WESA) Surrounding Features: The Tank farm is located on a raised area within the main camp area. To the north is a cold storage and debris Area 3. To the East is the drainage pathway, Storage Shed 01, To the south is Debris Area 02, the Generator Building and the Bunkhouse: Fuel Storage: Volume not defined, Pipeline size and length undefined.(photos)	2 large ASTx assumed empty **HAZMAT Red/Whjite Paint PS-027-Lead**	• Volumes within the ASTs are needed to determine the risk associated with Organic Liquid Waste as per the AMRSP. • The proximity to the drainage path is important to delinate as it may suggest a migration route from the AST Tank Farm • Contents of the ASTs are needed to determine disposal criteria as per the AMSRP • **Hazmat:** EBA would recommend to re-sample the one paint sample (SB029-PS-0027) to analysis for leachable lead concentrations.	• ACM: 2 AST gaskets • Paint: re-sample the one paint sample (SB029-PS-0027) for leachable • Organic: 2 AST • Note: volume in asts and pipeline	
APEC 15 Food Cache Storage No dimensions given	not sampled	• Not calculate or included in overall contamination assessment • Demolition is needed to ensure no subside • Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• Note amount of wood	
APEC 16 Debris Area 01 1 Surface Area not defined: Surrounding Features:Located within 10m north of Hudson Strait. Possible Landfill (photos)	Drums Evidence of burned cabin contents construction material suspected landfill to the south scattered debris Rocks/Beach	• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent • Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• ACM 1 random • Paint 1 white ALL • 1 concrete	• PLM: 1 • Paint 1 ALL • Concrete: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	• Gap Analysis Recommendations	• Samples to be Collected	• Sample Analysis to be done
APEC 17 Debris Area 02 Surface Area not defined Surrounding Features: Located south of the AST tank farm and West of the Generator building and Bunkhouse. Two areas of standing water were noted within the vicinity of the debris area (photos)		• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• Paint: 3 ALL from drums • Organic: 3 from 10 drums	• Paint 3 ALL Organic: 4
APEC 18 Debris Area 03 Surface Area: not defined Surrounding Features: Located Northeast of the AST next to the Food Cache(west) To the Southeast Storage Shed 01, and to the Northeast-Old Kitchen. A terminal end of the drainage path is located near the anticipated beginning of the Debris Area. (photos)		• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent • Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• Note metal debris	
APEC 19 Debris Area 04 Surface Area: not defined Surrounding Features: Located to the Southeast of site next to Hudson Strait. (photos)		• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent • Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• Note metal and wood debris • ACM: 1 • Paint 1 ALL • Concrete: 1	• PLM: 1 • Paint 1 ALL • Concrete: 1

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	• Gap Analysis Recommendations	• Samples to be Collected	• Sample Analysis to be done
APEC 20 Debris Area 05 Surface Area: not defined Surrounding Features: Located to the East of the main site removed from area.		• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent • Hazmat: No potential hazardous materials identified during the review of the previous work conducted at the site.	• Note debris	• NA
APEC 21 Debris Area 06 Surface Area: not defined		• Further assessmenmt needed, no samples taken within the debris pile detail categorization of size needed for disposal assessment, Suspected landfill to the south but not deinfed in report • Other HAZMAT including PCBs, Mercury, UFFI, not identified • The remains of a burned cabin was noted in this area. HAZMAT was not sampled • The size and contents of the landfill require characterizaiton to determine the extent • **Hazmat:** No potential hazardous materials identified during the review of the previous work conducted at the site.	• Note debris	NA
PEC 22 Road to East of Site Not defined in WESA report but indicated in Figure 1		• No assessment had been previously performed, no information is available. The road should be assessed for contaminates and debris areas to ensure there are no off-site contaminates that have not been identified.	• Note debris	• NA
APEC 23 Offsite Communcation Tower Not defined in WESA report	Not identified in WESA study, found during Earthtech Study testing needs to be performed to determine the presence/ absence of contaminates.	• The Communication tower was identified during the Earth Tech study and not delineated during the WESA study. A HAZMAT Assessment and vertical and horizontal sampling survey should be performed after a visual assessment to identify and delineate any impacts associated with the structure.	• 1 Paint Sample All	• 1 Paint Sample All
APEC 24 Lake 01	NA	• NA	• NA	NA
APEC 25 Lake 02	NA	• NA	• NA	NA

TABLE A2: Y22101291 Nottingham HAZMAT

APEC/Description	Previous Samples Collected	• Gap Analysis Recommendations	• Samples to be Collected	• Sample Analysis to be done
APEC 26 Hudson Strait:	NA	• NA	• NA	• NA

Table A3: Summary of Guidelines for Nottingham Island Gap Analysis

Matrix	Category	Parameter	Units	Guideline to be applied	Coarse Grained Criteria
Soil	Metals	Aluminium	mg/kg	CCME R/P Tier 1	NA
		Antimony	mg/kg	CCME R/P Tier 1	20
		Arsenic	mg/kg	AMRSP Tier 2	30
		Barium	mg/kg	CCME R/P Tier 1	500
		Beryllium	mg/kg	CCME R/P Tier 1	4
		Boron	mg/kg	CCME R/P Tier 1	NA
		Cadmium	mg/kg	AMRSP Tier 2	5
		Chromium	mg/kg	AMRSP Tier 2	250
		Cobalt	mg/kg	AMRSP Tier 2	50
		Copper	mg/kg	AMRSP Tier 2	100
		Iron	mg/kg	CCME R/P Tier 1	NA
		Lead	mg/kg	AMRSP Tier 1	200
		Mercury	mg/kg	AMRSP Tier 2	2
		Molybdenum	mg/kg	CCME R/P Tier 1	10
		Nickel	mg/kg	AMRSP Tier 2	100
		Selenium	mg/kg	CCME R/P Tier 1	1
		Silver	mg/kg	CCME R/P Tier 1	20
		Thallium	mg/kg	CCME R/P Tier 1	1
		Tin	mg/kg	CCME R/P Tier 1	50
		Uranium	mg/kg	CCME R/P Tier 1	23
		Vanadium	mg/kg	CCME R/P Tier 1	130
		Zinc	mg/kg	AMRSP Tier 2	500
		PCB	mg/kg	AMRSP Tier 1	1
	Hydrocarbons	Benzene	mg/kg	CCME R/P Tier 1	0.03
		Ethyl benzene	mg/kg	CCME R/P Tier 1	0.37
		Toluene	mg/kg	CCME R/P Tier 1	0.082
		Xylenes (Total)	mg/kg	CCME R/P Tier 1	11
		Sum of F1-F3 (Type B Freshwater protected)*	mg/kg	AMSRP Type B > 30m from water	2500
		Sum of F1-F3 (Type B Freshwater protected)*	mg/kg	AMSRP Type B freshwater protected	330
		Type A Hydrocarbons (70% F3/F4 of TPH)	%	AMSRP Type B freshwater protected	70% of TPH
Building Material	Hazardous Materials	PCB (concrete/paint)	mg/kg	AMSRP	50
		Pb based paint	mg/kg	Government of Nunavut	600
		TCLP Pb based paint	mg/L	AMSRP	5
		ACM	%	Government of Nunavut	1%
Barrel Samples	Will be analyzed as per the AMSRP, % alcohol, Cl, Cd, Cr, Pb,				

NA: Criteria is not available for parameter
* Type B was chosen due to surrounding surface water and drainage path through Site.

Table A3: Summary of Guidelines for Nottingham Island Gap Analysis

Matrix	Category	Parameter	Units	Guideline to be applied	Criteria
Water	Routine Parameters	pH	-	CCME MWAL	7.0-8.7
		Total Hardness	ug/L	CCME MWAL	NA
		Acidity	ug/L	CCME MWAL	NA
		Bromide	ug/L	CCME MWAL	NA
		Chloride	ug/L	CCME MWAL	NA
		Conductivity	ug/L	CCME MWAL	NA
		Fluroide	ug/L	CCME MWAL	NA
		Alkalinity as CaCO3	ug/L	CCME MWAL	NA
		Nitrate	ug/L	CCME MWAL	16000
		Nitrite	ug/L	CCME FWAL	60
		Phosphate	ug/L	CCME MWAL	NA
		Sulphate	ug/L	CCME MWAL	NA
		TDS	ug/L	CCME MWAL	NA
		Total Sulphur	ug/L	CCME MWAL	NA
	Metals	Aluminum	ug/L	CCME FWAL	5 or 100 pH dependent
		Antimony	ug/L	CCME MWAL	NA
		Arsenic	ug/L	CCME MWAL	12.5
		Barium	ug/L	CCME MWAL	NA
		Beryllium	ug/L	CCME MWAL	NA
		Boron	ug/L	CCME MWAL	NA
		Cadmium	ug/L	CCME MWAL	0.12
		Chromium (total)	ug/L	CCME MWAL	NA
		Cr (IV)	ug/L	CCME MWAL	1.5
		Cobalt	ug/L	CCME MWAL	NA
		Copper	ug/L	CCME FWAL	2- 4 hardness dependent
		Iron	ug/L	CCME FWAL	300
		Lead	ug/L	CCME FWAL	1-7 hardness dependent
		Mercury	ug/L	CCME MWAL	0.016
		Nickel	ug/L	CCME FWAL	25-150 hardness dependent
		Selenium	ug/L	CCME FWAL	1
		Silver	ug/L	CCME FWAL	0.1
		Thalium	ug/L	CCME FWAL	0.8
		Tin	ug/L	CCME MWAL	NA
		Uranium	ug/L	CCME MWAL	NA
		Vandium	ug/L	CCME MWAL	NA
		Zinc	ug/L	CCME FWAL	30
	Hydrocarbons	Benzene	ug/L	CCME MWAL	110
		Toluene	ug/L	CCME MWAL	215
		Ethyl Benzene	ug/L	CCME MWAL	25
		Xylene	ug/L	CCME MWAL	NA

Due to the proximity to Hudson Strait, with all drainage pathways leading to the Strait CCME Marine Water Aquatic Life shall be applied. In the event that a MWAL criteria had not been established Fresh Water Aquatic Life Criteria will be applied
NA: Criteria is not available for parameter

Table A3: Summary of Guidelines for Nottingham Island Gap Analysis

Matrix	Category	Parameter	Units	Guideline to be applied	Criteria
Sediment	Metals	Aluminium	mg/kg	ISQG/PEL Marine Life	NA
		Antimony	mg/kg	ISQG/PEL Marine Life	NA
		Arsenic	mg/kg	ISQG/PEL Marine Life	7.24 /41.6
		Barium	mg/kg	ISQG/PEL Marine Life	NA
		Beryllium	mg/kg	ISQG/PEL Marine Life	NA
		Boron	mg/kg	ISQG/PEL Marine Life	Na
		Cadmium	mg/kg	ISQG/PEL Marine Life	0.7 /4.2
		Chromium	mg/kg	ISQG/PEL Marine Life	52.3 / 160
		Cobalt	mg/kg	ISQG/PEL Marine Life	NA
		Copper	mg/kg	ISQG/PEL Marine Life	18.7 /108
		Iron	mg/kg	ISQG/PEL Marine Life	Na
		Lead	mg/kg	ISQG/PEL Marine Life	30.2 /112
		Mercury	mg/kg	ISQG/PEL Marine Life	0.13 / 0.7
		Molybdenum	mg/kg	ISQG/PEL Marine Life	Na
		Nickel	mg/kg	ISQG/PEL Marine Life	NA
		Selenium	mg/kg	ISQG/PEL Marine Life	Na
		Silver	mg/kg	ISQG/PEL Marine Life	Na
		Thallium	mg/kg	ISQG/PEL Marine Life	Na
		Tin	mg/kg	ISQG/PEL Marine Life	Na
		Uranium	mg/kg	ISQG/PEL Marine Life	Na
		Vanadium	mg/kg	ISQG/PEL Marine Life	Na
		Zinc	mg/kg	ISQG/PEL Marine Life	124/ 271
	Other	PCB	ug/kg	ISQG/PEL Marine Life	21.5/ 189

NA: Criteria is not available for parameter

APPENDIX B

WESA ANALYTICAL RESULTS TABLES

Table 1: Soil Analytical Results - Metals

CSQG (Ag) = Canadian Soil Quality Guidelines for Coarse Soil in an Agricultural/Wildland Setting (CCME, 2007)

Exceeds CSQG
Duplicates

	Date	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron (HWE)	Boron	Cadmium	Chromium (tot)	Cobalt	Copper	Iron	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Uranium	Vanadium	Zinc
Criteria	CSQG (Ag)	6-8	---	20	12	750	4	2	---	1.4	64	40	63	---	70	6.6	5	50	1	20	1	5	23	130	200
	MDL	---	5	0.5	0.5	0.5	0.5	1	1	0.05	0.5	0.05	0.5	1000	0.5	0.05	0.5	0.5	0.5	0.05	0.5	0.5	0.5	0.5	0.5
Sample	Units	---	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
SB029 Cape Dorset 2 (Nottingham Island) House																									
SB029-SS-030	23-Oct-10		3930	2.6	8.18	435	0.5		30.4	1.13	17.8	5.87	55.3	11400	387	0.067	1.3	15.5	1.2	0.41	< 0.5	39.5	< 0.5	13.3	474
SB029 Cape Dorset 2 (Nottingham Island) House & Garage																									
SB029-SS-031	23-Oct-10		2070	3.4	3.2	178	< 0.5		36.8	0.17	9.1	2.21	8.57	6100	260	< 0.05	0.67	9.82	0.75	< 0.05	< 0.5	2	< 0.5	12.2	51.9
SB029-SS-032	23-Oct-10		1160	1.3	5.53		< 0.5		27	0.15	7.89	2.3	9.82	16300	3890	< 0.05	1.3	12	< 0.5	< 0.05	< 0.5	1.3	< 0.5	8.54	153
SB029-SS-033	23-Oct-10		1440	1.2	5.61		< 0.5		25.4	0.15	12.2	3.01	12.6	25600	4620	< 0.05	1.8	14.3	< 0.5	< 0.05	< 0.5	3.6	< 0.5	9.05	199
SB029-SS-035	23-Oct-10	7.05	1600	4.6	7.7	157	< 0.5		34.8	0.39	11	3.41	25.7	9900	260	< 0.05	0.63	12.6	2.1	0.05	< 0.5	11	< 0.5	8.33	209
SB029-SS-036	23-Oct-10		1430	< 0.5	3.6	90.2	< 0.5		5.4	0.09	4.8	1.78	17.3	4410	25.2	< 0.05	< 0.5	7.95	< 0.5	< 0.05	< 0.5	1.9	< 0.5	7.86	26.8
SB029-SS-037	23-Oct-10		1150	< 0.5	3.8	119	< 0.5		23.8	0.58	6.46	1.3	28.6	4030	62	< 0.05	< 0.5	6.95	< 0.5	0.089	< 0.5	1.4	< 0.5	6.88	49.9
SB029 Cape Dorset 2 (Nottingham Island) Shed																									
SB029-SS-038	23-Oct-10		7340	5.28	16.2	421	< 0.5		30.4	0.47	138	16.2	36.2	17600	1460	0.15	1.3	33.9	3.3	0.098	< 0.5	6.22	< 0.5	13.5	246
SB029 Cape Dorset 2 (Nottingham Island) Generator Building																									
SB029-SS-039	23-Oct-10		1780	7.67	4.8	476	< 0.5		29.9	0.886	11.1	2.23	14.3	7200	409	0.072	< 0.5	12	0.69	0.073	< 0.5	5	< 0.5	8.92	524
SB029-SS-040	23-Oct-10		1250	< 0.5	3.4	249	< 0.5		25.8	0.15	6.15	1.82	5.72	3920	17	< 0.05	< 0.5	6.88	< 0.5	< 0.05	< 0.5	0.67	< 0.5	8.34	60
SB029-SS-041	23-Oct-10		1830	2.6	2.7	131	< 0.5		23.7	0.1	9.27	2.07	2.3	6000	2.7	< 0.05	< 0.5	9.21	0.56	0.27	< 0.5	< 0.5	< 0.5	17.5	16.3
SB029-SS-042	23-Oct-10		1440	2	5	212	< 0.5		25.4	1.58	14.6	2.22	40.2	5800	178	< 0.05	< 0.5	12.2	< 0.5	0.098	< 0.5	18.9	< 0.5	11	195
SB029-SS-043	23-Oct-10		1580	2.1	4.8	193	< 0.5		29.2	2	11.4	2.12	86.1	5600	166	< 0.05	< 0.5	13.4	0.57	0.081	< 0.5	5.4	< 0.5	9.81	205
SB029-SS-045	23-Oct-10		1290	< 0.5	3.6	65.1	< 0.5		4	< 0.05	6.26	1.48	1.2	3600	1.4	< 0.05	< 0.5	8.48	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	8.94	7.41
SB029 Cape Dorset 2 (Nottingham Island) ASTs																									
SB029-SS-046	23-Oct-10		3920	< 0.5	4.9	143	< 0.5		22.2	0.095	12.3	3.77	5.99	7600	2.8	< 0.05	< 0.5	12.8	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	16.8	17.4
SB029-SS-047	23-Oct-10		1230	< 0.5	4.3	49.5	< 0.5		4.2	0.084	7.72	1.57	2	3570	3.2	< 0.05	< 0.5	9.69	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	7.66	11.4
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 03																									
SB029-SS-048	23-Oct-10	7.08	13400	140	85.9	1060	< 0.5	1.81	50.3	19.2	76.3	17.4	30000	35600	6250	< 0.05	17.3	153	4.4	1.14	< 0.5	386	0.88	91.9	23900
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 01																									
SB029-SS-049	23-Oct-10		2070	2.6	7.15	226	< 0.5		28	0.36	9.22	2.91	21.8	7000	57.2	0.075	0.88	13.9	1	0.34	< 0.5	6.09	< 0.5	13.6	89.7
SB029-SS-050	23-Oct-10		4140	0.79	8.33	161	< 0.5		26.6	0.677	8.87	4.68	34.9	7300	39.9	< 0.05	1.1	18.7	1.4	0.16	< 0.5	5.98	< 0.5	19.5	62.5
SB029 Cape Dorset 2 (Nottingham Island) Old Kitchen																									
SB029-SS-051	23-Oct-10		1540	< 0.5	3.3	176	< 0.5		4.4	1.57	6.57	1.83	10.3	4760	111	0.062	< 0.5	8.23	< 0.5	0.068	< 0.5	3	< 0.5	8.6	147
SB029 Cape Dorset 2 (Nottingham Island) Bunkhouse																									
SB029-SS-052	23-Oct-10		1240	3.4	4.7	74.2	< 0.5		26.4	0.22	8.67	1.93	8.82	3820	23.7	< 0.05	1.1	11.7	< 0.5	< 0.05	< 0.5	6.84	< 0.5	7.06	49.8
SB029-SS-053	23-Oct-10		1100	1.1	4.2	58.6	< 0.5		7	0.12	6.36	1.59	4	4280	19.3	< 0.05	0.73	10.9	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	7.58	38.8
SB029-SS-054	23-Oct-10		1860	< 0.5	5.08	109	< 0.5		5.5	0.15	8.41	2.41	8.55	4200	9.42	< 0.05	< 0.5	14.5	0.86	< 0.05	< 0.5	0.58	< 0.5	11.7	26.7
SB029-SS-056	23-Oct-10		1890	0.61	4.2	87.2	< 0.5	1.28	7.9	0.32	12.6	1.93	19.3	3400	77.5	0.23	< 0.5	11	0.55	< 0.05	< 0.5	12.2	< 0.5	11.1	169
SB029-SS-057	23-Oct-10		1320	< 0.5	4.2	89.3	< 0.5		6	0.869	7.29	1.34	249	3760	22.9	0.34	< 0.5	7.92	< 0.5	0.29	< 0.5	14.8	< 0.5	7.35	136
SB029-SS-058	23-Oct-10		1980	< 0.5	4.4	110	< 0.5		4.8	0.23	9.91	2.28	11.2	5000	22.4	< 0.05	< 0.5	12	< 0.5	0.078	< 0.5	1.7	< 0.5	10	69.4

Table 1: Soil Analytical Results - Metals

CSQG (Ag) = Canadian Soil Quality Guidelines for Coarse Soil in an Agricultural/Wildland Setting (CCME, 2007)

Exceeds CSQG
Duplicates

	Date	pH	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron (HWE)	Boron	Cadmium	Chromium (tot)	Cobalt	Copper	Iron	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Uranium	Vanadium	Zinc
Criteria	CSQG (Ag)	6-8	---	20	12	750	4	2	---	1.4	64	40	63	---	70	6.6	5	50	1	20	1	5	23	130	200
	MDL	---	5	0.5	0.5	0.5	0.5	1	1	0.05	0.5	0.05	0.5	1000	0.5	0.05	0.5	0.5	0.5	0.05	0.5	0.5	0.5	0.5	0.5
Sample	Units	---	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building																									
SB029-SS-061	23-Oct-10	7.22	3800	4	4.6	131	< 0.5	0.648	3.7	0.578	12.5	2.84	10.2	6600	5.19	< 0.05	0.52	9.96	1.1	< 0.05	< 0.5	0.56	< 0.5	15.9	372
SB029-SS-062	23-Oct-10		5060	11.6	8.34	248	0.51		24.3	1.41	9.34	5.37	2450	6200	240	0.15	2.6	59	1.5	0.14	< 0.5	8.81	< 0.5	25.5	1300
SB029-SS-063	23-Oct-10		2290	< 0.5	4.6	172	< 0.5		25.1	0.733	8.58	2.87	28.2	4960	49.2	0.698	< 0.5	10.3	1.1	0.051	< 0.5	3	< 0.5	14.8	115
SB029-SS-064	23-Oct-10		2240	< 0.5	4.6	180	< 0.5		27.9	0.651	8.78	3.03	28.5	4000	43.4	0.886	0.58	12.7	0.94	< 0.05	< 0.5	4.5	< 0.5	15.8	137
SB029-SS-066	23-Oct-10		3690	7.49	1.9	334	< 0.5	1.09	30.7	0.19	13.9	2.37	8.14	6800	3.3	< 0.05	< 0.5	8.02	1.2	0.42	< 0.5	< 0.5	< 0.5	16.7	122
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building																									
SB029-SS-065	23-Oct-10		3140	8	7.7	1450	< 0.5		38.1	2.38	40.6	4.82	345	9800	2270	0.15	0.69	16.1	2.2	0.14	< 0.5	57.7	< 0.5	18.3	3210
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 02																									
SB029-SS-067	23-Oct-10		828	1.8	0.84	282	< 0.5		39.5	1.21	3.4	0.651	21.4	1290	1.4	0.1	1.7	5.65	2.2	0.067	< 0.5	< 0.5	1.2	2.6	125
SB029 Cape Dorset 2 (Nottingham Island) Storage Building																									
SB029-SS-068	23-Oct-10		3850	< 0.5	4.2	199	< 0.5		27.9	0.11	12.7	3.6	5.72	9200	4.1	< 0.05	< 0.5	10.2	0.71	0.083	< 0.5	< 0.5	< 0.5	22.7	23.5
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 04																									
SB029-SS-069	23-Oct-10		2250	< 0.5	2.9	127	< 0.5		5.5	0.073	10.1	1.62	6.01	4780	14.3	< 0.05	1.1	7.64	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	13.2	30.7
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 05																									
SB029-SS-070	23-Oct-10		3750	< 0.5	3.2	159	< 0.5		6	0.885	13.1	3.18	5.79	8700	2.8	< 0.05	< 0.5	10.1	0.93	0.056	< 0.5	< 0.5	< 0.5	18.3	125
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 06																									
SB029-SS-071	23-Oct-10		8590	< 0.5	4	1230	< 0.5		31.4	0.24	21.6	5.74	22.9	19500	23.3	< 0.05	1.1	11.2	1.7	0.066	< 0.5	8.17	1.2	41.8	46.9
SB029-SS-073	23-Oct-10		3810	< 0.5	3.2	432	< 0.5		27.7	0.076	13.2	3.07	5.78	8200	3.3	< 0.05	< 0.5	9.54	0.55	< 0.05	< 0.5	< 0.5	0.58	17	19.7
SB029 Cape Dorset 2 (Nottingham Island) Background Sample																									
SB029-SS-076	23-Oct-10		4450	< 0.5	4.8	124	< 0.5	0.233	26.9	0.12	13.2	3.2	4.9	6600	14.4	< 0.05	< 0.5	12.4	< 0.5	< 0.05	< 0.5	< 0.5	< 0.5	20.5	17.5

NOTE - Results for the following metals with no CCME guidelines are not included in this table, but can be viewed in the laboratory analytical results in Appendix C: Bismuth, Calcium, Cerium, Cesium, Europium, Gallium, Lanthanum, Lithium, Magnesium, Manganese, Niobium, Phosphorous, Rubidium, Scandium, Strontium, Tellurium, Thorium, Titanium, Tungsten, Yttrium and Zirconium.

Table 2: Soil Analytical Results - PHCs and BTEX

Guidelines for PHC results: Canada Wide Standards for PHCs in Soil, Agricultural/Wildland Setting (CCME, 2008)
Guidelines for BTEX results: Canadian Soil Quality Guidelines, Agricultural/Wildland Setting (CCME, 2004)

VI[1] = Vapour Intrusion Pathway
ES = Eco Soil Contact Pathway
AL = Groundwater Pathway for the Protection of Aquatic Life
DC/SI = Direct Contact/Soil Ingestion Pathway

Exceeds VI
Exceeds ES
Exceeds AL
Exceeds DC/SI
MDL > AL Guidelin
Duplicates

1. Exceedances of VI guidelines only relevant at certain locations (within 30 m of inhabitable structures)

Name	Date	F1 ug/g	F1 - BTEX	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (tot)
Criteria	CCME VI	6-8	30	150	---		0.0095	120	55	14
	CCME ES		210	150	300		25	75	55	95
	CCME AL		970	380	---	---	1	0.1	50	37
	CCME DC/SI		12000	6800	15000	21000	11	1400	910	3700
Sample	Units	---	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
SB029 Cape Dorset 2 (Nottingham Island) House										
SB029-SS-030	23-Oct-10	< 2.6	< 2.6	18	257	57	0.026	0.28	0.045	0.226
SB029 Cape Dorset 2 (Nottingham Island) House & Garage										
SB029-SS-031[1]	23-Oct-10	5.2	5.3	2,150	3,700	491	< 0.019	< 0.039	< 0.019	< 0.0047
SB029-SS-032[1]	23-Oct-10	< 2.5	< 2.5	111	10,900	112	< 0.016	< 0.032	< 0.016	< 0.0045
SB029-SS-033[1]	23-Oct-10	< 2.4	< 2.4	109	13,200	116	< 0.015	< 0.03	< 0.015	< 0.0041
SB029-SS-035[1]	23-Oct-10	< 2.8	3.7	78.1	439	135	0.12	0.813	0.21	1.28
SB029-SS-036[1]	23-Oct-10	< 2.3	< 2.3	7.2	42.8	49	< 0.015	< 0.029	< 0.015	0.029
SB029-SS-037[1]	23-Oct-10	< 2.1	< 2.1	371	996	99.7	< 0.013	0.046	< 0.013	0.037
SB029 Cape Dorset 2 (Nottingham Island) Shed										
SB029-SS-038[1]	23-Oct-10	< 3.9	< 3.9	11	201	37	0.048	0.2	0.031	0.194
SB029 Cape Dorset 2 (Nottingham Island) Generator Building										
SB029-SS-040[1]	23-Oct-10	< 2.8	< 2.8	41.7	1,080	163	< 0.018	< 0.035	< 0.018	0.022
SB029-SS-041[1]	23-Oct-10	2.9	2.9	948	1,160	156	< 0.013	< 0.026	< 0.013	< 0.0039
SB029-SS-042[1]	23-Oct-10	< 2.4	< 2.4	104	1,340	205	< 0.015	< 0.029	< 0.015	0.03
SB029-SS-043[1]	23-Oct-10	< 2.4	< 2.4	123	1,560	253	< 0.015	< 0.031	< 0.015	0.035
SB029-SS-045[1]	23-Oct-10	< 2.5	< 2.5	31.3	4.5	< 6.4	< 0.015	< 0.031	< 0.015	< 0.0042
SB029 Cape Dorset 2 (Nottingham Island) ASTs										
SB029-SS-046	23-Oct-10	81.2	81.5	6,930	2,150	33	< 0.031	< 0.063	0.1	0.838
SB029-SS-047[1]	23-Oct-10	3.9	3.9	1,510	589	18	< 0.02	< 0.04	< 0.02	< 0.006
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 03										
SB029-SS-048[1]	23-Oct-10	< 3.3	< 3.3	11	42.6	30	< 0.021	< 0.042	< 0.021	0.023
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 01										
SB029-SS-049[1]	23-Oct-10	< 3.5	< 3.5	23.8	74.7	22	< 0.022	< 0.044	< 0.022	0.071
SB029-SS-050[1]	23-Oct-10	< 2.8	< 2.8	< 2.5	78	28	< 0.018	< 0.035	< 0.018	0.02
SB029 Cape Dorset 2 (Nottingham Island) Old Kitchen										
SB029-SS-051[1]	23-Oct-10	< 2.2	< 2.2	91.6	106	23	< 0.014	0.039	0.017	0.109
SB029 Cape Dorset 2 (Nottingham Island) Bunkhouse										
SB029-SS-052[1]	23-Oct-10	< 2.4	< 2.4	3,100	2,930	12	< 0.015	< 0.03	< 0.015	< 0.0042
SB029-SS-053[1]	23-Oct-10	< 2.6	< 2.6	2,490	1,940	12	< 0.016	< 0.032	< 0.016	< 0.0047
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building										
SB029-SS-061[1]	23-Oct-10	< 3.5	< 3.5	34.5	39	< 7.1	< 0.022	< 0.044	< 0.022	< 0.0056
SB029-SS-062[1]	23-Oct-10	< 6.2	< 6.2	8,010	9,520	15	< 0.078	< 0.16	< 0.078	< 0.016
SB029-SS-063[1]	23-Oct-10	< 2.5	< 2.5	5.1	34	37	< 0.015	< 0.031	< 0.015	< 0.0043
SB029-SS-064[1]	23-Oct-10	< 2.8	< 2.8	5.5	24	13	< 0.017	< 0.034	< 0.017	< 0.0049
SB029-SS-066[1]	23-Oct-10	< 5.1	< 5.1	8.3	33	< 5.1	< 0.032	< 0.064	< 0.032	< 0.0072
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building										
SB029-SS-065[1]	23-Oct-10	< 2.7	< 2.7	282	2,710	83.8	0.026	0.21	0.026	0.162
SB029 Cape Dorset 2 (Nottingham Island) Background Sample										
SB029-SS-076	23-Oct-10	< 2.5	< 2.5	9.8	12	< 5.8	< 0.016	< 0.031	< 0.016	< 0.0044

Table 3: Soil Analytical Results - PCBs and PAHs

CSQG (Ag) = Canadian Soil Quality Guidelines for Coarse Soil in an Agricultural/Wildland Setting (CCME, 2007)

AL[1] = Groundwater Pathway for the Protection of Aquatic Life
1. Exceedances of AL guidelines only relevant at certain locations (within 10 m of water body)

Exceeds CSQG
Duplicates

	Date	PCB (total)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
Criteria	CSQG (Ag)	0.5	21.5	---	2.5	0.1	0.6	0.1	---	0.1	6.2	0.1	15.4	15.4	0.1	0.1	0.1	0.1
	CSQG (AL)	---	0.28	320	---	---	8800	---	---	---	---	---	---	0.25	---	0.013	0.046	---
Sample	Units	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/
SB029 Cape Dorset 2 (Nottingham Island) House																		
SB029-SS-030	23-Oct-10	< 0.008																
SB029 Cape Dorset 2 (Nottingham Island) House & Garage																		
SB029-SS-031	23-Oct-10	< 0.0075																
SB029-SS-032	23-Oct-10	< 0.0064																
SB029-SS-033	23-Oct-10	< 0.0062																
SB029-SS-035	23-Oct-10	< 0.0056																
SB029-SS-036	23-Oct-10	< 0.0059																
SB029-SS-037	23-Oct-10	0.021																
SB029 Cape Dorset 2 (Nottingham Island) Shed																		
SB029-SS-038[1]	23-Oct-10	< 0.011	< 0.012	< 0.012	< 0.012	0.01	< 0.012	0.034	< 0.012	< 0.012	0.03	< 0.012	0.036	0.036	< 0.012	0.364	0.235	0.0
SB029 Cape Dorset 2 (Nottingham Island) Generator Building																		
SB029-SS-039	23-Oct-10	< 0.008																
SB029-SS-040	23-Oct-10	< 0.0072																
SB029-SS-041	23-Oct-10	< 0.0057																
SB029-SS-042	23-Oct-10	0.062																
SB029-SS-043	23-Oct-10	0.047																
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 03																		
SB029-SS-048	23-Oct-10	< 0.0068																
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 01																		
SB029-SS-049	23-Oct-10	< 0.008																
SB029-SS-050	23-Oct-10	< 0.0058																
SB029 Cape Dorset 2 (Nottingham Island) Old Kitchen																		
SB029-SS-051	23-Oct-10	< 0.0066																

Table 3: Soil Analytical Results - PCBs and PAHs

CSQG (Ag) = Canadian Soil Quality Guidelines for Coarse Soil in an Agricultural/Wildland Setting (CCME, 2007)

AL[1] = Groundwater Pathway for the Protection of Aquatic Life
1. Exceedances of AL guidelines only relevant at certain locations (within 10 m of water body)

Exceeds CSQG
Duplicates

	Date	PCB (total)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
Criteria	CSQG (Ag)	0.5	21.5	---	2.5	0.1	0.6	0.1	---	0.1	6.2	0.1	15.4	15.4	0.1	0.1	0.1	0.1
	CSQG (AL)	---	0.28	320	---	---	8800	---	---	---	---	---	---	0.25	---	0.013	0.046	---
Sample	Units	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
SB029 Cape Dorset 2 (Nottingham Island) Bunkhouse																		
SB029-SS-052	23-Oct-10	< 0.0083																
SB029-SS-053	23-Oct-10	< 0.0077																
SB029-SS-054	23-Oct-10	< 0.0051																
SB029-SS-056	23-Oct-10	< 0.0097																
SB029-SS-057	23-Oct-10	< 0.0092																
SB029-SS-058	23-Oct-10	0.025																
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building																		
SB029-SS-061	23-Oct-10	< 0.01																
SB029-SS-062	23-Oct-10	< 0.016																
SB029-SS-063	23-Oct-10	< 0.0077																
SB029-SS-064	23-Oct-10	< 0.0091																
SB029-SS-066	23-Oct-10	< 0.014																
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building																		
SB029-SS-065	23-Oct-10	< 0.0098																
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 02																		
SB029-SS-067	23-Oct-10	< 0.027																
SB029 Cape Dorset 2 (Nottingham Island) Storage Building																		
SB029-SS-068	23-Oct-10	< 0.0082																
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 04																		
SB029-SS-069	23-Oct-10	< 0.0099																
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 05																		
SB029-SS-070	23-Oct-10	< 0.0075																
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 06																		
SB029-SS-071	23-Oct-10	< 0.0068																
SB029-SS-073	23-Oct-10	< 0.0072																
SB029 Cape Dorset 2 (Nottingham Island) Background Sample																		
SB029-SS-076	23-Oct-10	< 0.0077																

Table 4: Soil Analytical Results - Leachate

GN = Government of Nunavut Guideline for Industrial Waste Discharges in Nunavut (2002)

	Date	Arsenic	Barium	Boron	Cadmium	Chromium (tot)	Lead	Mercury	Selenium	Silver	Uranium
Criteria	GN	2500	100000	---	500	5000	5000	100	1000	5000	---
Sample	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SB029 Cape Dorset 2 (Nottingham Island) House & Garage											
SB029-SS-032	23-Oct-10	<1	225	766	0.34	1.3	519	<0.1	<1	<1	<1
SB029 Cape Dorset 2 (Nottingham Island) Shed											
SB029-SS-038	23-Oct-10	<1	247	383	0.41	1.1	1.2	<0.1	<1	<1	<1
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 03											
SB029-SS-048	23-Oct-10	<1	125	363	11.3		<1	<0.1	<1	<1	<1
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building											
SB029-SS-062	23-Oct-10	16.2	272	1360	2.45	2.4	10.8	<0.1	2.2	<1	<1
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building											
SB029-SS-065	23-Oct-10	2.1	211	383	1.67	1.9	24.2	<0.1	<1	<1	<1

Table 5: Sediment Analytical Results - Metals and PCBs

ISQG = Canadian Sediment Quality Guidelines - Interim Freshwater SQGs (CCME, 2002)
PEL = Canadian Sediment Quality Guidelines - Freshwater Probable Effect Levels (CCME, 2002)

Exceeds ISQG
Exceeds PEL

	Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (tot)	Chromium (VI)	Cobalt	Copper	Iron	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Uranium	Vanadium	Zinc
Criteria	ISQG	---	---	5.9	---	---	---	0.6	37.3	---	---	35.7	---	35	0.17	---	---	---	---	---	---	---	---	123
	PEL	---	---	17	---	---	---	3.5	90	---	---	197	---	91.3	0.486	---	---	---	---	---	---	---	---	315
Sample	MDL	5	0.5	0.5	0.5	0.5	1	0.05	0.5	0.01	0.05	0.5	1000	0.5	0.05	0.5	0.5	0.5	0.05	0.5	0.5	0.5	0.5	0.5
	Units	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g	ug/g
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 01																								
SB029-SD-029	23-Oct-10	1010	< 0.5	2.8	65.8	< 0.5	3.1	0.062	3.5	1.13	1.7	< 0.5	21.6	< 2.5	< 0.5	5.64	< 0.5	466	< 0.05	< 0.5	< 0.5	< 0.5	5.47	7.21

NOTE - Results for the following metals with no CCME guidelines are not included in this table, but can be viewed in the laboratory analytical results in Appendix C: Bismuth, Calcium, Cerium, Cesium, Europium, Gallium, Lanthanum, Lithium, Magnesium, Manganese, Niobium, Phosphorous, Rubidium, Scandium, Strontium, Tellurium, Thorium, Titanium, Tungsten, Yttrium and Zirconium.

Table 6: Surface Water Analytical Results - Metals

CWQG = Canadian Water Quality Guidelines - Freshwater (CCME, 2007)

Field Blank
Trip Blank
Exceeds CWQG

	Date	pH	Total Hardness	Aluminum (tot)	Antimony (tot)	Arsenic (tot)	Barium (tot)	Beryllium (tot)	Boron (tot)	Cadmium (tot)	Chromium (tot)	Chromium (VI)	Cobalt (tot)	Copper (tot)	Iron (tot)	Lead (tot)	Mercury (tot)	Molybdenum (tot)	Nickel (tot)	Selenium (tot)	Silver (tot)	Thallium (tot)	Tin (tot)	Uranium (tot)	Vanadium (tot)	Zinc (tot)
Criteria	CWQG	6.5-9	---	5-100*	---	5	---	---	---	0.017	---	1	---	2-4*	300	1-7*	0.026	73	25-150*	1	0.1	0.8	---	---	---	30
	MDL	---	0.1	1	0.5	1	1	0.5	2	0.1	1	1	0.1	1	20	1	0.1	1	1	1	0.1	0.1	1	1	1	1
Sample	Units	---	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SB029 Cape Dorset 2 (Nottingham Island) Shed																										
SB029-SW-034	23-Oct-10	8.25	222000	5.9	< 0.5	< 1	94.3	< 0.5	18	< 0.1	< 1	< 0.8	0.23	< 1	120	< 1	< 0.1	< 1	4.6	< 1	< 0.1	< 0.1	< 1	< 1	< 1	11
SB029 Cape Dorset 2 (Nottingham Island) Generator Building																										
SB029-SW-044	23-Oct-10	8.21	101000	3.3	< 0.5	< 1	49.5	< 0.5	30.2	< 0.1	< 1	< 0.8	< 0.1	1.6	< 20	< 1	< 0.1	1.6	1.4	< 1	< 0.1	< 0.1	< 1	< 1	< 1	4.7
SB029 Cape Dorset 2 (Nottingham Island) ASTs																										
SB029-SW-055	23-Oct-10	8.04	343000	2310	< 0.5		171	< 0.5	9.1	0.25	< 1	5.9	2.06	7.4	3400	6.9	< 0.1	< 1	9.9	< 1	< 0.1	< 0.1	< 1	< 1	6.9	42
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building																										
SB029-SW-059	23-Oct-10	8.27	264000	190	3.7	< 1	105	< 0.5	14	< 0.1	< 1	1.5	0.45	4.3	381	1.9	< 0.1	1.7	4.8	1.2	< 0.1	< 0.1	< 1	< 1	1.4	25
SB029-SW-060	23-Oct-10	8.21	236000	1.1	1.5	< 1	118	< 0.5	13	< 0.1	< 1	< 0.8	0.18	2.6	< 20	< 1	< 0.1	1.9	4.1	< 1	< 0.1	< 0.1	< 1	< 1	< 1	29
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 06																										
SB029-SW-072	23-Oct-10	8.56	43500	691	1.4	1.3	76.6	< 0.5	292	< 0.1	< 1	< 0.8	0.16	8	651	< 1	< 0.1	12	1.4	2.4	< 0.1	< 0.1	< 1	9.1	12.3	11
SB029 Cape Dorset 2 (Nottingham Island) Lake 01																										
SB029-SW-074	23-Oct-10	8.21	145000	23.7	< 0.5	< 1	75	< 0.5	52.9	< 0.1	< 1	0.99	< 0.1	1.7	54	< 1	< 0.1	2.9	2.3	1.8	< 0.1	< 0.1	< 1	< 1	1.2	1.3
SB029 Cape Dorset 2 (Nottingham Island) Lake 02																										
SB029-SW-075	23-Oct-10	8.3	211000	4.8	< 0.5	< 1	117	< 0.5	103	< 0.1	< 1	0.82	0.13	2.8	< 20	< 1	< 0.1	4.3	2.6	2	< 0.1	< 0.1	< 1	2	1.3	2.3
SB029-SW-077	23-Oct-10	6.91	< 100	< 1	< 0.5	< 1	< 1	< 0.5	3.3	< 0.1	< 1	< 0.8	< 0.1	< 1	< 20	< 1	< 0.1	< 1	< 1	< 1	< 0.1	< 0.1	< 1	< 1	< 1	1.6
SB029 Cape Dorset 2 (Nottingham Island) Trip Blank																										
SB029-SW-028	23-Oct-10	8.1	< 100	4.6	< 0.5	< 1	< 1	< 0.5	< 2	< 0.1	< 1	< 0.8	< 0.1	< 1	< 20	< 1	< 0.1	< 1	< 1	< 1	< 0.1	< 0.1	< 1	< 1	< 1	1.3

NOTE - Results for the following metals with no CCME guidelines are not included in this table, but can be viewed in the laboratory analytical results in Appendix C: Bismuth, Calcium, Cerium, Cesium, Europium, Gallium, Lanthanum, Lithium, Magnesium, Manganese, Niobium, Potassium, Rubidium, Scandium, Silicon, Sodium, Strontium, Tellurium, Thorium, Titanium, Tungsten, Yttrium and Zirconium.

* CWQG for Al is pH dependent; CWQGs for Cu, Ni and Pb are hardness dependent

CWQG for Al = 5 μg/L at pH < 6.5
CWQG for Al = 100 μg/L at pH ≥ 6.5

CWQG for Cu = 2 μg/L at a water hardness of 0-120 mg/L as $CaCO_3$
CWQG for Cu = 3 μg/L at a water hardness of 120-180 mg/L as $CaCO_3$
CWQG for Cu = 4 μg/L at a water hardness of > 180 mg/L as $CaCO_3$

CWQG for Pb = 1 μg/L at a water hardness of 0-60 mg/L as $CaCO_3$
CWQG for Pb = 2 μg/L at a water hardness of 60-120 mg/L as $CaCO_3$
CWQG for Pb = 4 μg/L at a water hardness of 120-180 mg/L as $CaCO_3$
CWQG for Pb = 7 μg/L at a water hardness of > 180 mg/L as $CaCO_3$

CWQG for Ni = 25 μg/L at a water hardness of 0-60 mg/L as $CaCO_3$
CWQG for Ni = 65 μg/L at a water hardness of 60-120 mg/L as $CaCO_3$
CWQG for Ni = 110 μg/L at a water hardness of 120-180 mg/L as $CaCO_3$
CWQG for Ni = 150 μg/L at a water hardness of > 180 mg/L as $CaCO_3$

Table 7: Surface Water Analytical Results - General Chemistry

CWQG = Canadian Water Quality Guidelines - Freshwater (CCME, 2007)

Field Blank
Trip Blank

	Date	pH	Total Hardness	Acidity	Bromide	Chloride	Conductivity	Fluoride	Alkalinity as $CaCO_3$	Nitrate (as N)	Nitrite (as N)	Phosphate	Sulphate	Total Dissolved Solids	Total Sulphur
Criteria	CWQG	6.5-9	---	---	---	---	---	---	---	13000	60	---	---	---	---
	MDL	---	0.1	1	0.1	0.2	---	0.1	1	100	30	1	1	25	0.8
Sample	Units	---	mg/L	mg/L	mg/L	mg/L	mS/cm	mg/L	mg/L	ug/L	ug/L	mg/L	mg/L	mg/L	mg/L
SB029 Cape Dorset 2 (Nottingham Island) Shed															
SB029-SW-034	23-Oct-10		222	15.6	<0.1	35.9	0.563	<0.1	208	<100	<30	<1	11.7	260	6
SB029 Cape Dorset 2 (Nottingham Island) Generator Building															
SB029-SW-044	23-Oct-10		101	13.5	<0.1	21	0.378	<0.1	130	<100	<30	<1	13.8	220	7.2
SB029 Cape Dorset 2 (Nottingham Island) ASTs															
SB029-SW-055	23-Oct-10		343	17.5	<0.1		0.582	<0.1	230	<100	<30	<1	9.2	350	5.2
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building															
SB029-SW-059	23-Oct-10		264	14.6	<0.1	57.6	0.652	<0.1	196	<100	<30	<1	32.9	390	16.4
SB029-SW-060	23-Oct-10		236	16.4	<0.1	45.4	0.687	<0.1	208	270	<30	<1	49.6	440	19.3
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 06															
SB029-SW-072	23-Oct-10		43.5	<1	<0.1	117	0.727	0.76	104	100	<30	<1	41.3	470	19.2
SB029 Cape Dorset 2 (Nottingham Island) Lake 01															
SB029-SW-074	23-Oct-10		145	12.2	<0.1	120	0.684	<0.1	105	120	<30	<1	22.7	450	12.4
SB029 Cape Dorset 2 (Nottingham Island) Lake 02															
SB029-SW-075	23-Oct-10		211	12.4	1.26	191	1.04	0.14	140	<100	<30	<1	68.8	600	27.8
SB029-SW-077	23-Oct-10		<0.1	10.9	<0.1	<0.2	0.0215	<0.1	21.2	<100	<30	<1	<1	60	<0.8
SB029 Cape Dorset 2 (Nottingham Island) Trip Blank															
SB029-SW-028	23-Oct-10		<0.1	14.3	<0.1	39.2	0.428	<0.1	113	530	<30	<1	26.3	280	<0.8

Table 8: Surface Water Analytical Results - PHCs, BTEX and PCBs

CWQG = Canadian Water Quality Guidelines - Freshwater (CCME, 2007)

								Trip Blank		
Name	Date	F1 - BTEX	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	PCB (total)
Criteria	CWQG	---	---	---	---	370	2	90	---	---
Sample	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SB029 Cape Dorset 2 (Nottingham Island) Shed										
SB029-SW-034	23-Oct-10									5.37
SB029 Cape Dorset 2 (Nottingham Island) Generator Building										
SB029-SW-044	23-Oct-10									< 0.0045
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building										
SB029-SW-059	23-Oct-10									< 0.0058
SB029-SW-060	23-Oct-10									< 0.004
SB029 Cape Dorset 2 (Nottingham Island) Debris Area 06										
SB029-SW-072	23-Oct-10									< 0.0039
SB029 Cape Dorset 2 (Nottingham Island) Lake 01										
SB029-SW-074	23-Oct-10									< 0.0044
SB029 Cape Dorset 2 (Nottingham Island) Lake 02										
SB029-SW-075	23-Oct-10									< 0.0031
SB029 Cape Dorset 2 (Nottingham Island) ASTs										
SB029-SW-055	23-Oct-10	< 25	27200	10500	160	< 0.25	< 0.5	< 0.5	1.3	
SB029 Cape Dorset 2 (Nottingham Island) Trip Blank										
SB029-SW-028	23-Oct-10	< 25	< 39	< 39	< 39	< 0.25	< 0.5	< 0.5	< 0.5	

Table 9: Surface Water Analytical Results - VOCs

CWQG = Canadian Water Quality Guidelines - Freshwater (CCME, 2007)

Trip Blank

Name	Date	1,2,4-Trichlorobenzene ug/L	1,2-Dichlorobenzene ug/L	1,2-Dichloroethane ug/L	1,3-Dichlorobenzene ug/L	1,4-Dichlorobenzene ug/L	Carbon Tetrachloride ug/L	Chlorobenzene ug/L	Chloroform ug/L	Hexachlorobutadiene ug/L	Methylene Chloride ug/L	Styrene ug/L	Tetrachloroethylene ug/L	Trichloroethylene ug/L
Criteria	CWQG	24	0.7	100	150	26	13.3	1.3	1.8	1.3	98.1	72	111	21
Sample	Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SB029 Cape Dorset 2 (Nottingham Island) ASTs														
SB029-SW-055	23-Oct-10	< 0.25	< 0.25	< 0.25	< 0.5	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
SB029 Cape Dorset 2 (Nottingham Island) Trip Blank														
SB029-SW-028	23-Oct-10	< 0.25	< 0.25	< 0.25	< 0.5	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Table 10: Paint Analytical Results - Metals, PCBs and Leachate

GNWT = Government of Nunavut Guideline for the Management of Waste Lead and Lead Paint (2004)
CEPA = Canadian Environmental Protection Act (GC, 1999)
GN = Government of Nunavut Guideline for Industrial Waste Discharges in Nunavut (2002)

	Date	Lead	PCB (total)	Lead (in leachate)
Criteria	GNWT	600	---	---
	CEPA	---	50	---
	GN	---	---	5000
Sample	Units	ug/g	ug/g	ug/L
SB029 Cape Dorset 2 (Nottingham Island) Old Kitchen				
SB029-PS-008	22-Oct-10	28900	< 0.068	9990
SB029-PS-009	22-Oct-10	36700	< 0.093	13000
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building				
SB029-PS-011	22-Oct-10	910	1.87	
SB029-PS-012	22-Oct-10	23200	10.7	
SB029-PS-013	22-Oct-10	19300	6	
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building				
SB029-PS-015	22-Oct-10	31900	< 0.083	926
SB029 Cape Dorset 2 (Nottingham Island) Bunkhouse				
SB029-PS-016	22-Oct-10	21600	< 0.15	
SB029-PS-018	22-Oct-10	1360	5.37	
SB029-PS-019	22-Oct-10	406	4.84	
SB029-PS-022	22-Oct-10	2810	6	
SB029 Cape Dorset 2 (Nottingham Island) Generator Building				
SB029-PS-023	22-Oct-10	3280	23	
SB029-PS-024	22-Oct-10	26000	0.69	2190
SB029 Cape Dorset 2 (Nottingham Island) House				
SB029-PS-025	22-Oct-10	55000	< 0.1	9.1
SB029 Cape Dorset 2 (Nottingham Island) ASTs				
SB029-PS-027	22-Oct-10	753	< 0.1	

Exceeds GNWT
Excceeds CEPA
Exceeds GN

Table 11: Building Material Analytical Results - Asbestos

NU = Guideline: Management of Waste Asbestos (GN, 2002)

Exceeds NU

Sample	Date	Asbestos, Amosite	Asbestos, Chrysotile	Asbestos, Other	Cellulose	Crocidolite	Fibrous Glass	Glass Wool	Mineral Wool	Non-Fibrous Material	Other Non-Asbestos Fibers	Tremolite	Vermiculite
Criteria	NU	1	1	1	---	1	---	---	---	---	---	1	---
	MDL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Units	%	%	%	%	%	%	%	%	%	%	%	%
SB029 Cape Dorset 2 (Nottingham Island) Storage Shed 01													
SB029-BM-001	22-Oct-10	< 0.5	25	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	75	< 0.5	< 0.5	< 0.05
SB029-BM-002	22-Oct-10	< 0.5	< 0.5	< 0.5	30	< 0.5	1	< 0.5	< 0.5	69	< 0.5	< 0.5	< 0.05
SB029-BM-003	22-Oct-10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1	< 0.5	98	1	< 0.5	< 0.05
SB029-BM-004	22-Oct-10	< 0.5	10	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	70	< 0.5	< 0.5	< 0.05
SB029-BM-005	22-Oct-10	< 0.5	< 0.5	< 0.5	5		< 0.5	< 0.5	< 0.5	95	< 0.5	< 0.5	< 0.05
SB029 Cape Dorset 2 (Nottingham Island) Old Kitchen													
SB029-BM-006	22-Oct-10	< 0.5	< 0.5	< 0.5	20	< 0.5	< 0.5	10	< 0.5	70	< 0.5	< 0.5	< 0.05
SB029-BM-007	22-Oct-10	< 0.5	< 0.5	< 0.5	10	< 0.5	< 0.5	5	< 0.5	85	< 0.5	< 0.5	< 0.05
SB029 Cape Dorset 2 (Nottingham Island) New Radio Building													
SB029-BM-010	22-Oct-10	< 0.5	0.75	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	99.3	< 0.5	< 0.5	< 0.05
SB029 Cape Dorset 2 (Nottingham Island) Old Radio Building													
SB029-BM-014	22-Oct-10	< 0.5	< 0.5	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	95	< 0.5	< 0.5	< 0.05
SB029 Cape Dorset 2 (Nottingham Island) Bunkhouse													
SB029-BM-017	22-Oct-10	< 0.5	< 0.5	< 0.5	98	< 0.5	< 0.5	< 0.5	< 0.5	2	< 0.5	< 0.5	< 0.05
SB029-BM-020	22-Oct-10	< 0.5	< 0.5	< 0.5	5	< 0.5	< 0.5	< 0.5	< 0.5	95	< 0.5	< 0.5	< 0.05
SB029-BM-021	22-Oct-10	< 0.5	20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	80	< 0.5	< 0.5	< 0.05
SB029 Cape Dorset 2 (Nottingham Island) House													
SB029-BM-026	22-Oct-10	< 0.5	< 0.5	< 0.5	95	< 0.5	< 0.5	< 0.5	< 0.5	5	< 0.5	< 0.5	< 0.05

Table 12: QA/QC Field and Lab Duplicate Results - Soils

Parameter	MDL	Units	SB029-SS-032	SB029-SS-033	RPD (%)	SB029-SS-042	SB029-SS-043	RPD (%)	SB029-SS-052	SB029-SS-053	RPD (%)	SB029-SS-063	SB029-SS-064	RPD (%)	SB029-SS-036	SB029-SS-036 (Lab replicate)	RPD (%)	SB029-SS-045	SB029-SS-045 (Lab replicate)	RPD (%)	SB029-SS-076	SB029-SS-076 (Lab replicate)	RPD (%)
Metals																							
Aluminum	5	ug/g	1160	1440	22%	1440	1580	9%	1240	1100	12%	2290	2240	2%	< 0.5	< 0.5	--	1290	1270	2%			n/a
Antimony	0.5	ug/g	1.3	1.2	8%	2	2.1	5%	3.4	1.1	**102%**	< 0.5	< 0.5	--	3.6	3.6	0%	< 0.5	< 0.5	--			n/a
Arsenic	0.5	ug/g	5.53	5.61	1%	5	4.8	4%	4.7	4.2	11%	4.6	4.6	0%	90.2	89.5	1%	3.6	3.6	0%			n/a
Barium	0.5	ug/g	132	202	**42%**	212	193	9%	74.2	58.6	23%	172	180	5%	< 0.5	< 0.5	--	65.1	69.3	6%			n/a
Beryllium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--			n/a
Bismuth	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	5.4	5.3	2%	< 0.5	< 0.5	--			n/a
Boron	1	ug/g	27	25.4	6%	25.4	29.2	14%	26.4	7	**116%**	25.1	27.9	11%	0.09	0.13	36%	4	3.8	5%			n/a
Cadmium	0.05	ug/g	0.15	0.15	0%	1.58	2	23%	0.22	0.12	**59%**	0.733	0.651	12%	107000	117000	9%	< 0.05	0.076	--			n/a
Calcium	25	ug/g	137000	117000	16%		150000	n/a	173000	196000	12%	113000	102000	10%	65.8	63.1	4%	119000	116000	3%			n/a
Cerium	0.5	ug/g	19	29	**42%**		34.2	n/a	39	19.1	**69%**	88.6	62.2	35%	< 0.5	< 0.5	--	44	45	2%			n/a
Cesium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	4.8	4.4	9%	< 0.5	< 0.5	--			n/a
Chromium (to	0.5	ug/g	7.89	12.2	**43%**	14.6	11.4	25%	8.67	6.36	31%	8.58	8.78	2%	1.78	1.93	8%	6.26	5.39	15%			n/a
Cobalt	0.05	ug/g	2.3	3.01	27%	2.22	2.12	5%	1.93	1.59	19%	2.87	3.03	5%	17.3	18.5	7%	1.48	1.44	3%			n/a
Copper	0.5	ug/g	9.82	12.6	25%	40.2	86.1	**73%**	8.82	4	**75%**	28.2	28.5	1%	< 0.5	< 0.5	--	1.2	1.7	34%			n/a
Europium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	0.64	0.65	2%	2.5	2.9	15%	< 0.5	< 0.5	--			n/a
Gallium	0.5	ug/g	2.9	4.1	34%	4.8	4.4	9%	1.9	1.6	17%	4.1	5.49	29%	4410	4170	6%	1.9	2.1	10%			n/a
Iron	1000	ug/g	16300	25600	**44%**	5800	5600	4%	3820	4280	11%	4960	4000	21%	33.9	33.6	1%	3600	4330	18%			n/a
Lanthanum	0.5	ug/g	10.6	15	34%	24.9	17.7	34%	21.7	10.7	**68%**	44.3	31.1	35%	25.2	16.2	**43%**	22	22.8	4%			n/a
Lead	0.5	ug/g	3890	4620	17%	178	166	7%	23.7	19.3	20%	49.2	43.4	13%	3.1	3.4	9%	1.4	1.3	7%			n/a
Lithium	2.5	ug/g	< 2.5	< 2.5	--	3.2	3.5	9%	< 2.5	< 2.5	--	4.8	4.4	9%	9850	9770	1%	< 2.5	< 2.5	--			n/a
Magnesium	200	ug/g	14000	12300	13%	12500	9880	23%	10500	13600	26%	7980	8190	3%	74.3	77.1	4%	11800	10800	9%			n/a
Manganese	0.5	ug/g	118	134	13%	76.7	78.8	3%	67.5	53.4	23%	105	105	0%	< 0.05	< 0.05	--	69.9	70.4	1%			n/a
Mercury	0.05	ug/g	< 0.05	< 0.05	--	< 0.05	< 0.05	--	< 0.05	< 0.05	--	0.698	0.886	24%	< 0.5	< 0.5	--	< 0.05	< 0.05	--			n/a
Molybdenum	0.5	ug/g	1.3	1.8	32%	< 0.5	< 0.5	--	1.1	0.73	40%	< 0.5	0.58	--	7.95	8.16	3%	< 0.5	< 0.5	--			n/a
Nickel	0.5	ug/g	12	14.3	17%	12.2	13.4	9%	11.7	10.9	7%	10.3	12.7	21%	< 0.5	< 0.5	--	8.48	9.66	13%			n/a
Niobium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	0.75	0.72	4%	453	452	0%	< 0.5	< 0.5	--			n/a
Phosphorus	25	ug/g	230	370	**49%**	533	486	9%	397	305	26%	706	638	10%	6.16	6.61	7%	342	311	9%			n/a
Rubidium	0.5	ug/g	3.9	5.05	26%	4.4	4.6	4%	4.2	2.9	37%	6.12	5.97	2%	0.95	0.95	0%	3.2	3.1	3%			n/a
Scandium	0.5	ug/g	1	1.1	10%	1.1	1.2	9%	0.88	0.79	11%	1.8	1.5	18%	< 0.5	< 0.5	--	0.85	0.9	6%			n/a
Selenium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	0.57	--	< 0.5	< 0.5	--	1.1	0.94	16%	525	609	15%	< 0.5	< 0.5	--			n/a
Silver	0.05	ug/g	< 0.05	< 0.05	--	0.098	0.081	19%	< 0.05	< 0.05	--	0.051	< 0.05	--	< 0.05	< 0.05	--	< 0.05	< 0.05	--			n/a
Strontium	0.5	ug/g	612	443	32%	682	850	22%	844	852	1%	537	512	5%	457	525	14%	303	322	6%			n/a
Tellurium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--			n/a
Thallium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--			n/a
Thorium	0.5	ug/g	3.4	1.7	**67%**	3.2	2	**46%**	2.4	0.99	**83%**	2.8	2.7	4%	4.4	3.6	20%	3.4	3.4	0%			n/a
Tin	0.5	ug/g	1.3	3.6	**94%**	18.9	5.4	**111%**	6.84	< 0.5	--	3	4.5	40%	1.9	1.8	5%	< 0.5	< 0.5	--			n/a
Titanium	0.5	ug/g	148	197	28%	199	211	6%	154	105	38%	292	259	12%	256	229	11%	220	222	1%			n/a
Tungsten	0.5	ug/g	< 0.5	< 0.5	--	1.4	0.68	**69%**	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--			n/a
Uranium	0.5	ug/g	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--			n/a
Vanadium	0.5	ug/g	8.54	9.05	6%	11	9.81	11%	7.06	7.58	7%	14.8	15.8	7%	7.86	8.76	11%	8.94	9.78	9%			n/a
Yttrium	0.5	ug/g	1.9	2.2	15%	3.1	3.1	0%	2.6	2.7	4%	5.68	5.92	4%	3.3	3.2	3%	3.8	3.8	0%			n/a
Zinc	0.5	ug/g	153	199	26%	195	205	5%	49.8	38.8	25%	115	137	17%	26.8	30.7	14%	7.41	6.66	11%			n/a
Zirconium	0.5	ug/g	< 0.5	< 0.5	--	0.94	0.56	--	< 0.5	< 0.5	--	< 0.5	< 0.5	--	0.6	0.54	11%	0.83	0.73	13%			n/a
PHCs																							
F1	2.6	ug/g	< 2.5	< 2.4	--	< 2.4	< 2.4	--	< 2.4	< 2.6	--	< 2.5	< 2.8	--			n/a			n/a	< 2.5	< 2.5	--
F1 - BTEX	2.6	ug/g	< 2.5	< 2.4	--	< 2.4	< 2.4	--	< 2.4	< 2.6	--	< 2.5	< 2.8	--			n/a			n/a	< 2.5	< 2.5	--
F2	1.3	ug/g	111	109	2%	104	123	17%	3,100	2,490	22%	5.1	5.5	8%	7.2	5.9	20%			n/a	8.1	9.8	19%
F3	3.1	ug/g	10,900	13,200	19%	1,340	1,560	15%	2,930	1,940	**41%**	34	24	34%	42.8	34	23%			n/a	9.9	12	19%
F4	4.4	ug/g	112	116	4%	205	253	21%	12	12	0%	37	13	**96%**	49	28	**55%**			n/a	< 5	< 5.8	--
BTEX																							
Benzene	0.013	ug/g	< 0.016	< 0.015	--	< 0.015	< 0.015	--	< 0.015	< 0.016	--	< 0.015	< 0.017	--			n/a			n/a	< 0.016	< 0.016	--
Toluene	0.026	ug/g	< 0.032	< 0.03	--	< 0.029	< 0.031	--	< 0.03	< 0.032	--	< 0.031	< 0.034	--			n/a			n/a	< 0.032	< 0.031	--
Ethylbenzene	0.013	ug/g	< 0.016	< 0.015	--	< 0.015	< 0.015	--	< 0.015	< 0.016	--	< 0.015	< 0.017	--			n/a			n/a	< 0.016	< 0.016	--
o-Xylene	0.013	ug/g	< 0.016	< 0.015	--	< 0.015	< 0.015	--	< 0.015	< 0.016	--	< 0.015	< 0.017	--			n/a			n/a	< 0.016	< 0.016	--
p+m-Xylene	0.013	ug/g	< 0.016	< 0.015	--	0.03	0.035	15%	< 0.015	< 0.016	--	< 0.015	< 0.017	--			n/a			n/a	< 0.016	< 0.016	--
Xylene (tot)	0.0041	ug/g	< 0.0045	< 0.0041	--	0.03	0.035	15%	< 0.0042	< 0.0047	--	< 0.0043	< 0.0049	--			n/a			n/a	< 0.0045	< 0.0044	--
PCBs																							
PCB (total)	0.0062	ug/g	< 0.0064	< 0.0062	--	0.062	0.047	28%	< 0.0083	< 0.0077	--	< 0.0077	< 0.0091	--			n/a			n/a	< 0.0093	< 0.0077	--

APPENDIX C
ANALYTICAL RESULTS TABLES

Table E1: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals Background Samples

					Area of Potential Environmental Concern	Background Samples									
					Sample ID	2012-BG1	2012-BG2	2012-BG3	2012-BG4	2012-BG5	2012-BG6	2012-BG7	2012-BG8	2012-BG9	2012-BG10
					Date Sampled	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012	11/8/2012
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**										
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Arsenic	mg/kg	AMRSP Tier 2	30	4	<2	<2	2	<2	<2	<2	<2	<2	<2
		Barium	mg/kg	CCME Agricultural	750	150	89	16	130	54	68	29	32	29	38
		Cadmium	mg/kg	AMRSP Tier 2	5	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
		Cobalt	mg/kg	AMRSP Tier 2	50	4	2	2	4	2	1	3	1	1	3
		Chromium	mg/kg	AMRSP Tier 2	250	22	8	5	14	7	6	4	3	4	10
		Copper	mg/kg	AMRSP Tier 2	100	10	4	3	13	4	1	4	2	1	6
		Tin	mg/kg	CCME Agricultural	5	2	1	1	2	2	1	1	1	1	1
		Manganese	mg/kg	NA	NA	150	78	61	160	86	55	88	54	31	130
		Molybdenum	mg/kg	CCME Agricultural	5	0.9	<0.5	<0.5	0.6	<0.5	<0.5	1	<0.5	0.7	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	12	4.1	3.3	8.9	4.2	2.9	3.1	1.8	2.2	6.3
		Lead	mg/kg	AMRSP Tier 1	200	4	2	2	3	2	1	2	1	2	3
		Selenium	mg/kg	CCME Agricultural	1	1.7	0.7	0.5	1.3	0.9	0.7	<0.5	0.7	0.5	0.6
		Zinc	mg/kg	AMRSP Tier 2	500	27	12	7	21	16	9	10	6	10	13
		Aluminium	mg/kg	CCME R/P Tier 1	NA	6800	2700	1700	4700	2900	2100	2300	1500	2000	3100
		Antimony	mg/kg	CCME Agricultural	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		Beryllium	mg/kg	CCME Agricultural	4	0.3	0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	0.1
		Boron	mg/kg	CCME Agricultural	NA	17	9	4	6	7	5	7	5	<2	8
		Iron	mg/kg	CCME Agricultural	NA	13000	5800	4000	11000	6100	4200	5500	2900	5300	7300
		Magnesium	mg/kg	CCME Agricultural	NA	22000	11000	8200	5400	8300	12000	17000	7900	1300	23000
		Vanadium	mg/kg	CCME Agricultural	130	33	12	7	22	10	10	9	6	7	13
		Thallium	mg/kg	CCME Agricultural	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		Uranium	mg/kg	CCME Agricultural	23	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
		Mercury	mg/kg	AMRSP Tier 2	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/ Wild land Coarse Grained soils
2. AMSRP Teir 1/2: Abandoned Military Site Remediation Critera, Aboriginal Affairs and Northern Development Canada, December 2008.

Yellow cells indicate samples above criteria.

NA: Guideline is not available

Table E2: Y22101291 Nottingham Island Water Quality Sampling Results, August 2012

						Area of Potential Environmental Concern	BACKGROUND (LAKE 3)	BACKGROUND (LAKE 4)	APEC 3	APEC 9	APEC 12		APEC 2	APEC 16			APEC 17				APEC 19			APEC 21		APEC 24	APEC 25	
						Environment Type	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Marine Water	Marine Water	Marine Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Marine Water	Marine Water	Marine Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water	Fresh Water
						Sample ID	2012-SW-11	2012-SW-10	SBO29-SW-060 WESA^	SBO29-SW-059 WESA^	2012-SW-09	SBO29-SW-034 WESA^	2012-SW-02	2012-SW-06	2012-SW-07	2012-SW-08	2012-SW-13	SBO29-SW-044 WESA^	2012-SW-12	SBO29-SW-055 WESA^	2012-SW-05	2012-SW-04	2012-SW-03	2012-SW-01	SBO29-SW-072 WESA^	SBO29-SW-074 WESA^	2012-SW-14	SBO29-SW-075 WESA^
						Date Sampled	8/15/2012	8/15/2012	10/23/2010	10/23/2010	8/15/2012	10/23/2010	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012	10/23/2010	8/15/2012	10/23/2010	8/15/2012	8/15/2012	8/15/2012	8/15/2012	10/23/2010	10/23/2010	8/15/2012	10/23/2010
			Fresh Water Environment		Marine Water Environment																							
Matrix	Category	Parameter	Guideline	Criteria	Guideline	Criteria	Units																					
Water	Routine Package	Conductivity	CCME FWAL	NA	CCME MWAL	NA	mS/cm	0.30	0.27	0.687	0.652	0.47	0.563	0.16	50	50	51	0.42	0.378	0.32	0.582	42	48	48	0.17	0.727	0.684	0.61	1.040
		Flouride	CCME FWAL	0.12	CCME FWAL	0.12	mg/L	**0.20**	**0.20**	<0.1	<0.1	<0.10	<0.1	<0.10	**0.90**	**0.90**	**0.90**	**0.20**	<0.10	**0.20**	<0.10	**0.80**	**0.90**	**0.90**	<0.10	**0.76**	<0.10	**0.20**	**0.14**
		Ion Balance	CCME FWAL	NA	CCME MWAL	NA	n/a	1.2	1.2	---	---	1.1	---	1.2	1.0	1.0	1.1	1.2	---	1.2	---	0.99	1.0	1.0	1.1	---	---	1.1	---
		Nitrates (NO_3)	CCME FWAL	13.00	CCME MWAL	200	mg/L	<0.02	0.11	0.27	<0.10	0.02	<0.10	0.03	<2.00	<2.00	<2.00	0.03	<0.10	0.04	<0.10	<2.00	<2.00	<2.00	0.08	0.10	0.12	0.06	<0.10
		Nitrites (NO_2)	CCME FWAL	0.06	CCME FWAL	0.06	mg/L	<0.02	<0.02	<0.03	<0.03	<0.02	<0.03	<0.02	<10	<10	<10	<0.02	<0.03	<0.02	<0.03	<10	<10	<20	<0.02	<0.03	<0.03	<0.04	<0.03
		Nitrogen Ammonia (NH_3)	CCME FWAL	0.502-1.54*	CCME FWAL	1.54 - 4.84	mg/L	<0.02	0.03	---	---	<0.02	---	<0.02	0.04	0.08	0.08	<0.02	---	<0.02	---	0.03	0.10	0.08	<0.02	---	---	<0.02	---
		Orthophosphate (P)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.05	<0.05	---	---	<0.05	---	<0.05	<0.05	<0.05	<0.05	<0.05	---	<0.05	---	<0.05	<0.05	<0.05	<0.05	---	---	<0.05	---
		Total Hardness	CCME FWAL	NA	CCME MWAL	NA	mg/L	110	82	236	264	190	222	39	6200	6300	6200	160	101	120	343	6200	6100	5300	34	43.5	145	140	211
		pH	CCME FWAL	6.50 - 9.00	CCME MWAL	7.00 - 8.70	pH	8.24	8.05	8.21	8.27	7.84	8.25	8.08	7.97	7.94	7.85	8.33	8.21	8.37	8.04	7.71	7.79	7.84	7.95	8.56	8.21	8.20	8.30
		Total Organic Carbon	CCME FWAL	NA	CCME MWAL	NA	mg/L	4.8	5.7	---	---	5.4	---	3.5	1.5	1.4	1.4	5.5	---	5.5	---	1.7	1.3	1.4	2.4	---	---	3.9	---
		Alkalinity Total (as CaCO3) pH 4.5	CCME FWAL	NA	CCME MWAL	NA	mg/L	110	83	208	196	210	208	45	110	110	110	170	130	130	230	120	110	110	43	104	105	130	140
		Alkalinity (PP as CaCO3) pH 8.3	CCME FWAL	NA	CCME MWAL	NA	mg/L	<1	<1	---	---	<1	---	<1	<1	<1	<1	1	---	2	---	<1	<1	<1	<1	---	---	<1	---
		Bicarbonates (HCO3 as CaCO3)	CCME FWAL	NA	CCME MWAL	NA	mg/L	110	83	---	---	210	---	45	110	110	110	170	---	130	---	120	110	110	43	---	---	130	---
		Carbonate (CO3 as CaCO3)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<1	<1	---	---	<1	---	<1	<1	<1	<1	3	---	3	---	<1	<1	<1	<1	---	---	<1	---
		Chloride	CCME FWAL	120	CCME MWAL	NA	mg/L	17	17	45.4	57.6	24	35.9	14	18000	19000	18000	21	21	16	---	16000	18000	18000	14	117	**120**	91	**191**
		Hydroxide (OH-)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<1	<1	---	---	<1	---	<1	<1	<1	<1	<1	---	<1	---	<1	<1	<1	<1	---	---	<1	---
		Nitrate (N) and Nitrite (N)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.02	0.11	---	---	0.02	---	0.03	<10	<10	<10	0.03	---	0.04	---	<10	<10	<20	0.08	---	---	0.06	---
		Sulfates	CCME FWAL	NA	CCME MWAL	NA	mg/L	11.0	10	49.6	32.9	13	11.7	8.3	2500	2600	2500	11.0	13.8	8.5	9.2	2200	2500	2500	14.0	41.3	22.7	22.0	68.8
		Total Dissolved Solids	CCME FWAL	NA	CCME MWAL	NA	mg/L	160	140	440	390	270	260	110	35000	34000	35000	240	220	180	350	30000	33000	35000	100	470	450	330	600
	Hydrocarbons	Benzene	CCME FWAL	0.37	CCME MWAL	0.11	mg/L	<0.00040	<0.00040	---	---	<0.00040	---	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	---	<0.00040	<0.00025	<0.00040	<0.00040	<0.00040	<0.00040	---	---	<0.00040	---
		Toluene	CCME FWAL	0.002	CCME FWAL	0.215	mg/L	<0.00040	<0.00040	---	---	<0.00040	---	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	---	<0.00040	<0.0005	<0.00040	<0.00040	<0.00040	<0.00040	---	---	<0.00040	---
		Ethylbenzene	CCME FWAL	0.09	CCME FWAL	0.022	mg/L	<0.00040	<0.00040	---	---	<0.00040	---	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	---	<0.00040	<0.0005	<0.00040	<0.00040	<0.00040	<0.00040	---	---	<0.00040	---
		o-Xylene	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.008	<0.008	---	---	<0.008	---	<0.008	<0.008	<0.008	<0.008	<0.008	---	<0.008	---	<0.008	<0.008	<0.008	<0.008	---	---	<0.008	---
		m+p-Xylene	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.004	<0.004	---	---	<0.004	---	<0.004	<0.004	<0.004	<0.004	<0.004	---	<0.004	---	<0.004	<0.004	<0.004	<0.004	---	---	<0.004	---
		Xylenes	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.008	<0.008	---	---	<0.008	---	<0.008	<0.008	<0.008	<0.008	<0.008	---	<0.008	0.0013	<0.008	<0.008	<0.008	<0.008	---	---	<0.008	---
		F1 (C6-C10)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.10	<0.10	---	---	<0.10	---	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	---	<0.10	<0.10	<0.10	<0.10	---	---	<0.10	---
		F1-BTEX	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.10	<0.10	---	---	<0.10	---	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	<0.025	<0.10	<0.10	<0.10	<0.10	---	---	<0.10	---
		F2 (C10-C16)	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.10	<0.10	---	---	<0.10	---	<0.10	<0.10	<0.10	<0.10	<0.10	---	<0.10	27.2	<0.10	<0.10	<0.10	<0.10	---	---	<0.10	---
	PCBs	Total PCB	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.000012	<0.000012	<0.000004	<0.0000058	<0.000012	0.00537	<0.000012	<0.000012	0.000013	0.000016	<0.000012	0.0000045	<0.000012	---	0.000018	<0.000012	<0.000012	<0.000012	<0.0000039	<0.0000044	<0.000012	<0.0000031
	Total Metals	Aluminium	CCME FWAL	0.100**	CCME MWAL	0.100**	mg/L	<0.010	0.014	0.0011	**0.190**	<0.010	0.0059	0.074	**0.110**	0.810	0.850	<0.010	0.0033	<0.010	**2.31**	0.060	0.051	0.019	**0.200**	**0.691**	0.0237	0.029	0.0048
		Antimony	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.01	<0.01	0.0015	0.0037	<0.01	<0.0005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0005	<0.01	<0.0005	<0.01	<0.01	<0.01	<0.01	0.0014	<0.0005	<0.01	<0.0005
		Arsenic	CCME FWAL	0.005	CCME MWAL	0.0125	mg/L	<0.001	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.001	0.0024	0.0038	0.0035	<0.001	<0.001	<0.001	---	0.0022	0.0020	0.0020	<0.001	0.0013	<0.001	<0.001	<0.001
		Barium	CCME FWAL	NA	CCME MWAL	NA	mg/L	0.036	0.031	0.1180	0.1050	0.088	0.0943	0.023	<0.020	0.035	0.030	0.092	0.0495	0.058	0.1710	<0.020	<0.020	<0.020	0.052	0.0766	0.0750	0.099	0.117
		Beryllium	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.0005
		Bisumuth	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.0025	<0.0025	---	---	<0.0025	---	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	---	<0.0025	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---	<0.0025	---
		Boron	CCME FWAL	1.500	CCME MWAL	NA	mg/L	<0.050	0.067	0.013	0.014	<0.050	0.018	<0.050	5.500	5.600	6.200	<0.050	0.0302	0.051	0.0091	45.000	4.700	5.100	0.061	0.282	0.0529	0.080	0.103
		Cadmium	CCME FWAL	0.000013 - 000063***	CCME FWAL	0.00012	mg/L	<0.000300	<0.00030	<0.00010	<0.00010	<0.00030	<0.00010	<0.000300	<0.00030	<0.00030	<0.00030	<0.000300	<0.000100	<0.000300	0.000250	<0.00030	<0.00030	<0.00030	<0.000300	<0.000100	<0.000100	<0.000300	<0.000100
		Calcium	CCME FWAL	NA	CCME MWAL	NA	mg/L	29.0	22	---	---	59	---	10.0	450	470	460	48.0	---	32.0	---	390	420	440	7.9	---	---	36.0	---
		Chromium	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.05	<0.0050	<0.001	<0.001	<0.0050	<0.001	<0.05	0.0060	0.0084	0.0081	<0.05	<0.001	<0.05	<0.001	0.0061	0.0052	0.0061	<0.05	<0.01	<0.001	<0.05	<0.001
		Cobalt	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.05	<0.005	0.00018	0.00045	<0.005	0.00023	<0.05	<0.005	<0.005	<0.005	<0.05	<0.00010	<0.05	0.00206	<0.005	<0.005	<0.005	<0.05	0.00016	<0.00100	<0.05	0.00013
		Copper	CCME FWAL	0.00200 - 0.00400***	CCME FWAL	0.0020 - 0.0040***	mg/L	<0.00200	<0.00200	<0.0020	**0.0043**	<0.00200	<0.0010	**0.00670**	<0.00200	0.0023	0.0026	<0.00200	0.00160	<0.00200	**0.00740**	0.00200	<0.0020	<0.0020	**0.00290**	**0.00800**	0.00170	<0.00200	0.00280
		Iron	CCME FWAL	0.30	CCME FWAL	0.300	mg/L	<0.06	0.067	<0.020	**0.381**	0.073	0.120	0.16	**0.320**	**2.200**	**2.200**	<0.06	<0.02	<0.06	**3.400**	0.130	0.140	<0.060	0.11	**0.651**	0.054	**1.10**	<0.020
		Lead	CCME FWAL	0.00100 - 0.00700***	CCME FWAL	0.0025 - 0.0070***	mg/L	<0.00100	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	<0.00100	0.0014	**0.0130**	0.0062	<0.00100	<0.00100	<0.00100	0.00690	<0.0010	<0.0010	<0.0010	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
		Lithium	CCME FWAL	NA	CCME FWAL	NA	mg/L	<0.1	<0.10	---	---	<0.10	---	<0.1	0.15	0.15	0.15	<0.1	---	<0.1	---	0.14	0.14	0.15	<0.1	---	---	<0.1	---
		Magnesium	CCME FWAL	NA	CCME MWAL	NA	mg/L	4.6	3.6	---	---	7.0	---	2.5	1400.0	1400.0	1400.0	5.7	---	6.1	---	1100.0	1200.0	1200.0	2.2	---	---	9.0	---
		Manganese	CCME FWAL	NA	CCME MWAL	NA	mg/L	0.0041	0.0045	---	---	0.0270	---	<0.0040	0.0049	0.0370	0.0320	<0.0040	---	<0.0040	---	<0.0040	<0.0040	<0.0040	<0.0040	---	---	<0.0040	---
		Mercury	CCME FWAL	0.000026	CCME MWAL	0.000016	mg/L	<0.000010	<0.000010	**<0.0001**	**<0.0001**	<0.000010	**<0.0001**	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0001	<0.000010	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.0001	<0.0001	<0.000010	<0.0001
		Molybdenum	CCME FWAL	0.073	CCME FWAL	0.073	mg/L	<0.005	<0.005	0.0019	0.0017	<0.005	<0.001	<0.005	0.011	0.011	0.011	<0.005	0.0016	<0.005	<0.0010	0.011	0.011	0.011	<0.005	0.0120	0.0029	<0.005	0.0043
		Nickel	CCME FWAL	0.0250 - 0.1500***	CCME FWAL	0.082 - 0.150***	mg/L	<0.0020	<0.002	0.0041	0.0048	<0.002	0.0046	<0.0020	<0.002	<0.002	<0.002	<0.0020	0.0014	<0.0020	0.0099	<0.002	<0.002	<0.002	<0.0020	0.0014	0.0023	<0.0020	0.0026
		Potassium	CCME FWAL	NA	CCME MWAL	NA	mg/L	1.3	1.4	---	1.1	---	---	1.5	420.0	410.0	420.0	1.8	---	1.6	---	360.0	400.0	420.0	1.6	---	---	3.4	---
		Selenium	CCME FWAL	0.001	CCME FWAL	0.001	mg/L	<0.010	<0.010	<0.0010	**0.0012**	<0.010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.001	<0.010	<0.001	<0.010	<0.010	<0.010	<0.010	0.0024	0.0018	<0.010	0.0020
		Silver	CCME FWAL	0.0001	CCME FWAL	0.0001	mg/L	<0.0010	<0.0010	<0.0001	<0.0001	<0.0010	<0.0001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001	<0.0010	<0.0001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0001	<0.0001	<0.0010	<0.0001
		Sodium	CCME FWAL	NA	CCME MWAL	NA	mg/L	19	17	---	---	31	---	15	12000	11000	12000	25	---	21	---	11000	10000	9400	21	---	---	69	---
		Strontium	CCME FWAL	NA	CCME MWAL	NA	mg/L	0.160	0.14	---	---	0.43	---	0.049	8.30	8.20	8.40	0.380	---	0.160	---	7.70	8.10	8.40	0.240	---	---	0.410	---
		Thallium	CCME FWAL	0.0008	CCME FWAL	0.0008	mg/L	<0.0200	<0.0200	<0.0001	<0.0001	<0.0200	<0.0001	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0001	<0.0200	<0.0001	<0.0200	<0.0200	<0.0200	<0.0200	<0.0001	<0.0001	<0.0200	<0.0001
		Tin	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.02	<0.02	<0.001	<0.001	<0.02	<0.001	<0.02	<0.02	<0.02	<0.02	<0.001	<0.02	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.001	<0.001	<0.02	<0.001
		Titanium	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.01	<0.01	---	---	<0.01	---	<0.01	11.00	0.10	0.10	<0.01	---	<0.01	---	<0.01	<0.01	<0.01	<0.01	---	---	<0.01	---
		Vanadium	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.02	<0.02	<0.001	0.0014	<0.02	<0.001	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0010	<0.02	0.0069	<0.02	<0.02	<0.02	<0.02	0.0123	0.0012	<0.02	0.0013
		Zinc	CCME FWAL	0.0300	CCME FWAL	0.030	mg/L	<0.0070	<0.007	0.029	0.025	**0.130**	0.011	0.0110	<0.007	0.008	0.010	<0.0070	0.0047	<0.0070	0.0042	<0.007	<0.007	<0.007	<0.0070	0.0110	0.0013	<0.0070	0.0023
	Dissolved Metals	Aluminium	CCME FWAL	0.1000**	CCME FWAL	0.100**	mg/L	<0.0300	<0.030	---	---	<0.030	---	0.0700	0.030	**0.110**	0.030	<0.0300	---	<0.0300	---	<0.030	<0.030	<0.030	**0.2100**	---	---	<0.0300	---
		Antimony	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.003	<0.003	---	---	<0.003	---	<0.003	<0.003	<0.003	<0.003	<0.003	---	<0.003	---	<0.003	<0.003	<0.003	<0.003	---	---	<0.003	---
		Arsenic	CCME FWAL	0.005	CCME MWAL	0.0125	mg/L	<0.001	<0.0010	---	---	<0.0010	---	<0.001	0.0020	0.0020	0.0020	<0.001	---	<0.001	---	0.0020	0.0020	0.0020	<0.002	---	---	<0.001	---
		Barium	CCME FWAL	NA	CCME MWAL	NA	mg/L	0.04	0.030	---	---	0.090	---	0.02	<0.020	<0.02	<0.02	0.09	---	0.06	---	<0.02	<0.02	<0.02	0.05	---	---	0.08	---
		Cadmium	CCME FWAL	0.000013 - 000063***	CCME MWAL	0.00012	mg/L	<0.001000	<0.00100	---	---	<0.00100	---	<0.001000	<0.00100	<0.00100	<0.00100	<0.001000	---	<0.001000	---	<0.00100	<0.00100	<0.00100	<0.001000	---	---	<0.001000	---
		Chromium	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.030	<0.030	---	---	<0.005	---	<0.005	<0.005	<0.005	<0.005	<0.030	---	<0.030	---	<0.005	<0.005	<0.005	<0.005	---	---	<0.005	---
		Cobalt	CCME FWAL	NA	CCME MWAL	NA	mg/L	<0.02	<0.02	---	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	<0.02	---	<0.02	---	<0.02	<0.02	<0.02	<0.02	---	---	<0.03	---
		Copper	CCME FWAL	0.00200 - 0.00353***	CCME FWAL	0.0020 - 0.0040***	mg/L	<0.00300	<0.0030	---	---	<0.0030	---	<0.00300	<0.0030	<0.0030	<0.0030	<0.00300	---	<0.00300	---	<0.0030	<0.0030	<0.0030	<0.00300	---	---	<0.00300	---
		Lead	CCME FWAL	0.00100 - 0.00579***	CCME FWAL	0.0025 - 0.0070***	mg/L	<0.00100	<0.0010	---	---	<0.0010	---	<0.00100	0.0010	0.0040	<0.0010	<0.00100	---	<0.00100	---	<0.0010	<0.0010	<0.0010	<0.00100	---	---	<0.00100	---
		Manganese	CCME FWAL	NA	CCME MWAL	NA	mg/L	0.006	0.005	---	---	0.027	---	<0.003	0.003	0.011	<0.003	<0.003	---	<0.003	---	<0.003	<0.003	<0.003	<0.003	---	---	<0.003	---
		Molybdenum	CCME FWAL	0.073	CCME FWAL	0.073	mg/L	<0.010	<0.010	---	---	<0.010	---	<0.010	0.010	0.010	0.010	<0.010	---	<0.010	---	<0.010	0.010	0.010	<0.01	---	---	<0.010	---
		Nickel	CCME FWAL	0.0250 - 0.1366***	CCME FWAL	0.082 - 0.150***	mg/L	<0.0100	<0.010	---	---	<0.010	---	<0.0100	<0.010	<0.010	<0.010	<0.0100	---	<0.0100	---	<0.010	<0.010	<0.010	<0.0100	---	---	<0.0100	---
		Selenium	CCME FWAL	0.001	CCME FWAL	0.001	mg/L	<0.001	<0.001	---	---	<0.001	---	<0.001	<0.001	<0.001	<0.001	<0.001	---	<0.001	---	<0.001	0.001	<0.001	<0.001	---	---	<0.001	---
		Silver	CCME FWAL	0.0001	CCME FWAL	0.0001	mg/L	<0.0003	<0.0003	---	---	**0.0004**	---	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	---	<0.0003	---	<0.0003	<0.0003	<0.0003	<0.0003	---	---	<0.0003	---
		Sodium	CCME FWAL	NA	CCME MWAL	NA	mg/L	20	18	---	---	26	---	16	10000	11000	11000	26	---	22	---	8600	10000	10000	20	---	---	71	---
		Zinc	CCME FWAL	0.030	CCME FWAL	0.030	mg/L	**0.036**	0.006	---	---	**0.150**	---	0.016	<0.005	0.007	0.007	0.008	---	<0.005	---	0.006	0.016	0.009	0.010	---	---	0.006	---

CCME: Marine Water Aquatic Life (MWAL) criteria shall be applied to samples collected at stations from the Strait as well as in the pooled surface water that have the potential to drain into the Strait during high water conditions. In the event that a MWAL criteria has not been established the Fresh Water Aquatic Life (FWAL) criteria will be applied.
CCME: Freshwater Water Aquatic Life (FWAL) criteria shall be applied to sampling stations at pooled surface waters that do not have the potential to drain into the Strait during high water conditions.
As per the Guideline Analysis Approved by PWGSC/AANDC, CCME FWAL criteria has been applied to MWAL environments in the event of a gap in criteria
The laboratory detection limit varies between the 2012 and 2010 surface water samples, as well as between samples of the same collection date due to sample and equipment quality.
NA: Criteria is not available for this parameter
--- denotes parameter not analyzed
^(WESA 2011)
< denotes result below detection level
* = CCME FWAL guideline for Nitrogen Ammonia (NH_3) is pH and water temperature dependent at each station. The calculation of the guideline assumes the water temperature is 5 °C and rounds the analyzed pH to the nearest guideline value.
** CCME guideline for Aluminum is specific to the pH of the water at this site during this particular sampling event. Guideline for pH values < 6.5 = 0.005mg/L and ≥ 6.5 = 0.1 mg/L.
*** = CCME guideline dependent on hardness of the water at each station during this particular sampling event.

Outside CCME Marine Water Quality Guidelines
Outside CCME Fresh Water Quality Guidelines
Detection Limit above CCME Guidelines

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 1						APEC 2	APEC 3								
					Sample ID	2012-SB-36	2012-SB-37	2012-SB-38	2012-SB-39	SB029-SS-049 WESA	SB029-SS-050 WESA	SB029-SS-051	2012-SB-43	2012-SB-44	2012-SB-45	2012-SB-46	2012-SB-47	SB029-SS-061 WESA	SB029-SS-062 WESA	SB029-SS-063 WESA	SB029-SS-066 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	23-10-10	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**																
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	<0.005	<0.005	<0.005	<0.005	<0.022	<0.018	<0.014	<0.005	<0.02	<0.005	<0.005	<0.005	<0.022	<0.078	<0.015	<0.032
		Toluene	mg/kg	CCME Agricultural	0.37	<0.02	<0.02	<0.02	<0.02	<0.044	<0.035	0.039	<0.02	<0.06	<0.02	<0.02	<0.02	<0.044	<0.16	<0.031	<0.064
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	<0.01	<0.01	<0.01	<0.01	<0.022	<0.018	0.017	<0.01	0.08	<0.01	<0.01	<0.01	<0.022	<0.078	<0.015	<0.032
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	<0.02	<0.02	<0.02				<0.02	0.63	<0.02	<0.02	<0.02				
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	<0.04	<0.04	<0.04	<0.04				<0.04	0.9	<0.04	<0.04	<0.04				
		Xylenes	mg/kg	CCME Agricultural	11	<0.04	<0.04	<0.04	<0.04	0.071	0.02	0.109	<0.04	1.5	<0.04	<0.04	<0.04	<0.0056	<0.016	<0.0043	<0.0072
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<3.5	<2.8	<2.2	<10	120	74	<10	<10	<3.5	<6.2	<2.5	<5.1
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<3.5	<2.8	<2.2	<10	120	74	<10	<10	<3.5	<6.2	<2.5	<5.1
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	13	1500	<10	<10	23.8	<2.5	91.6	<10	2600	2600	<10	18	34.5	8010	5.1	8.3
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	56	610	91	26	74.7	78	106	<10	2200	1400	<10	32	39	9520	34	33
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	36	12	22	28	23	<10	30	<10	<10	<10	<7.1	15	37	<5.1
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA																
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	69	2110	91	26	99	78	198	0	4920	4074	0	50	74	17530	39	41
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	56	610	127	38	97	106	129	0	2230	1400	0	32	39	9535	71	33

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/Wild land Coarse Grained soils
2. AMSRP Teir 1/2: Abandonec, Aboriginal Affairs and Northern Development Canada, December 2008.

Yellow cells indicate samples above criteria.

NA=Guideline is not available

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 4				APEC 7			APEC 8		APEC 9				
					Sample ID	2012-SB-40	2012-SB-41	2012-SB-42	SB029-SS-065 WESA	2012-SB-50	2012-SB-51	2012-SB-52	2012-SB-48	2012-SB-49	2012-SB-20	2012-SB-21	2012-SB-22	2012-SB-23	SB029-SS-052 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	23-10-10	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**														
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	0.007	<0.005	<0.005	0.026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.015
		Toluene	mg/kg	CCME Agricultural	0.37	0.03	<0.02	<0.02	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	<0.01	<0.01	<0.01	0.026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.015
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	<0.04	<0.04	<0.04		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	<0.04	<0.04	
		Xylenes	mg/kg	CCME Agricultural	11	<0.04	<0.04	<0.04	0.162	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	<0.04	<0.04	<0.0042
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<2.7	<10	<10	<10	<10	<10	<10	<10	<10	<10	<2.4
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<2.7	<10	<10	<10	<10	<10	<10	<10	<10	<10	<2.4
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	<10	530	230	282	<10	<10	<10	<10	<10	53	580	120	<10	3100
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	130	2000	1300	2710	<10	24	13	<10	12	47	800	490	21	2930
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	45	19	13	83.8	<10	<10	<10	<10	<10	<10	<10	<10	14	12
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA														
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	130	2530	1530	2992	0	24	13	0	12	100	1380	610	21	6030
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	175	2019	1313	2794	0	24	13	0	12	47	800	490	35	2942

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/
2. AMSRP Teir 1/2: Abandonec, Aboriginal Affairs and Northern Development Canada, December 2008.
Yellow cells indicate samples above criteria.
NA=Guideline is not available

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 10					
					Sample ID	2012-SB-13	2012-SB-14	2012-SB-15	2012-SB-16	SB029-SS-041 WESA	SB029-SS-042 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**						
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	<0.005	<0.005	<0.005	<0.005	<0.013	<0.015
		Toluene	mg/kg	CCME Agricultural	0.37	<0.02	<0.02	<0.02	<0.02	<0.026	<0.029
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	<0.01	<0.01	<0.01	<0.01	<0.029	<0.015
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	<0.02	<0.02	<0.02		
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	<0.04	<0.04	<0.04	<0.04		
		Xylenes	mg/kg	CCME Agricultural	11	<0.04	<0.04	<0.04	<0.04	<0.0039	0.03
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	2.9	<2.4
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	2.9	<2.4
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	48	71	21	380	948	104
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	170	1800	1700	850	1160	1340
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	71	1000	1200	480	156	205
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA		2800	4900			
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	218	1871	1721	1230	2111	1444
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	241	2800	2900	1330	1316	1545

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/
2. AMSRP Teir 1/2: Abandonet, Aboriginal Affairs and Northern Development Canada, December 2008.
Yellow cells indicate samples above criteria.
NA=Guideline is not available

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 11/ APEC 12																
					Sample ID	2012-SB-6	2012-SB-7	2012-SB-8	2012-SB-9	2012-SB-10	2012-SB-57	2012-SB-58	2012-SB-59	2012-SB-60	2012-SB-61	2012-SB-62	SB029-SS-031 WESA	SB0029-SS-032 WESA	SB029-SS35 WESA	SB029-SS36 WESA	SB029-SS-037 WESA	SB029-SS-038 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	15-08-12	15-08-12	15-08-12	15-08-12	15-08-12	15-08-12	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**																	
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	<0.005	0.008	0.013	<0.005	0.01	<0.005	0.16	<0.005	0.025	0.005	<0.005	<0.019	<0.016	0.12	<0.015	<0.013	0.048
		Toluene	mg/kg	CCME Agricultural	0.37	<0.02	0.05	0.08	<0.02	0.03	<0.02	0.71	<0.02	0.09	<0.02	<0.02	<0.039	<0.032	0.813	<0.029	0.046	0.2
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	<0.01	0.02	0.04	<0.01	0.02	<0.01	0.12	<0.01	0.05	<0.01	<0.01	<0.019	<0.016	0.21	<0.015	<0.013	0.031
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	0.04	0.06	<0.02	<0.02	<0.02	0.17	<0.02	0.1	<0.02	<0.02						
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	<0.04	0.08	0.17	<0.04	0.09	<0.04	0.77	<0.04	0.25	<0.04	0.04						
		Xylenes	mg/kg	CCME Agricultural	11	<0.04	0.12	0.23	<0.04	0.09	<0.04	0.95	<0.04	0.36	<0.04	0.04	<0.0047	<0.0045	1.28	0.029	0.037	0.194
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	81	<10	<10	45	15	<10	65	<10	59	5.2	<2.5	<2.8	<2.3	<2.1	<3.9
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	80	<10	<10	45	13	<10	65	<10	59	5.3	<2.5	3.7	<2.3	<2.1	<3.9
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	10	200	13000	4800	190	4600	2200	4000	5300	34	3700	2150	111	78.1	7.2	371	11
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	34	440	4200	1900	130	980	780	2000	760	51	750	3700	10900	439	42.8	996	201
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	<10	160	310	47	11	<10	160	90	<10	<10	18	491	112	135	49	100	37
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA																	
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	44	640	17281	6700	320	5625	2995	6000	6125	85	4509	5855	11011	517	50	1367	212
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	34	600	4510	1947	141	980	940	2090	760	51	768	4191	11012	574	92	1096	238

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/
2. AMSRP Teir 1/2: Abandonec, Aboriginal Affairs and Northern Development Canada, December 2008.
Yellow cells indicate samples above criteria.
NA=Guideline is not available

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 13					APEC 14													
					Sample ID	2012-SB-3	2012-SB-4	2012-SB-5	2012-SB-55	SB0290SS-030 WESA	2012-SB-17	2012-SB-18	2012-SB-19	2012-SB-24	2012-SB-25	2012-SB-26	2012-SB-27	2012-SB-28	2012-SB-29	2012-SB-30	2012-SB-31	2012-SB-33	SB029-SS-046 WESA	SB029-SS-047 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	15-08-12	23-Oct-10	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**																			
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	0.014	0.061	<0.005	<0.005	0.026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.031	<0.02
		Toluene	mg/kg	CCME Agricultural	0.37	0.06	0.09	<0.02	<0.02	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.063	<0.04
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	0.02	0.01	<0.01	<0.01	0.045	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.1	<0.02
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02		
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	0.08	0.05	<0.04	<0.04		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.1	<0.04	<0.04	<0.04	<0.04	<0.04		
		Xylenes	mg/kg	CCME Agricultural	11	0.08	0.05	<0.04	<0.04	0.226	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.22	<0.04	<0.04	<0.04	<0.04	<0.04	0.838	<0.006
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<2.6	<10	<10	<10	<10	30	<10	520	<10	<10	<10	<10	<10	81.2	3.9
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<2.6	<10	<10	<10	<10	30	<10	520	<10	<10	<10	<10	<10	81.5	3.9
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	<10	62	<10	<10	18	90	<10	1000	<10	4700	<10	9900	380	1900	<10	<10	31	6930	1510
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	90	130	11	180	257	95	17	250	12	1000	<10	1700	130	1400	<10	<10	<10	2150	589
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	45	41	12	36	57	11	11	<10	12	<10	<10	<10	<10	250	<10	<10	<10	33	18
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA																			
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	90	192	11	180	275	185	17	1250	12	5730	0	12120	510	3300	0	0	31	9161	2103
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	135	171	23	216	314	106	28	250	24	1000	0	1700	130	1650	0	0	0	2183	607

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/
2. AMSRP Teir 1/2: Abandonet, Aboriginal Affairs and Northern Development Canada, December 2008.
Yellow cells indicate samples above criteria.
NA=Guideline is not available

Table E3: Y22101291 Nottingham Island Soil Sampling Results-Petroleum Hydrocarbons AMSRP/CCME Criteria

					Area of Potential Environmental Concern	APEC 16					APEC 17		APEC 18				Pipeline			
					Sample ID	2012-SB-1	2012-SB-2	2012-SB-53	2012-SB-54	2012-SB-56	2012-SB-12	SB029-SS-045 WESA	2012-SB-32	2012-SB-34	2012-SB-35	SB029-SS-048 WESA	2012-SB-11	2012-SB-63	2012-SB-64	SB029-SS-040 WESA
					Date Sampled	14-08-12	14-08-12	14-08-12	15-08-12	15-08-12	14-08-12	23-10-10	14-08-12	14-08-12	14-08-12	23-10-10	14-08-12	15-08-12	15-08-12	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**															
Soil	Hydrocarbons	Benzene	mg/kg	CCME Agricultural	0.03	<0.005	0.024	<0.005	0.006	<0.005	<0.005	<0.015	<0.005	<0.005	<0.005	<0.021	<0.005	0.033	<0.005	<0.018
		Toluene	mg/kg	CCME Agricultural	0.37	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.031	<0.02	<0.02	<0.02	<0.042	<0.02	0.07	<0.02	<0.035
		Ethylbenzene	mg/kg	CCME Agricultural	0.082	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01	<0.01	<0.021	<0.01	0.02	<0.01	<0.018
		o-Xylene	mg/kg	Used in sum for CCME	NA	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02		<0.02	0.03	<0.02	
		m+p-Xylene	mg/kg	Used in sum for CCME	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		<0.04	<0.04	<0.04		<0.04	0.1	<0.04	
		Xylenes	mg/kg	CCME Agricultural	11	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.0042	<0.04	<0.04	<0.04	0.023	<0.04	0.13	<0.04	0.022
		F1 (C6-C10)	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<10	<10	<2.5	<10	<10	<10	<3.3	80	<10	43	<2.8
		F1-BTEX	mg/kg	NA used for AMSRP Calculation	NA	<10	<10	<10	<10	<10	<10	<2.5	<10	<10	<10	<3.3	80	<10	43	<2.8
		F2 (C10-C16)	mg/kg	NA used for AMSRP Calculation	NA	0094	<10	<10	<10	130	2800	31.3	<10	<10	<10	11	5000	4900	2000	41.7
		F3 (C16-C34)	mg/kg	NA used for AMSRP Calculation	NA	058	61	15	21	280	820	4.5	13	<10	<10	42.6	4100	1400	460	1080
		F4 (C34-C50)	mg/kg	NA used for AMSRP Calculation	NA	22	56	<10	<10	110	960	<6.4	<10	<10	<10	30	2100	170	68	163
		F4 Gravimetric (Heavy Hydrocarbons)	mg/kg	NA used in Calculation of F4	NA						1700									
		Sum of F1-F3 (Type B)	mg/kg	AMSRP Type B Terrestrial protected	2500	152	61	15	21	410	3620	36	13	0	0	54	9180	6300	2503	1122
		Type A Hydrocarbons (sum of F3/F4)	mg/kg	AMSRP Type A	20000	80	117	15	21	390	1780	5	13	0	0	73	6200	1570	528	1243

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/
2. AMSRP Teir 1/2: Abandonen, Aboriginal Affairs and Northern Development Canada, December 2008.
Yellow cells indicate samples above criteria.
NA=Guideline is not available

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 1						APEC 2
					Sample ID		2012-SB-36	2012-SB-37	2012-SB-38	2012-SB-39	SB029-SS-049 WESA	SB029-SS-050 WESA	SB029-SS-051 WESA
					Date Sampled		14-08-12	14-08-12	14-08-12	14-08-12	2310-10	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**							
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	0.34	0.16	0.068
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	<2	4	7.15	8.33	3.3
		Barium	mg/kg	CCME Agricultural	750	16-150	60	82	100	140	226	161	176
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	<0.1	0.1	0.2	0.2	9.22	8.87	1.57
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	<1	<1	1	2	0.36	0.677	1.83
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	1	2	4	3	2.91	4.68	6.57
		Copper	mg/kg	AMRSP Tier 2	100	13-1	2	2	6	10	21.8	34.9	10.3
		Tin	mg/kg	CCME Agricultural	5	2-1	<1	<1	<1	<1	6.09	5.98	3
		Manganese	mg/kg	Na	NA	31-160	47	36	43	42			
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	0.8	0.88	1.1	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	0.9	1.4	6.7	4.5	13.9	18.7	8.23
		Lead	mg/kg	AMRSP Tier 1	200	1-4	<1	1	12	16	57.2	39.9	111
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	<0.5	0.5	0.7	1	1.4	<0.5
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	<5	<5	35	32	89.7	62.5	147
		Aluminium	mg/kg	NA	NA	1500-6800	570	700	1700	1800	2070	4140	1540
		Antimony	mg/kg	CCME Agricultural	20	ND	<0.1	<0.1	0.9	0.3	2.6	0.79	<0.5
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	<0.1	<0.1	0.2	<0.5	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	5	5	13	8	28	26.6	4.4
		Iron	mg/kg	NA	NA	2900-13000	1400	1500	2900	2600	7000	7300	4760
		Magnesium	mg/kg	NA	NA	1300-22000	8800	6800	6900	8100			
		Vanadium	mg/kg	CCME Agricultural	130	6-33	2	3	6	8	13.6	19.5	8.6
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<0.5	<0.5	<0.5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	0.01	<0.01	0.03	0.07	0.075	<0.05	0.062
		PCB	mg/kg	AMRSP Tier 1	1	1.00							

1. CCME: R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural/Wild land Coarse Grained soils
2. AMSRP Teir 1/2: Abandonec, Aboriginal Affairs and Northern Development Canada, December 2008.
NA=Guideline is not available
Yellow cells indicate samples above criteria.
ND= non-detectable

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 3									APEC 4				APEC 6	APEC 7				APEC 8	
					Sample ID		2012-SB-43	2012-SB-44	2012-SB-45	2012-SB-46	2012-SB-47	SB029-SS-061 WESA	SB029-SS-062 WESA	SB029-SS-063 WESA	SB029-SS-066 WESA	2012-SB-40	2012-SB-41	2012-SB-42	SB029-SS-065 WESA	SB029-SS-067 WESA	2012-SB-50	2012-SB-51	2012-SB-52	SB029-SS-068 WESA	2012-SB-48	2012-SB-49
					Date Sampled		14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	23-10-10	23-10-10	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	14-08-12	14-08-12	14-08-12	23-10-10	14-08-12	14-08-12
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**																				
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	0.14	0.051	0.42	<0.5	<0.5	<0.5	0.14	0.067	<0.5	<0.5	<0.5	0.083	<0.5	<0.5
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	<2	<2	<2	4.6	8.34	4.6	1.9	7	<2	<2	7.7	0.84	<2	6	<2	4.2	<2	2
		Barium	mg/kg	CCME Agricultural	750	16-150	43	140	84	74	54	131	248	172	334	200	68	27	1450	282	83	170	120	199	64	58
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	<0.1	0.4	<0.1	<0.1	0.1	0.578	1.41	0.733	0.19	0.8	0.2	<0.1	2.38	1.21	<0.1	<0.1	<0.1	0.11	<0.1	<0.1
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	1	<1	1	2	3	2.84	5.37	2.87	2.37	2	1	<1	4.82	0.651	2	3	2	3.6	<1	3
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	2	2	3	4	5	12.5	9.34	8.58	13.9	3	3	2	40.6	3.4	4	8	11	12.7	3	10
		Copper	mg/kg	AMRSP Tier 2	100	13-1	4	540	2	2	27	10.2	2450	28.2	8.14	36	10	1	345	21.4	2	9	4	5.72	1	7
		Tin	mg/kg	CCME Agricultural	5	2-1	<1	<1	<1	<1	<1	0.56	8.81	3	<0.5	7	1	<1	57.7	<0.5	<1	<1	<1	<0.5	<1	<1
		Manganese	mg/kg	Na	NA	31-160	49	53	52	64	110					170	74	47			90	100	55		52	150
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	0.9	<0.5	<0.5	<0.5	0.52	2.6	<0.5	<0.5	1.7	<0.5	<0.5	0.69	1.7	<0.5	<0.	<0.5	<0.5	<0.5	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	1.9	4.6	2	2.4	4.8	9.96	59	10.3	8.02	5.4	2.2	1.2	16.1	5.65	2.6	6.1	4.5	10.2	1.8	6.8
		Lead	mg/kg	AMRSP Tier 1	200	1-4	2	8	1	1	13	5.19	240	49.2	3.3	92	36	2	2270	1.4	2	4	2	4.1	1	4
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	1.5	0.7	0.6	0.6	1.1	1.5	1.1	1.2	4.2	<0.5	<0.5	2.2	2.2	0.9	1.2	0.7	0.71	0.5	0.6
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	7	28	8	14	47	372	1300	115	122	210	87	6	3210	125	14	18	15	23.5	5	18
		Aluminium	mg/kg	NA	NA	1500-6800	1200	1400	1500	2200	3900	3800	5060	2290	3690	2600	1500	810	3140	828	2600	3500	2900	3850	1200	3900
		Antimony	mg/kg	CCME Agricultural	20	ND	<0.1	0.6	<0.1	0.2	0.5	4	11.6	<0.5	7.49	0.8	0.4	<0.1	8	1.8	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	0.1	<0.1	<0.1	<0.1	<0.5	0.51	<0.5	<0.5	0.2	<0.1	<0.1	<0.5	<0.5	<0.1	0.2	0.1	<0.5	<0.1	0.1
		Boron	mg/kg	NA	NA	ND-17	4	23	4	5	6	3.7	24.3	25.1	30.7	5	5	5	38.1	39.5	5	7	3	27.9	6	11
		Iron	mg/kg	NA	NA	2900-13000	2500	3500	2800	5400	7700	6600	6200	4960	6800	4100	3100	1800	9800	1290	5200	9900	6900	9200	2600	7600
		Magnesium	mg/kg	NA	NA	1300-22000	9100	1100	12000	13000	11000					4800	6300	15000			2200	6000	6100		13000	26000
		Vanadium	mg/kg	CCME Agricultural	130	6-33	4	7	5	8	12	15.9	25.5	14.8	16.7	12	6	3	18.3	2.6	9	15	14	22.7	5	14
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	4	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<0.5	1.2	<2	<2	<2	<0.5	<2	<2
		Mercury	mg/kg	AMRSP Tier 2	2	ND	<0.01	0.04	<0.01	<0.01	<0.01	<0.05	0.15	0.698	<0.05	0.25	<0.01	0.02	0.15	0.1	<0.01	<0.01	0.02	<0.05	<0.01	<0.01
		PCB	mg/kg	AMRSP Tier 1	1	1.00																				

1. CCME: R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural
2. AMSRP Tier 1/2: Abandonec , Aboriginal Affairs and Northern Development Canada, December 2008.
NA=Guideline is not available
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ND= non-detectable

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 9								
					Sample ID		2012-SB-20	2012-SB-21	2012-SB-22	2012-SB-23	SB029-SS-052 WESA	SB029-SS-054 WESA	SB029-SS-056 WESA	SB029-SS-057 WESA	SB029-SS-058 WESA
					Date Sampled		14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**									
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	0.29	0.078
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	<2	<2	4.7	5.08	4.2	4.2	4.4
		Barium	mg/kg	CCME Agricultural	750	16-150	59	54	71	46	74.2	109	87.2	89.3	110
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	0.1	0.2	0.2	<0.1	0.22	0.15	0.32	0.869	0.23
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	<1	<1	1	1	1.93	2.41	1.93	1.34	2.28
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	2	3	3	4	8.67	8.41	12.6	7.29	9.91
		Copper	mg/kg	AMRSP Tier 2	100	13-1	2	4	6	2	8.82	8.55	19.3	249	11.2
		Tin	mg/kg	CCME Agricultural	5	2-1	<1	<1	9	<1	6.84	0.58	12.2	14.8	1.7
		Manganese	mg/kg	Na	NA	31-160	57	57	89	71					
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	1.2	1.6	2.5	2.7	11.7	14.5	11	7.92	12
		Lead	mg/kg	AMRSP Tier 1	200	1-4	2	12	10	2	23.7	9.42	77.5	22.9	22.4
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	<0.5	0.6	<0.5	<0.5	0.86	0.55	<0.5	<0.5
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	8	40	57	13	49.8	26.7	169	136	69.4
		Aluminium	mg/kg	NA	NA	1500-6800	560	960	1100	1300	1240	1860	1890	1320	1980
		Antimony	mg/kg	CCME Agricultural	20	ND	<0.1	0.1	0.1	<0.1	3.4	<0.45	0.61	<0.5	<0.5
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	4	6	5	6	26.4	5.5	7.9	6	4.8
		Iron	mg/kg	NA	NA	2900-13000	1500	2100	3400	2700	3820	4200	3400	3760	5000
		Magnesium	mg/kg	NA	NA	1300-22000	8900	9300	7700	15000					
		Vanadium	mg/kg	CCME Agricultural	130	6-33	3	4	4	5	7.06	11.7	11.1	7.35	10
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	<0.01	0.02	0.1	0.03	<0.05	<0.05	0.23	0.34	<0.05
		PCB	mg/kg	AMRSP Tier 1	1	1.00									

1. CCME: R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural
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ND= non-detectable

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 10					
					Sample ID		2012-SB-13	2012-SB-14	2012-SB-15	2012-SB-16	SB029-SS-041 WESA	SB029-SS-042 WESA
					Date Sampled		14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**						
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	0.27	0.098
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	<2	<2	2.7	5
		Barium	mg/kg	CCME Agricultural	750	16-150	61	110	74	68	131	212
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	<0.1	0.2	<0.1	<0.1	0.1	1.58
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	1	1	1	1	2.07	2.22
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	4	4	4	5	9.27	14.6
		Copper	mg/kg	AMRSP Tier 2	100	13-1	2	5	3	2	2.3	40.2
		Tin	mg/kg	CCME Agricultural	5	2-1	<1	2	<1	<1	<0.5	18.9
		Manganese	mg/kg	Na	NA	31-160	70	62	63	60		
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	2.2	3.4	3.6	2.6	9.21	12.2
		Lead	mg/kg	AMRSP Tier 1	200	1-4	4	22	5	2	2.7	178
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	<0.5	0.6	<0.5	0.56	<0.5
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	11	58	16	14	16.3	195
		Aluminium	mg/kg	NA	NA	1500-6800	1200	1200	1300	1100	1830	1440
		Antimony	mg/kg	CCME Agricultural	20	ND	<0.1	<0.1	<0.1	<0.1	2.6	2
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	5	5	4	5	23.7	25.4
		Iron	mg/kg	NA	NA	2900-13000	2900	2900	2900	2300	6000	5800
		Magnesium	mg/kg	NA	NA	1300-22000	13000	13000	13000	14000		
		Vanadium	mg/kg	CCME Agricultural	130	6-33	6	5	5	5	17.5	11
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<0.5	<0.5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	<0.01	<0.01	0.02	<0.01	<0.05	<0.05
		PCB	mg/kg	AMRSP Tier 1	1	1.00						

1. CCME R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural
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NA=Guideline is not available
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ND= non-detectable

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 11/ APEC 12															
					Sample ID		2012-SB-6	2012-SB-7	2012-SB-8	2012-SB-9	2012-SB-10	2012-SB-57	2012-SB-58	2012-SB-59	2012-SB-60	2012-SB-61	2012-SB-62	SB029-SS-031 WESA	SB029-SS-032 WESA	SB029-SS-035 WESA	SB029-SS-036 WESA	SB029-SS-037 WESA	SB029-SS-038 WESA
					Date Sampled		14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	15-08-12	15-08-12	15-08-12	15-08-12	15-08-12	15-08-12	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**																	
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	0.05	<0.05	0.089	0.098
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<0.2	<2	<2	<2	<2	<2	<2	<2	<2	<2	3.2	5.53	7.7	3.6	3.8	16.2
		Barium	mg/kg	CCME Agricultural	750	16-150	61	100	100	63	82	87	130	73	42	62	68	178		157	90.2	119	421
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	<0.1	0.2	0.2	<0.1	0.1	0.2	0.3	0.1	0.1	<0.1	<0.1	0.17	0.15	0.39	0.09	0.58	0.47
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	<1	1	1	<1	<1	<1	1	<1	<1	<1	<1	2.21	2.3	3.41	1.78	1.3	16.2
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	2	4	5	2	3	2	5	2	2	2	1	9.1	7.89	11	4.8	6.46	138
		Copper	mg/kg	AMRSP Tier 2	100	13-1	2	26	6	2	14	2	8	3	3	2	2	8.57	9.82	25.7	17.3	28.6	36.2
		Tin	mg/kg	CCME Agricultural	5	2-1	<1	<1	3	<1	<1	<1	3	<1	<1	4	<1	2	1.3	11	1.9	1.4	6.22
		Manganese	mg/kg	Na	NA	31-160	47	59	58	72	57	63	67	38	52	44	88						
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.67	1.3	0.63	<0.5	<0.5	1.3
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	1.3	2.7	2.7	1.8	2	1.3	2.8	2.1	1.6	1.6	1.1	9.82	12	12.6	7.95	6.95	33.9
		Lead	mg/kg	AMRSP Tier 1	200	1-4	9	170	88	1	81	3	100	9	8	15	1000	260	3890	260	25.2	62	1460
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	0.6	<0.5	<0.5	0.5	1.2	0.6	0.6	0.5	<0.5	<0.5	0.75	<0.5	2.1	<0.5	<0.5	3.3
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	11	100	15	7	17	8	66	18	12	24	8	51.9	153	209	26.8	49.9	246
		Aluminium	mg/kg	NA	NA	1500-6800	810	1300	1200	930	980	920	1300	1100	950	730	770	2070	1160	1600	1430	1150	7340
		Antimony	mg/kg	CCME Agricultural	20	ND	0.1	1.3	0.9	<0.1	1.4	0.3	1.3	0.1	0.1	0.2	5.9	3.4	1.3	4.6	<0.5	<0.5	5.28
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	4	6	4	8	7	7	12	9	7	6	6	36.8	27	34.8	5.4	23.8	30.4
		Iron	mg/kg	NA	NA	2900-13000	1700	4100	2400	2600	2400	1700	3400	2300	2200	1700	1700	6100	16300	9900	4410	4030	17600
		Magnesium	mg/kg	NA	NA	1300-22000	10000	12000	8000	18000	7700	8100	7100	8700	9200	7800	13000						
		Vanadium	mg/kg	CCME Agricultural	130	6-33	2	4	5	4	3	4	4	4	3	3	3	12.2	8.54	8.33	7.86	6.88	13.5
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<2	<2	<2	4	<2	<2	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	0.01	0.04	0.04	<0.01	0.03	0.01	0.05	<0.01	0.16	0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
		PCB	mg/kg	AMRSP Tier 1	1	1.00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01							

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Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 13					APEC 14													
					Sample ID		2012-SB-3	2012-SB-4	2012-SB-5	2012-SB-55	SB029-SS-030 WESA	2012-SB-17	2012-SB-18	2012-SB-19	2012-SB-24	2012-SB-25	2012-SB-26	2012-SB-27	2012-SB-28	2012-SB-29	2012-SB-30	2012-SB-31	2012-SB-33	SB029-SS-046 WESA	SB029-SS-047 WESA
					Date Sampled		14-08-12	14-08-12	14-08-12	15-08-12	23-10-10	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**																			
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	<0.5	0.41	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	<2	<2	8.18	<2	3	<2	<2	<2	<2	<2	<2	<2	<2	<2	4.9	4.3
		Barium	mg/kg	CCME Agricultural	750	16-150	130	160	86	50	435	39	91	55	40	46	47	35	230	49	47	36	87	143	49.5
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	0.8	0.5	0.2	<0.1	1.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.095	0.084
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	1	2	1	<1	5.87	<1	5	1	1	<1	1	<1	<1	<1	<1	1	3.77	1.57
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	4	9	4	4	17.8	3	21	5	3	4	5	2	3	2	2	3	5	12.3	7.72
		Copper	mg/kg	AMRSP Tier 2	100	13-1	25	28	19	6	55.3	2	12	2	2	2	3	2	2	2	3	2	3	5.99	2
		Tin	mg/kg	CCME Agricultural	5	2-1	390	10	3	1	39.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5
		Manganese	mg/kg	Na	NA	31-160	76	110	80	37		74	220	53	64	56	62	42	48	54	50	59	74		
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	2.9	3.2	2.5	2.2	15.5	1.9	14	2.1	1.8	2	2.8	1.3	1.9	1.1	1.7	2.8	2.8	12.8	9.69
		Lead	mg/kg	AMRSP Tier 1	200	1-4	460	170	21	16	387	2	5	1	2	<1	1	2	1	1	1	1	2	2.8	3.2
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	0.7	1.1	<0.5	1.2	<0.5	0.8	<0.5	0.9	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	170	230	76	32	474	6	29	7	6	7	7	10	6	<5	<5	6	9	17.4	11.4
		Aluminium	mg/kg	NA	NA	1500-6800	980	1400	1400	1400	3930	890	7300	1000	1200	1000	1500	860	810	780	850	1000	1800	3920	1230
		Antimony	mg/kg	CCME Agricultural	20	ND	3.5	0.6	0.1	0.1	2.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.5	<0.5
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	0.1	<0.1	<0.1	<0.1	0.5	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	4	4	3	7	30.4	5	9	5	5	7	6	9	7	8	5	8	7	22.2	4.2
		Iron	mg/kg	NA	NA	2900-13000	2500	3700	2900	3100	11400	1800	11000	2000	2400	2300	3000	1900	2100	1800	2000	2500	3500	7600	3570
		Magnesium	mg/kg	NA	NA	1300-22000	7600	6000	8900	8500		17000	20000	12000	13000	12000	11000	10000	9200	10000	12000	21000	15000		
		Vanadium	mg/kg	CCME Agricultural	130	6-33	4	5	5	4	13.3	3	23	4	5	4	6	3	5	3	4	4	7	16.8	7.66
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0..5	<0..5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0..5	<0..5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	0.09	0.08	0.02	0.06	0.067	<0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05
		PCB	mg/kg	AMRSP Tier 1	1	1.00	0.06	<0.01	<0.01	<0.01															

1. CCME: R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural
2. AMSRP Teir 1/2: Abandonec, Aboriginal Affairs and Northern Development Canada, December 2008.
NA=Guideline is not available
Yellow cells indicate samples above criteria.
ND= non-detectable

Table E4: Y22101291 Nottingham Island Soil Sampling Results- CCME/AMSRP Total Extractable Metals

					Area of Potential Environmental Concern		APEC 16					Apec 17		APEC 18				APEC 19	APEC 20	APEC 21		Pipeline				
					Sample ID		2012-SB-1	2012-SB-2	2012-SB-53	2012-SB-54	2012-SB-56	2012-SB-12	SB029-SS-045 WESA	2012-SB-32	2012-SB-34	2012-SB-35	SB029-SS-048 WESA	SB0029-SS-069 WESA	SB029-SS-070 WESA	SB029-SS-071 WESA	SB029-SS-073 WESA	2012-SB-11	2012-SB-63	2012-SB-64	SB029-SS-039 WESA	SB029-SS-040 WESA
					Date Sampled		14-08-12	14-08-12	15-08-12	15-08-12	15-08-12	14-08-12	23-10-10	14-08-12	14-08-12	14-08-12	23-10-10	23-10-10	23-10-10	23-10-10	23-10-10	14-08-12	15-08-12	15-08-12	23-10-10	23-10-10
Matrix	**Category**	**Parameter**	**Units**	**Guideline**	**Coarse Grained Criteria**	**Background Concentration Range**																				
Soil	Metals	Silver	mg/kg	CCME Agricultural	20	ND	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.05	<0.5	<0.5	0.6	1.14	<0.05	0.056	0.066	<0.05	<0.5	<0.5	<0.5	0.073	<0.05
		Arsenic	mg/kg	AMRSP Tier 2	30	ND-4	<2	<2	2	<2	<2	<2	3.6	<2	<2	<2	85.9	2.9	3.2	4	3.2	<2	<2	<2	4.8	3.4
		Barium	mg/kg	CCME Agricultural	750	16-150	93	150	48	99	54	50	65.1	51	61	27	1060	127	159	1230	432	41	100	34	476	249
		Cadmium	mg/kg	AMRSP Tier 2	5	ND-0.3	0.2	0.3	<0.1	0.1	0.1	<0.1	<0.05	<0.1	<0.1	<0.1	19.2	0.073	0.885	0.24	0.076	<0.1	0.2	<0.1	0..886	0.15
		Cobalt	mg/kg	AMRSP Tier 2	50	1-4	<1	1	4	1	<1	1	1.48	<1	1	<1	17.4	1.62	3.18	5.74	3.07	2	<1	1	2.23	1.82
		Chromium	mg/kg	AMRSP Tier 2	250	22-3	3	6	12	6	1	4	6.26	2	3	3	76.3	10.1	13.1	21.6	13.2	4	3	3	11.1	6.15
		Copper	mg/kg	AMRSP Tier 2	100	13-1	6	7	9	7	1	2	1.2	2	2	3	30000	6.01	5.79	22.9	5.78	3	7	1	14.3	5.72
		Tin	mg/kg	CCME Agricultural	5	2-1	1	4	<1	7	<1	<1	<0.5	<1	<1	<1	386	<0.5	<0.5	8.17	<0.5	<1	3	<1	5	0.67
		Manganese	mg/kg	Na	NA	31-160	74	89	210	58	37	56		41	88	51						50	57	40		
		Molybdenum	mg/kg	CCME Agricultural	5	ND-1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	17.3	1.1	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		Nickel	mg/kg	AMRSP Tier 2	100	1.8 - 12	2.1	2.9	9.7	2.7	0.8	2.2	8.48	1.3	2.2	1.6	153	7.64	10.1	11.2	9.54	2.7	2.1	1.7	12	6.88
		Lead	mg/kg	AMRSP Tier 1	200	1-4	12	250	5	9	8	1	1.4	2	1	4	6250	14.3	2.8	23.3	3.3	2	240	1	409	17
		Selenium	mg/kg	CCME Agricultural	1	ND-1.7	<0.5	0.7	0.7	0.9	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	0.93	1.7	0.55	<0.5	0.5	<0.5	0.69	<0.5
		Zinc	mg/kg	AMRSP Tier 2	500	9-27	48	170	21	39	21	16	7.41	5	8	22	23900	30.7	125	46.9	19.7	11	44	5	524	60
		Aluminium	mg/kg	NA	NA	1500-6800	1200	1900	4700	1500	720	1400	1290	730	1500	880	13400	2250	3750	8590	3810	1300	1100	1100	1780	1250
		Antimony	mg/kg	CCME Agricultural	20	ND	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.5	<0.1	<0.1	<0.1	140	<0.5	<0.5	<0.5	<0.5	<0.1	4.2	<0.1	7.67	<0.5
		Beryllium	mg/kg	CCME Agricultural	4	ND-0.3	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5
		Boron	mg/kg	NA	NA	ND-17	4	5	12	6	7	4	4	7	7	5	50.3	5.5	6	31.4	27.7	4	5	5	29.9	25.8
		Iron	mg/kg	NA	NA	2900-13000	2600	4000	8500	3400	1900	2900	3600	1500	3000	2300	35600	4780	8700	19500	8200	2700	2500	2100	7200	3920
		Magnesium	mg/kg	NA	NA	1300-22000	9400	8900	31000	12000	7000	13000		9600	13000	12000						11000	5200	11000		
		Vanadium	mg/kg	CCME Agricultural	130	6-33	4	6	15	5	2	6	8.94	3	5	4	91.9	13.2	18.3	41.8	17	5	4	4	8.92	8.34
		Thallium	mg/kg	CCME Agricultural	1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.5	<0.5
		Uranium	mg/kg	CCME Agricultural	23	ND	<2	<2	<2	<2	<2	<2	<0.5	<2	<2	<2	0.88	<0.5	<0.5	1.2	0.58	<2	<2	<2	<0.5	<0.5
		Mercury	mg/kg	AMRSP Tier 2	2	ND	0.02	0.02	<0.01	0.07	0.02	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.01	<0.01	0.072	<0.05
		PCB	mg/kg	AMRSP Tier 1	1	1.00	0.01	<0.01	<0.01		<0.01															

1. CCME: R/P Tier 1: *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (PEHH) by Canadian Council of Ministers of the Environment (CCME), 2007 - Agricultural
2. AMSRP Teir 1/2: Abandonec , Aboriginal Affairs and Northern Development Canada, December 2008.
NA=Guideline is not available
Yellow cells indicate samples above criteria.
ND= non-detectable

Table E5: Y22101291 Nottingham Island Soil Sampling Results- Landfill Suitibilty Suite

				Sample ID	21012-SB-8	2112SB-27	2012-SB-58
				Date Sampled	8/14/2012	8/14/2012	8/15/2012
Matrix	**Category**	**Parameter**	**Units**	**Guideline**			
Soil	Leachable PHCs	Benzene	ug/L	500	ND	ND	ND
		Toluene	ug/L	500	ND	ND	ND
		Ethylbenzene	ug/L	500	ND	ND	ND
		Xylenes	ug/L	500	ND	ND	ND
		F1	ug/L	-	ND	ND	ND
		F2	ug/L	-	850	990	130
		F3	ug/L	-	200	ND	ND
		F4	ug/L	-	ND	ND	ND
		Flash Point		<61	>61	>61	>61
		Free Liquid		pass fail	pass	pass	pass
		PSA		-	Coarse	Coarse	Coarse

1. Alberta Waste Managers Guide: Hazardous Waste Guidelines
Yellow cells indicate samples above criteria.
* ND: Not detectable

Table E6: Y22101291 Nottingham Island Soil Exceedances by APEC

APEC	Sampling Point	Exceedance	Volume of PHC contaminated Soil (m3)	Volume of Metal Contaminated Soil (m3)
APEC 1	SB029-SS-049 WESA	Cd,Se	-	58.4
	SB029-SS-050 WESA	Cd,Se		
APEC 3	2012-SB-44	Ethylbenzene, Type B, Cu	85.8	21.1
	2012-SB-45	Type B		
	SB029-SS-061 WESA	Se		
	SB029-SS-062 WESA	Type B,Cu,Pb,Se,Zn		
	SB029-SS-063 WESA	Se		
	SB029-SS-066 WESA	Se		
APEC 4	2012-SB-40	Se	25.6	26.2
	2012-SB-41	Type B		
	SB029-SS-065 WESA	Type B, Ba,Cu,Sn,Pb,Se,Zn		
APEC 6	SB029-SS-067 WESA	Se	-	31.8
APEC 9	SB029-SS-052 WESA	Type B	4.1	16.5
	SB029-SS-057	Cu		
APEC 11/12	2012-SB-8	Type B	2074.0	97.2
	2012-SB-9	Type B		
	2012-SB-57	Type B, Se		
	2012-SB-58	Benzene, Toluene, Ethylbenzene, Type B		
	2012-SB-59	Type B		
	2012-SB-60	Type B		
	2012-SB-62	Type B, Pb		
	SB029-SS-031 WESA	Type B, Pb		
	SB0029-SS-032 WESA	Type B, Pb		
	SB029-SS35 WESA	Benzene, Toluene, Ethylbenzene, Pb, Se		
	SB029-SS-038 WESA	Benzene, Pb, Se		
APEC 13	2012-SB-3	Sn, Pb	16.5	21.7
	2012-SB-4	Benzene		
	2012-SB-5	Se		
	SB0290SS-030 WESA	Pb, Se		
APEC 14	2012-SB-25	Type B	53.8	-
	2012-SB-27	Type B		
	2012-SB-29	Type B		
	SB029-SS-046 WESA	Type B		
APEC 18	SB029-SS-048 WESA	Ba,Cd,Cu,Sn, Mo,Ni,Pb,Se,Zn,Sb	-	32.1
APEC 16	2012-SB-2	Pb	-	16.5
Apec 17	2012-SB-12	Type B	included in APEC 11/12	
Pipeline	2012-SB-64	Type B	included in APEC 11/12	79.1
	SB029-SS-039 WESA	Pb,Zn		
	2012-SB-11	Type B		
	2012-SB-63	Type B,Pb		
APEC 21	SB029-SS-071 WESA	Ba, Se	-	54.6
		Total Volume of Contaminated Soil	**2259.8**	**455.0**

Table E7: Y22101291 Nottingham Island Water Quality Duplicate Relative Percent Difference Assessment

				Laboratory Results		Detection Limits	Duplicate Assessment				
Matrix	Category	Parameter	Units	2012-SW-02	Dup-01		2012-SW-02	Dup-01	Applicable? Yes or No[1]	RPD[2]	Duplicate Reliable? Yes or No[3]
Water	Routine Package	Conductivity	mS/cm	0.160	0.160	0.001	160	160	Yes	0.00	Yes
		Flouride	mg/L	<0.1	0.3	0.1	-	3	No	-	Yes
		Ion Balance	n/a	1.2	1.2	na	-	-	Yes	-	Yes
		Nitrates (NO_3)	mg/L	0.03	0.05	0.02	1.5	2.5	No	-	Yes
		Nitrites (NO_2)	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Nitrogen Ammonia (NH_3)	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Orthophosphate (P)	mg/L	<0.05	<0.05	0.05	-	-	No	-	Yes
		Total Hardness	mg/L	39	41	1	39	41	Yes	5.00	Yes
		pH	pH	8.08	7.91	0.1	80.8	79.1	Yes	2.13	Yes
		Total Organic Carbon	mg/L	3.5	3.4	0.2	17.5	17	Yes	2.90	Yes
		Alkalinity Total (as CaCO3) pH 4.5	mg/L	45	43	1	45	43	Yes	4.55	Yes
		Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	<1	1	-	-	No	-	Yes
		Bicarbonates (HCO3 as CaCO3)	mg/L	45	43	1	45	43	Yes	4.55	Yes
		Carbonate (CO3 as CaCO3)	mg/L	<1	<1	1	-	-	No	-	Yes
		Chloride	mg/L	14.00	14.00	0.05	280	280	Yes	0.00	Yes
		Hydroxide (OH-)	mg/L	<1	<1	1	-	-	No	-	Yes
		Nitrate (N) and Nitrite (N)	mg/L	0.03	0.05	0.02	1.5	2.5	No	-	Yes
		Sulfates	mg/L	8.3	8.0	0.5	16.6	16	Yes	3.68	Yes
		Total Dissolved Solids	mg/L	110	170	10	11	17	Yes	42.86	No
	Hydrocarbons	Benzene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		Toluene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		Ethylbenzene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		m+p-Xylene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		o-Xylene	mg/L	<0.8	<0.8	0.8	-	-	No	-	Yes
		Xylenes	mg/L	<0.8	<0.8	0.8	-	-	No	-	Yes
		F1 (C6-C10)	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
		F1-BTEX	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
		F2 (C10-C16)	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
	PCBs	Total PCB	mg/L	<0.000012	<0.000012	0.000012	-	-	No	-	Yes
	Total Metals	Aluminium	mg/L	0.074	0.069	0.010	7.40	6.90	Yes	6.99	Yes
		Antimony	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Arsenic	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Barium	mg/L	0.023	0.023	0.020	1.15	1.15	No	-	Yes
		Beryllium	mg/L	<0.005	<0.005	0.005	-	-	No	-	Yes
		Bisumuth	mg/L	<0.0025	<0.0025	0.0025	-	-	No	-	Yes
		Boron	mg/L	<0.050	<0.050	0.0500	-	-	No	-	Yes
		Cadmium	mg/L	<0.0003	<0.0003	0.0003	-	-	No	-	Yes
		Calcium	mg/L	10.0	9.4	0.5	20.0	18.8	Yes	6.19	Yes
		Chromium	mg/L	<0.05	<0.05	0.05	-	-	No	-	Yes
		Cobalt	mg/L	<0.05	<0.05	0.05	-	-	No	-	Yes
		Copper	mg/L	0.0067	0.0063	0.0020	3.35	3.15	No	-	Yes
		Iron	mg/L	0.16	0.16	0.06	2.67	2.67	No	-	Yes
		Lead	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Lithium	mg/L	<0.1	<0.1	0.1	-	-	No	-	Yes
		Magnesium	mg/L	2.5	2.2	0.5	5.00	4.40	No	-	Yes
		Manganese	mg/L	<0.0040	<0.0040	0.0040	-	-	No	-	Yes
		Mercury	mg/L	<0.000010	<0.000010	0.00001	-	-	No	-	Yes
		Molybdenum	mg/L	<0.005	<0.005	0.005	-	-	No	-	Yes
		Nickel	mg/L	<0.002	<0.002	0.002	-	-	No	-	Yes
		Potassium	mg/L	1.5	1.3	0.5	3.00	2.60	No	-	Yes
		Selenium	mg/L	<0.010	<0.010	0.010	-	-	No	-	Yes
		Silver	mg/L	<0.0010	<0.0010	0.0010	-	-	No	-	Yes
		Sodium	mg/L	15	16	0.5	30	32	Yes	6.45	Yes
		Strontium	mg/L	0.049	0.047	0.020	2.45	2.35	No	-	Yes
		Thallium	mg/L	<0.0200	<0.0200	0.0200	-	-	No	-	Yes
		Tin	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Titanium	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Vanadium	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Zinc	mg/L	0.0110	0.0088	0.0070	1.57	1.26	No	-	Yes
	Dissolved Metals	Aluminium	mg/L	0.07	0.07	0.03	2.33	2.33	No	-	Yes
		Antimony	mg/L	<0.003	<0.003	0.003	-	-	No	-	Yes
		Arsenic	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Barium	mg/L	0.02	0.02	0.02	1	1	No	-	Yes
		Cadmium	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Chromium	mg/L	<0.005	<0.03	0.03 / 0.005	-	-	No	-	Yes
		Cobalt	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Copper	mg/L	<0.003	<0.003	0.003	-	-	No	-	Yes
		Lead	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Manganese	mg/L	<0.003	<0.003	0.003	-	-	No	-	Yes
		Molybdenum	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Nickel	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Selenium	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Silver	mg/L	<0.0003	<0.0003	0.0003	-	-	No	-	Yes
		Sodium	mg/L	16.0	16.0	0.2	80	80	Yes	0.00	Yes
		Zinc	mg/L	0.016	0.011	0.005	3.2	2.2	No	-	Yes

< = below the detection limit.

[1] Applicability to the Relative Percent Difference (RPD) Assessment requires that results be at least 5 x the detection limit since analytical error increases near the detection limit. Results not applicable to the RPD assessment do not imply an unreliable duplicate.

[2] Relative Percent Difference. RPD(%) = 200 x ABS(x - y)/(x + y), where ABS = Absolute difference, x = the analytical result of the original sample, y = the analytical result of the blind field duplicate

[3] Duplicate samples are reliable when their RPD is less than 20%.

- = not applicable to the RPD Assessment.

Table E8: Y22101291 Nottingham Island Water Quality Duplicate Relative Percent Difference Assessment

				Laboratory Results		Detection Limits	Duplicate Assessment				
Matrix	Category	Parameter	Units	2012-SW-11	Dup-02		2012-SW-11	Dup-02	Applicable? Yes or No[1]	RPD[2]	Duplicate Reliable? Yes or No[3]
Water	Routine Package	Conductivity	mS/cm	0.300	0.240	0.001	300	240	Yes	22.22	No
		Flouride	mg/L	0.2	0.2	0.1	2	2	No	-	Yes
		Ion Balance	n/a	1.2	1.2	na	-	-	Yes	-	Yes
		Nitrates (NO_3)	mg/L	<0.02	0.05	0.02	-	2.5	No	-	Yes
		Nitrites (NO_2)	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Nitrogen Ammonia (NH_3)	mg/L	<0.02	0.02	0.02	-	-	No	-	Yes
		Orthophosphate (P)	mg/L	<0.05	<0.05	0.05	-	-	No	-	Yes
		Total Hardness	mg/L	110	81	1.0	110	81	Yes	30.37	No
		pH	pH	8.24	8.14	0.1	82.4	81.4	Yes	1.22	Yes
		Total Organic Carbon	mg/L	4.8	5.7	0.2	24.0	28.5	Yes	17.14	Yes
		Alkalinity Total (as CaCO3) pH 4.5	mg/L	110	74	1	110	74	Yes	39.13	No
		Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	<1	1	-	-	No	-	Yes
		Bicarbonates (HCO3 as CaCO3)	mg/L	110	74	1	110	74	Yes	39.13	No
		Carbonate (CO3 as CaCO3)	mg/L	<1	<1	1	-	-	No	-	Yes
		Chloride	mg/L	17.00	18.00	0.05	340	360	Yes	5.71	Yes
		Hydroxide (OH-)	mg/L	<1	<1	1	-	-	No	-	Yes
		Nitrate (N) and Nitrite (N)	mg/L	<0.02	0.05	0.02	-	2.5	No	-	Yes
		Sulfates	mg/L	11.0	11.0	0.5	22	22	Yes	0.00	Yes
		Total Dissolved Solids	mg/L	160	140	10	16	14	Yes	13.33	Yes
	Hydrocarbons	Benzene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		Toluene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		Ethylbenzene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		m+p-Xylene	mg/L	<0.4	<0.4	0.4	-	-	No	-	Yes
		o-Xylene	mg/L	<0.8	<0.8	0.8	-	-	No	-	Yes
		Xylenes	mg/L	<0.8	<0.8	0.8	-	-	No	-	Yes
		F1 (C6-C10)	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
		F1-BTEX	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
		F2 (C10-C16)	mg/L	<0.10	<0.10	0.10	-	-	No	-	Yes
	PCBs	Total PCB	mg/L	<0.000012	<0.000012	0.000012	-	-	No	-	Yes
	Total Metals	Aluminium	mg/L	<0.010	<0.010	0.010	-	-	No	-	Yes
		Antimony	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Arsenic	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Barium	mg/L	0.036	0.030	0.020	1.8	1.5	No	-	Yes
		Beryllium	mg/L	<0.005	<0.005	0.005	-	-	No	-	Yes
		Bisumuth	mg/L	<0.0025	<0.0025	0.0025	-	-	No	-	Yes
		Boron	mg/L	<0.050	<0.050	0.05	-	-	No	-	Yes
		Cadmium	mg/L	<0.0003	<0.0003	0.00	-	-	No	-	Yes
		Calcium	mg/L	29.0	22	0.5	58	44	Yes	27.45	No
		Chromium	mg/L	<0.05	<0.05	0.05	-	-	No	-	Yes
		Cobalt	mg/L	<0.005	<0.005	0.005	-	-	No	-	Yes
		Copper	mg/L	<0.0020	<0.0020	0.0020	-	-	No	-	Yes
		Iron	mg/L	<0.060	0.066	0.060	-	1.1	No	-	Yes
		Lead	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Lithium	mg/L	<0.1	<0.1	0.1	-	-	No	-	Yes
		Magnesium	mg/L	4.6	3.6	0.5	9.2	7.2	Yes	24.39	No
		Manganese	mg/L	0.0041	0.0045	0.0040	1.03	1.13	No	-	Yes
		Mercury	mg/L	<0.000010	<0.000010	0.000010	-	-	No	-	Yes
		Molybdenum	mg/L	<0.005	<0.005	0.005	-	-	No	-	Yes
		Nickel	mg/L	<0.002	<0.002	0.002	-	-	No	-	Yes
		Potassium	mg/L	1.3	1.3	0.5	2.6	2.6	No	-	Yes
		Selenium	mg/L	<0.010	<0.010	0.010	-	-	No	-	Yes
		Silver	mg/L	<0.0010	<0.0010	0.001	-	-	No	-	Yes
		Sodium	mg/L	19	16	0.5	38	32	Yes	17.14	Yes
		Strontium	mg/L	0.16	0.14	0.02	8	7	Yes	13.33	Yes
		Thallium	mg/L	<0.0200	<0.0200	0.0200	-	-	No	-	Yes
		Tin	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Titanium	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Vanadium	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Zinc	mg/L	<0.0070	<0.0070	0.0070	-	-	No	-	Yes
	Disolved Metals	Aluminium	mg/L	<0.03	<0.03	0.03	-	-	No	-	Yes
		Antimony	mg/L	<0.003	<0.003	0.003	-	-	No	-	Yes
		Arsenic	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Barium	mg/L	0.04	0.03	0.02	2.0	1.5	No	-	Yes
		Cadmium	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Chromium	mg/L	<0.03	<0.005	0.03 / 0.005	-	-	No	-	Yes
		Cobalt	mg/L	<0.02	<0.02	0.02	-	-	No	-	Yes
		Copper	mg/L	<0.003	<0.003	0.003	-	-	No	-	Yes
		Lead	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Manganese	mg/L	0.006	0.005	0.003	2.00	1.67	No	-	Yes
		Molybdenum	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Nickel	mg/L	<0.01	<0.01	0.01	-	-	No	-	Yes
		Selenium	mg/L	<0.001	<0.001	0.001	-	-	No	-	Yes
		Silver	mg/L	<0.0003	<0.0003	0.0003	-	-	No	-	Yes
		Sodium	mg/L	20.0	17.0	0.2	100	85	Yes	16.22	Yes
		Zinc	mg/L	0.036	<0.005	0.005	7.2	-	No	-	Yes

< = below the detection limit.

[1] Applicability to the Relative Percent Difference (RPD) Assessment requires that results be at least 5 x the detection limit since analytical error increases near the detection limit. Results not applicable to the RPD assessment do not imply an unreliable duplicate.

[2] Relative Percent Difference. RPD(%) = 200 x ABS(x - y)/(x + y), where ABS = Absolute difference, x = the analytical result of the original sample, y = the analytical result of the blind field duplicate

[3] Duplicate samples are reliable when their RPD is less than 20%.

- = not applicable to the RPD Assessment.

Table H1: Analytical Results for Building Materials (August 2012)

Sample ID	Lab Order Number	Sampling Date	APEC	Description	Asbestos Type					
					Actinolite	Amosite	Anthophyllite	Chrysotile	Crocidolite	Tremolite
					Unit					
					% volume	% volume	% volume	% volume	% volume	% volume
					Asbestos Criteria[1]					
					<1%	<1%	<1%	<1%	<1%	<1%
2012-BM-01	EG6917	8/11/2012	APEC 1 - Storage Shed 01	Beige flooring with battleship backing	ND	ND	ND	ND	ND	ND
2012-BM-02	EG6918	8/11/2012	APEC 1 - Storage Shed 01	Attic insulation	**0.5-10**	ND	ND	ND	ND	ND
2012-BM-03	EG6919	8/11/2012	APEC 1 - Storage Shed 01	Ceiling interior white paneling	ND	ND	ND	**10-30**	**0.5-20**	ND
2012-BM-04	EG6920	8/11/2012	APEC 2 - Old Kitchen	Exterior and interior flooring black felt	ND	ND	ND	ND	ND	ND
2012-BM-05	EG6921	8/11/2012	APEC 2 - Old Kitchen	Beige flooring with battleship backing	ND	ND	ND	ND	ND	ND
2012-BM-06	EG6922	8/11/2012	APEC 2 - Old Kitchen	Window caulking	ND	ND	ND	ND	ND	ND
2012-BM-07	EG6923	8/11/2012	APEC 2 - Old Kitchen	Brick	ND	ND	ND	ND	ND	ND
2012-BM-08	EG6924	8/11/2012	APEC 2 - Old Kitchen	Brick mortor	ND	ND	ND	ND	ND	ND
2012-BM-09	EG6925	8/11/2012	APEC 3 - New Radio Building	Beige vinyl floor tile	ND	ND	ND	**0.5-10**	ND	ND
2012-BM-10	EG6926	8/11/2012	APEC 3 - New Radio Building	Light fixture backing	ND	ND	ND	**60-80**	ND	ND
2012-BM-11	EG6927	8/11/2012	APEC 3 - New Radio Building	Windown caulking	ND	ND	ND	ND	ND	ND
2012-BM-12	EG6928	8/11/2012	APEC 3 - New Radio Building	Interior wall paneling	ND	ND	ND	**40-60**	**10-30**	ND
2012-BM-13	EG6929	8/11/2012	APEC 3 - New Radio Building	Exterior felt	ND	ND	ND	ND	ND	ND
2012-BM-14	EG6930	8/11/2012	APEC 4 - Old Radio Building	Red shingles on roof	ND	ND	ND	ND	ND	ND
2012-BM-15	EG6931	8/11/2012	APEC 4 - Old Radio Building	Interior white particle board	ND	ND	ND	ND	ND	ND
2012-BM-16	EG6932	8/11/2012	APEC 4 - Old Radio Building	Interior yellow particulate board	ND	ND	ND	ND	ND	ND
2012-BM-17	EG6933	8/11/2012	APEC 5 - Outhouse	Exterior felt	ND	ND	ND	ND	ND	ND
2012-BM-18	EG6934	8/11/2012	APEC 5 - Outhouse	Green shingles on roof	ND	ND	ND	**0.5-20**	ND	ND
2012-BM-19	EG6935	8/11/2012	APEC 6 - Storage Shed	Green shingles on roof and walls	ND	ND	ND	**20-40**	ND	ND
2012-BM-20	EG6936	8/11/2012	APEC 4 - Old Radio Building	Brick	ND	ND	ND	ND	ND	ND
2012-BM-21	EG6937	8/11/2012	APEC 4 - Old Radio Building	Brick Mortor	ND	ND	ND	ND	ND	ND
2012-BM-22	EG6938	8/14/2012	APEC 7 - Storage Building	Red shingles on roof	ND	ND	ND	ND	ND	ND
2012-BM-23	EG6939	8/14/2012	APEC 7 - Storage Building	Exterior felt	ND	ND	ND	ND	ND	ND
2012-BM-24	EG6940	8/14/2012	APEC 7 - Storage Building	Exterior white siding	ND	ND	ND	**0.5-20**	ND	ND
2012-BM-25	EG6941	8/14/2012	APEC 7 - Storage Building	Attic insulation	**0.5-10**	ND	ND	ND	ND	ND
2012-BM-26	EG6942	8/14/2012	APEC 8 - Chicken Coop	Attic insulation	**0.5-10**	ND	ND	ND	ND	ND
2012-BM-27	EG6943	8/14/2012	APEC 8 - Chicken Coop	Interior particle boards	ND	ND	ND	ND	ND	ND
2012-BM-28	EG6944	8/14/2012	APEC 9 - Bunkhouse	Exterior felt	ND	ND	ND	ND	ND	ND
2012-BM-29	EG6945	8/14/2012	APEC 9 - Bunkhouse	Paper on floor under beige battleship linoleum	ND	ND	ND	ND	ND	ND
2012-BM-30	EG6946	8/14/2012	APEC 9 - Bunkhouse	Gasket on furnace	ND	ND	ND	**60-80**	ND	ND
2012-BM-31	EG6947	8/14/2012	APEC 9 - Bunkhouse	Interior paneling	ND	ND	ND	**40-60**	ND	ND
2012-BM-32	EG6948	8/14/2012	APEC 10 - Generator Building	Red/white shingles	ND	ND	ND	ND	ND	ND
2012-BM-33	EG6949	8/14/2012	APEC 10 - Generator Building	Exterior bottom panels	ND	ND	ND	**40-60**	ND	ND
2012-BM-34	EG6950	8/14/2012	APEC 13 - House	Attic insulation	ND	ND	ND	ND	ND	ND
2012-BM-35	EG6951	8/14/2012	APEC 13 - House	Attic insulation	ND	ND	ND	ND	ND	ND

Notes:

1. Criteria taken from the Environmental Guideline for Asbestos, Revised 2011 (Department of the Environment: Government of Nunavut)
2. Values exceeding the applicable criteria are **BOLD** and shaded yellow
3. ND = Not detected at the reporting limit

Table H2: Analytical Results for Paint (August 2012)

Sample ID	Lab Order Number	Sampling Date	APEC	Description	Parameter ID		
					Leachable Lead (Pb) TCLP	PCBs in Paint	Total Lead in Paint by ICPOES
					Unit		
					mg/L	ppm	ppm
					Paint Criteria[1]		
					<5	<50	600
2012-PT-01	R95322	8/11/2012	APEC 1 - Storage Shed 01	Blue furnace paint	0.5	1.2	41
2012-PT-02	R95323	8/12/2012	APEC 2 - Old Kitchen	Exterior green paint	**34**	SP	**SP**
2012-PT-03	R95324	8/13/2012	APEC 3 - New Radio Building	Exterior red trim paint	**6.4**	-	-
2012-PT-04	R95325	8/14/2012	APEC 3 - New Radio Building	Interior white paint	0.08	-	**6400**
2012-PT-05	R95326	8/15/2012	APEC 3 - New Radio Building	Interior yellow paint	**9.1**	SP	**SP**
2012-PT-06	R95327	8/16/2012	APEC 3 - New Radio Building	Interior white paint (base coat throughout building)	**6.5**	SP	**3500**
2012-PT-07	R95328	8/17/2012	APEC 4 - Old Radio Building	Exterior white paint	**590**	0.02	**230000**
2012-PT-08	R95329	8/18/2012	APEC 3 - New Radio Building	White electrical panel paint	**15**	-	**5600**
2012-PT-09	R95330	8/19/2012	APEC 4 - Old Radio Building	Interior white paint	2.7	-	-
2012-PT-10	R95331	8/20/2012	APEC 8 - Chicken Coop	Interior white paint	0.14	1.4	**1100**
2012-PT-11	R95333	8/21/2012	APEC 9 - Bunkhouse	Exterior red trim paint	**43**	<0.5	**140000**
2012-PT-12	R95334	8/22/2012	APEC 10 - Generator Building	Interior white/grey paint	**20**	SP	**SP**
2012-PT-13	R95335	8/23/2012	APEC 10 - Generator Building	Generator grey/blue/yellow/red paint	4.3	SP	**SP**
2012-PT-14	R95336	8/24/2012	APEC 12 - Shed	Trailer and tracked vehicle orange paint	**550**	0.29	**9900**
2012-PT-ASTs	R95337	8/25/2012	APEC 14 - AST Tank Farm	ASTs white/ red paint	0.47	0.18	**7900**

Notes:

1. Criteria taken from the Abandoned Military Site Remediation Protocol, December 2008 and the Environmental Guideline for Waste Lead and Lead Paint, Revised March 2011 (Department of the Environment: Government of Nunavut)
2. Valves exceeding the applicable criteria are **BOLD** and shaded yellow.
3. "-" = Not analyzed due to insufficient amount of sample
4. "SP" = Parameter was sampled previously by WESA

Table H3: Analytical Results for Concrete (August 2012)

Sample ID	Lab Order Number	Sampling Date	APEC	Description	Parameter ID	
					Total PCBs	Asbestos Percentage
					Unit	
					mg/kg	% volume
					PCBs and Asbestos Criteria[1]	
					<50	<1
2012-CR-01	S03080	8/11/2012	APEC 4 - Old Radio Building	Concrete cubes adjacent to building	<0.01	ND

Notes:

1. Criteria taken from the Abandoned Military Site Remediation Protocol, December 2008 (INAC) and the Environmental Guideline for Asbestos, Revised 2011 (Department of the Environment: Government of Nunavut)
2. Valves exceeding the applicable criteria are **BOLD** and shaded yellow.
3. ND = Not detected at the reporting limit

APPENDIX D
LABORATORY ANALYTICAL REPORTS

Your Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Your C.O.C. #: 8102001

Attention: Rory Farrell
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/08/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B244988
Received: 2012/08/17, 09:30

Sample Matrix: PAINT
Samples Received: 15

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Metals - Leached	7	2012/08/23	2012/08/23	STL SOP-00006	MA.200- Mét 1.2
Metals - Leached	8	2012/08/24	2012/08/24	STL SOP-00006	MA.200- Mét 1.2
Metals by ICP	9	2012/08/22	2012/08/23	STL SOP-00006	MA.200- Mét 1.2
Total PCB	6	2012/08/27	2012/08/28	STL SOP-00133	MA. 400 - BPC 1.0
Toxicity Charact. Leach. Proc.(EPA 1311)	15	2012/08/22	2012/08/22	STL SOP-00024	MA.100-Lix. com.1.1

Sample Matrix: SOLID
Samples Received: 35

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Asbestos (1)	35	N/A	N/A		

(1) This test was performed by Maxxam Analytics - Burnaby

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Argyro Frangoulis, Project Manager
Email: AFrangoulis@maxxam.ca
Phone# (514) 448-9001 Ext:4229

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

TOTAL EXTRACTABLE METALS (PAINT)

Maxxam ID		R95322		R95325	R95327		R95328		R95329		
Sampling Date		2012/08/11		2012/08/11	2012/08/11		2012/08/11		2012/08/11		
COC Number		8102001		8102001	8102001		8102001		8102001		
	Units	**2012-PT-01/ APEC 1**	**RDL**	**2012-PT-04/ APEC 3**	**2012-PT-06/ APEC 3**	**RDL**	**2012-PT-07/ APEC 4**	**RDL**	**2012-PT-08/ APEC 3**	**RDL**	**QC Batch**
METALS											
Lead (Pb)	mg/kg	41	5	6400	3500	50	230000	500	5600	50	1046779

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95331		R95333		R95336	R95337		
Sampling Date		2012/08/11		2012/08/14		2012/08/14	2012/08/14		
COC Number		8102001		8102001		8102001	8102001		
	Units	**2012-PT-10/ APEC 8**	**RDL**	**2012-PT-11/ APEC 9**	**RDL**	**2012-PT-14/ APEC 12**	**2012-PT-ASTS/ APEC 14**	**RDL**	**QC Batch**
METALS									
Lead (Pb)	mg/kg	1100	50	140000	500	9900	7900	50	1046779

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

METALS-LAB LEACHATE (PAINT)

Maxxam ID		R95322		R95323		R95324		R95325		
Sampling Date		2012/08/11		2012/08/11		2012/08/11		2012/08/11		
COC Number		8102001		8102001		8102001		8102001		
	Units	**2012-PT-01/ APEC 1**	**QC Batch**	**2012-PT-02/ APEC 2**	**QC Batch**	**2012-PT-03/ APEC 3**	**QC Batch**	**2012-PT-04/ APEC 3**	**RDL**	**QC Batch**
METALS										
Lead (Pb)	mg/L	0.50	1047664	34	1048538	6.4	1047664	0.08	0.01	1048538

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95326	R95327			R95328			R95329		
Sampling Date		2012/08/11	2012/08/11			2012/08/11			2012/08/11		
COC Number		8102001	8102001			8102001			8102001		
	Units	**2012-PT-05/ APEC 3**	**2012-PT-06/ APEC 3**	**RDL**	**QC Batch**	**2012-PT-07/ APEC 4**	**RDL**	**QC Batch**	**2012-PT-08/ APEC 3**	**RDL**	**QC Batch**
METALS											
Lead (Pb)	mg/L	9.1	6.5	0.01	1047664	590	1	1048538	15	0.01	1047664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95330	R95331		R95333	R95334		R95335		
Sampling Date		2012/08/11	2012/08/11		2012/08/14	2012/08/14		2012/08/14		
COC Number		8102001	8102001		8102001	8102001		8102001		
	Units	**2012-PT-09/ APEC 4**	**2012-PT-10/ APEC 8**	**QC Batch**	**2012-PT-11/ APEC 9**	**2012-PT-12/ APEC 10**	**QC Batch**	**2012-PT-13/ APEC 10**	**RDL**	**QC Batch**
METALS										
Lead (Pb)	mg/L	2.7	0.14	1048538	43	20	1047664	4.3	0.01	1048538

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

METALS-LAB LEACHATE (PAINT)

Maxxam ID		R95336		R95337		
Sampling Date		2012/08/14		2012/08/14		
COC Number		8102001		8102001		
	Units	**2012-PT-14/ APEC 12**	**RDL**	**2012-PT-ASTS/ APEC 14**	**RDL**	**QC Batch**
METALS						
Lead (Pb)	mg/L	550	1	0.47	0.01	1048538

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tél. : (514) 448-9001 Télécopieur : (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

PCB CONGENERS (PAINT)

Maxxam ID		R95322		R95328	R95331		R95333		
Sampling Date		2012/08/11		2012/08/11	2012/08/11		2012/08/14		
COC Number		8102001		8102001	8102001		8102001		
	Units	**2012-PT-01/ APEC 1**	**RDL**	**2012-PT-07/ APEC 4**	**2012-PT-10/ APEC 8**	**RDL**	**2012-PT-11/ APEC 9**	**RDL**	**QC Batch**
PCB									
Total PCB	mg/kg	1.2	0.5	0.02	1.4	0.01	<0.5	0.5	1048960
Surrogate Recovery (%)									
2,3,3',4,6-Pentachlorobiphenyl	%	97	N/A	96	100	N/A	96	N/A	1048960
2',3,5-Trichlorobiphenyl	%	83	N/A	84	87	N/A	83	N/A	1048960
22'33'44'566'-Nonachlorobiphenyl	%	96	N/A	102	98	N/A	99	N/A	1048960

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95336	R95337		
Sampling Date		2012/08/14	2012/08/14		
COC Number		8102001	8102001		
	Units	**2012-PT-14/ APEC 12**	**2012-PT-ASTS/ APEC 14**	**RDL**	**QC Batch**
PCB					
Total PCB	mg/kg	0.29	0.18	0.01	1048960
Surrogate Recovery (%)					
2,3,3',4,6-Pentachlorobiphenyl	%	97	96	N/A	1048960
2',3,5-Trichlorobiphenyl	%	86	84	N/A	1048960
22'33'44'566'-Nonachlorobiphenyl	%	95	97	N/A	1048960

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

LEACHATES (PAINT)

Maxxam ID		R95322	R95323	R95324	R95325	R95326	R95327	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	
COC Number		8102001	8102001	8102001	8102001	8102001	8102001	
	Units	**2012-PT-01/ APEC 1**	**2012-PT-02/ APEC 2**	**2012-PT-03/ APEC 3**	**2012-PT-04/ APEC 3**	**2012-PT-05/ APEC 3**	**2012-PT-06/ APEC 3**	**QC Batch**
Leachates								
Weight of sample (g)	n/a	7.00	10.0	5.17	8.00	6.88	8.69	1046754
pH Deionized water	n/a	5.84	5.84	5.84	5.84	5.84	5.84	1046754
pH of pre-test	n/a	N/A	1.62	N/A	2.22	N/A	N/A	1046754
pH end of leaching	n/a	3.38	5.01	3.77	5.03	5.68	4.53	1046754
Volume extracting fluid 1 (ml)	n/a	N/A	200	N/A	160	N/A	N/A	1046754
Volume extracting fluid 2 (ml)	n/a	140	N/A	103	N/A	138	174	1046754

N/A = Not Applicable
QC Batch = Quality Control Batch

Maxxam ID		R95328	R95329	R95330	R95331	R95333	R95334	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/14	2012/08/14	
COC Number		8102001	8102001	8102001	8102001	8102001	8102001	
	Units	**2012-PT-07/ APEC 4**	**2012-PT-08/ APEC 3**	**2012-PT-09/ APEC 4**	**2012-PT-10/ APEC 8**	**2012-PT-11/ APEC 9**	**2012-PT-12/ APEC 10**	**QC Batch**
Leachates								
Weight of sample (g)	n/a	20.0	4.57	10.0	20.0	7.61	6.54	1046754
pH Deionized water	n/a	5.84	5.84	5.84	5.84	5.84	5.84	1046754
pH of pre-test	n/a	1.75	N/A	1.93	2.28	N/A	N/A	1046754
pH end of leaching	n/a	5.44	4.28	4.98	6.75	3.92	4.60	1046754
Volume extracting fluid 1 (ml)	n/a	400	N/A	200	400	N/A	N/A	1046754
Volume extracting fluid 2 (ml)	n/a	N/A	91.0	N/A	N/A	152	131	1046754

N/A = Not Applicable
QC Batch = Quality Control Batch

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

LEACHATES (PAINT)

Maxxam ID		R95335	R95336	R95337	
Sampling Date		2012/08/14	2012/08/14	2012/08/14	
COC Number		8102001	8102001	8102001	
	Units	**2012-PT-13/ APEC 10**	**2012-PT-14/ APEC 12**	**2012-PT-ASTS/ APEC 14**	**QC Batch**
Leachates					
Weight of sample (g)	n/a	20.0	20.1	20.0	1046754
pH Deionized water	n/a	5.84	5.84	5.84	1046754
pH of pre-test	n/a	1.71	1.64	1.58	1046754
pH end of leaching	n/a	5.11	5.03	4.98	1046754
Volume extracting fluid 1 (ml)	n/a	400	400	400	1046754

QC Batch = Quality Control Batch

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Maxxam Job #: B244988
Report Date: 2012/08/30

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTIGHAM PHASE III ESA
Sampler Initials: MC

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD except for the following:
Total PCB: Analyses requested past holding time: R95322, R95328, R95331

TOTAL EXTRACTABLE METALS (PAINT)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

METALS-LAB LEACHATE (PAINT)

Please note that the results have not been corrected for QC recoveries nor for the leachate blank results.
Reported detection limits are multiplied by dilution factors used for sample analysis.

PCB CONGENERS (PAINT)

Please note that the results have not been corrected for QC recovery (spiked blank) nor for the method blank. The results have been corrected for the percent surrogate recoveries.

Please note that for samples which required a dilution, the results were not corrected for the percent surrogate recoveries.

Reported detection limits are multiplied by dilution factors used for sample analysis.

LEACHATES (PAINT)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

Results relate only to the items tested.

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #: 422101291
P.O. #:
Site Location: NOTTIGHAM PHASE III ESA

Quality Assurance Report

Maxxam Job Number: B244988

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1046754	RC3	Method Blank	pH Deionized water	2012/08/22	5.84		n/a
			pH end of leaching	2012/08/22	4.92/2.85		n/a
			Volume extracting fluid 1 (ml)	2012/08/22	400		n/a
			Volume extracting fluid 2 (ml)	2012/08/22	400		n/a
1046779	SC5	QC Standard	Lead (Pb)	2012/08/23		100	%
		Spiked Blank	Lead (Pb)	2012/08/23		101	%
		Method Blank	Lead (Pb)	2012/08/23	<5		mg/kg
1047664	JS2	LEACH. BLANK	Lead (Pb)	2012/08/23	<0.01		mg/L
		Spiked Blank	Lead (Pb)	2012/08/23		108	%
		Method Blank	Lead (Pb)	2012/08/23	<0.01		mg/L
1048538	JS2	LEACH. BLANK	Lead (Pb)	2012/08/24	0.03, RDL=0.01		mg/L
		Spiked Blank	Lead (Pb)	2012/08/24		101	%
		Method Blank	Lead (Pb)	2012/08/24	<0.01		mg/L
1048960	CB5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/28		95	%
			2',3,5-Trichlorobiphenyl	2012/08/28		85	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/28		100	%
			Total PCB	2012/08/28		106	%
		Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/28		88	%
			2',3,5-Trichlorobiphenyl	2012/08/28		81	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/28		93	%
			Total PCB	2012/08/28	<0.01		mg/kg

RDL = Reportable Detection Limit
Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Validation Signature Page

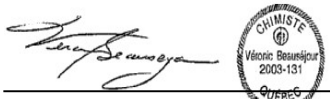
Maxxam Job #: B244988

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alexandre Lemire, M.Sc., Analyst 2

Kathie Quevillon, B.Sc., Chemist

Tien Nguyen Thi, B.Sc., Chemist



Veronic Beausejour, B.Sc., Chemist, Supervisor

==========

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Pinchin Environmental Asbestos Laboratory
Certificate of Analysis

Project Name:	**Maxxam Analytique, Dossier B246548** **Le Groupe Gesfor Poirier, Pinchin Inc.**		
Project No.:	**M04-25083-277**		
Prepared For:	**B. Lindsay**	**Date Received:**	**September 11, 2012**
Lab Reference No.:	**b92279 Revised**	**Date Analyzed:**	**October 12, 2012**
Analyst(s):	**S. Capsuyen**	**# Samples submitted:**	**1**
		# Phases analyzed:	**1**

Methods of Analysis:
Method IRSST 244-2 dated 1999

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. The percentage range category reported reflects the level of uncertainty of the method for estimating quantities of asbestos in bulk samples. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with all provincial regulatory requirements (EPA 600/R-93/116 and NIOSH 9002). Multiple phases within a sample are analyzed separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Ontario, British Columbia	0.5%	Manitoba	0.1% friable 1% non-friable
Quebec	0.1%	Saskatchewan	0.1% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Atlantic Provinces	1%

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Environmental Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples' and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested.

NOTE: ***This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst. Vinyl asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method. Internal verification studies performed by Pinchin indicate that the chance of missing asbestos in floor tiles is no higher than about 2%. Supporting laboratory documentation is available upon request. The analysis of dust samples by PLM cannot be used as an indicator of past or present airborne asbestos fibre levels.***

Pinchin Environmental Asbestos Laboratory
Certificate of Analysis

Project Name: Maxxam Analytique, Dossier B246548
Project No.: M04-25083-277
Prepared For: B. Lindsay

Lab Reference No.: b92279 Revised
Date Analyzed: October 12, 2012

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0001 Concrete: S03080-01-8A	Homogeneous, grey, hard, cementitious material.	None Detected	Non-Fibrous Material > 75%

ANALYST

Attention: Rory Farrell
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/09/21
This report supersedes all previous reports with the same Maxxam job number

RESULTS FOR TOTAL PCB

MAXXAM JOB #: B246548
Received: 2012/08/17, 9:30

Sample Matrix: SOLID
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Total PCB	1	2012/09/20	2012/09/21	STL SOP-00133	MA. 400 - BPC 1.0

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Argyro Frangoulis, Project Manager
Email: AFrangoulis@maxxam.ca
Phone# (514) 448-9001 Ext:4229

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EBA ENGINEERING CONSULTANTS LTD.

Maxxam Job #: B246548
Report Date: 2012/09/21

PCB CONGENERS (SOLID)

Maxxam ID		S03080		
Sampling Date		2012/08/11		
	Units	**2012-CR-01**	**RDL**	**QC Batch**
Total PCB	mg/kg	<0.01	0.01	1059212
Surrogate Recovery (%)				
2,3,3',4,6-Pentachlorobiphenyl	%	96	N/A	1059212
2',3,5-Trichlorobiphenyl	%	85	N/A	1059212
22'33'44'566'-Nonachlorobiphenyl	%	102	N/A	1059212

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EBA ENGINEERING CONSULTANTS LTD.

Maxxam Job #: B246548
Report Date: 2012/09/21

GENERAL COMMENTS

Condition of sample(s) upon receipt:
Total PCB: Analyses requested past holding time: S03080

All results are calculated on a dry weight basis except where not applicable.

PCB CONGENERS (SOLID)

Please note that the results have not been corrected for QC recovery (spiked blank) nor for the method blank. The results have been corrected for the percent surrogate recoveries.

Results relate only to the items tested.

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #:
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: B246548

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1059212 DM5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/09/21		91	%
		2',3,5-Trichlorobiphenyl	2012/09/21		83	%
		22'33'44'566'-Nonachlorobiphenyl	2012/09/21		99	%
		Total PCB	2012/09/21		100	%
	Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/09/21		89	%
		2',3,5-Trichlorobiphenyl	2012/09/21		83	%
		22'33'44'566'-Nonachlorobiphenyl	2012/09/21		97	%
		Total PCB	2012/09/21	<0.01		mg/kg

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Your Project #: LB244988
Your C.O.C. #: 08356659

Attention: SOUSTRAITANCEQUE
MAXXAM ANALYTIQUE
MONTREAL
889 MONTEE DE LIESSE
VILLE ST-LAURENT, PQ
CANADA H4T 1P5

Report Date: 2012/08/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B274755
Received: 2012/08/22, 15:20

Sample Matrix: Bulk
Samples Received: 35

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos Identification (1)	35	N/A	2012/08/28	BBY5SOP-00020	NIOSH Method 9002

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) RDL = 0.5%

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Morgan Melnychuk, Burnaby Project Manager
Email: MMelnychuk@maxxam.ca
Phone# (604) 638-8034

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Total cover pages: 1

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

ASBESTOS IDENTIFICATION (BULK)

Maxxam ID		EG6917	EG6918	EG6919	EG6920	EG6921	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-01/APEC 1(R95186-01R)**	**2012-BM-02/APEC 1(R95187-01R)**	**2012-BM-03/APEC 1(R95188-01R)**	**2012-BM-04/APEC 2(R95189-01R)**	**2012-BM-05/APEC 2(R95190-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	0.5-10	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	ND	10-30	ND	ND	6121793
Crocidolite	% vol/vol	ND	ND	0.5-20	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	0.5-20	ND	ND	0.5-10	0.5-10	6121793
Filler	% vol/vol	80-99	90-99	60-80	90-99	90-99	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam ID		EG6922	EG6923	EG6924	EG6925	EG6926	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-06/APEC 2(R95191-01R)**	**2012-BM-07/APEC 2(R95192-01R)**	**2012-BM-08/APEC 2(R95193-01R)**	**2012-BM-09/APEC 3(R95194-01R)**	**2012-BM-10/APEC 3(R95195-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	ND	ND	0.5-10	60-80	6121793
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	10-30	ND	ND	ND	ND	6121793
Filler	% vol/vol	70-90	>99	>99	90-99	20-40	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

ASBESTOS IDENTIFICATION (BULK)

Maxxam ID		EG6927	EG6928	EG6929	EG6930	EG6931	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-11/APEC 3(R95196-01R)**	**2012-BM-12/APEC 3(R95197-01R)**	**2012-BM-13/APEC 3(R95198-01R)**	**2012-BM-14/APEC 4(R95199-01R)**	**2012-BM-15/APEC 4(R95200-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	40-60	ND	ND	ND	6121793
Crocidolite	% vol/vol	ND	10-30	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	ND	ND	80-99	0.5-20	10-30	6121793
Filler	% vol/vol	>99	20-40	1-20	80-99	70-90	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam ID		EG6932	EG6933	EG6934	EG6935	EG6936	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-16/APEC 4(R95201-01R)**	**2012-BM-17/APEC 5(R95202-01R)**	**2012-BM-18/APEC 5(R95203-01R)**	**2012-BM-19/APEC 6(R95204-01R)**	**2012-BM-20/APEC 4(R95205-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	ND	0.5-20	20-40	ND	6121793
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	>99	60-80	0.5-10	ND	ND	6121793
Filler	% vol/vol	ND	20-40	75-95	60-80	>99	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

ASBESTOS IDENTIFICATION (BULK)

Maxxam ID		EG6937	EG6938	EG6939	EG6940	EG6941	
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/14	2012/08/14	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-21/APEC 4(R95206-01R)**	**2012-BM-22/APEC 7(R95207-01R)**	**2012-BM-23/APEC 7(R95208-01R)**	**2012-BM-24/APEC 7(R95209-01R)**	**2012-BM-25/APEC 7(R95210-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	ND	ND	ND	0.5-10	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	ND	ND	0.5-20	ND	6121793
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	ND	0.5-20	60-80	ND	ND	6121793
Filler	% vol/vol	>99	80-99	20-40	80-99	90-99	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam ID		EG6942	EG6943	EG6944	EG6945	EG6946	
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-26/APEC 8(R95211-01R)**	**2012-BM-27/APEC 8(R95212-01R)**	**2012-BM-28/APEC 9(R95213-01R)**	**2012-BM-29/APEC 9(R95214-01R)**	**2012-BM-30/APEC 9(R95215-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	0.5-10	ND	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	ND	ND	ND	ND	60-80	6121793
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	ND	>99	80-99	>99	ND	6121793
Filler	% vol/vol	90-99	ND	1-20	ND	20-40	6121793
Glass Fibres	% vol/vol	ND	ND	ND	ND	ND	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

ASBESTOS IDENTIFICATION (BULK)

Maxxam ID		EG6947	EG6948	EG6949	EG6950	EG6951	
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	
COC Number		08356659	08356659	08356659	08356659	08356659	
	UNITS	**2012-BM-31/APEC 9(R95216-01R)**	**2012-BM-32/APEC 10(R95217-01R)**	**2012-BM-33/APEC 10(R95218-01R)**	**2012-BM-34/APEC 13(R95219-01R)**	**2012-BM-35/APEC 8(R95220-01R)**	**QC Batch**
Asbestos Type							
Actinolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Amosite	% vol/vol	ND	ND	ND	ND	ND	6121793
Anthophyllite	% vol/vol	ND	ND	ND	ND	ND	6121793
Chrysotile	% vol/vol	40-60	ND	40-60	ND	ND	6121793
Crocidolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Tremolite	% vol/vol	ND	ND	ND	ND	ND	6121793
Others							
Cellulose	% vol/vol	ND	0.5-20	ND	ND	ND	6121793
Filler	% vol/vol	40-60	80-99	40-60	ND	1-10	6121793
Glass Fibres	% vol/vol	ND	ND	ND	>99	90-99	6121793
Hair	% vol/vol	ND	ND	ND	ND	ND	6121793
Other Fibers	% vol/vol	ND	ND	ND	ND	ND	6121793

ND = Not detected

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

General Comments

For Asbestos:

ND = Not detected. Below reportable detection limit of 0.5%
All samples are homogeneous
Site Location: Not Provided

Sample EG6917-01: 2 layers: Brown mix and Brown fibrous mix

Sample EG6918-01: Vermiculite sample

Sample EG6919-01: 1 layer: Bluish fibrous mix

Sample EG6920-01: 1 layer: Black fibrous mix

Sample EG6921-01: 1 layer: Brown fibrous mix

Sample EG6922-01: 1 layer: Green fibrous mix

Sample EG6923-01: 1 layer: Reddish rocks

Sample EG6924-01: 1 layer: Grey cement like mix

Sample EG6925-01: 1 layer: Grey floor tile

Sample EG6926-01: 2 layers: Grey fibrous mix and Silver aluminum foil like mix. Asbestos is found in the grey fibrous mix

Sample EG6927-01: 1 layer: White mix

Sample EG6928-01: 1 layer: Bluish fibrous mix

Sample EG6929-01: 1 layer: Black fibrous mix

Sample EG6930-01: 1 layer: Black fibrous mix

Sample EG6931-01: 2 layers: Grey fibrous mix and Grey chalky mix

Sample EG6932-01: 1 layer: Yellow fibrous mix

Sample EG6933-01: 1 layer: Black fibrous mix

Sample EG6934-01: 1 layer: Black fibrous mix

Sample EG6935-01: 1 layer: Black fibrous mix

Sample EG6936-01: 1 layer: Red rocks

Sample EG6937-01: 1 layer: White mix

Sample EG6938-01: 1 layer: Black fibrous mix

Sample EG6939-01: 1 layer: Black fibrous mix

Sample EG6940-01: 1 layer: Grey floor tile

Sample EG6941-01: Vermiculite sample

Sample EG6942-01: Vermiculite sample

Sample EG6943-01: 1 layer: Brown fibrous mix

Maxxam Job #: B274755
Report Date: 2012/08/28

MAXXAM ANALYTIQUE
Client Project #: LB244988

Sample EG6944-01: 1 layer: Black fibrous mix

Sample EG6945-01: 1 layer: Grey fibrous mix

Sample EG6946-01: 1 layer: Grey fibrous mix

Sample EG6947-01: 1 layer: White fibrous mix

Sample EG6948-01: 1 layer: Black fibrous mix

Sample EG6949-01: 1 layer: White fibrous mix

Sample EG6950-01: 1 layer: Grey fibrous mix

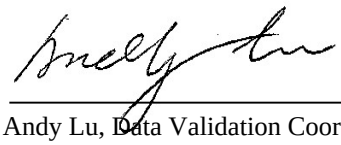
Sample EG6951-01: 2 layers: White fibrous mix and Black mix

Results relate only to the items tested.

Validation Signature Page

Maxxam Job #: B274755

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Data Validation Coordinator

==========

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Your Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Your C.O.C. #: 8102001

Attention: Rory Farrell
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/10/04
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B244892
Received: 2012/08/17, 09:30

Sample Matrix: SOIL
Samples Received: 64

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Petroleum Hydro. CCME F1 & BTEX (1)	3	N/A	N/A		
Petroleum Hydro. CCME F1 & BTEX	28	2012/08/18	2012/08/20	STL SOP-00131	CCME-PN1310
Petroleum Hydro. CCME F1 & BTEX	12	2012/08/18	2012/08/21	STL SOP-00131	CCME-PN1310
Petroleum Hydro. CCME F1 & BTEX	24	2012/08/18	2012/08/22	STL SOP-00131	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	21	2012/08/20	2012/08/20	STL SOP-00170	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	17	2012/08/20	2012/08/22	STL SOP-00170	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	24	2012/08/20	2012/08/23	STL SOP-00170	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	1	2012/08/22	2012/08/22	STL SOP-00170	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	1	2012/08/23	2012/08/23	STL SOP-00170	CCME-PN1310
Petroleum Hydrocarbons (F2-F4) (1)	3	N/A	N/A		
Heavy Hydrocarbons (F4G)	3	2012/08/20	2012/08/28	STL SOP-00170	CCME-PN1310
Flash Point (2)	3	N/A	N/A		
Mercury by ICP-MS	10	2012/08/24	2012/09/09	STL SOP-00006	MA.200-Hg 1.0
Mercury by ICP-MS	12	2012/09/06	2012/09/06	STL SOP-00006	MA.200-Hg 1.0
Mercury by ICP-MS	38	2012/09/07	2012/09/07	STL SOP-00006	MA.200-Hg 1.0
Mercury by ICP-MS	4	2012/09/07	2012/09/09	STL SOP-00006	MA.200-Hg 1.0
Humidity (Water Content) (2)	3	N/A	N/A		
Total Extractable Metals	21	2012/08/23	2012/08/23	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	5	2012/08/23	2012/08/24	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	11	2012/08/24	2012/08/24	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	27	2012/08/24	2012/08/25	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	12	2012/09/06	2012/09/08	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	41	2012/09/07	2012/09/08	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	1	2012/09/07	2012/09/10	STL SOP-00006	MA.200- Mét 1.2
Total PCB	4	2012/08/20	2012/08/21	STL SOP-00133	MA. 400 - BPC 1.0
Total PCB	15	2012/08/20	2012/08/22	STL SOP-00133	MA. 400 - BPC 1.0
pH	3	2012/09/21	2012/09/21	STL SOP-00016	MA.100- pH1.1
Particle size (pipettes & sieves) (3)	3	N/A	N/A		
TCLP - No Head Space (1)	3	N/A	N/A		

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam - Mississauga
(2) This test was performed by Maxxam - Calgary

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tél. : (514) 448-9001 Télécopieur : (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)

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(3) This test was performed by Maxxam Analytics - Bedford

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Argyro Frangoulis, Project Manager
Email: AFrangoulis@maxxam.ca
Phone# (514) 448-9001 Ext:4229

==========

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94568	R94568	R94569	R94569	R94570	R94570		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-1**	**2012-SB-1 Lab-Dup**	**2012-SB-2**	**2012-SB-2 Lab-Dup**	**2012-SB-3**	**2012-SB-3 Lab-Dup**	**RDL**	**QC Batch**
% Moisture	%	8.7	8.7	8.5	8.5	13	13	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	<0.005	0.024	0.013	0.014	0.027	0.005	1045422
Toluene	mg/kg	<0.02	<0.02	0.04	0.03	0.06	0.10	0.02	1045422
Ethylbenzene	mg/kg	<0.01	<0.01	0.01	<0.01	0.02	0.02	0.01	1045422
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.02	1045422
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	0.08	0.10	0.04	1045422
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	0.08	0.13	0.04	1045422
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	<10	10	1045422
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	<10	10	1045422
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98	98	99	97	98	98	N/A	1045422
4-Bromofluorobenzene	%	102	102	101	102	101	102	N/A	1045422
D10-Ethylbenzene	%	115	115	117	109	110	112	N/A	1045422
D4-1,2-Dichloroethane	%	99	97	96	99	98	98	N/A	1045422

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94571	R94572	R94573	R94574	R94575	R94576		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-4**	**2012-SB-5**	**2012-SB-6**	**2012-SB-7**	**2012-SB-8**	**2012-SB-9**	**RDL**	**QC Batch**
% Moisture	%	22	9.5	21	31	22	19	N/A	N/A
VOLATILES									
Benzene	mg/kg	0.061	<0.005	<0.005	0.008	0.013	<0.005	0.005	1045422
Toluene	mg/kg	0.09	<0.02	<0.02	0.05	0.08	<0.02	0.02	1045422
Ethylbenzene	mg/kg	0.01	<0.01	<0.01	0.02	0.04	<0.01	0.01	1045422
o-Xylene	mg/kg	<0.02	<0.02	<0.02	0.04	0.06	<0.02	0.02	1045422
p+m-Xylene	mg/kg	0.05	<0.04	<0.04	0.08	0.17	<0.04	0.04	1045422
Total_Xylenes	mg/kg	0.05	<0.04	<0.04	0.12	0.23	<0.04	0.04	1045422
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	81	<10	10	1045422
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	80	<10	10	1045422
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98	97	97	98	97	97	N/A	1045422
4-Bromofluorobenzene	%	102	102	102	102	102	101	N/A	1045422
D10-Ethylbenzene	%	114	115	112	118	109	116	N/A	1045422
D4-1,2-Dichloroethane	%	99	98	99	98	101	97	N/A	1045422

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94577	R94580	R94581	R94582	R94583	R94584		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-10**	**2012-SB-11**	**2012-SB-12**	**2012-SB-13**	**2012-SB-14**	**2012-SB-15**	**RDL**	**QC Batch**
% Moisture	%	20	21	6.9	7.5	7.2	8.5	N/A	N/A
VOLATILES									
Benzene	mg/kg	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1045422
Toluene	mg/kg	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
Ethylbenzene	mg/kg	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045422
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
p+m-Xylene	mg/kg	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045422
Total_Xylenes	mg/kg	0.09	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045422
F1 (C6-C10)	mg/kg	<10	80	<10	<10	<10	<10	10	1045422
F1 (C6-C10) - BTEX	mg/kg	<10	80	<10	<10	<10	<10	10	1045422
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	98	99	97	97	98	97	N/A	1045422
4-Bromofluorobenzene	%	100	100	101	100	100	100	N/A	1045422
D10-Ethylbenzene	%	115	112	105	112	107	109	N/A	1045422
D4-1,2-Dichloroethane	%	95	95	99	95	96	98	N/A	1045422

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94585	R94586	R94587	R94588	R94589	R94590		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-16**	**2012-SB-17**	**2012-SB-18**	**2012-SB-19**	**2012-SB-20**	**2012-SB-21**	**RDL**	**QC Batch**
% Moisture	%	5.7	6.3	10	5.5	7.1	10	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1045422
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01	1045422
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.04	1045422
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	0.04	1045422
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	<10	10	1045422
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	<10	10	1045422
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	97	96	97	97	97	97	N/A	1045422
4-Bromofluorobenzene	%	100	101	101	101	101	100	N/A	1045422
D10-Ethylbenzene	%	113	111	112	110	111	110	N/A	1045422
D4-1,2-Dichloroethane	%	97	96	96	96	97	97	N/A	1045422

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94591	R94592	R94593	R94594	R94595		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-22**	**2012-SB-23**	**2012-SB-24**	**2012-SB-25**	**2012-SB-26**	**RDL**	**QC Batch**
% Moisture	%	8.9	8.9	14	17	14	N/A	N/A
VOLATILES								
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1045422
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045422
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045422
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045422
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045422
F1 (C6-C10)	mg/kg	<10	<10	<10	30	<10	10	1045422
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	30	<10	10	1045422
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	97	97	98	98	96	N/A	1045422
4-Bromofluorobenzene	%	100	101	100	101	100	N/A	1045422
D10-Ethylbenzene	%	114	112	110	111	109	N/A	1045422
D4-1,2-Dichloroethane	%	96	96	95	96	95	N/A	1045422

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94596		R94597		R94598	R94598	R94599		
Sampling Date		2012/08/14		2012/08/14		2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001		8102001		8102001	8102001	8102001		
	Units	**2012-SB-27**	**RDL**	**2012-SB-28**	**QC Batch**	**2012-SB-29**	**2012-SB-29 Lab-Dup**	**2012-SB-30**	**RDL**	**QC Batch**
% Moisture	%	15	N/A	5.7	N/A	5.0	5.0	7.0	N/A	N/A
VOLATILES										
Benzene	mg/kg	<0.005	0.005	<0.005	1045422	<0.005	<0.005	<0.005	0.005	1045437
Toluene	mg/kg	<0.02	0.02	<0.02	1045422	<0.02	<0.02	<0.02	0.02	1045437
Ethylbenzene	mg/kg	0.03	0.01	<0.01	1045422	<0.01	<0.01	<0.01	0.01	1045437
o-Xylene	mg/kg	0.12	0.02	<0.02	1045422	<0.02	<0.02	<0.02	0.02	1045437
p+m-Xylene	mg/kg	0.10	0.04	<0.04	1045422	<0.04	<0.04	<0.04	0.04	1045437
Total_Xylenes	mg/kg	0.22	0.04	<0.04	1045422	<0.04	<0.04	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	520	100	<10	1045422	<10	<10	<10	10	1045437
F1 (C6-C10) - BTEX	mg/kg	520	100	<10	1045422	<10	<10	<10	10	1045437
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	98	N/A	95	1045422	99	98	99	N/A	1045437
4-Bromofluorobenzene	%	101	N/A	99	1045422	101	101	99	N/A	1045437
D10-Ethylbenzene	%	107	N/A	111	1045422	124	118	119	N/A	1045437
D4-1,2-Dichloroethane	%	98	N/A	95	1045422	103	100	100	N/A	1045437

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94599	R94601	R94601	R94602	R94603	R94604		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-30 Lab-Dup**	**2012-SB-31**	**2012-SB-31 Lab-Dup**	**2012-SB-32**	**2012-SB-33**	**2012-SB-34**	**RDL**	**QC Batch**
% Moisture	%	7.0	3.8	3.8	5.8	9.7	5.0	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1045437
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045437
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	101	100	102	100	101	100	N/A	1045437
4-Bromofluorobenzene	%	97	98	98	99	99	100	N/A	1045437
D10-Ethylbenzene	%	120	116	124	122	124	121	N/A	1045437
D4-1,2-Dichloroethane	%	98	101	100	101	102	102	N/A	1045437

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94605	R94606	R94607	R94608	R94609	R94610		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-35**	**2012-SB-36**	**2012-SB-37**	**2012-SB-38**	**2012-SB-39**	**2012-SB-40**	**RDL**	**QC Batch**
% Moisture	%	6.8	8.4	9.9	25	36	17	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	0.005	1045437
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.02	1045437
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045437
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	101	99	100	100	101	101	N/A	1045437
4-Bromofluorobenzene	%	100	100	101	100	99	99	N/A	1045437
D10-Ethylbenzene	%	115	113	114	113	119	114	N/A	1045437
D4-1,2-Dichloroethane	%	101	106	104	102	100	101	N/A	1045437

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Report Date: 2012/10/04

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Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94611	R94612	R94613		R94614		R94615		
Sampling Date		2012/08/14	2012/08/14	2012/08/14		2012/08/14		2012/08/14		
COC Number		8102001	8102001	8102001		8102001		8102001		
	Units	**2012-SB-41**	**2012-SB-42**	**2012-SB-43**	**RDL**	**2012-SB-44**	**RDL**	**2012-SB-45**	**RDL**	**QC Batch**
% Moisture	%	9.4	8.2	4.5	N/A	66	N/A	11	N/A	N/A
VOLATILES										
Benzene	mg/kg	<0.005	<0.005	<0.005	0.005	<0.02	0.02	<0.005	0.005	1045437
Toluene	mg/kg	<0.02	<0.02	<0.02	0.02	<0.06	0.06	<0.02	0.02	1045437
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	0.01	0.08	0.03	<0.01	0.01	1045437
o-Xylene	mg/kg	<0.02	<0.02	<0.02	0.02	0.63	0.06	<0.02	0.02	1045437
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	0.04	0.9	0.1	<0.04	0.04	1045437
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	0.04	1.5	0.1	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	<10	<10	<10	10	120	30	74	10	1045437
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	10	120	30	74	10	1045437
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	100	100	99	N/A	101	N/A	101	N/A	1045437
4-Bromofluorobenzene	%	99	99	99	N/A	101	N/A	99	N/A	1045437
D10-Ethylbenzene	%	111	113	118	N/A	116	N/A	113	N/A	1045437
D4-1,2-Dichloroethane	%	103	100	100	N/A	100	N/A	100	N/A	1045437

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94616	R94617	R94618	R94619	R94620	R94621		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-46**	**2012-SB-47**	**2012-SB-48**	**2012-SB-49**	**2012-SB-50**	**2012-SB-51**	**RDL**	**QC Batch**
% Moisture	%	13	26	16	18	12	27	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	1045437
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045437
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	<10	10	1045437
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	100	100	101	101	100	100	N/A	1045437
4-Bromofluorobenzene	%	97	99	98	99	99	99	N/A	1045437
D10-Ethylbenzene	%	118	117	119	118	118	116	N/A	1045437
D4-1,2-Dichloroethane	%	100	103	100	101	103	102	N/A	1045437

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94622	R94623	R94624	R94625	R94626		
Sampling Date		2012/08/14	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-52**	**2012-SB-53**	**2012-SB-54**	**2012-SB-55**	**2012-SB-56**	**RDL**	**QC Batch**
% Moisture	%	21	18	15	27	21	N/A	N/A
VOLATILES								
Benzene	mg/kg	<0.005	<0.005	0.006	<0.005	<0.005	0.005	1045437
Toluene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045437
o-Xylene	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	1045437
p+m-Xylene	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
Total_Xylenes	mg/kg	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	1045437
F1 (C6-C10)	mg/kg	<10	<10	<10	<10	<10	10	1045437
F1 (C6-C10) - BTEX	mg/kg	<10	<10	<10	<10	<10	10	1045437
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	102	101	101	101	102	N/A	1045437
4-Bromofluorobenzene	%	99	100	100	100	100	N/A	1045437
D10-Ethylbenzene	%	120	116	117	109	116	N/A	1045437
D4-1,2-Dichloroethane	%	102	104	104	106	104	N/A	1045437

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94627	R94628	R94629	R94630	R94632	R94633		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-57**	**2012-SB-58**	**2012-SB-59**	**2012-SB-60**	**2012-SB-61**	**2012-SB-62**	**RDL**	**QC Batch**
% Moisture	%	23	17	27	19	18	15	N/A	N/A
VOLATILES									
Benzene	mg/kg	<0.005	0.16	<0.005	0.025	0.005	<0.005	0.005	1045478
Toluene	mg/kg	<0.02	0.71	<0.02	0.09	<0.02	<0.02	0.02	1045478
Ethylbenzene	mg/kg	<0.01	0.12	<0.01	0.05	<0.01	<0.01	0.01	1045478
o-Xylene	mg/kg	<0.02	0.17	<0.02	0.10	<0.02	<0.02	0.02	1045478
p+m-Xylene	mg/kg	<0.04	0.77	<0.04	0.25	<0.04	0.04	0.04	1045478
Total_Xylenes	mg/kg	<0.04	0.95	<0.04	0.36	<0.04	0.04	0.04	1045478
F1 (C6-C10)	mg/kg	45	15	<10	65	<10	59	10	1045478
F1 (C6-C10) - BTEX	mg/kg	45	13	<10	65	<10	59	10	1045478
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	99	101	101	100	101	102	N/A	1045478
4-Bromofluorobenzene	%	101	100	100	99	100	101	N/A	1045478
D10-Ethylbenzene	%	119	116	108	112	116	112	N/A	1045478
D4-1,2-Dichloroethane	%	101	99	102	102	103	103	N/A	1045478

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R94634	R94635		
Sampling Date		2012/08/15	2012/08/15		
COC Number		8102001	8102001		
	Units	**2012-SB-63**	**2012-SB-64**	**RDL**	**QC Batch**
% Moisture	%	14	17	N/A	N/A
VOLATILES					
Benzene	mg/kg	0.033	<0.005	0.005	1045478
Toluene	mg/kg	0.07	<0.02	0.02	1045478
Ethylbenzene	mg/kg	0.02	<0.01	0.01	1045478
o-Xylene	mg/kg	0.03	<0.02	0.02	1045478
p+m-Xylene	mg/kg	0.10	<0.04	0.04	1045478
Total_Xylenes	mg/kg	0.13	<0.04	0.04	1045478
F1 (C6-C10)	mg/kg	<10	43	10	1045478
F1 (C6-C10) - BTEX	mg/kg	<10	43	10	1045478
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	99	102	N/A	1045478
4-Bromofluorobenzene	%	100	98	N/A	1045478
D10-Ethylbenzene	%	112	114	N/A	1045478
D4-1,2-Dichloroethane	%	101	99	N/A	1045478

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Report Date: 2012/10/04

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Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
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HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94568	R94569	R94570	R94571	R94572		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-1**	**2012-SB-2**	**2012-SB-3**	**2012-SB-4**	**2012-SB-5**	**RDL**	**QC Batch**
% Moisture	%	8.7	8.5	13	22	9.5	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	94	<10	<10	62	<10	10	1045945
Petroleum Hydrocarbons F3:C16-C34	mg/kg	58	61	90	130	11	10	1045945
Petroleum Hydrocarbons F4:C34-C50	mg/kg	22	56	45	41	12	10	1045945
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045945
Surrogate Recovery (%)								
O-Terphenyl	%	109	110	107	108	111	N/A	1045945

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94573	R94574	R94575	R94575	R94576		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-6**	**2012-SB-7**	**2012-SB-8**	**2012-SB-8 Lab-Dup**	**2012-SB-9**	**RDL**	**QC Batch**
% Moisture	%	21	31	22	22	19	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	10	200	13000	13000	4800	10	1045945
Petroleum Hydrocarbons F3:C16-C34	mg/kg	34	440	4200	4200	1900	10	1045945
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	160	310	290	47	10	1045945
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045945
Surrogate Recovery (%)								
O-Terphenyl	%	106	105	111	109	82	N/A	1045945

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94577	R94580	R94581	R94582	R94583		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-10**	**2012-SB-11**	**2012-SB-12**	**2012-SB-13**	**2012-SB-14**	**RDL**	**QC Batch**
% Moisture	%	20	21	6.9	7.5	7.2	N/A	N/A
Total Petroleum Hydro.								
F4G (Heavy Hydrocarbons - Grav.)	mg/kg	N/A	N/A	1700	N/A	2800	100	1049623
Petroleum Hydrocarbons F2:C10-C16	mg/kg	190	5000	2800	48	71	10	1045945
Petroleum Hydrocarbons F3:C16-C34	mg/kg	130	4100	820	170	1800	10	1045945
Petroleum Hydrocarbons F4:C34-C50	mg/kg	11	2100	960	71	1000	10	1045945
Reached Baseline at C50	mg/kg	Yes	Yes	No	Yes	No	N/A	1045945
Surrogate Recovery (%)								
O-Terphenyl	%	100	109	114	116	113	N/A	1045945

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94584	R94585	R94585	R94586	R94587		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-15**	**2012-SB-16**	**2012-SB-16 Lab-Dup**	**2012-SB-17**	**2012-SB-18**	**RDL**	**QC Batch**
% Moisture	%	8.5	5.7	5.7	6.3	10	N/A	N/A
Total Petroleum Hydro.								
F4G (Heavy Hydrocarbons - Grav.)	mg/kg	4900	N/A	N/A	N/A	N/A	100	1049623
Petroleum Hydrocarbons F2:C10-C16	mg/kg	21	380	370	90	<10	10	1045945
Petroleum Hydrocarbons F3:C16-C34	mg/kg	1700	850	680	95	17	10	1045945
Petroleum Hydrocarbons F4:C34-C50	mg/kg	1200	480	410	11	11	10	1045945
Reached Baseline at C50	mg/kg	No	Yes	Yes	Yes	Yes	N/A	1045945
Surrogate Recovery (%)								
O-Terphenyl	%	115	ND	109	117	102	N/A	1045945

ND = less than the reported detection limit
N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94588	R94589	R94590	R94591	R94592		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-19**	**2012-SB-20**	**2012-SB-21**	**2012-SB-22**	**2012-SB-23**	**RDL**	**QC Batch**
% Moisture	%	5.5	7.1	10	8.9	8.9	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	1000	53	580	120	<10	10	1045945
Petroleum Hydrocarbons F3:C16-C34	mg/kg	250	47	800	490	21	10	1045945
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	<10	<10	14	10	1045945
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045945
Surrogate Recovery (%)								
O-Terphenyl	%	111	112	109	110	117	N/A	1045945

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94593	R94593		R94594	R94595		
Sampling Date		2012/08/14	2012/08/14		2012/08/14	2012/08/14		
COC Number		8102001	8102001		8102001	8102001		
	Units	**2012-SB-24**	**2012-SB-24 Lab-Dup**	**QC Batch**	**2012-SB-25**	**2012-SB-26**	**RDL**	**QC Batch**
% Moisture	%	14	14	N/A	17	14	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	<10	<10	1045945	4700	<10	10	1045997
Petroleum Hydrocarbons F3:C16-C34	mg/kg	12	<10	1045945	1000	<10	10	1045997
Petroleum Hydrocarbons F4:C34-C50	mg/kg	12	<10	1045945	<10	<10	10	1045997
Reached Baseline at C50	mg/kg	Yes	Yes	1045945	Yes	Yes	N/A	1045997
Surrogate Recovery (%)								
O-Terphenyl	%	108	111	1045945	108	104	N/A	1045997

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94596	R94597	R94598	R94599	R94601		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-27**	**2012-SB-28**	**2012-SB-29**	**2012-SB-30**	**2012-SB-31**	**RDL**	**QC Batch**
% Moisture	%	15	5.7	5.0	7.0	3.8	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	9900	380	1900	<10	<10	10	1045997
Petroleum Hydrocarbons F3:C16-C34	mg/kg	1700	130	1400	<10	<10	10	1045997
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	250	<10	<10	10	1045997
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045997
Surrogate Recovery (%)								
O-Terphenyl	%	109	105	105	98	101	N/A	1045997

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94602	R94602	R94603	R94604	R94605		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-32**	**2012-SB-32 Lab-Dup**	**2012-SB-33**	**2012-SB-34**	**2012-SB-35**	**RDL**	**QC Batch**
% Moisture	%	5.8	5.8	9.7	5.0	6.8	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	<10	<10	31	<10	<10	10	1045997
Petroleum Hydrocarbons F3:C16-C34	mg/kg	13	14	<10	<10	<10	10	1045997
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	<10	<10	<10	10	1045997
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045997
Surrogate Recovery (%)								
O-Terphenyl	%	104	102	100	104	104	N/A	1045997

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94606	R94607	R94608	R94609	R94610		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-36**	**2012-SB-37**	**2012-SB-38**	**2012-SB-39**	**2012-SB-40**	**RDL**	**QC Batch**
% Moisture	%	8.4	9.9	25	36	17	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	13	1500	<10	<10	<10	10	1045997
Petroleum Hydrocarbons F3:C16-C34	mg/kg	56	610	91	26	130	10	1045997
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	36	12	45	10	1045997
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045997
Surrogate Recovery (%)								
O-Terphenyl	%	103	111	103	102	101	N/A	1045997

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94610		R94611	R94612	R94613		
Sampling Date		2012/08/14		2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001		8102001	8102001	8102001		
	Units	**2012-SB-40 Lab-Dup**	**QC Batch**	**2012-SB-41**	**2012-SB-42**	**2012-SB-43**	**RDL**	**QC Batch**
% Moisture	%	17	N/A	9.4	8.2	4.5	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	<10	1045997	530	230	<10	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	110	1045997	2000	1300	<10	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	40	1045997	19	13	<10	10	1045861
Reached Baseline at C50	mg/kg	Yes	1045997	Yes	Yes	Yes	N/A	1045861
Surrogate Recovery (%)								
O-Terphenyl	%	101	1045997	101	100	105	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94614		R94615	R94616	R94617	R94618		
Sampling Date		2012/08/14		2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001		8102001	8102001	8102001	8102001		
	Units	**2012-SB-44**	**RDL**	**2012-SB-45**	**2012-SB-46**	**2012-SB-47**	**2012-SB-48**	**RDL**	**QC Batch**
% Moisture	%	66	N/A	11	13	26	16	N/A	N/A
Total Petroleum Hydro.									
Petroleum Hydrocarbons F2:C10-C16	mg/kg	2600	20	2600	<10	18	<10	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	2200	20	1400	<10	32	<10	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	30	20	<10	<10	<10	<10	10	1045861
Reached Baseline at C50	mg/kg	Yes	N/A	Yes	Yes	Yes	Yes	N/A	1045861
Surrogate Recovery (%)									
O-Terphenyl	%	104	N/A	101	101	101	96	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94618	R94619	R94620	R94621	R94622		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-48 Lab-Dup**	**2012-SB-49**	**2012-SB-50**	**2012-SB-51**	**2012-SB-52**	**RDL**	**QC Batch**
% Moisture	%	16	18	12	27	21	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	<10	<10	<10	<10	<10	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	14	12	<10	24	13	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	<10	<10	<10	10	1045861
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045861
Surrogate Recovery (%)								
O-Terphenyl	%	97	100	98	97	102	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94623	R94624	R94625	R94626		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001		
	Units	**2012-SB-53**	**2012-SB-54**	**2012-SB-55**	**2012-SB-56**	**RDL**	**QC Batch**
% Moisture	%	18	15	27	21	N/A	N/A
Total Petroleum Hydro.							
Petroleum Hydrocarbons F2:C10-C16	mg/kg	<10	<10	<10	130	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	15	21	180	280	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	<10	<10	36	110	10	1045861
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	1045861
Surrogate Recovery (%)							
O-Terphenyl	%	100	100	98	98	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94626		R94626		R94627		
Sampling Date		2012/08/15		2012/08/15		2012/08/15		
COC Number		8102001		8102001		8102001		
	Units	**2012-SB-56 REPEAT**	**QC Batch**	**2012-SB-56 Lab-Dup**	**QC Batch**	**2012-SB-57**	**RDL**	**QC Batch**
% Moisture	%	21	N/A	21	N/A	23	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	130	1046765	88 (1)	1045861	4600	10	1046765
Petroleum Hydrocarbons F3:C16-C34	mg/kg	200	1046765	150 (1)	1045861	980	10	1046765
Petroleum Hydrocarbons F4:C34-C50	mg/kg	73	1046765	69 (1)	1045861	<10	10	1046765
Reached Baseline at C50	mg/kg	Yes	1046765	Yes	1045861	Yes	N/A	1046765
Surrogate Recovery (%)								
O-Terphenyl	%	105	1046765	98	1045861	103	N/A	1046765

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Sampler Initials: SW

HYDROCARBONS BY GCFID (SOIL)

Maxxam ID		R94628	R94629	R94630	R94632	R94633		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-58**	**2012-SB-59**	**2012-SB-60**	**2012-SB-61**	**2012-SB-62**	**RDL**	**QC Batch**
% Moisture	%	17	27	19	18	15	N/A	N/A
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	mg/kg	2200	4000	5300	34	3700	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	780	2000	760	51	750	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	160	90	<10	<10	18	10	1045861
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	1045861
Surrogate Recovery (%)								
O-Terphenyl	%	98	111	102	105	101	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94634	R94635		R94635		R94635		
Sampling Date		2012/08/15	2012/08/15		2012/08/15		2012/08/15		
COC Number		8102001	8102001		8102001		8102001		
	Units	**2012-SB-63**	**2012-SB-64**	**QC Batch**	**2012-SB-64 REPEAT**	**QC Batch**	**2012-SB-64 Lab-Dup**	**RDL**	**QC Batch**
% Moisture	%	14	17	N/A	17	N/A	17	N/A	N/A
Total Petroleum Hydro.									
Petroleum Hydrocarbons F2:C10-C16	mg/kg	4900	2000	1045861	2400	1047351	1200 (1)	10	1045861
Petroleum Hydrocarbons F3:C16-C34	mg/kg	1400	460	1045861	500	1047351	200 (1)	10	1045861
Petroleum Hydrocarbons F4:C34-C50	mg/kg	170	68	1045861	79	1047351	34	10	1045861
Reached Baseline at C50	mg/kg	Yes	Yes	1045861	Yes	1047351	Yes	N/A	1045861
Surrogate Recovery (%)									
O-Terphenyl	%	103	100	1045861	109	1047351	103	N/A	1045861

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94568	R94569	R94570	R94570	R94571	R94572		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-1**	**2012-SB-2**	**2012-SB-3**	**2012-SB-3 Lab-Dup**	**2012-SB-4**	**2012-SB-5**	**RDL**	**QC Batch**
% Moisture	%	8.7	8.5	13	13	22	9.5	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	0.02	0.02	0.09	0.06 (1)	0.08	0.02	0.01	1053298
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	N/A	<0.5	<0.5	0.5	1047481
Arsenic (As)	mg/kg	<2	<2	<2	N/A	<2	<2	2	1047481
Barium (Ba)	mg/kg	93	150	130	N/A	160	86	4	1047481
Cadmium (Cd)	mg/kg	0.2	0.3	0.8	N/A	0.5	0.2	0.1	1047481
Cobalt (Co)	mg/kg	<1	1	1	N/A	2	1	1	1047481
Chromium (Cr)	mg/kg	3	6	4	N/A	9	4	1	1047481
Copper (Cu)	mg/kg	6	7	25	N/A	28	19	1	1047481
Tin (Sn)	mg/kg	1	4	390	N/A	10	3	1	1047481
Manganese (Mn)	mg/kg	74	89	76	N/A	110	80	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	<0.5	<0.5	N/A	<0.5	<0.5	0.5	1047481
Nickel (Ni)	mg/kg	2.1	2.9	2.9	N/A	3.2	2.5	0.5	1047481
Lead (Pb)	mg/kg	12	250	460	N/A	170	21	1	1047481
Selenium (Se)	mg/kg	<0.5	0.7	<0.5	N/A	0.7	1.1	0.5	1047481
Zinc (Zn)	mg/kg	48	170	170	N/A	230	76	5	1047481
Aluminum (Al)	mg/kg	1200	1900	980	N/A	1400	1400	20	1047481
Antimony (Sb)	mg/kg	<0.1	0.1	3.5	N/A	0.6	0.1	0.1	1047481
Beryllium (Be)	mg/kg	<0.1	<0.1	0.1	N/A	<0.1	<0.1	0.1	1047481
Boron (B)	mg/kg	4	5	4	N/A	4	3	2	1047481
Iron (Fe)	mg/kg	2600	4000	2500	N/A	3700	2900	10	1047481
Magnesium (Mg)	mg/kg	9400	8900	7600	N/A	6000	8900	5	1047481
Vanadium (V)	mg/kg	4	6	4	N/A	5	5	2	1047481
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	N/A	<0.1	<0.1	0.1	1047481
Uranium (U)	mg/kg	<2	<2	<2	N/A	<2	<2	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94573		R94574		R94575	R94576		
Sampling Date		2012/08/14		2012/08/14		2012/08/14	2012/08/14		
COC Number		8102001		8102001		8102001	8102001		
	Units	**2012-SB-6**	**QC Batch**	**2012-SB-7**	**QC Batch**	**2012-SB-8**	**2012-SB-9**	**RDL**	**QC Batch**
% Moisture	%	21	N/A	31	N/A	22	19	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	0.01	1053298	0.04	1053311	0.04	<0.01	0.01	1053298
Silver (Ag)	mg/kg	<0.5	1047481	<0.5	1047481	<0.5	<0.5	0.5	1047481
Arsenic (As)	mg/kg	<2	1047481	<2	1047481	<2	<2	2	1047481
Barium (Ba)	mg/kg	61	1047481	100	1047481	100	63	4	1047481
Cadmium (Cd)	mg/kg	<0.1	1047481	0.2	1047481	0.2	<0.1	0.1	1047481
Cobalt (Co)	mg/kg	<1	1047481	1	1047481	1	<1	1	1047481
Chromium (Cr)	mg/kg	2	1047481	4	1047481	5	2	1	1047481
Copper (Cu)	mg/kg	2	1047481	26	1047481	6	2	1	1047481
Tin (Sn)	mg/kg	<1	1047481	<1	1047481	3	<1	1	1047481
Manganese (Mn)	mg/kg	47	1047481	59	1047481	58	72	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	1047481	<0.5	1047481	<0.5	<0.5	0.5	1047481
Nickel (Ni)	mg/kg	1.3	1047481	2.7	1047481	2.7	1.8	0.5	1047481
Lead (Pb)	mg/kg	9	1047481	170	1047481	88	1	1	1047481
Selenium (Se)	mg/kg	<0.5	1047481	0.6	1047481	<0.5	<0.5	0.5	1047481
Zinc (Zn)	mg/kg	11	1047481	100	1047481	150	7	5	1047481
Aluminum (Al)	mg/kg	810	1047481	1300	1047481	1200	930	20	1047481
Antimony (Sb)	mg/kg	0.1	1047481	1.3	1047481	0.9	<0.1	0.1	1047481
Beryllium (Be)	mg/kg	<0.1	1047481	<0.1	1047481	<0.1	<0.1	0.1	1047481
Boron (B)	mg/kg	4	1047481	6	1047481	4	8	2	1047481
Iron (Fe)	mg/kg	1700	1047481	4100	1047481	2400	2600	10	1047481
Magnesium (Mg)	mg/kg	10000	1047481	12000	1047481	8000	18000	5	1047481
Vanadium (V)	mg/kg	2	1047481	4	1047481	5	4	2	1047481
Thallium (Tl)	mg/kg	<0.1	1047481	<0.1	1047481	<0.1	<0.1	0.1	1047481
Uranium (U)	mg/kg	<2	1047481	<2	1047481	<2	<2	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94577	R94577	R94577	R94580	R94581		R94582		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		8102001		
	Units	**2012-SB-10**	**2012-SB-10 Lab-Dup**	**2012-SB-10 Lab-Dup 2**	**2012-SB-11**	**2012-SB-12**	**QC Batch**	**2012-SB-13**	**RDL**	**QC Batch**
% Moisture	%	20	20	20	21	6.9	N/A	7.5	N/A	N/A
METALS										
Mercury (Hg)	mg/kg	0.03	0.01	0.02	0.05	<0.01	1053311	<0.01	0.01	1053298
Silver (Ag)	mg/kg	<0.5	<0.5	N/A	<0.5	<0.5	1047481	<0.5	0.5	1047481
Arsenic (As)	mg/kg	<2	<2	N/A	<2	<2	1047481	<2	2	1047481
Barium (Ba)	mg/kg	82	99	N/A	41	50	1047481	61	4	1047481
Cadmium (Cd)	mg/kg	0.1	0.2	N/A	<0.1	<0.1	1047481	<0.1	0.1	1047481
Cobalt (Co)	mg/kg	<1	1	N/A	2	1	1047481	1	1	1047481
Chromium (Cr)	mg/kg	3	4	N/A	4	4	1047481	4	1	1047481
Copper (Cu)	mg/kg	14	19	N/A	3	2	1047481	2	1	1047481
Tin (Sn)	mg/kg	<1	1	N/A	<1	<1	1047481	<1	1	1047481
Manganese (Mn)	mg/kg	57	57	N/A	50	56	1047481	70	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	<0.5	N/A	<0.5	<0.5	1047481	<0.5	0.5	1047481
Nickel (Ni)	mg/kg	2.0	2.7	N/A	2.7	2.2	1047481	2.2	0.5	1047481
Lead (Pb)	mg/kg	81	74	N/A	2	1	1047481	4	1	1047481
Selenium (Se)	mg/kg	0.5	0.6	N/A	<0.5	<0.5	1047481	<0.5	0.5	1047481
Zinc (Zn)	mg/kg	17	22	N/A	11	16	1047481	11	5	1047481
Aluminum (Al)	mg/kg	980	1400 (1)	N/A	1300	1400	1047481	1200	20	1047481
Antimony (Sb)	mg/kg	1.4	1.3	N/A	<0.1	<0.1	1047481	<0.1	0.1	1047481
Beryllium (Be)	mg/kg	<0.1	<0.1	N/A	<0.1	<0.1	1047481	<0.1	0.1	1047481
Boron (B)	mg/kg	7	6	N/A	4	4	1047481	5	2	1047481
Iron (Fe)	mg/kg	2400	2900	N/A	2700	2900	1047481	2900	10	1047481
Magnesium (Mg)	mg/kg	7700	9000	N/A	11000	13000	1047481	13000	5	1047481
Vanadium (V)	mg/kg	3	5	N/A	5	6	1047481	6	2	1047481
Thallium (Tl)	mg/kg	<0.1	<0.1	N/A	<0.1	<0.1	1047481	<0.1	0.1	1047481
Uranium (U)	mg/kg	<2	<2	N/A	<2	<2	1047481	<2	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94583	R94584	R94585	R94585		R94586		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14		2012/08/14		
COC Number		8102001	8102001	8102001	8102001		8102001		
	Units	**2012-SB-14**	**2012-SB-15**	**2012-SB-16**	**2012-SB-16 Lab-Dup**	**QC Batch**	**2012-SB-17**	**RDL**	**QC Batch**
% Moisture	%	7.2	8.5	5.7	5.7	N/A	6.3	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	0.02	<0.01	<0.01	1053298	<0.01	0.01	1053311
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	N/A	1047481	<0.5	0.5	1047481
Arsenic (As)	mg/kg	<2	<2	<2	N/A	1047481	<2	2	1047481
Barium (Ba)	mg/kg	110	74	68	N/A	1047481	39	4	1047481
Cadmium (Cd)	mg/kg	0.2	<0.1	<0.1	N/A	1047481	<0.1	0.1	1047481
Cobalt (Co)	mg/kg	1	1	1	N/A	1047481	<1	1	1047481
Chromium (Cr)	mg/kg	4	4	5	N/A	1047481	3	1	1047481
Copper (Cu)	mg/kg	5	3	2	N/A	1047481	2	1	1047481
Tin (Sn)	mg/kg	2	<1	<1	N/A	1047481	<1	1	1047481
Manganese (Mn)	mg/kg	62	63	60	N/A	1047481	74	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	<0.5	<0.5	N/A	1047481	<0.5	0.5	1047481
Nickel (Ni)	mg/kg	3.4	3.6	2.6	N/A	1047481	1.9	0.5	1047481
Lead (Pb)	mg/kg	22	5	2	N/A	1047481	2	1	1047481
Selenium (Se)	mg/kg	<0.5	0.6	<0.5	N/A	1047481	<0.5	0.5	1047481
Zinc (Zn)	mg/kg	58	16	14	N/A	1047481	6	5	1047481
Aluminum (Al)	mg/kg	1200	1300	1100	N/A	1047481	890	20	1047481
Antimony (Sb)	mg/kg	<0.1	<0.1	<0.1	N/A	1047481	<0.1	0.1	1047481
Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	N/A	1047481	<0.1	0.1	1047481
Boron (B)	mg/kg	5	4	5	N/A	1047481	5	2	1047481
Iron (Fe)	mg/kg	2900	2900	2300	N/A	1047481	1800	10	1047481
Magnesium (Mg)	mg/kg	13000	13000	14000	N/A	1047481	17000	5	1047481
Vanadium (V)	mg/kg	5	5	5	N/A	1047481	3	2	1047481
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	N/A	1047481	<0.1	0.1	1047481
Uranium (U)	mg/kg	<2	<2	<2	N/A	1047481	<2	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94587	R94588		R94589	R94589	R94589		
Sampling Date		2012/08/14	2012/08/14		2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001		8102001	8102001	8102001		
	Units	**2012-SB-18**	**2012-SB-19**	**QC Batch**	**2012-SB-20**	**2012-SB-20 Lab-Dup**	**2012-SB-20 Lab-Dup 2**	**RDL**	**QC Batch**
% Moisture	%	10	5.5	N/A	7.1	7.1	7.1	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	0.01	<0.01	1053298	<0.01	<0.01	<0.01	0.01	1053311
Silver (Ag)	mg/kg	<0.5	<0.5	1047481	<0.5	<0.5	N/A	0.5	1047481
Arsenic (As)	mg/kg	3	<2	1047481	<2	<2	N/A	2	1047481
Barium (Ba)	mg/kg	91	55	1047481	59	59	N/A	4	1047481
Cadmium (Cd)	mg/kg	<0.1	<0.1	1047481	0.1	0.1	N/A	0.1	1047481
Cobalt (Co)	mg/kg	5	1	1047481	<1	<1	N/A	1	1047481
Chromium (Cr)	mg/kg	21	5	1047481	2	2	N/A	1	1047481
Copper (Cu)	mg/kg	12	2	1047481	2	1	N/A	1	1047481
Tin (Sn)	mg/kg	<1	<1	1047481	<1	<1	N/A	1	1047481
Manganese (Mn)	mg/kg	220	53	1047481	57	52	N/A	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	<0.5	1047481	<0.5	<0.5	N/A	0.5	1047481
Nickel (Ni)	mg/kg	14	2.1	1047481	1.2	1.2	N/A	0.5	1047481
Lead (Pb)	mg/kg	5	1	1047481	2	1	N/A	1	1047481
Selenium (Se)	mg/kg	0.8	<0.5	1047481	<0.5	<0.5	N/A	0.5	1047481
Zinc (Zn)	mg/kg	29	7	1047481	8	7	N/A	5	1047481
Aluminum (Al)	mg/kg	7300	1000	1047481	560	730	N/A	20	1047481
Antimony (Sb)	mg/kg	<0.1	<0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Beryllium (Be)	mg/kg	0.3	<0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Boron (B)	mg/kg	9	5	1047481	4	4	N/A	2	1047481
Iron (Fe)	mg/kg	11000	2000	1047481	1500	1500	N/A	10	1047481
Magnesium (Mg)	mg/kg	20000	12000	1047481	8900	9600	N/A	5	1047481
Vanadium (V)	mg/kg	23	4	1047481	3	3	N/A	2	1047481
Thallium (Tl)	mg/kg	<0.1	<0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Uranium (U)	mg/kg	<2	<2	1047481	<2	<2	N/A	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94590	R94591		R94592	R94593	R94593		
Sampling Date		2012/08/14	2012/08/14		2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001		8102001	8102001	8102001		
	Units	**2012-SB-21**	**2012-SB-22**	**QC Batch**	**2012-SB-23**	**2012-SB-24**	**2012-SB-24 Lab-Dup**	**RDL**	**QC Batch**
% Moisture	%	10	8.9	N/A	8.9	14	14	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	0.02	0.10	1053298	0.03	0.02	<0.01	0.01	1053091
Silver (Ag)	mg/kg	<0.5	<0.5	1047481	<0.5	<0.5	N/A	0.5	1047481
Arsenic (As)	mg/kg	<2	<2	1047481	<2	<2	N/A	2	1047481
Barium (Ba)	mg/kg	54	71	1047481	46	40	N/A	4	1047481
Cadmium (Cd)	mg/kg	0.2	0.2	1047481	<0.1	<0.1	N/A	0.1	1047481
Cobalt (Co)	mg/kg	<1	1	1047481	1	1	N/A	1	1047481
Chromium (Cr)	mg/kg	3	3	1047481	4	3	N/A	1	1047481
Copper (Cu)	mg/kg	4	6	1047481	2	2	N/A	1	1047481
Tin (Sn)	mg/kg	<1	9	1047481	<1	<1	N/A	1	1047481
Manganese (Mn)	mg/kg	57	89	1047481	71	64	N/A	2	1047481
Molybdenum (Mo)	mg/kg	<0.5	<0.5	1047481	<0.5	<0.5	N/A	0.5	1047481
Nickel (Ni)	mg/kg	1.6	2.5	1047481	2.7	1.8	N/A	0.5	1047481
Lead (Pb)	mg/kg	12	10	1047481	2	2	N/A	1	1047481
Selenium (Se)	mg/kg	<0.5	0.6	1047481	<0.5	0.9	N/A	0.5	1047481
Zinc (Zn)	mg/kg	40	57	1047481	13	6	N/A	5	1047481
Aluminum (Al)	mg/kg	960	1100	1047481	1300	1200	N/A	20	1047481
Antimony (Sb)	mg/kg	0.1	0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Beryllium (Be)	mg/kg	<0.1	<0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Boron (B)	mg/kg	6	5	1047481	6	5	N/A	2	1047481
Iron (Fe)	mg/kg	2100	3400	1047481	2700	2400	N/A	10	1047481
Magnesium (Mg)	mg/kg	9300	7700	1047481	15000	13000	N/A	5	1047481
Vanadium (V)	mg/kg	4	4	1047481	5	5	N/A	2	1047481
Thallium (Tl)	mg/kg	<0.1	<0.1	1047481	<0.1	<0.1	N/A	0.1	1047481
Uranium (U)	mg/kg	<2	<2	1047481	<2	<2	N/A	2	1047481

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94594	R94594	R94595		R94596	R94597		
Sampling Date		2012/08/14	2012/08/14	2012/08/14		2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001		8102001	8102001		
	Units	**2012-SB-25**	**2012-SB-25 Lab-Dup**	**2012-SB-26**	**QC Batch**	**2012-SB-27**	**2012-SB-28**	**RDL**	**QC Batch**
% Moisture	%	17	17	14	N/A	15	5.7	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	1053298	<0.01	<0.01	0.01	1053091
Silver (Ag)	mg/kg	<0.5	N/A	<0.5	1047891	<0.5	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	N/A	<2	1047891	<2	<2	2	1048351
Barium (Ba)	mg/kg	46	N/A	47	1047891	35	230	4	1048351
Cadmium (Cd)	mg/kg	<0.1	N/A	<0.1	1047891	<0.1	0.1	0.1	1048351
Cobalt (Co)	mg/kg	<1	N/A	1	1047891	<1	<1	1	1048351
Chromium (Cr)	mg/kg	4	N/A	5	1047891	2	3	1	1048351
Copper (Cu)	mg/kg	2	N/A	3	1047891	2	2	1	1048351
Tin (Sn)	mg/kg	<1	N/A	<1	1047891	<1	<1	1	1048351
Manganese (Mn)	mg/kg	56	N/A	62	1047891	42	48	2	1048351
Molybdenum (Mo)	mg/kg	<0.5	N/A	<0.5	1047891	<0.5	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	2.0	N/A	2.8	1047891	1.3	1.9	0.5	1048351
Lead (Pb)	mg/kg	<1	N/A	1	1047891	2	1	1	1048351
Selenium (Se)	mg/kg	<0.5	N/A	0.6	1047891	<0.5	<0.5	0.5	1048351
Zinc (Zn)	mg/kg	7	N/A	7	1047891	10	6	5	1048351
Aluminum (Al)	mg/kg	1000	N/A	1500	1047891	860	810	20	1048351
Antimony (Sb)	mg/kg	<0.1	N/A	<0.1	1047891	0.1	<0.1	0.1	1048351
Beryllium (Be)	mg/kg	<0.1	N/A	<0.1	1047891	<0.1	<0.1	0.1	1048351
Boron (B)	mg/kg	7	N/A	6	1047891	9	7	2	1048351
Iron (Fe)	mg/kg	2300	N/A	3000	1047891	1900	2100	10	1048351
Magnesium (Mg)	mg/kg	12000	N/A	11000	1047891	10000	9200	5	1048351
Vanadium (V)	mg/kg	4	N/A	6	1047891	3	5	2	1048351
Thallium (Tl)	mg/kg	<0.1	N/A	<0.1	1047891	<0.1	<0.1	0.1	1048351
Uranium (U)	mg/kg	<2	N/A	<2	1047891	<2	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94598	R94598	R94598		R94599	R94601	R94602		
Sampling Date		2012/08/14	2012/08/14	2012/08/14		2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001		8102001	8102001	8102001		
	Units	**2012-SB-29**	**2012-SB-29 Lab-Dup**	**2012-SB-29 Lab-Dup 2**	**QC Batch**	**2012-SB-30**	**2012-SB-31**	**2012-SB-32**	**RDL**	**QC Batch**
% Moisture	%	5.0	5.0	5.0	N/A	7.0	3.8	5.8	N/A	N/A
METALS										
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	1053311	<0.01	<0.01	<0.01	0.01	1053091
Silver (Ag)	mg/kg	<0.5	<0.5	N/A	1048351	<0.5	<0.5	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	<2	N/A	1048351	<2	<2	<2	2	1048351
Barium (Ba)	mg/kg	49	48	N/A	1048351	47	36	51	4	1048351
Cadmium (Cd)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	<0.1	<0.1	0.1	1048351
Cobalt (Co)	mg/kg	<1	<1	N/A	1048351	<1	<1	<1	1	1048351
Chromium (Cr)	mg/kg	2	3	N/A	1048351	2	3	2	1	1048351
Copper (Cu)	mg/kg	2	1	N/A	1048351	3	2	2	1	1048351
Tin (Sn)	mg/kg	<1	<1	N/A	1048351	<1	<1	<1	1	1048351
Manganese (Mn)	mg/kg	54	60	N/A	1048351	50	59	41	2	1048351
Molybdenum (Mo)	mg/kg	<0.5	<0.5	N/A	1048351	<0.5	<0.5	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	1.1	1.9	N/A	1048351	1.7	2.8	1.3	0.5	1048351
Lead (Pb)	mg/kg	1	1	N/A	1048351	1	1	2	1	1048351
Selenium (Se)	mg/kg	<0.5	0.6	N/A	1048351	<0.5	<0.5	<0.5	0.5	1048351
Zinc (Zn)	mg/kg	<5	5	N/A	1048351	<5	6	5	5	1048351
Aluminum (Al)	mg/kg	780	940	N/A	1048351	850	1000	730	20	1048351
Antimony (Sb)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	<0.1	<0.1	0.1	1048351
Beryllium (Be)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	<0.1	<0.1	0.1	1048351
Boron (B)	mg/kg	8	7	N/A	1048351	5	8	7	2	1048351
Iron (Fe)	mg/kg	1800	2200	N/A	1048351	2000	2500	1500	10	1048351
Magnesium (Mg)	mg/kg	10000	10000	N/A	1048351	12000	21000	9600	5	1048351
Vanadium (V)	mg/kg	3	4	N/A	1048351	4	4	3	2	1048351
Thallium (Tl)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	<0.1	<0.1	0.1	1048351
Uranium (U)	mg/kg	<2	<2	N/A	1048351	<2	<2	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94603	R94604	R94605	R94606	R94607	R94607		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-33**	**2012-SB-34**	**2012-SB-35**	**2012-SB-36**	**2012-SB-37**	**2012-SB-37 Lab-Dup**	**RDL**	**QC Batch**
% Moisture	%	9.7	5.0	6.8	8.4	9.9	9.9	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	1053298
Silver (Ag)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	<2	<2	<2	<2	<2	2	1048351
Barium (Ba)	mg/kg	87	61	27	60	82	65	4	1048351
Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	1048351
Cobalt (Co)	mg/kg	1	1	<1	<1	<1	<1	1	1048351
Chromium (Cr)	mg/kg	5	3	3	1	2	1	1	1048351
Copper (Cu)	mg/kg	3	2	3	2	2	2	1	1048351
Tin (Sn)	mg/kg	<1	<1	<1	<1	<1	<1	1	1048351
Manganese (Mn)	mg/kg	74	88	51	47	36	47	2	1048351
Molybdenum (Mo)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	2.8	2.2	1.6	0.9	1.4	0.9	0.5	1048351
Lead (Pb)	mg/kg	2	1	4	<1	1	1	1	1048351
Selenium (Se)	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1048351
Zinc (Zn)	mg/kg	9	8	22	<5	<5	<5	5	1048351
Aluminum (Al)	mg/kg	1800	1500	880	570	700	640	20	1048351
Antimony (Sb)	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048351
Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048351
Boron (B)	mg/kg	7	7	5	5	5	5	2	1048351
Iron (Fe)	mg/kg	3500	3000	2300	1400	1500	1600	10	1048351
Magnesium (Mg)	mg/kg	15000	13000	12000	8800	6800	10000 (1)	5	1048351
Vanadium (V)	mg/kg	7	5	4	2	3	2	2	1048351
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048351
Uranium (U)	mg/kg	<2	<2	<2	<2	<2	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94607		R94608		R94609	R94610		
Sampling Date		2012/08/14		2012/08/14		2012/08/14	2012/08/14		
COC Number		8102001		8102001		8102001	8102001		
	Units	**2012-SB-37 Lab-Dup 2**	**QC Batch**	**2012-SB-38**	**QC Batch**	**2012-SB-39**	**2012-SB-40**	**RDL**	**QC Batch**
% Moisture	%	9.9	N/A	25	N/A	36	17	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	1053298	0.03	1053311	0.07	0.25	0.01	1053298
Silver (Ag)	mg/kg	N/A	1048351	<0.5	1048351	<0.5	<0.5	0.5	1048351
Arsenic (As)	mg/kg	N/A	1048351	<2	1048351	4	7	2	1048351
Barium (Ba)	mg/kg	N/A	1048351	100	1048351	140	200	4	1048351
Cadmium (Cd)	mg/kg	N/A	1048351	0.2	1048351	0.2	0.8	0.1	1048351
Cobalt (Co)	mg/kg	N/A	1048351	1	1048351	2	2	1	1048351
Chromium (Cr)	mg/kg	N/A	1048351	4	1048351	3	3	1	1048351
Copper (Cu)	mg/kg	N/A	1048351	6	1048351	10	36	1	1048351
Tin (Sn)	mg/kg	N/A	1048351	<1	1048351	<1	7	1	1048351
Manganese (Mn)	mg/kg	N/A	1048351	43	1048351	42	170	2	1048351
Molybdenum (Mo)	mg/kg	N/A	1048351	<0.5	1048351	0.8	1.7	0.5	1048351
Nickel (Ni)	mg/kg	N/A	1048351	6.7	1048351	4.5	5.4	0.5	1048351
Lead (Pb)	mg/kg	N/A	1048351	12	1048351	16	92	1	1048351
Selenium (Se)	mg/kg	N/A	1048351	0.5	1048351	0.7	4.2	0.5	1048351
Zinc (Zn)	mg/kg	N/A	1048351	35	1048351	32	210	5	1048351
Aluminum (Al)	mg/kg	N/A	1048351	1700	1048351	1800	2600	20	1048351
Antimony (Sb)	mg/kg	N/A	1048351	0.9	1048351	0.3	0.8	0.1	1048351
Beryllium (Be)	mg/kg	N/A	1048351	<0.1	1048351	0.2	0.2	0.1	1048351
Boron (B)	mg/kg	N/A	1048351	13	1048351	8	5	2	1048351
Iron (Fe)	mg/kg	N/A	1048351	2900	1048351	2600	4100	10	1048351
Magnesium (Mg)	mg/kg	N/A	1048351	6900	1048351	8100	4800	5	1048351
Vanadium (V)	mg/kg	N/A	1048351	6	1048351	8	12	2	1048351
Thallium (Tl)	mg/kg	N/A	1048351	<0.1	1048351	<0.1	<0.1	0.1	1048351
Uranium (U)	mg/kg	N/A	1048351	<2	1048351	<2	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94611	R94611	R94611		R94612		R94613		
Sampling Date		2012/08/14	2012/08/14	2012/08/14		2012/08/14		2012/08/14		
COC Number		8102001	8102001	8102001		8102001		8102001		
	Units	**2012-SB-41**	**2012-SB-41 Lab-Dup**	**2012-SB-41 Lab-Dup 2**	**QC Batch**	**2012-SB-42**	**QC Batch**	**2012-SB-43**	**RDL**	**QC Batch**
% Moisture	%	9.4	9.4	9.4	N/A	8.2	N/A	4.5	N/A	N/A
METALS										
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	1053311	0.02	1053787	<0.01	0.01	1053298
Silver (Ag)	mg/kg	<0.5	<0.5	N/A	1048351	<0.5	1048351	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	<2	N/A	1048351	<2	1048351	<2	2	1048351
Barium (Ba)	mg/kg	68	61	N/A	1048351	27	1048351	43	4	1048351
Cadmium (Cd)	mg/kg	0.2	0.1	N/A	1048351	<0.1	1048351	<0.1	0.1	1048351
Cobalt (Co)	mg/kg	1	1	N/A	1048351	<1	1048351	1	1	1048351
Chromium (Cr)	mg/kg	3	3	N/A	1048351	2	1048351	2	1	1048351
Copper (Cu)	mg/kg	10	6 (1)	N/A	1048351	1	1048351	4	1	1048351
Tin (Sn)	mg/kg	1	<1	N/A	1048351	<1	1048351	<1	1	1048351
Manganese (Mn)	mg/kg	74	83	N/A	1048351	47	1048351	49	2	1048351
Molybdenum (Mo)	mg/kg	<0.5	<0.5	N/A	1048351	<0.5	1048351	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	2.2	2.2	N/A	1048351	1.2	1048351	1.9	0.5	1048351
Lead (Pb)	mg/kg	36	28	N/A	1048351	2	1048351	2	1	1048351
Selenium (Se)	mg/kg	<0.5	<0.5	N/A	1048351	<0.5	1048351	<0.5	0.5	1048351
Zinc (Zn)	mg/kg	87	67	N/A	1048351	6	1048351	7	5	1048351
Aluminum (Al)	mg/kg	1500	1400	N/A	1048351	810	1048351	1200	20	1048351
Antimony (Sb)	mg/kg	0.4	0.3	N/A	1048351	<0.1	1048351	<0.1	0.1	1048351
Beryllium (Be)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	1048351	<0.1	0.1	1048351
Boron (B)	mg/kg	5	5	N/A	1048351	5	1048351	4	2	1048351
Iron (Fe)	mg/kg	3100	2900	N/A	1048351	1800	1048351	2500	10	1048351
Magnesium (Mg)	mg/kg	6300	6500	N/A	1048351	15000	1048351	9100	5	1048351
Vanadium (V)	mg/kg	6	5	N/A	1048351	3	1048351	4	2	1048351
Thallium (Tl)	mg/kg	<0.1	<0.1	N/A	1048351	<0.1	1048351	<0.1	0.1	1048351
Uranium (U)	mg/kg	<2	<2	N/A	1048351	<2	1048351	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94614		R94615		R94616		R94617		
Sampling Date		2012/08/14		2012/08/14		2012/08/14		2012/08/14		
COC Number		8102001		8102001		8102001		8102001		
	Units	**2012-SB-44**	**QC Batch**	**2012-SB-45**	**QC Batch**	**2012-SB-46**	**QC Batch**	**2012-SB-47**	**RDL**	**QC Batch**
% Moisture	%	66	N/A	11	N/A	13	N/A	26	N/A	N/A
METALS										
Mercury (Hg)	mg/kg	0.04	1053311	<0.01	1053298	<0.01	1053787	<0.01	0.01	1053091
Silver (Ag)	mg/kg	<0.5	1048351	<0.5	1048351	<0.5	1048351	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	1048351	<2	1048351	<2	1048351	<2	2	1048351
Barium (Ba)	mg/kg	140	1048351	84	1048351	74	1048351	54	4	1048351
Cadmium (Cd)	mg/kg	0.4	1048351	<0.1	1048351	<0.1	1048351	0.1	0.1	1048351
Cobalt (Co)	mg/kg	<1	1048351	1	1048351	2	1048351	3	1	1048351
Chromium (Cr)	mg/kg	2	1048351	3	1048351	4	1048351	5	1	1048351
Copper (Cu)	mg/kg	540	1048351	2	1048351	2	1048351	27	1	1048351
Tin (Sn)	mg/kg	<1	1048351	<1	1048351	<1	1048351	<1	1	1048351
Manganese (Mn)	mg/kg	53	1048351	52	1048351	64	1048351	110	2	1048351
Molybdenum (Mo)	mg/kg	0.9	1048351	<0.5	1048351	<0.5	1048351	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	4.6	1048351	2.0	1048351	2.4	1048351	4.8	0.5	1048351
Lead (Pb)	mg/kg	8	1048351	1	1048351	1	1048351	13	1	1048351
Selenium (Se)	mg/kg	1.5	1048351	0.7	1048351	0.6	1048351	0.6	0.5	1048351
Zinc (Zn)	mg/kg	28	1048351	8	1048351	14	1048351	47	5	1048351
Aluminum (Al)	mg/kg	1400	1048351	1500	1048351	2200	1048351	3900	20	1048351
Antimony (Sb)	mg/kg	0.6	1048351	<0.1	1048351	0.2	1048351	0.5	0.1	1048351
Beryllium (Be)	mg/kg	0.1	1048351	<0.1	1048351	<0.1	1048351	<0.1	0.1	1048351
Boron (B)	mg/kg	23	1048351	4	1048351	5	1048351	6	2	1048351
Iron (Fe)	mg/kg	3500	1048351	2800	1048351	5400	1048351	7700	10	1048351
Magnesium (Mg)	mg/kg	1100	1048351	12000	1048351	13000	1048351	11000	5	1048351
Vanadium (V)	mg/kg	7	1048351	5	1048351	8	1048351	12	2	1048351
Thallium (Tl)	mg/kg	<0.1	1048351	<0.1	1048351	<0.1	1048351	<0.1	0.1	1048351
Uranium (U)	mg/kg	4	1048351	<2	1048351	<2	1048351	<2	2	1048351

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94618		R94619	R94620		R94621		
Sampling Date		2012/08/14		2012/08/14	2012/08/14		2012/08/14		
COC Number		8102001		8102001	8102001		8102001		
	Units	**2012-SB-48**	**QC Batch**	**2012-SB-49**	**2012-SB-50**	**QC Batch**	**2012-SB-51**	**RDL**	**QC Batch**
% Moisture	%	16	N/A	18	12	N/A	27	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	1053787	<0.01	<0.01	1053091	0.01	0.01	1053298
Silver (Ag)	mg/kg	<0.5	1048351	<0.5	<0.5	1048351	<0.5	0.5	1048351
Arsenic (As)	mg/kg	<2	1048351	2	<2	1048351	6	2	1048351
Barium (Ba)	mg/kg	64	1048351	58	83	1048351	170	4	1048351
Cadmium (Cd)	mg/kg	<0.1	1048351	<0.1	<0.1	1048351	<0.1	0.1	1048351
Cobalt (Co)	mg/kg	<1	1048351	3	2	1048351	3	1	1048351
Chromium (Cr)	mg/kg	3	1048351	10	4	1048351	8	1	1048351
Copper (Cu)	mg/kg	1	1048351	7	2	1048351	9	1	1048351
Tin (Sn)	mg/kg	<1	1048351	<1	<1	1048351	<1	1	1048351
Manganese (Mn)	mg/kg	52	1048351	150	90	1048351	100	2	1048351
Molybdenum (Mo)	mg/kg	<0.5	1048351	<0.5	<0.5	1048351	<0.5	0.5	1048351
Nickel (Ni)	mg/kg	1.8	1048351	6.8	2.6	1048351	6.1	0.5	1048351
Lead (Pb)	mg/kg	1	1048351	4	2	1048351	4	1	1048351
Selenium (Se)	mg/kg	0.5	1048351	0.6	0.9	1048351	1.2	0.5	1048351
Zinc (Zn)	mg/kg	5	1048351	18	14	1048351	18	5	1048351
Aluminum (Al)	mg/kg	1200	1048351	3900	2600	1048351	3500	20	1048351
Antimony (Sb)	mg/kg	<0.1	1048351	<0.1	<0.1	1048351	<0.1	0.1	1048351
Beryllium (Be)	mg/kg	<0.1	1048351	0.1	<0.1	1048351	0.2	0.1	1048351
Boron (B)	mg/kg	6	1048351	11	5	1048351	7	2	1048351
Iron (Fe)	mg/kg	2600	1048351	7600	5200	1048351	9900	10	1048351
Magnesium (Mg)	mg/kg	13000	1048351	26000	2200	1048351	6000	5	1048351
Vanadium (V)	mg/kg	5	1048351	14	9	1048351	15	2	1048351
Thallium (Tl)	mg/kg	<0.1	1048351	<0.1	<0.1	1048351	<0.1	0.1	1048351
Uranium (U)	mg/kg	<2	1048351	<2	<2	1048351	<2	2	1048351

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94622		R94623	R94624		R94625	R94626		
Sampling Date		2012/08/14		2012/08/15	2012/08/15		2012/08/15	2012/08/15		
COC Number		8102001		8102001	8102001		8102001	8102001		
	Units	**2012-SB-52**	**QC Batch**	**2012-SB-53**	**2012-SB-54**	**QC Batch**	**2012-SB-55**	**2012-SB-56**	**RDL**	**QC Batch**
% Moisture	%	21	N/A	18	15	N/A	27	21	N/A	N/A
METALS										
Mercury (Hg)	mg/kg	0.02	1053787	<0.01	0.07	1053091	0.06	0.02	0.01	1048360
Silver (Ag)	mg/kg	<0.5	1048351	<0.5	0.5	1048351	<0.5	<0.5	0.5	1048360
Arsenic (As)	mg/kg	<2	1048351	2	<2	1048351	<2	<2	2	1048360
Barium (Ba)	mg/kg	120	1048351	48	99	1048351	50	54	4	1048360
Cadmium (Cd)	mg/kg	<0.1	1048351	<0.1	0.1	1048351	<0.1	0.1	0.1	1048360
Cobalt (Co)	mg/kg	2	1048351	4	1	1048351	<1	<1	1	1048360
Chromium (Cr)	mg/kg	11	1048351	12	6	1048351	4	1	1	1048360
Copper (Cu)	mg/kg	4	1048351	9	7	1048351	6	1	1	1048360
Tin (Sn)	mg/kg	<1	1048351	<1	7	1048351	1	<1	1	1048360
Manganese (Mn)	mg/kg	55	1048351	210	58	1048351	37	37	2	1048360
Molybdenum (Mo)	mg/kg	<0.5	1048351	<0.5	<0.5	1048351	<0.5	<0.5	0.5	1048360
Nickel (Ni)	mg/kg	4.5	1048351	9.7	2.7	1048351	2.2	0.8	0.5	1048360
Lead (Pb)	mg/kg	2	1048351	5	9	1048351	16	8	1	1048360
Selenium (Se)	mg/kg	0.7	1048351	0.7	0.9	1048351	<0.5	0.7	0.5	1048360
Zinc (Zn)	mg/kg	15	1048351	21	39	1048351	32	21	5	1048360
Aluminum (Al)	mg/kg	2900	1048351	4700	1500	1048351	1400	720	20	1048360
Antimony (Sb)	mg/kg	<0.1	1048351	<0.1	0.2	1048351	0.1	<0.1	0.1	1048360
Beryllium (Be)	mg/kg	0.1	1048351	0.2	<0.1	1048351	<0.1	<0.1	0.1	1048360
Boron (B)	mg/kg	3	1048351	12	6	1048351	7	7	2	1048360
Iron (Fe)	mg/kg	6900	1048351	8500	3400	1048351	3100	1900	10	1048360
Magnesium (Mg)	mg/kg	6100	1048351	31000	12000	1048351	8500	7000	5	1048360
Vanadium (V)	mg/kg	14	1048351	15	5	1048351	4	2	2	1048360
Thallium (Tl)	mg/kg	<0.1	1048351	<0.1	<0.1	1048351	<0.1	<0.1	0.1	1048360
Uranium (U)	mg/kg	<2	1048351	<2	<2	1048351	<2	<2	2	1048360

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94627	R94628	R94628	R94629	R94630	R94632		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-57**	**2012-SB-58**	**2012-SB-58 Lab-Dup**	**2012-SB-59**	**2012-SB-60**	**2012-SB-61**	**RDL**	**QC Batch**
% Moisture	%	23	17	17	27	19	18	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	0.01	0.05	0.06	<0.01	0.16	0.01	0.01	1048360
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1048360
Arsenic (As)	mg/kg	<2	<2	<2	<2	<2	<2	2	1048360
Barium (Ba)	mg/kg	87	130	97	73	42	62	4	1048360
Cadmium (Cd)	mg/kg	0.2	0.3	0.3	0.1	0.1	<0.1	0.1	1048360
Cobalt (Co)	mg/kg	<1	1	1	<1	<1	<1	1	1048360
Chromium (Cr)	mg/kg	2	5	6	2	2	2	1	1048360
Copper (Cu)	mg/kg	2	8	11	3	3	2	1	1048360
Tin (Sn)	mg/kg	<1	3	3	<1	<1	4	1	1048360
Manganese (Mn)	mg/kg	63	67	65	38	52	44	2	1048360
Molybdenum (Mo)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1048360
Nickel (Ni)	mg/kg	1.3	2.8	2.7	2.1	1.6	1.6	0.5	1048360
Lead (Pb)	mg/kg	3	100	120	9	8	15	1	1048360
Selenium (Se)	mg/kg	1.2	0.6	0.6	0.6	0.5	<0.5	0.5	1048360
Zinc (Zn)	mg/kg	8	66	75	18	12	24	5	1048360
Aluminum (Al)	mg/kg	920	1300	1300	1100	950	730	20	1048360
Antimony (Sb)	mg/kg	0.3	1.3	1.5	0.1	0.1	0.2	0.1	1048360
Beryllium (Be)	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048360
Boron (B)	mg/kg	7	12	13	9	7	6	2	1048360
Iron (Fe)	mg/kg	1700	3400	3500	2300	2200	1700	10	1048360
Magnesium (Mg)	mg/kg	8100	7100	6200	8700	9200	7800	5	1048360
Vanadium (V)	mg/kg	4	4	4	4	3	3	2	1048360
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048360
Uranium (U)	mg/kg	<2	<2	<2	4	<2	<2	2	1048360

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

TOTAL EXTRACTABLE METALS (SOIL)

Maxxam ID		R94633	R94634	R94635		
Sampling Date		2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001		
	Units	**2012-SB-62**	**2012-SB-63**	**2012-SB-64**	**RDL**	**QC Batch**
% Moisture	%	15	14	17	N/A	N/A
METALS						
Mercury (Hg)	mg/kg	<0.01	0.03	<0.01	0.01	1048360
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	0.5	1048360
Arsenic (As)	mg/kg	<2	<2	<2	2	1048360
Barium (Ba)	mg/kg	68	100	34	4	1048360
Cadmium (Cd)	mg/kg	<0.1	0.2	<0.1	0.1	1048360
Cobalt (Co)	mg/kg	<1	<1	1	1	1048360
Chromium (Cr)	mg/kg	1	3	3	1	1048360
Copper (Cu)	mg/kg	2	7	1	1	1048360
Tin (Sn)	mg/kg	<1	3	<1	1	1048360
Manganese (Mn)	mg/kg	88	57	40	2	1048360
Molybdenum (Mo)	mg/kg	<0.5	<0.5	<0.5	0.5	1048360
Nickel (Ni)	mg/kg	1.1	2.1	1.7	0.5	1048360
Lead (Pb)	mg/kg	1000	240	1	1	1048360
Selenium (Se)	mg/kg	<0.5	0.5	<0.5	0.5	1048360
Zinc (Zn)	mg/kg	8	44	5	5	1048360
Aluminum (Al)	mg/kg	770	1100	1100	20	1048360
Antimony (Sb)	mg/kg	5.9	4.2	<0.1	0.1	1048360
Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	0.1	1048360
Boron (B)	mg/kg	6	5	5	2	1048360
Iron (Fe)	mg/kg	1700	2500	2100	10	1048360
Magnesium (Mg)	mg/kg	13000	5200	11000	5	1048360
Vanadium (V)	mg/kg	3	4	4	2	1048360
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	0.1	1048360
Uranium (U)	mg/kg	<2	<2	<2	2	1048360

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

CONVENTIONAL PARAMETERS (SOIL)

Maxxam ID		R94575	R94596	R94628	
Sampling Date		2012/08/14	2012/08/14	2012/08/15	
COC Number		8102001	8102001	8102001	
	Units	**2012-SB-8**	**2012-SB-27**	**2012-SB-58**	**QC Batch**
% Moisture	%	22	15	17	N/A
CONVENTIONALS					
pH	pH	7.68	8.00	7.86	1059744

N/A = Not Applicable
QC Batch = Quality Control Batch

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Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PCB CONGENERS (SOIL)

Maxxam ID		R94568	R94569	R94570	R94571	R94572		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-1**	**2012-SB-2**	**2012-SB-3**	**2012-SB-4**	**2012-SB-5**	**RDL**	**QC Batch**
% Moisture	%	8.7	8.5	13	22	9.5	N/A	N/A
PCB								
Total PCB	mg/kg	0.01	<0.01	0.06	<0.01	<0.01	0.01	1045774
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	91	90	92	93	91	N/A	1045774
2',3,5-Trichlorobiphenyl	%	84	85	86	87	86	N/A	1045774
22'33'44'566'-Nonachlorobiphenyl	%	98	99	97	98	100	N/A	1045774

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94573	R94574	R94575	R94576	R94577		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/14	2012/08/14		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-6**	**2012-SB-7**	**2012-SB-8**	**2012-SB-9**	**2012-SB-10**	**RDL**	**QC Batch**
% Moisture	%	21	31	22	19	20	N/A	N/A
PCB								
Total PCB	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045774
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	91	96	92	78	92	N/A	1045774
2',3,5-Trichlorobiphenyl	%	88	92	83	77	87	N/A	1045774
22'33'44'566'-Nonachlorobiphenyl	%	101	101	89	80	98	N/A	1045774

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RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PCB CONGENERS (SOIL)

Maxxam ID		R94623	R94623	R94624	R94624	R94625		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-53**	**2012-SB-53 Lab-Dup**	**2012-SB-54**	**2012-SB-54 Lab-Dup**	**2012-SB-55**	**RDL**	**QC Batch**
% Moisture	%	18	18	15	15	27	N/A	N/A
PCB								
Total PCB	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045774
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	92	90	92	93	96	N/A	1045774
2',3,5-Trichlorobiphenyl	%	87	88	87	89	92	N/A	1045774
22'33'44'566'-Nonachlorobiphenyl	%	99	108	98	100	99	N/A	1045774

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R94626	R94627	R94628	R94629	R94630		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**2012-SB-56**	**2012-SB-57**	**2012-SB-58**	**2012-SB-59**	**2012-SB-60**	**RDL**	**QC Batch**
% Moisture	%	21	23	17	27	19	N/A	N/A
PCB								
Total PCB	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1045774
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	96	92	97	90	89	N/A	1045774
2',3,5-Trichlorobiphenyl	%	91	88	91	94	82	N/A	1045774
22'33'44'566'-Nonachlorobiphenyl	%	100	94	99	95	90	N/A	1045774

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

PCB CONGENERS (SOIL)

Maxxam ID		R94632		
Sampling Date		2012/08/15		
COC Number		8102001		
	Units	**2012-SB-61**	**RDL**	**QC Batch**
% Moisture	%	18	N/A	N/A
PCB				
Total PCB	mg/kg	<0.01	0.01	1045774
Surrogate Recovery (%)				
2,3,3',4,6-Pentachlorobiphenyl	%	94	N/A	1045774
2',3,5-Trichlorobiphenyl	%	88	N/A	1045774
22'33'44'566'-Nonachlorobiphenyl	%	99	N/A	1045774

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD

All results are calculated on a dry weight basis except where not applicable.

PETROLEUM HYDROCARBONS (CCME)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

Please note that the above results have been corrected for the instrument blank.

Note: The results for the totals are rounded off to two significant figures.

Please note that samples were analysed by Headspace GC/MS-FID.

Reported detection limits are multiplied by dilution factors used for sample analysis.

Due to a high percent humidity, the detection limits for sample S94614 were adjusted.

HYDROCARBONS BY GCFID (SOIL)

Please note that the results have not been corrected for QC recoveries (spiked blank and surrogates). Please note that the results have not been corrected for the method blank.

Please note that the higher result between F4 and F4G should be used for interpreting the CWS PHC Tier 1 approach.

Please note that samples R94626 and R94635 are not homogeneous, therefore all duplicates are shown in the above results table.

Sample R94568, Total Extractable Metals: Test repeated.
Sample R94569, Total Extractable Metals: Test repeated.
Sample R94570, Total Extractable Metals: Test repeated.
Sample R94571, Total Extractable Metals: Test repeated.
Sample R94572, Total Extractable Metals: Test repeated.
Sample R94573, Total Extractable Metals: Test repeated.
Sample R94574, Total Extractable Metals: Test repeated.
Sample R94575, Total Extractable Metals: Test repeated.
Sample R94576, Total Extractable Metals: Test repeated.
Sample R94577, Total Extractable Metals: Test repeated.
Sample R94580, Total Extractable Metals: Test repeated.
Sample R94581, Total Extractable Metals: Test repeated.
Sample R94582, Total Extractable Metals: Test repeated.
Sample R94583, Total Extractable Metals: Test repeated.
Sample R94584, Total Extractable Metals: Test repeated.
Sample R94585, Total Extractable Metals: Test repeated.
Sample R94586, Total Extractable Metals: Test repeated.
Sample R94587, Total Extractable Metals: Test repeated.
Sample R94588, Total Extractable Metals: Test repeated.
Sample R94589, Total Extractable Metals: Test repeated.
Sample R94590, Total Extractable Metals: Test repeated.
Sample R94591, Total Extractable Metals: Test repeated.
Sample R94592, Total Extractable Metals: Test repeated.
Sample R94593, Total Extractable Metals: Test repeated.
Sample R94594, Total Extractable Metals: Test repeated.
Sample R94595, Total Extractable Metals: Test repeated.
Sample R94596, Total Extractable Metals: Test repeated.
Sample R94597, Total Extractable Metals: Test repeated.
Sample R94598, Total Extractable Metals: Test repeated.
Sample R94599, Total Extractable Metals: Test repeated.
Sample R94601, Total Extractable Metals: Test repeated.
Sample R94602, Total Extractable Metals: Test repeated.

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Maxxam Job #: B244892
Report Date: 2012/10/04

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 422101291
Site Location: NOTTINGHAM ISLAND
Sampler Initials: SW

Sample R94603, Total Extractable Metals: Test repeated.
Sample R94604, Total Extractable Metals: Test repeated.
Sample R94605, Total Extractable Metals: Test repeated.
Sample R94606, Total Extractable Metals: Test repeated.
Sample R94607, Total Extractable Metals: Test repeated.
Sample R94608, Total Extractable Metals: Test repeated.
Sample R94609, Total Extractable Metals: Test repeated.
Sample R94610, Total Extractable Metals: Test repeated.
Sample R94611, Total Extractable Metals: Test repeated.
Sample R94612, Total Extractable Metals: Test repeated.
Sample R94613, Total Extractable Metals: Test repeated.
Sample R94614, Total Extractable Metals: Test repeated.
Sample R94615, Total Extractable Metals: Test repeated.
Sample R94616, Total Extractable Metals: Test repeated.
Sample R94617, Total Extractable Metals: Test repeated.
Sample R94618, Total Extractable Metals: Test repeated.
Sample R94619, Total Extractable Metals: Test repeated.
Sample R94620, Total Extractable Metals: Test repeated.
Sample R94621, Total Extractable Metals: Test repeated.
Sample R94622, Total Extractable Metals: Test repeated.
Sample R94623, Total Extractable Metals: Test repeated.
Sample R94624, Total Extractable Metals: Test repeated.

CONVENTIONAL PARAMETERS (SOIL)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

PCB CONGENERS (SOIL)

Please note that the results have not been corrected for QC recovery (spiked blank) nor for the method blank. The results have been corrected for the percent surrogate recoveries.

Results relate only to the items tested.

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Attention: Rory Farrell
Client Project #: 422101291
P.O. #:
Site Location: NOTTINGHAM ISLAND

Quality Assurance Report

Maxxam Job Number: B244892

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1045422 ST1	Spiked Blank	1,4-Difluorobenzene	2012/08/20		100	%
		4-Bromofluorobenzene	2012/08/20		101	%
		D10-Ethylbenzene	2012/08/20		110	%
		D4-1,2-Dichloroethane	2012/08/20		97	%
		Benzene	2012/08/20		96	%
		Toluene	2012/08/20		102	%
		Ethylbenzene	2012/08/20		104	%
		o-Xylene	2012/08/20		105	%
		p+m-Xylene	2012/08/20		107	%
		Total_Xylenes	2012/08/20		106	%
		F1 (C6-C10)	2012/08/20		86	%
	Method Blank	1,4-Difluorobenzene	2012/08/20		97	%
		4-Bromofluorobenzene	2012/08/20		102	%
		D10-Ethylbenzene	2012/08/20		112	%
		D4-1,2-Dichloroethane	2012/08/20		99	%
		Benzene	2012/08/20	<0.005		mg/kg
		Toluene	2012/08/20	<0.02		mg/kg
		Ethylbenzene	2012/08/20	<0.01		mg/kg
		o-Xylene	2012/08/20	<0.02		mg/kg
		p+m-Xylene	2012/08/20	<0.04		mg/kg
		Total_Xylenes	2012/08/20	<0.04		mg/kg
		F1 (C6-C10)	2012/08/20	<10		mg/kg
		F1 (C6-C10) - BTEX	2012/08/20	<10		mg/kg
1045437 FF	Spiked Blank	1,4-Difluorobenzene	2012/08/21		99	%
		4-Bromofluorobenzene	2012/08/21		99	%
		D10-Ethylbenzene	2012/08/21		119	%
		D4-1,2-Dichloroethane	2012/08/21		98	%
		Benzene	2012/08/21		104	%
		Toluene	2012/08/21		112	%
		Ethylbenzene	2012/08/21		113	%
		o-Xylene	2012/08/21		116	%
		p+m-Xylene	2012/08/21		113	%
		Total_Xylenes	2012/08/21		115	%
		F1 (C6-C10)	2012/08/21		98	%
	Method Blank	1,4-Difluorobenzene	2012/08/21		99	%
		4-Bromofluorobenzene	2012/08/21		98	%
		D10-Ethylbenzene	2012/08/21		119	%
		D4-1,2-Dichloroethane	2012/08/21		100	%
		Benzene	2012/08/21	<0.005		mg/kg
		Toluene	2012/08/21	<0.02		mg/kg
		Ethylbenzene	2012/08/21	<0.01		mg/kg
		o-Xylene	2012/08/21	<0.02		mg/kg
		p+m-Xylene	2012/08/21	<0.04		mg/kg
		Total_Xylenes	2012/08/21	<0.04		mg/kg
		F1 (C6-C10)	2012/08/21	<10		mg/kg
		F1 (C6-C10) - BTEX	2012/08/21	<10		mg/kg
1045478 ST1	Spiked Blank	1,4-Difluorobenzene	2012/08/21		100	%
		4-Bromofluorobenzene	2012/08/21		99	%
		D10-Ethylbenzene	2012/08/21		115	%
		D4-1,2-Dichloroethane	2012/08/21		101	%
		Benzene	2012/08/21		101	%
		Toluene	2012/08/21		107	%
		Ethylbenzene	2012/08/21		108	%
		o-Xylene	2012/08/21		111	%
		p+m-Xylene	2012/08/21		109	%

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P.O. #:
Site Location: NOTTINGHAM ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: B244892

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1045478	ST1	Spiked Blank	Total_Xylenes	2012/08/21		110	%
			F1 (C6-C10)	2012/08/21		95	%
		Method Blank	1,4-Difluorobenzene	2012/08/21		102	%
			4-Bromofluorobenzene	2012/08/21		98	%
			D10-Ethylbenzene	2012/08/21		116	%
			D4-1,2-Dichloroethane	2012/08/21		100	%
			Benzene	2012/08/21	<0.005		mg/kg
			Toluene	2012/08/21	<0.02		mg/kg
			Ethylbenzene	2012/08/21	<0.01		mg/kg
			o-Xylene	2012/08/21	<0.02		mg/kg
			p+m-Xylene	2012/08/21	<0.04		mg/kg
			Total_Xylenes	2012/08/21	<0.04		mg/kg
			F1 (C6-C10)	2012/08/21	<10		mg/kg
			F1 (C6-C10) - BTEX	2012/08/21	<10		mg/kg
1045774	CB5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/21		85	%
			2',3,5-Trichlorobiphenyl	2012/08/21		81	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/21		97	%
			Total PCB	2012/08/21		103	%
		Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/21		85	%
			2',3,5-Trichlorobiphenyl	2012/08/21		83	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/21		97	%
			Total PCB	2012/08/21	<0.01		mg/kg
1045861	AM8	Spiked Blank	O-Terphenyl	2012/08/20		104	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/20		102	%
			Petroleum Hydrocarbons F3:C16-C34	2012/08/20		102	%
			Petroleum Hydrocarbons F4:C34-C50	2012/08/20		102	%
		Method Blank	O-Terphenyl	2012/08/20		103	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/20	<10		mg/kg
			Petroleum Hydrocarbons F3:C16-C34	2012/08/20	10, RDL=10		mg/kg
			Petroleum Hydrocarbons F4:C34-C50	2012/08/20	<10		mg/kg
1045945	NC1	Spiked Blank	O-Terphenyl	2012/08/23		104	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/23		111	%
			Petroleum Hydrocarbons F3:C16-C34	2012/08/23		111	%
			Petroleum Hydrocarbons F4:C34-C50	2012/08/23		111	%
		Method Blank	O-Terphenyl	2012/08/23		108	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/23	<10		mg/kg
			Petroleum Hydrocarbons F3:C16-C34	2012/08/23	<10		mg/kg
			Petroleum Hydrocarbons F4:C34-C50	2012/08/23	18, RDL=10		mg/kg
1045997	AM8	Spiked Blank	O-Terphenyl	2012/08/22		110	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/22		121	%
			Petroleum Hydrocarbons F3:C16-C34	2012/08/22		121	%
			Petroleum Hydrocarbons F4:C34-C50	2012/08/22		121	%
		Method Blank	O-Terphenyl	2012/08/22		105	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/22	<10		mg/kg
			Petroleum Hydrocarbons F3:C16-C34	2012/08/22	<10		mg/kg
			Petroleum Hydrocarbons F4:C34-C50	2012/08/22	<10		mg/kg
1046765	AM8	Spiked Blank	O-Terphenyl	2012/08/22		106	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/22		110	%
			Petroleum Hydrocarbons F3:C16-C34	2012/08/22		110	%
			Petroleum Hydrocarbons F4:C34-C50	2012/08/22		110	%
		Method Blank	O-Terphenyl	2012/08/22		101	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/22	<10		mg/kg
			Petroleum Hydrocarbons F3:C16-C34	2012/08/22	<10		mg/kg
			Petroleum Hydrocarbons F4:C34-C50	2012/08/22	<10		mg/kg
1047351	NC1	Spiked Blank	O-Terphenyl	2012/08/23		110	%

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Quality Assurance Report (Continued)

Maxxam Job Number: B244892

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1047351 NC1	Spiked Blank	Petroleum Hydrocarbons F2:C10-C16	2012/08/23		106	%
		Petroleum Hydrocarbons F3:C16-C34	2012/08/23		106	%
		Petroleum Hydrocarbons F4:C34-C50	2012/08/23		106	%
	Method Blank	O-Terphenyl	2012/08/23		107	%
		Petroleum Hydrocarbons F2:C10-C16	2012/08/23	<10		mg/kg
		Petroleum Hydrocarbons F3:C16-C34	2012/08/23	<10		mg/kg
		Petroleum Hydrocarbons F4:C34-C50	2012/08/23	<10		mg/kg
1047481 SC5	Spiked Blank	Silver (Ag)	2012/08/23		99	%
		Arsenic (As)	2012/08/23		104	%
		Barium (Ba)	2012/08/23		108	%
		Cadmium (Cd)	2012/08/23		104	%
		Cobalt (Co)	2012/08/23		103	%
		Chromium (Cr)	2012/08/23		98	%
		Copper (Cu)	2012/08/23		111	%
		Tin (Sn)	2012/08/23		103	%
		Manganese (Mn)	2012/08/23		96	%
		Molybdenum (Mo)	2012/08/23		104	%
		Nickel (Ni)	2012/08/23		104	%
		Lead (Pb)	2012/08/23		101	%
		Selenium (Se)	2012/08/23		99	%
		Zinc (Zn)	2012/08/23		105	%
		Aluminum (Al)	2012/08/23		99	%
		Antimony (Sb)	2012/08/23		108	%
		Beryllium (Be)	2012/08/23		94	%
		Boron (B)	2012/08/23		99	%
		Iron (Fe)	2012/08/23		102	%
		Magnesium (Mg)	2012/08/23		90	%
		Vanadium (V)	2012/08/23		98	%
		Thallium (Tl)	2012/08/23		104	%
		Uranium (U)	2012/08/23		103	%
	Method Blank	Silver (Ag)	2012/08/23	<0.5		mg/kg
		Arsenic (As)	2012/08/23	<2		mg/kg
		Barium (Ba)	2012/08/23	<4		mg/kg
		Cadmium (Cd)	2012/08/23	<0.1		mg/kg
		Cobalt (Co)	2012/08/23	<1		mg/kg
		Chromium (Cr)	2012/08/23	<1		mg/kg
		Copper (Cu)	2012/08/23	<1		mg/kg
		Tin (Sn)	2012/08/23	<1		mg/kg
		Manganese (Mn)	2012/08/23	<2		mg/kg
		Molybdenum (Mo)	2012/08/23	<0.5		mg/kg
		Nickel (Ni)	2012/08/23	<0.5		mg/kg
		Lead (Pb)	2012/08/23	<1		mg/kg
		Selenium (Se)	2012/08/23	<0.5		mg/kg
		Zinc (Zn)	2012/08/23	<5		mg/kg
		Aluminum (Al)	2012/08/23	<20		mg/kg
		Antimony (Sb)	2012/08/23	<0.1		mg/kg
		Beryllium (Be)	2012/08/23	<0.1		mg/kg
		Boron (B)	2012/08/23	<2		mg/kg
		Iron (Fe)	2012/08/23	<10		mg/kg
		Magnesium (Mg)	2012/08/23	<5		mg/kg
		Vanadium (V)	2012/08/23	<2		mg/kg
		Thallium (Tl)	2012/08/23	<0.1		mg/kg
		Uranium (U)	2012/08/23	<2		mg/kg
1047891 KK	Spiked Blank	Silver (Ag)	2012/08/23		98	%
		Arsenic (As)	2012/08/23		106	%

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Attention: Rory Farrell
Client Project #: 422101291
P.O. #:
Site Location: NOTTINGHAM ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: B244892

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1047891 KK	Spiked Blank	Barium (Ba)	2012/08/23		105	%
		Cadmium (Cd)	2012/08/23		103	%
		Cobalt (Co)	2012/08/23		104	%
		Chromium (Cr)	2012/08/23		99	%
		Copper (Cu)	2012/08/23		110	%
		Tin (Sn)	2012/08/23		101	%
		Manganese (Mn)	2012/08/23		97	%
		Molybdenum (Mo)	2012/08/23		104	%
		Nickel (Ni)	2012/08/23		104	%
		Lead (Pb)	2012/08/23		100	%
		Selenium (Se)	2012/08/23		101	%
		Zinc (Zn)	2012/08/23		107	%
		Aluminum (Al)	2012/08/23		96	%
		Antimony (Sb)	2012/08/23		106	%
		Beryllium (Be)	2012/08/23		94	%
		Boron (B)	2012/08/23		98	%
		Iron (Fe)	2012/08/23		103	%
		Magnesium (Mg)	2012/08/23		90	%
		Vanadium (V)	2012/08/23		98	%
		Thallium (Tl)	2012/08/23		102	%
		Uranium (U)	2012/08/23		101	%
	Method Blank	Silver (Ag)	2012/08/23	<0.5		mg/kg
		Arsenic (As)	2012/08/23	<2		mg/kg
		Barium (Ba)	2012/08/23	<4		mg/kg
		Cadmium (Cd)	2012/08/23	<0.1		mg/kg
		Cobalt (Co)	2012/08/23	<1		mg/kg
		Chromium (Cr)	2012/08/23	<1		mg/kg
		Copper (Cu)	2012/08/23	<1		mg/kg
		Tin (Sn)	2012/08/23	<1		mg/kg
		Manganese (Mn)	2012/08/23	<2		mg/kg
		Molybdenum (Mo)	2012/08/23	<0.5		mg/kg
		Nickel (Ni)	2012/08/23	<0.5		mg/kg
		Lead (Pb)	2012/08/23	<1		mg/kg
		Selenium (Se)	2012/08/23	<0.5		mg/kg
		Zinc (Zn)	2012/08/23	<5		mg/kg
		Aluminum (Al)	2012/08/23	<20		mg/kg
		Antimony (Sb)	2012/08/23	<0.1		mg/kg
		Beryllium (Be)	2012/08/23	<0.1		mg/kg
		Boron (B)	2012/08/23	<2		mg/kg
		Iron (Fe)	2012/08/23	<10		mg/kg
		Magnesium (Mg)	2012/08/23	<5		mg/kg
		Vanadium (V)	2012/08/23	<2		mg/kg
		Thallium (Tl)	2012/08/23	<0.1		mg/kg
		Uranium (U)	2012/08/23	<2		mg/kg
1048351 SC5	Spiked Blank	Silver (Ag)	2012/08/24		99	%
		Arsenic (As)	2012/08/24		101	%
		Barium (Ba)	2012/08/24		108	%
		Cadmium (Cd)	2012/08/24		105	%
		Cobalt (Co)	2012/08/24		98	%
		Chromium (Cr)	2012/08/24		91	%
		Copper (Cu)	2012/08/24		102	%
		Tin (Sn)	2012/08/24		110	%
		Manganese (Mn)	2012/08/24		89	%
		Molybdenum (Mo)	2012/08/24		106	%
		Nickel (Ni)	2012/08/24		98	%

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #: 422101291
P.O. #:
Site Location: NOTTINGHAM ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: B244892

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1048351 SC5	Spiked Blank	Lead (Pb)	2012/08/24		105	%
		Selenium (Se)	2012/08/24		93	%
		Zinc (Zn)	2012/08/24		101	%
		Aluminum (Al)	2012/08/24		98	%
		Antimony (Sb)	2012/08/24		112	%
		Beryllium (Be)	2012/08/24		98	%
		Boron (B)	2012/08/24		117	%
		Iron (Fe)	2012/08/24		107	%
		Magnesium (Mg)	2012/08/24		91	%
		Vanadium (V)	2012/08/24		97	%
		Thallium (Tl)	2012/08/24		95	%
		Uranium (U)	2012/08/24		103	%
	Method Blank	Silver (Ag)	2012/08/24	<0.5		mg/kg
		Arsenic (As)	2012/08/24	<2		mg/kg
		Barium (Ba)	2012/08/24	<4		mg/kg
		Cadmium (Cd)	2012/08/24	<0.1		mg/kg
		Cobalt (Co)	2012/08/24	<1		mg/kg
		Chromium (Cr)	2012/08/24	<1		mg/kg
		Copper (Cu)	2012/08/24	<1		mg/kg
		Tin (Sn)	2012/08/24	<1		mg/kg
		Manganese (Mn)	2012/08/24	<2		mg/kg
		Molybdenum (Mo)	2012/08/24	<0.5		mg/kg
		Nickel (Ni)	2012/08/24	<0.5		mg/kg
		Lead (Pb)	2012/08/24	<1		mg/kg
		Selenium (Se)	2012/08/24	<0.5		mg/kg
		Zinc (Zn)	2012/08/24	<5		mg/kg
		Aluminum (Al)	2012/08/24	<20		mg/kg
		Antimony (Sb)	2012/08/24	<0.1		mg/kg
		Beryllium (Be)	2012/08/24	<0.1		mg/kg
		Boron (B)	2012/08/24	<2		mg/kg
		Iron (Fe)	2012/08/24	<10		mg/kg
		Magnesium (Mg)	2012/08/24	<5		mg/kg
		Vanadium (V)	2012/08/24	<2		mg/kg
		Thallium (Tl)	2012/08/24	<0.1		mg/kg
		Uranium (U)	2012/08/24	<2		mg/kg
1048360 SC5	Spiked Blank	Mercury (Hg)	2012/08/25		101	%
		Silver (Ag)	2012/08/25		94	%
		Arsenic (As)	2012/08/25		97	%
		Barium (Ba)	2012/08/25		102	%
		Cadmium (Cd)	2012/08/25		99	%
		Cobalt (Co)	2012/08/25		93	%
		Chromium (Cr)	2012/08/25		85	%
		Copper (Cu)	2012/08/25		93	%
		Tin (Sn)	2012/08/25		104	%
		Manganese (Mn)	2012/08/25		84	%
		Molybdenum (Mo)	2012/08/25		98	%
		Nickel (Ni)	2012/08/25		92	%
		Lead (Pb)	2012/08/25		102	%
		Selenium (Se)	2012/08/25		91	%
		Zinc (Zn)	2012/08/25		94	%
		Aluminum (Al)	2012/08/25		99	%
		Antimony (Sb)	2012/08/25		106	%
		Beryllium (Be)	2012/08/25		80	%
		Boron (B)	2012/08/25		91	%
		Iron (Fe)	2012/08/25		100	%

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #: 422101291
P.O. #:
Site Location: NOTTINGHAM ISLAND

Quality Assurance Report (Continued)

Maxxam Job Number: B244892

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1048360	SC5	Spiked Blank	Magnesium (Mg)	2012/08/25		82	%
			Vanadium (V)	2012/08/25		91	%
			Thallium (Tl)	2012/08/25		100	%
			Uranium (U)	2012/08/25		100	%
		Method Blank	Mercury (Hg)	2012/08/25	<0.01		mg/kg
			Silver (Ag)	2012/08/25	<0.5		mg/kg
			Arsenic (As)	2012/08/25	<2		mg/kg
			Barium (Ba)	2012/08/25	<4		mg/kg
			Cadmium (Cd)	2012/08/25	<0.1		mg/kg
			Cobalt (Co)	2012/08/25	<1		mg/kg
			Chromium (Cr)	2012/08/25	<1		mg/kg
			Copper (Cu)	2012/08/25	<1		mg/kg
			Tin (Sn)	2012/08/25	<1		mg/kg
			Manganese (Mn)	2012/08/25	<2		mg/kg
			Molybdenum (Mo)	2012/08/25	<0.5		mg/kg
			Nickel (Ni)	2012/08/25	<0.5		mg/kg
			Lead (Pb)	2012/08/25	<1		mg/kg
			Selenium (Se)	2012/08/25	<0.5		mg/kg
			Zinc (Zn)	2012/08/25	<5		mg/kg
			Aluminum (Al)	2012/08/25	<20		mg/kg
			Antimony (Sb)	2012/08/25	<0.1		mg/kg
			Beryllium (Be)	2012/08/25	<0.1		mg/kg
			Boron (B)	2012/08/25	<2		mg/kg
			Iron (Fe)	2012/08/25	<10		mg/kg
			Magnesium (Mg)	2012/08/25	<5		mg/kg
			Vanadium (V)	2012/08/25	<2		mg/kg
			Thallium (Tl)	2012/08/25	<0.1		mg/kg
			Uranium (U)	2012/08/25	<2		mg/kg
1049623	VC0	Spiked Blank	F4G (Heavy Hydrocarbons - Grav.)	2012/08/28		101	%
		Method Blank	F4G (Heavy Hydrocarbons - Grav.)	2012/08/28	<100		mg/kg
1053091	SC5	Spiked Blank	Mercury (Hg)	2012/09/08		111	%
		Method Blank	Mercury (Hg)	2012/09/08	<0.01		mg/kg
1053298	SC5	Spiked Blank	Mercury (Hg)	2012/09/08		111	%
		Method Blank	Mercury (Hg)	2012/09/08	<0.01		mg/kg
1053311	SC5	Spiked Blank	Mercury (Hg)	2012/09/08		96	%
		Method Blank	Mercury (Hg)	2012/09/08	<0.01		mg/kg
1053787	SC5	Spiked Blank	Mercury (Hg)	2012/09/08		119	%
		Method Blank	Mercury (Hg)	2012/09/08	<0.01		mg/kg
1059744	IC8	QC Standard	pH	2012/09/21		99	%
		Spiked Blank	pH	2012/09/21		101	%

RDL = Reportable Detection Limit
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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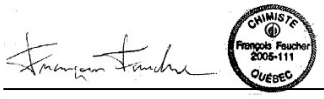
Validation Signature Page

Maxxam Job #: B244892

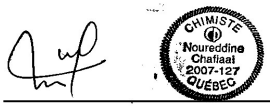
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Kathie Quevillon, B.Sc., Chemist

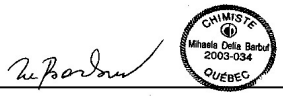


Francois Faucher, B.Sc., Chemist

Abdeslam Siaida, Analyst II



Noureddine Chafiaai, B.Sc., Chemist



Delia Barbul, B.Sc., Chemist

Caroline Bougie, B.Sc. Chemist

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Validation Signature Page

Maxxam Job #: B244892

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Steliana Calestru

CHIMISTE
Steliana
Calestru
2006-140
QUÉBEC

Steliana Calestru, B.Sc. Chemist

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Michele Crawford	Contact Name:	Rory Farrell	P.O. #:	V22101291		81020
Address:	14940- 123 avenue	Address:		Project #:	V2210129 L	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	C#81020-01-01	Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

Continuous Groundwater Sampling for Potability
- ☐ Politique — ☐ 24h (Art. 6.1&6.2) — ☐ 48h (Art. 6.2) — ☐ 72h (Art. 6.1&6.2)
- ☐ Solid Waste Reg.
- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 — ☐ Storm Sewer Art. 11
- ☐ Hazardous Material Reg.
- Quality of Quebec Drinking Water: ☐ Municipal — ☐ Non-municipal
- ☐ REIMR — ☐ Pulp & Paper Regulation (Art. 104) — ☐ Pulp & Paper Regulation (Art. 112)
- Other (specify): CCME

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX F1-F4 (CCME)	Tot Metals (CCME)	PCBs	# of Bottles	Comments
1	2012-SB-1	Nottingham	14-Aug-12		soil			X	X	X	2	
2	2012-SB-2							X	X	X		
3	2012-SB-3							X	X	X		
4	2012-SB-4							X	X	X		
5	2012 SB-5							X	X	X		
6	2012-SB-6							X	X	X		
7	2012-SB-7							X	X	X		
8	2012-SB-8							X	X	X		
9	2012-SB-9							X	X	X		
10	2012-SB-10							X	X	X		

17-Aug-12 09:30
Argyro Frangoulis
B244892
JP5 MTL-0027

REÇU
17 AOÛT 2012
Rép

13,21,17 / 19,11,18 / 24,23,23 / 13,17,24.

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Sean Whitaker							☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	Roy Farrell / EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #: 81020
Contact Name:	Michele Crawford	Contact Name:		P.O. #:	V22101291		
Address:	14940- 123 avenue Edmonton AB T5V 1B4	Address:		Project #:	V22101291		
				Project Name:	Nottingham Island	CHAIN OF CUSTODY #: C#81020-01-01	PROJECT MANAGER: Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

- ☐ Politique
- ☐ Solid Waste Reg.
- Continuous Groundwater Sampling for Potability: ☐ 24h (Art. 6.1&6.2) ☐ 48h (Art. 6.2) ☐ 72h (Art. 6.1&6.2)
- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 ☐ Storm Sewer Art. 11
- ☐ Hazardous Material Reg.
- ☐ REIMR
- Pulp & Paper Regulation (Art. 104) ☐ Pulp & Paper Regulation (Art. 112)
- Quality of Quebec Drinking Water: ☐ Municipal ☐ Non-municipal
- Other (specify): CCME

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX & F1-F4 (CCME)	10 Metals CCME	PCBs	# of Bottles	Comments
1	2012-SB-11	Nottingham	14-Aug-12		Soil			X	X		2	
2	2012-SB-12							X	X			
3	2012-SB-13							X	X			
4	2012-SB-14							X	X			
5	2012-SB-15							X	X			
6	2012-SB-16							X	X			
7	2012-SB-17							X	X			
8	2012-SB-18							X	X			
9	2012-SB-19							X	X			
10	2012-SB-20							X	X		13,21,17	19,18,11 / 24,23,23

RECEIVED 17 AOUT 2012 REÇU

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler? ☐ Yes ☐ No
Scan Whitaker							☐		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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889, montée de Liesse, Saint-Laurent, Quebec Canada H4T 1P5 Tel:(514) 448-9001 Toll-free:1-877-462-9926 Fax:(514)-448-9199 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Michele Crawford	Contact Name:	Rory Farrell	P.O. #:	V22101291		310210
Address:	14940- 123 avenue	Address:		Project #:	V22101291	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	C#81020-01-01	Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

Continuous Groundwater Sampling for Potability
- ☐ Politique — ☐ 24h (Art. 6.1&6.2) — ☐ 48h (Art. 6.2) — ☐ 72h (Art. 6.1&6.2)
- ☐ Solid Waste Reg. — BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 — ☐ Storm Sewer Art. 11
- ☐ Hazardous Material Reg. — Quality of Quebec Drinking Water: ☐ Municipal — ☐ Non-municipal
- ☐ RE/MR — ☐ Pulp & Paper Regulation (Art. 104) — ☐ Pulp & Paper Regulation (Art. 112)
- Other (specify): CCME

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	ANALYSIS REQUESTED (Please be specific): BTEX F1-F4 (CCME)	Tot. Hydrocarbons (CCME)	PCBs	# of Bottles	Comments
1	2012-SB-21	Nottingham	14 Aug 12		Soil			X	X			
2	2012-SB-22							X	X			
3	2012-SB-23							X	X			
4	2012-SB-24							X	X			
5	2012-SB-25							X	X			
6	2012-SB-26							X	X			
7	2012-SB-27							X	X			
8	2012-SB-28							X	X			
9	2012-SB-29							X	X			
10	2012-SB-30							X	X			

RECEIVED 17 AOUT 2012 Rep 99730

13,21,17/19,18,11/24,23,23/13,17,24

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Sean Whitaker							☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Michele Crawford	Contact Name:	Rory Farrell	P.O. #:	V22101291		81020
Address:	14940- 123 avenue	Address:		Project #:	V22101291	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	C#81020-01-01	Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

Continuous Groundwater Sampling for Potability
- ☐ Politique — ☐ 24h (Art. 6.1&6.2) — ☐ 48h (Art. 6.2) — ☐ 72h (Art. 6.1&6.2)
- ☐ Solid Waste Reg
- ☐ Hazardous Material Reg
- ☐ REIMR
- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 ☐ Storm Sewer Art. 11
- Quality of Quebec Drinking Water: ☐ Municipal ☐ Non-municipal
- Pulp & Paper Regulation (Art. 104) ☐ Pulp & Paper Regulation (Art. 112)
- Other (specify): CCME

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

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Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX+F1-F4 (CCME)	Total Methods (CCME) PCBs	# of Bottles	Comments
1	2012-SB-31	Nottingham	14 Aug 12		Soil			X	X		
2	2012-SB-32							X	X		
3	2012-SB-33							X	X		
4	2012-SB-34							X	X		
5	2012-SB-35							X	X		
6	2012-SB-36							X	X		
7	2012-SB-37							X	X		
8	2012-SB-38							X	X		
9	2012-SB-39							X	X		
10	2012-SB-40							X	X		

REGU
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13,17,21 / 19,11,18 / 21,23,23

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Sean Whitaker							☐		☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

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Maxxam Analytics International Corporation o/a Maxxam Analytique
889, montée de Liesse, Saint-Laurent, Quebec Canada H4T 1P5 Tel:(514) 448-9001 Toll-free:1-877-462-9926 Fax:(514)-448-9199 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Michele Crawford	Contact Name:	Rory Farrell	P.O. #:	Y22101291		81020
Address:	14940- 123 avenue	Address:		Project #:	Y22101291	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	C#81020-01-01	Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

Continuous Groundwater Sampling for Potability
- ☐ Politique — ☐ 24h (Art. 6.1&6.2) — ☐ 48h (Art. 6.2) — ☐ 72h (Art. 6.1&6.2)
- ☐ Solid Waste Reg.
- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 — ☐ Storm Sewer Art. 11
- ☐ Hazardous Material Reg.
- ☐ REIMR
- Pulp & Paper Regulation (Art. 104): ☐ Pulp & Paper Regulation (Art. 112)
- Quality of Quebec Drinking Water: ☐ Municipal — ☐ Non-municipal
- Other (specify): CCME

SPECIAL INSTRUCTIONS

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

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PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

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Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ ☐

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	BTEX F1-F4 (CCME)	Total Metals	PCB's	# of Bottles	Comments
1	2012-SB-41	Nottingham	14-Aug-12		Soil			X	X			
2	2012-SB-42							X	X			
3	2012-SB-43							X	X			
4	2012-SB-44							X	X			
5	2012-SB-45							X	X			
6	2012-SB-46							X	X			
7	2012-SB-47							X	X			
8	2012-SB-48							X	X			
9	2012-SB-49							X	X			
10	2012-SB-50							X	X			

REÇU 17 AOUT 2012

13,21,17 / 19,11,18 / 24,23,23 / 13,17,24

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
Scan Whitaker						

Laboratory Use Only: Time Sensitive ☐ | Temperature (°C) on Receipt | Custody Seal Intact on Cooler? ☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

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CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:		REPORT INFORMATION (if differs from invoice):		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	Rory Farrell / EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #:
Contact Name:	Michele Crawford	Contact Name:		P.O. #:	V2210129 1		81020
Address:	14940- 123 avenue	Address:		Project #:	V2210129 1	CHAIN OF CUSTODY #:	PROJECT MANAGER:
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	C#81020-01-01	Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

REGULATORY CRITERIA:

Continuous Groundwater Sampling for Potability
- ☐ Politique — ☐ 24h (Art. 6.1&6.2) — ☐ 48h (Art. 6.2) — ☐ 72h (Art. 6.1&6.2)
- ☐ Solid Waste Reg
- ☐ Hazardous Material Reg.
- ☐ RE/MR

BY-LAW 87 MUC
- ☐ Domestic Sewer Art. 10
- ☐ Storm Sewer Art. 11

Pulp & Paper Regulation
- ☐ Pulp & Paper Regulation (Art. 104)
- ☐ Pulp & Paper Regulation (Art. 112)

Quality of Quebec Drinking Water
- ☐ Municipal
- ☐ Non-municipal

Other (specify): CCME

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Job Specific Rush TAT (if applies to entire submission) ☐
Date Required: _____ Time Required: _____

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX/F1-F4 (CCME)	Total Metals	PCB's	# of Bottles	Comments
1	2012-SB-51	Nottingham	14-Aug-12		soil			✓	✓			
2	2012-SB-52		14-Aug-12					✓	✓			
3	2012-SB-53		15-Aug-12					✓	✓	✓		
4	2012-SB-54							✓	✓	✓		
5	2012-SB-55							✓	✓	✓		
6	2012-SB-56							✓	✓	✓		
7	2012-SB-57							✓	✓	✓		
8	2012-SB-58							✓	✓	✓		
9	2012-SB-59							✓	✓	✓		
10	2012-SB-60							✓	✓	✓		

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13,21,17/19,11,18/24,23,22/13,17,24

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Sean Whitaker							☐		☐ Yes ☐ No

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Company Name:	#3922 EBA ENGINEERING CONSULTANTS LTD.	Company Name:	EBA	Quotation #:		MAXXAM JOB #:	BOTTLE ORDER #: 81020
Contact Name:	Michele Crawford	Contact Name:	Rory Farrell	P.O. #:	4122101291		
Address:	14940- 123 avenue	Address:		Project #:	4122101291		
	Edmonton AB T5V 1B4			Project Name:	Nottingham Island	CHAIN OF CUSTODY #: C#81020-01-01	PROJECT MANAGER: Argyro Frangoulis
Phone:	(780)293-2091 Fax:	Phone:	780-777-5463 Fax:	Site #:			
Email:	mcrawford@eba.ca	Email:	rfarrell@eba.ca	Sampled By:	SW		

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- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 — ☐ Storm Sewer Art. 11
- ☐ Hazardous Material Reg.
- Quality of Quebec Drinking Water: ☐ Municipal — ☐ Non-municipal
- ☐ REIMR
- ☐ Pulp & Paper Regulation (Art. 104)
- ☐ Pulp & Paper Regulation (Art. 112)
- Other (specify): CCME

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Date Required: _____ Time Required: _____ ☐

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y / N)	Metals Field Filtered ? (Y / N)	ANALYSIS REQUESTED (Please be specific): BTEX F1-F4 (CCME)	Total Metals	PCB's	# of Bottles	Comments
1	2012-SB-61	Nottingham	13-Aug-12		Soil			X	X	X		
2	2012-SB-62							X	X			
3	2012-SB-63							X	X			
4	2012-SB-64							X	X			
5												
6												
7												
8												
9												
10												

RECU
17 AOUT 2012

13,17,24
13,21,17 / 19,11,18 / 24,23,23

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted	Laboratory Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler? ☐ Yes ☐ No
Sean Whitaker							☐		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

rgyro Frangoulis B244892

From: Whitaker, Sean [SWhitaker@eba.ca]
Sent: Wednesday, September 12, 2012 10:56 AM
To: Argyro Frangoulis
Cc: Farrell, Rory
Subject: Additional Analysis:
Follow Up Flag: Follow up
Flag Status: Red

Good Morning Argyro:

As discussed yesterday I will require further analysis on three samples as seen in the table below. Could you please include in your response to me the anticipated delivery dates of these results.

I have also only received two final copies, including excel, for Maxxam Job ID's 244892 and 244975. If you could resend the third file you indicated yesterday was complete and provide me with an anticipated date of the final report I would appreciate this very much.

Sample ID	Maxxam Sample ID	Additional Analysis
2012-SB-58	R94628	TCLP Hydrocarbons and BTEX Flash point Paint Filter pH Grain Size (Coarse/Fine) I don't want the Atterburg curve only the determination of Coarse/Fine grained
2012-SB-8	R94575	TCLP Hydrocarbons and BTEX Flash point Paint Filter pH Grain Size (Coarse/Fine) I don't want the Atterburg curve only the determination of Coarse/Fine grained
2012-SB-27	R94596	TCLP Hydrocarbons and BTEX Flash point Paint Filter pH Grain Size (Coarse/Fine) I don't want the Atterburg curve only the determination of Coarse/Fine grained

Kind Regards
Sean Whitaker

Sean Whitaker, B.Sc., C.Chem. | Environmental Scientist
p. 867.766.3728 x258 | **c.** 867.446.3805 | **f.** 867.873.3324
swhitaker@eba.ca

EBA, A Tetra Tech Company | **Environment Practice**
#201, 4916 - 49 Street| Yellowknife, NT X1A 2P7 | **www.eba.ca**

please consider the environment before printing this email

2012/09/20

Your Project #: LB244892

Attention: SOUSTRAITANCEQUE
MAXXAM ANALYTIQUE
MONTREAL
889 MONTEE DE LIESSE
VILLE ST-LAURENT, PQ
CANADA H4T 1P5

Report Date: 2012/09/26

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B285964
Received: 2012/09/25, 8:30

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Flash Point	3	N/A	2012/09/25	CAL SOP-00175	ASTM D93-07, 3828-09
Free Liquid (Paint filter)	3	N/A	2012/09/25	AB SOP-00047	EPA SW846/9095B

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Anna Gordon, Project Manager
Email: AGordon@maxxam.ca
Phone# (403) 291-3077

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B285964
Report Date: 2012/09/26

MAXXAM ANALYTIQUE
Client Project #: LB244892

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		EO1433	EO1533	EO1534	
Sampling Date		2012/08/14	2012/08/14	2012/08/15	
	UNITS	**2012-SB-8 (R94575-01R)**	**2012-SB-27 (R94596-01R)**	**2012-SB-58 (R94628-01R)**	**QC Batch**
Physical Properties					
Closed Cup Flash point	deg. C	>61 (1)	>61 (1)	>61 (1)	6196981
Free Liquid	N/A	PASS	PASS	PASS	6196982

(1) Headspace in sample jar was noted at the time of extraction
Analysis requested past recommended holding time

Maxxam Job #: B285964
Report Date: 2012/09/26

MAXXAM ANALYTIQUE
Client Project #: LB244892

Package 1	8.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

Results relate only to the items tested.

MAXXAM ANALYTIQUE
Attention: SOUSTRAITANCEQUE
Client Project #: LB244892
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: CB285964

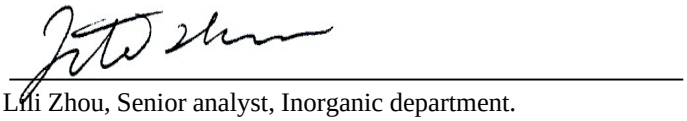
QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
6196981	RK3	RPD	Closed Cup Flash point	2012/09/25	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B285964

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Lili Zhou, Senior analyst, Inorganic department.

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: B244892
Your C.O.C. #: na

Attention: Argyro Frangoulis
Maxxam Analytique
889 Montée De Liesse
Ville St-Laurent, QC
H4T 1P5

Report Date: 2012/09/28

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E6828
Received: 2012/09/22, 10:35

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
CCME F1 Hydrocarbons/BTEX in Leachate	3	2012/09/26	2012/09/27	CAM SOP-00315	CCME CWS
CCME F2-F4 Hydrocarbons in Leachate	1	2012/09/27	2012/09/27	CAM SOP-00316	CCME Hydrocarbons
CCME F2-F4 Hydrocarbons in Leachate	2	2012/09/27	2012/09/28	CAM SOP-00316	CCME Hydrocarbons
TCLP - % Solids	3	2012/09/26	2012/09/27	CAM SOP-00401	EPA 1311 modified
TCLP - Extraction Fluid	3	N/A	2012/09/27	CAM SOP-00401	EPA 1311 modified
TCLP - Initial and final pH	3	N/A	2012/09/27	CAM SOP-00401	EPA 1311 modified
TCLP Zero Headspace Extraction	3	2012/09/25	2012/09/25	CAM SOP-00430	EPA 1311 modified

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ken Pomeroy,
Email: kpomeroy@maxxam.ca
Phone# (905) 817-5700

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

O.REG 558 TCLP LEACHATE PREPARATION (SOIL)

Maxxam ID		OY0402	OY0403	OY0404		
Sampling Date		2012/08/14	2012/08/14	2012/08/15		
	Units	**R94575 \ 2012-SB-8**	**R94596 \ 2012-SB-27**	**R94628 \ 2012-SB-58**	**RDL**	**QC Batch**
Inorganics						
Final pH	pH	6.22	6.21	6.19		2983821
Initial pH	pH	8.50	8.69	8.59		2983821
TCLP - % Solids	%	100	100	100	0.2	2983819
TCLP Extraction Fluid	N/A	FLUID 1	FLUID 1	FLUID 1		2983820

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

TCLP PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		OY0402	OY0402	OY0403	OY0404		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/15		
	Units	**R94575 \ 2012-SB-8**	**R94575 \ 2012-SB-8 Lab-Dup**	**R94596 \ 2012-SB-27**	**R94628 \ 2012-SB-58**	**RDL**	**QC Batch**
BTEX & F1 Hydrocarbons							
Leachable (ZHE) Benzene	ug/L	ND	ND	ND	ND	0.8	2982678
Leachable (ZHE) Toluene	ug/L	ND	ND	ND	ND	0.8	2982678
Leachable (ZHE) Ethylbenzene	ug/L	ND	ND	ND	ND	0.8	2982678
Leachable (ZHE) o-Xylene	ug/L	ND	ND	ND	ND	0.8	2982678
Leachable (ZHE) p+m-Xylene	ug/L	ND	ND	ND	ND	2	2982678
Leachable (ZHE) Total Xylenes	ug/L	ND	ND	ND	ND	2	2982678
Leachable (ZHE) F1 (C6-C10)	ug/L	ND	ND	ND	ND	1000	2982678
Leachable (ZHE) F1 (C6-C10) - BTEX	ug/L	ND	ND	ND	ND	300	2982678
Surrogate Recovery (%)							
Leachable (ZHE) 1,4-Difluorobenzene	%	102	102	102	102		2982678
Leachable (ZHE) 4-Bromofluorobenzene	%	102	102	103	100		2982678
Leachable (ZHE) D10-Ethylbenzene	%	104	106	104	104		2982678
Leachable (ZHE) D4-1,2-Dichloroethane	%	100	97	99	99		2982678
F2-F4 Hydrocarbons							
Leachable F2 (C10-C16 Hydrocarbons)	ug/L	850		990	130	100	2984390
Leachable F3 (C16-C34 Hydrocarbons)	ug/L	200		ND	ND	100	2984390
Leachable F4 (C34-C50 Hydrocarbons)	ug/L	ND		ND	ND	100	2984390
Leachable Reached Baseline at C50	ug/L	YES		YES	YES	N/A	2984390
Surrogate Recovery (%)							
Leachable o-Terphenyl	%	103		88	95		2984390

RESULTS OF ANALYSES OF SOIL

Maxxam ID		OY0402	OY0402	OY0403	OY0404		
Sampling Date		2012/08/14	2012/08/14	2012/08/14	2012/08/15		
	Units	**R94575 \ 2012-SB-8**	**R94575 \ 2012-SB-8 Lab-Dup**	**R94596 \ 2012-SB-27**	**R94628 \ 2012-SB-58**	**RDL**	**QC Batch**
Charge/Prep Analysis							
Amount Extracted (Wet Weight) (g)	N/A	25	25	25	25	N/A	2981477

N/A = Not Applicable
ND = Not detected
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

Test Summary

Maxxam ID OY0402 **Collected** 2012/08/14
Sample ID R94575 \ 2012-SB-8 **Shipped**
Matrix Soil **Received** 2012/09/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
CCME F1 Hydrocarbons/BTEX in Leachate	HSGC/MSFD	2982678	2012/09/26	2012/09/27	Haibin Wu
CCME F2-F4 Hydrocarbons in Leachate	GC/FID	2984390	2012/09/27	2012/09/27	Nicoleta Ciublea
TCLP - % Solids	BAL	2983819	2012/09/26	2012/09/27	Jian (Ken) Wang
TCLP - Extraction Fluid		2983820	N/A	2012/09/27	Jian (Ken) Wang
TCLP - Initial and final pH	PH	2983821	N/A	2012/09/27	Jian (Ken) Wang
TCLP Zero Headspace Extraction		2981477	2012/09/25	2012/09/25	Walt Wang

Maxxam ID OY0402 Dup **Collected** 2012/08/14
Sample ID R94575 \ 2012-SB-8 **Shipped**
Matrix Soil **Received** 2012/09/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
CCME F1 Hydrocarbons/BTEX in Leachate	HSGC/MSFD	2982678	2012/09/26	2012/09/27	Haibin Wu
TCLP Zero Headspace Extraction		2981477	2012/09/25	2012/09/25	Walt Wang

Maxxam ID OY0403 **Collected** 2012/08/14
Sample ID R94596 \ 2012-SB-27 **Shipped**
Matrix Soil **Received** 2012/09/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
CCME F1 Hydrocarbons/BTEX in Leachate	HSGC/MSFD	2982678	2012/09/26	2012/09/27	Haibin Wu
CCME F2-F4 Hydrocarbons in Leachate	GC/FID	2984390	2012/09/27	2012/09/28	Nicoleta Ciublea
TCLP - % Solids	BAL	2983819	2012/09/26	2012/09/27	Jian (Ken) Wang
TCLP - Extraction Fluid		2983820	N/A	2012/09/27	Jian (Ken) Wang
TCLP - Initial and final pH	PH	2983821	N/A	2012/09/27	Jian (Ken) Wang
TCLP Zero Headspace Extraction		2981477	2012/09/25	2012/09/25	Walt Wang

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Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

Test Summary

Maxxam ID OY0404
Sample ID R94628 \ 2012-SB-58
Matrix Soil

Collected 2012/08/15
Shipped
Received 2012/09/22

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
CCME F1 Hydrocarbons/BTEX in Leachate	HSGC/MSFD	2982678	2012/09/26	2012/09/27	Haibin Wu
CCME F2-F4 Hydrocarbons in Leachate	GC/FID	2984390	2012/09/27	2012/09/28	Nicoleta Ciublea
TCLP - % Solids	BAL	2983819	2012/09/26	2012/09/27	Jian (Ken) Wang
TCLP - Extraction Fluid		2983820	N/A	2012/09/27	Jian (Ken) Wang
TCLP - Initial and final pH	PH	2983821	N/A	2012/09/27	Jian (Ken) Wang
TCLP Zero Headspace Extraction		2981477	2012/09/25	2012/09/25	Walt Wang

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Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

GENERAL COMMENTS

Sample OY0402-01: TCLP VOCs Extraction: Sample(s) analyzed past hold time. Analysis performed with client's consent.
TCLP VOCs Extraction: Sample container(s) submitted with headspace. Analysis performed with client's consent.

Sample OY0403-01: TCLP VOCs Extraction: Sample(s) analyzed past hold time. Analysis performed with client's consent.
TCLP VOCs Extraction: Sample container(s) submitted with headspace. Analysis performed with client's consent.

Sample OY0404-01: TCLP VOCs Extraction: Sample(s) analyzed past hold time. Analysis performed with client's consent.
TCLP VOCs Extraction: Sample container(s) submitted with headspace. Analysis performed with client's consent.

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Maxxam Job #: B2E6828
Report Date: 2012/09/28

Maxxam Analytique
Client Project #: B244892

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		Leachate Blank	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	Value	Units
2982678	Leachable (ZHE) 1,4-Difluorobenzene	2012/09/27	104	60 - 140	104	60 - 140	102	%			102	%
2982678	Leachable (ZHE) 4-Bromofluorobenzene	2012/09/27	103	60 - 140	102	60 - 140	96	%			100	%
2982678	Leachable (ZHE) D10-Ethylbenzene	2012/09/27	109	30 - 130	108	30 - 130	104	%			104	%
2982678	Leachable (ZHE) D4-1,2-Dichloroethane	2012/09/27	99	60 - 140	98	60 - 140	98	%			97	%
2982678	Leachable (ZHE) Benzene	2012/09/27	114	70 - 130	113	70 - 130	ND, RDL=0.8	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) Toluene	2012/09/27	99	70 - 130	100	70 - 130	ND, RDL=0.8	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) Ethylbenzene	2012/09/27	117	70 - 130	116	70 - 130	ND, RDL=0.8	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) o-Xylene	2012/09/27	107	70 - 130	107	70 - 130	ND, RDL=0.8	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) p+m-Xylene	2012/09/27	102	70 - 130	103	70 - 130	ND, RDL=2	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) F1 (C6-C10)	2012/09/27	91	70 - 130	106	70 - 130	ND, RDL=1000	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) Total Xylenes	2012/09/27					ND, RDL=2	ug/L	NC	40	ND	ug/L
2982678	Leachable (ZHE) F1 (C6-C10) - BTEX	2012/09/27					ND, RDL=300	ug/L	NC	40	ND	ug/L
2984390	Leachable o-Terphenyl	2012/09/27	104	60 - 130	98	60 - 130	88	%			91	%
2984390	Leachable F2 (C10-C16 Hydrocarbons)	2012/09/28	NC	50 - 130	120	70 - 130	ND, RDL=100	ug/L	NC	40	ND	ug/L
2984390	Leachable F3 (C16-C34 Hydrocarbons)	2012/09/28	120	50 - 130	113	70 - 130	ND, RDL=100	ug/L	NC	40	ND	ug/L
2984390	Leachable F4 (C34-C50 Hydrocarbons)	2012/09/28	123	50 - 130	114	70 - 130	ND, RDL=100	ug/L	NC	40	ND	ug/L
2984390	Leachable Reached Baseline at C50	2012/09/28							NC	40		

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B2E6828

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere, Scientific Services

Medhat Riskallah, Manager, Hydrocarbon Department

Suzana Popovic, Supervisor, Hydrocarbons

==========

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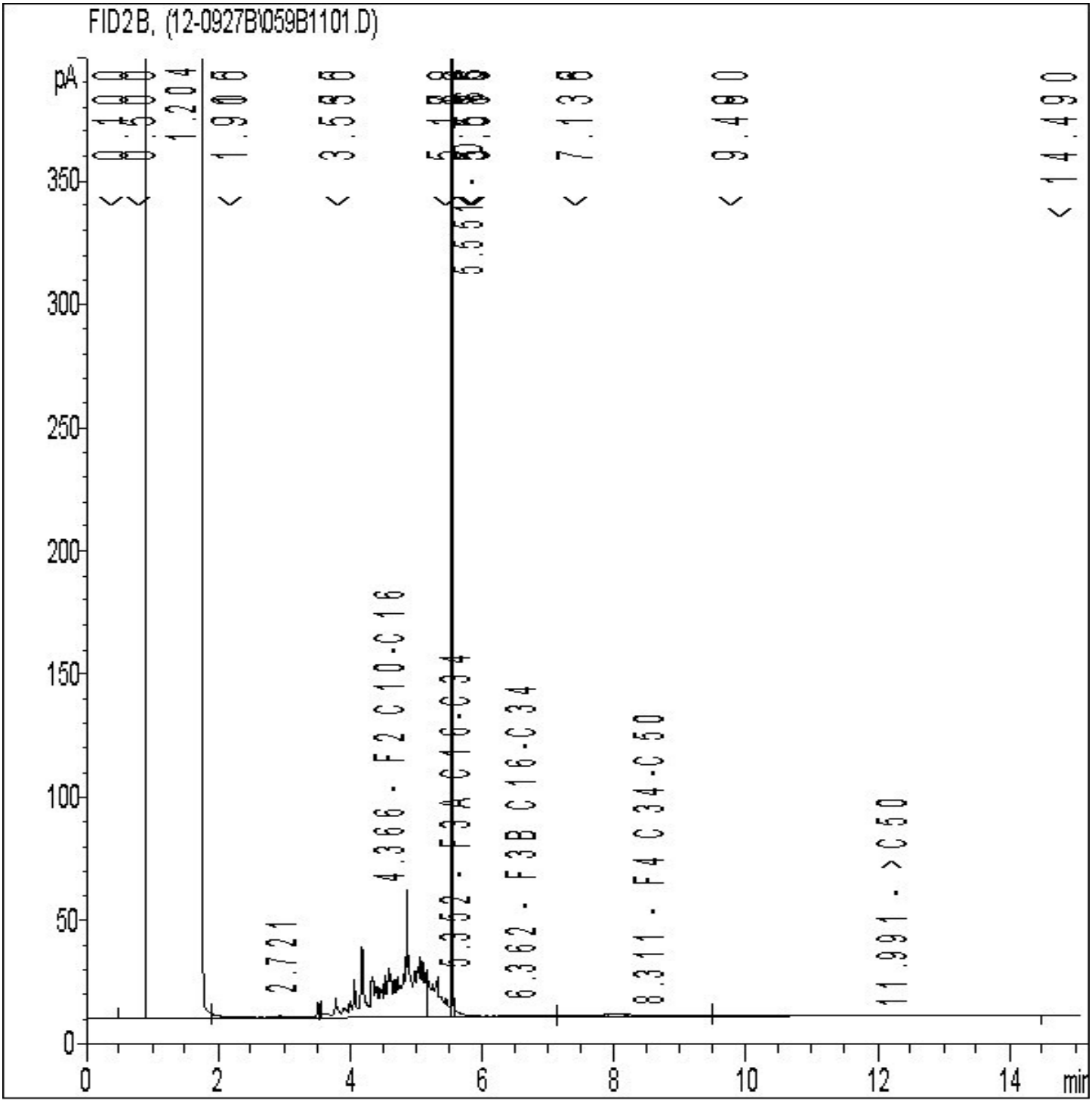
Success Through Science®

Report Date: 2012/09/28
Maxxam Job #: B2E6828
Maxxam Sample: OY0402

Maxxam Analytique
Client Project #: B244892

Client ID: R94575 \ 2012-SB-8

CCME F2-F4 Hydrocarbons in Leachate Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

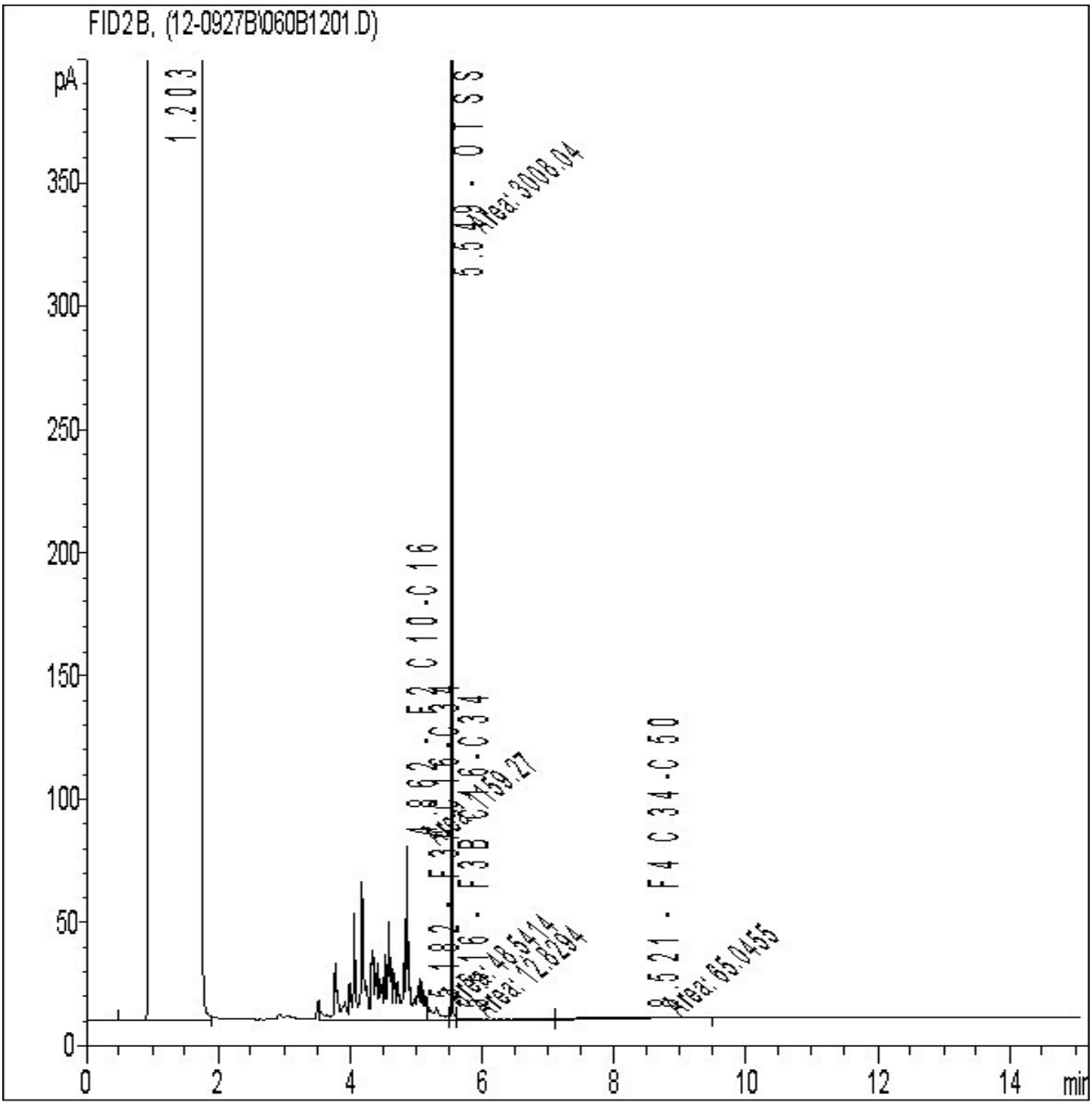
Success Through Science®

Report Date: 2012/09/28
Maxxam Job #: B2E6828
Maxxam Sample: OY0403

Maxxam Analytique
Client Project #: B244892

Client ID: R94596 \ 2012-SB-27

CCME F2-F4 Hydrocarbons in Leachate Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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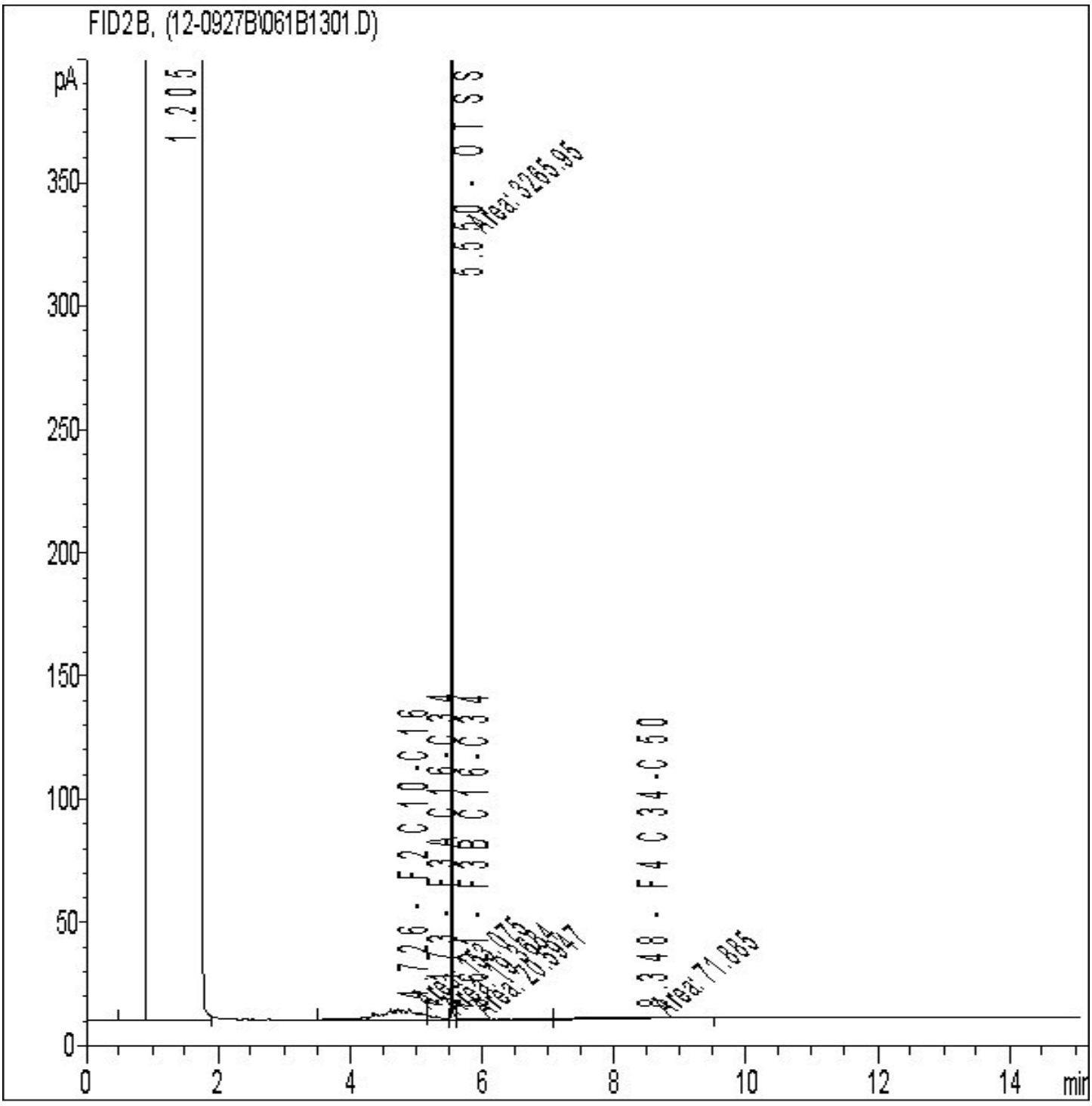
Report Date: 2012/09/28
Maxxam Job #: B2E6828
Maxxam Sample: OY0404

Maxxam Analytique
Client Project #: B244892

Client ID: R94628 \ 2012-SB-58

CCME F2-F4 Hydrocarbons in Leachate Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: B244892
Your C.O.C. #: N/A

Attention: Argyro Frangoulis
Maxxam Analytique
Saint Laurent PQ to Bedford
889 Montee de Liesse
Saint Laurent, QC
H4T 1P5

Report Date: 2012/10/04

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F1444
Received: 2012/09/28, 10:15

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Particle size in solids (pipette&sieve)	3	N/A	2012/10/04	ATL SOP 00012	based on MSAMS-1978
Particle size retained (Calculated)	3	N/A	2012/10/04	ATL SOP 00012	based on MSAMS-1978

Remarks:

Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Katie Cohoon, Bedford Client Services
Email: KCohoon@maxxam.ca
Phone# (902) 420-0203 Ext:226

==========

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Total cover pages: 1

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Maxxam Job #: B2F1444
Report Date: 2012/10/04

Maxxam Analytique
Client Project #: B244892

RESULTS OF ANALYSES OF SOIL

Maxxam ID		PA6336	PA6337	PA6338		
Sampling Date		2012/08/14	2012/08/14	2012/08/15		
COC Number		N/A	N/A	N/A		
	Units	**R94575-02R\2012-SB-8**	**R94596-02R\2012-SB-27**	**R94628-02R\2012-SB-58**	**RDL**	**QC Batch**
< -4 Phi (16 mm)	%	100	100	100	0.10	2991788
< -3 Phi (8 mm)	%	100	100	100	0.10	2991788
< -2 Phi (4 mm)	%	100	100	100	0.10	2991788
< -1 Phi (2 mm)	%	56	63	67	0.10	2991788
< 0 Phi (1 mm)	%	44	51	52	0.10	2991788
< +1 Phi (0.5 mm)	%	32	33	39	0.10	2991788
< +2 Phi (0.25 mm)	%	13	7.0	20	0.10	2991788
< +3 Phi (0.12 mm)	%	7.9	3.6	12	0.10	2991788
< +4 Phi (0.062 mm)	%	6.1	2.7	8.7	0.10	2991788
< +5 Phi (0.031 mm)	%	4.9	2.4	8.1	0.10	2991788
< +6 Phi (0.016 mm)	%	3.9	1.9	6.4	0.10	2991788
< +7 Phi (0.0078 mm)	%	2.1	0.98	4.2	0.10	2991788
< +8 Phi (0.0039 mm)	%	1.6	0.98	3.6	0.10	2991788
< +9 Phi (0.0020 mm)	%	1.2	0.87	2.3	0.10	2991788
Gravel	%	44	37	33	0.10	2991788
Sand	%	50	60	59	0.10	2991788
Silt	%	4.4	1.7	5.1	0.10	2991788
Clay	%	1.6	0.98	3.6	0.10	2991788

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2F1444
Report Date: 2012/10/04

Maxxam Analytique
Client Project #: B244892

CALCULATED PARAMETERS (SOIL)

Maxxam ID		PA6336	PA6337	PA6338		
Sampling Date		2012/08/14	2012/08/14	2012/08/15		
COC Number		N/A	N/A	N/A		
	Units	**R94575-02R\2012-SB-8**	**R94596-02R\2012-SB-27**	**R94628-02R\2012-SB-58**	**RDL**	**QC Batch**
>16 mm	%	<0.10	<0.10	<0.10	0.10	2987329
8-16 mm	%	<0.10	<0.10	<0.10	0.10	2987329
4-8 mm	%	<0.10	<0.10	<0.10	0.10	2987329
2-4 mm	%	44	37	33	0.10	2987329
1-2 mm	%	12	12	15	0.10	2987329
0.5-1 mm	%	13	18	13	0.10	2987329
0.25-0.5 mm	%	18	26	19	0.10	2987329
0.125-0.25 mm	%	5.5	3.4	8.0	0.10	2987329
0.0625-0.125 mm	%	1.8	0.94	2.9	0.10	2987329
0.031-0.062 mm	%	1.1	0.26	0.66	0.10	2987329
0.016-0.031 mm	%	1.0	0.50	1.6	0.10	2987329
0.0078-0.016 mm	%	1.8	0.92	2.3	0.10	2987329
0.0039-0.0078 mm	%	0.51	<0.10	0.57	0.10	2987329
0.0020-0.0039 mm	%	0.42	0.11	1.3	0.10	2987329

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B2F1444
Report Date: 2012/10/04

Maxxam Analytique
Client Project #: B244892

Package 1	9.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Analytique
Attention: Argyro Frangoulis
Client Project #: B244892
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: DB2F1444

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2991788	NRG	RPD	Gravel	2012/10/04	12.1		%	25
			Sand	2012/10/04	0.9		%	25
			Silt	2012/10/04	2.5		%	25
			Clay	2012/10/04	5.8		%	25

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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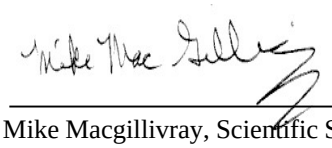
Validation Signature Page

Maxxam Job #: B2F1444

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Mike Macgillivray, Scientific Specialist (Inorganics)

==========

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Maxxam ID: PA6336-01

Maxxam

R94575-02R\2012-SB-8

Percent Coarser than 75 µm (PHI = 3.737)	Percent Coarser than 50 µm (PHI = 4.322)
93.5 %	94.3 %

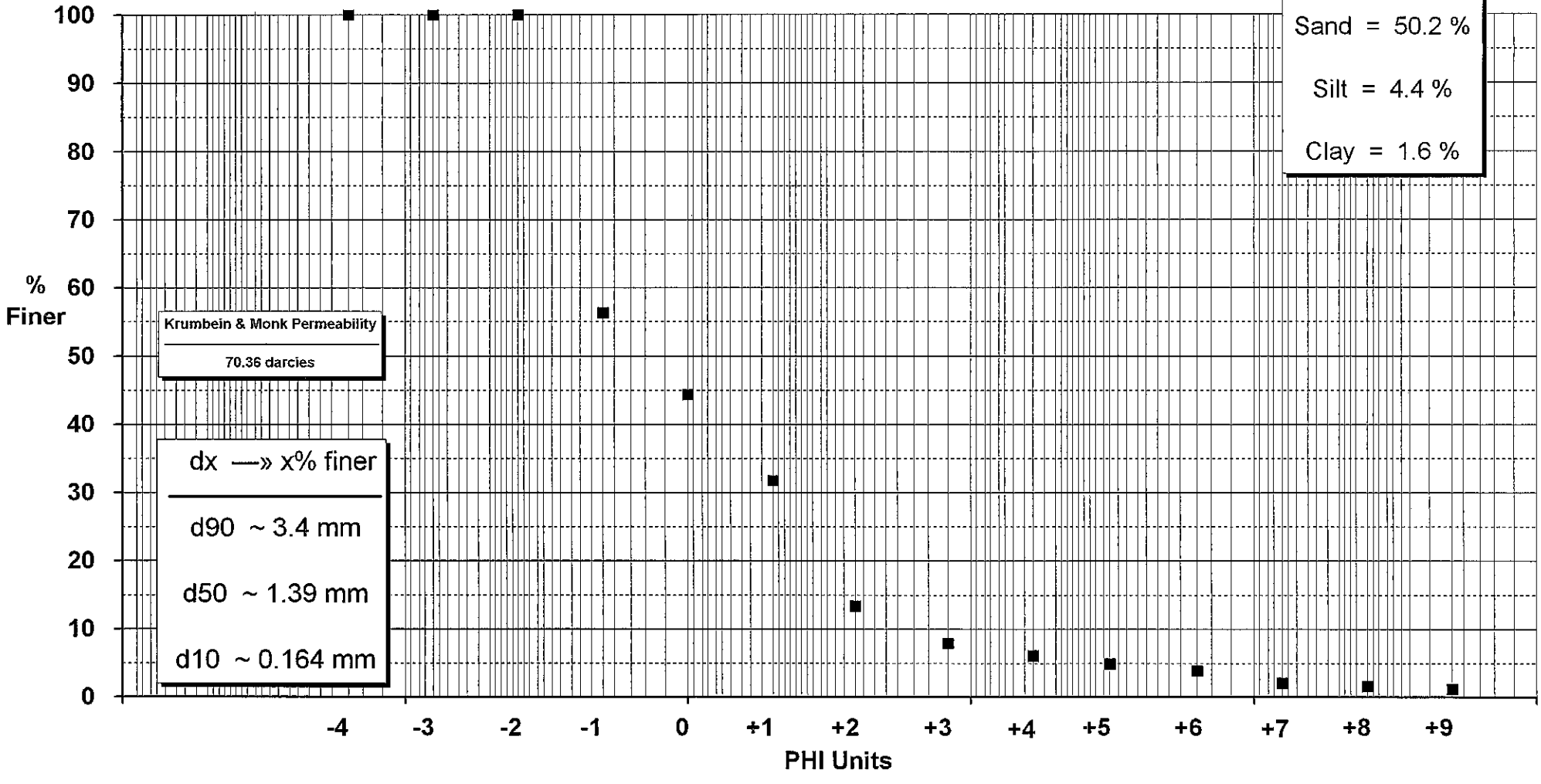
Wentworth

Gravel = 43.7 %

Sand = 50.2 %

Silt = 4.4 %

Clay = 1.6 %



Krumbein & Monk Permeability

70.36 darcies

dx —» x% finer
d90 ~ 3.4 mm
d50 ~ 1.39 mm
d10 ~ 0.164 mm

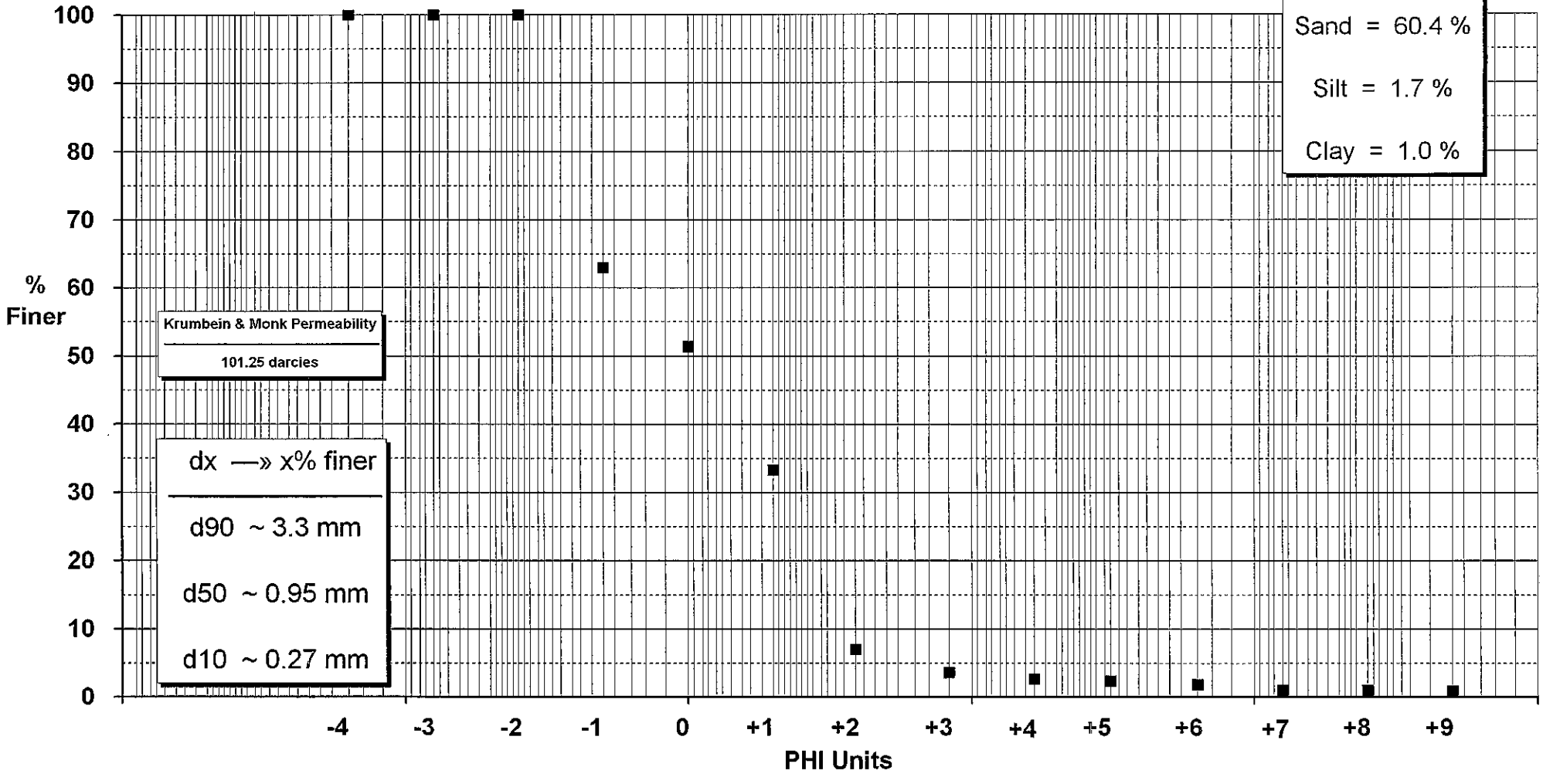
Approved

Maxxam ID: PA6337-01

R94596-02R\2012-SB-27

Percent Coarser than 75 µm (PHi = 3.737)	Percent Coarser than 50 µm (PHI = 4.322)
97.1 %	97.4 %

Wentworth	
Gravel	37.0 %
Sand	60.4 %
Silt	1.7 %
Clay	1.0 %



Krumbein & Monk Permeability
101.25 darcies

dx —» x% finer
d90 ~ 3.3 mm
d50 ~ 0.95 mm
d10 ~ 0.27 mm

Approved

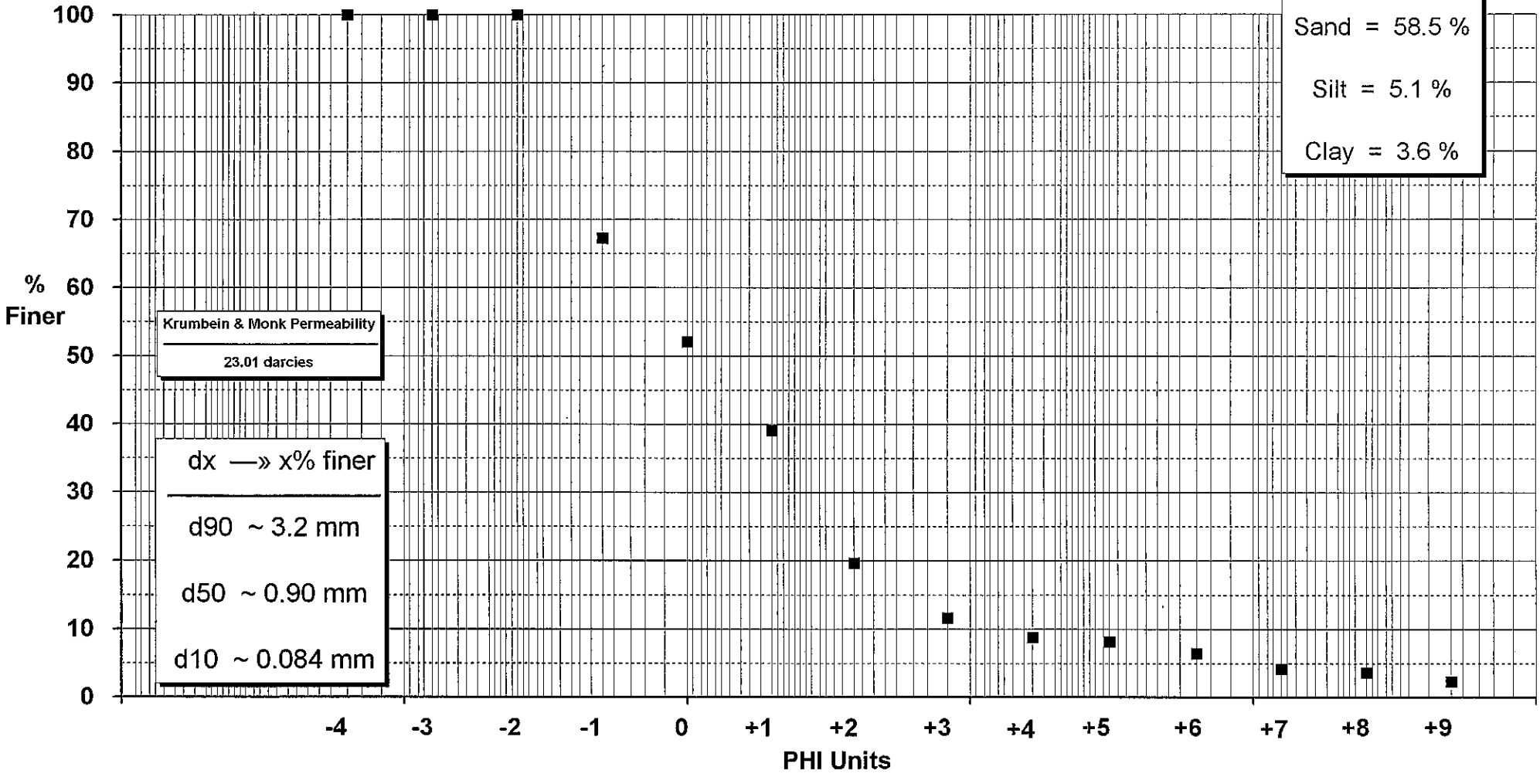
Maxxam

Maxxam ID: PA6338-01

R94628-02R\2012-SB-58

Percent Coarser than 75 µm (PHI = 3.737)	Percent Coarser than 50 µm (PHI = 4.322)
90.5 %	91.5 %

Wentworth	
Gravel	32.7 %
Sand	58.5 %
Silt	5.1 %
Clay	3.6 %



Approved

Attention: Rory Farrell
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/09/24
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B246548
Received: 2012/08/17, 9:30

Sample Matrix: SOLID
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Asbestos (1)	1	N/A	N/A		
Grinding	1	2012/08/24	2012/08/24	STL SOP-00019	SK100 Grinder
Mercury by ICP-MS	10	2012/09/06	2012/09/06	STL SOP-00006	MA.200-Hg 1.0
Total Extractable Metals	11	2012/08/24	2012/08/25	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	9	2012/09/07	2012/09/08	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	1	2012/09/07	2012/09/10	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	1	2012/09/13	2012/09/22	STL SOP-00006	MA.200- Mét 1.2
Total PCB	1	2012/09/20	2012/09/21	STL SOP-00133	MA. 400 - BPC 1.0

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics - Burnaby

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Argyro Frangoulis, Project Manager
Email: AFrangoulis@maxxam.ca
Phone# (514) 448-9001 Ext:4229

==========

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EBA ENGINEERING CONSULTANTS LTD.

Maxxam Job #: B246548
Report Date: 2012/09/24

TOTAL EXTRACTABLE METALS (SOLID)

Maxxam ID		S03070	S03071	S03072	S03073	S03074	S03075		
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11		
	Units	**EBA 2012-BG-1**	**EBA 2012-BG-2**	**EBA 2012-BG-3**	**EBA 2012-BG-4**	**EBA 2012-BG-5**	**EBA 2012-BG-6**	**RDL**	**QC Batch**
% Moisture	%	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
METALS									
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	1053532
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	1048223
Arsenic (As)	mg/kg	4	<2	<2	2	<2	<2	2	1048223
Barium (Ba)	mg/kg	150	89	16	130	54	68	4	1048223
Cadmium (Cd)	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048223
Cobalt (Co)	mg/kg	4	2	2	4	2	1	1	1048223
Chromium (Cr)	mg/kg	22	8	5	14	7	6	1	1048223
Copper (Cu)	mg/kg	10	4	3	13	4	1	1	1048223
Tin (Sn)	mg/kg	2	1	1	2	2	1	1	1048223
Manganese (Mn)	mg/kg	150	78	61	160	86	55	2	1048223
Molybdenum (Mo)	mg/kg	0.9	<0.5	<0.5	0.6	<0.5	<0.5	0.5	1048223
Nickel (Ni)	mg/kg	12	4.1	3.3	8.9	4.2	2.9	0.5	1048223
Lead (Pb)	mg/kg	4	2	2	3	2	1	1	1048223
Selenium (Se)	mg/kg	1.7	0.7	0.5	1.3	0.9	0.7	0.5	1048223
Zinc (Zn)	mg/kg	27	12	7	21	16	9	5	1048223
Aluminum (Al)	mg/kg	6800	2700	1700	4700	2900	2100	20	1048223
Antimony (Sb)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048223
Beryllium (Be)	mg/kg	0.3	0.1	<0.1	0.2	0.1	<0.1	0.1	1048223
Boron (B)	mg/kg	17	9	4	6	7	5	2	1048223
Iron (Fe)	mg/kg	13000	5800	4000	11000	6100	4200	10	1048223
Magnesium (Mg)	mg/kg	22000	11000	8200	5400	8300	12000	5	1048223
Vanadium (V)	mg/kg	33	12	7	22	10	10	2	1048223
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	1048223
Uranium (U)	mg/kg	<2	<2	<2	<2	<2	<2	2	1048223

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B246548
Report Date: 2012/09/24

TOTAL EXTRACTABLE METALS (SOLID)

Maxxam ID		S03076	S03077	S03078	S03078	S03079		S03080		
Sampling Date		2012/08/11	2012/08/11	2012/08/11	2012/08/11	2012/08/11		2012/08/11		
	Units	**EBA 2012-BG-7**	**EBA 2012-BG-8**	**EBA 2012-BG-9**	**EBA 2012-BG-9 Lab-Dup**	**EBA 2012-BG-10**	**QC Batch**	**2012-CR-01**	**RDL**	**QC Batch**
METALS										
Mercury (Hg)	mg/kg	<0.01	<0.01	<0.01	N/A	<0.01	1053532	0.01	0.01	1059331
Silver (Ag)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	1048223	<0.5	0.5	1048223
Arsenic (As)	mg/kg	<2	<2	<2	<2	<2	1048223	<2	2	1048223
Barium (Ba)	mg/kg	29	32	29	26	38	1048223	320	4	1048223
Cadmium (Cd)	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1	1048223	1.6	0.1	1048223
Cobalt (Co)	mg/kg	3	1	1	1	3	1048223	3	1	1048223
Chromium (Cr)	mg/kg	4	3	4	4	10	1048223	11	1	1048223
Copper (Cu)	mg/kg	4	2	1	2	6	1048223	7	1	1048223
Tin (Sn)	mg/kg	1	1	1	1	1	1048223	2	1	1048223
Manganese (Mn)	mg/kg	88	54	31	32	130	1048223	210	2	1048223
Molybdenum (Mo)	mg/kg	1.0	<0.5	0.7	1.1	<0.5	1048223	<0.5	0.5	1048223
Nickel (Ni)	mg/kg	3.1	1.8	2.2	1.9	6.3	1048223	6.2	0.5	1048223
Lead (Pb)	mg/kg	2	1	2	1	3	1048223	190	1	1048223
Selenium (Se)	mg/kg	<0.5	0.7	0.5	0.6	0.6	1048223	0.7	0.5	1048223
Zinc (Zn)	mg/kg	10	6	10	11	13	1048223	520	5	1048223
Aluminum (Al)	mg/kg	2300	1500	2000	1900	3100	1048223	6300	20	1048223
Antimony (Sb)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	1048223	0.3	0.1	1048223
Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1	1048223	0.2	0.1	1048223
Boron (B)	mg/kg	7	5	<2	<2	8	1048223	9	2	1048223
Iron (Fe)	mg/kg	5500	2900	5300	5500	7300	1048223	6400	10	1048223
Magnesium (Mg)	mg/kg	17000	7900	1300	1300	23000	1048223	5800	5	1048223
Vanadium (V)	mg/kg	9	6	7	7	13	1048223	10	2	1048223
Thallium (Tl)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	1048223	<0.1	0.1	1048223
Uranium (U)	mg/kg	<2	<2	<2	<2	<2	1048223	<2	2	1048223

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EBA ENGINEERING CONSULTANTS LTD.

Maxxam Job #: B246548
Report Date: 2012/09/24

PCB CONGENERS (SOLID)

Maxxam ID		S03080		
Sampling Date		2012/08/11		
	Units	**2012-CR-01**	**RDL**	**QC Batch**
PCB				
Total PCB	mg/kg	<0.01	0.01	1059212
Surrogate Recovery (%)				
2,3,3',4,6-Pentachlorobiphenyl	%	96	N/A	1059212
2',3,5-Trichlorobiphenyl	%	85	N/A	1059212
22'33'44'566'-Nonachlorobiphenyl	%	102	N/A	1059212

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EBA ENGINEERING CONSULTANTS LTD.

Maxxam Job #: B246548
Report Date: 2012/09/24

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD except for the following:
Total PCB: Analyses requested past holding time: S03080

All results are calculated on a dry weight basis except where not applicable.

TOTAL EXTRACTABLE METALS (SOLID)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

The extraction was performed passed holding time for parameter mercury for sample S03080.

Sample S03070, Total Extractable Metals: Test repeated.
Sample S03071, Total Extractable Metals: Test repeated.
Sample S03072, Total Extractable Metals: Test repeated.
Sample S03073, Total Extractable Metals: Test repeated.
Sample S03074, Total Extractable Metals: Test repeated.
Sample S03075, Total Extractable Metals: Test repeated.
Sample S03076, Total Extractable Metals: Test repeated.
Sample S03077, Total Extractable Metals: Test repeated.
Sample S03078, Total Extractable Metals: Test repeated.
Sample S03079, Total Extractable Metals: Test repeated.
Sample S03080, Total Extractable Metals: Test repeated.

PCB CONGENERS (SOLID)

Please note that the results have not been corrected for QC recovery (spiked blank) nor for the method blank. The results have been corrected for the percent surrogate recoveries.

Results relate only to the items tested.

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #:
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: B246548

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1048223	SC5	Spiked Blank	Silver (Ag)	2012/08/25		87	%
			Arsenic (As)	2012/08/25		89	%
			Barium (Ba)	2012/08/25		98	%
			Cadmium (Cd)	2012/08/25		90	%
			Cobalt (Co)	2012/08/25		86	%
			Chromium (Cr)	2012/08/25		80	%
			Copper (Cu)	2012/08/25		84	%
			Tin (Sn)	2012/08/25		100	%
			Manganese (Mn)	2012/08/25		79	%
			Molybdenum (Mo)	2012/08/25		93	%
			Nickel (Ni)	2012/08/25		87	%
			Lead (Pb)	2012/08/25		93	%
			Selenium (Se)	2012/08/25		80	%
			Zinc (Zn)	2012/08/25		85	%
			Aluminum (Al)	2012/08/25		93	%
			Antimony (Sb)	2012/08/25		98	%
			Beryllium (Be)	2012/08/25		76	%
			Boron (B)	2012/08/25		97	%
			Iron (Fe)	2012/08/25		101	%
			Magnesium (Mg)	2012/08/25		80	%
			Vanadium (V)	2012/08/25		86	%
			Thallium (Tl)	2012/08/25		94	%
			Uranium (U)	2012/08/25		94	%
		Method Blank	Silver (Ag)	2012/08/25	<0.5		mg/kg
			Arsenic (As)	2012/08/25	<2		mg/kg
			Barium (Ba)	2012/08/25	<4		mg/kg
			Cadmium (Cd)	2012/08/25	<0.1		mg/kg
			Cobalt (Co)	2012/08/25	<1		mg/kg
			Chromium (Cr)	2012/08/25	<1		mg/kg
			Copper (Cu)	2012/08/25	<1		mg/kg
			Tin (Sn)	2012/08/25	<1		mg/kg
			Manganese (Mn)	2012/08/25	<2		mg/kg
			Molybdenum (Mo)	2012/08/25	<0.5		mg/kg
			Nickel (Ni)	2012/08/25	<0.5		mg/kg
			Lead (Pb)	2012/08/25	<1		mg/kg
			Selenium (Se)	2012/08/25	<0.5		mg/kg
			Zinc (Zn)	2012/08/25	<5		mg/kg
			Aluminum (Al)	2012/08/25	<20		mg/kg
			Antimony (Sb)	2012/08/25	<0.1		mg/kg
			Beryllium (Be)	2012/08/25	<0.1		mg/kg
			Boron (B)	2012/08/25	<2		mg/kg
			Iron (Fe)	2012/08/25	<10		mg/kg
			Magnesium (Mg)	2012/08/25	<5		mg/kg
			Vanadium (V)	2012/08/25	<2		mg/kg
			Thallium (Tl)	2012/08/25	<0.1		mg/kg
			Uranium (U)	2012/08/25	<2		mg/kg
1053532	SC5	Spiked Blank	Mercury (Hg)	2012/09/08		105	%
		Method Blank	Mercury (Hg)	2012/09/08	<0.01		mg/kg
1059212	DM5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/09/21		91	%
			2',3,5-Trichlorobiphenyl	2012/09/21		83	%
			22'33'44'566'-Nonachlorobiphenyl	2012/09/21		99	%
			Total PCB	2012/09/21		100	%
		Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/09/21		89	%
			2',3,5-Trichlorobiphenyl	2012/09/21		83	%
			22'33'44'566'-Nonachlorobiphenyl	2012/09/21		97	%

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #:
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: B246548

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1059212	DM5	Method Blank	Total PCB	2012/09/21	<0.01		mg/kg
1059331	SC5	Spiked Blank	Mercury (Hg)	2012/09/22		98	%
		Method Blank	Mercury (Hg)	2012/09/22	<0.01		mg/kg

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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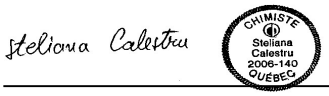
Validation Signature Page

Maxxam Job #: B246548

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Alexandre Lemire, M.Sc., Analyst 2

Daniela Mazilu, B.Sc. Chemist



Steliana Calestru, B.Sc. Chemist

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Your Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Your C.O.C. #: 8102001

Attention: Rory Farrell

EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/10/11
Report #: NM-416506
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B244975
Received: 2012/08/17, 09:30

Sample Matrix: WATER
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Primary reference
Total Alkalinity (pH end point 4.5)	6	N/A	2012/08/17	STL SOP-00038	SM 2320B
Total Alkalinity (pH end point 4.5)	10	N/A	2012/08/20	STL SOP-00038	SM 2320B
Anions	16	N/A	2012/08/17	STL SOP-00014	MA. 300 - Ions 1.3
Conductivity	6	N/A	2012/08/17	STL SOP-00038	SM 2510
Conductivity	10	N/A	2012/08/20	STL SOP-00038	SM 2510
Fluoride	6	N/A	2012/08/17	STL SOP-00038	SM 4500-F- C.
Fluoride	10	N/A	2012/08/20	STL SOP-00038	SM 4500-F- C.
Petroleum Hydro. CCME F1 & BTEX	16	N/A	2012/08/21	STL SOP-00131	CCME-PN1310
Petroleum Hydrocarbons (F2-F4)	16	2012/08/22	2012/08/24	STL SOP-00170	CCME-PN1310
Hardness	16	2012/08/23	2012/08/23	STL SOP-00006	MA.200- Mét 1.2
Mercury by Cold Vapour AA	16	2012/09/04	2012/09/05	STL SOP-00042	MA.200-Hg 1.1
Ion Balance	16	2012/08/27	2012/08/28		
Calculated HCO3/CO3/OH	16	2012/08/27	2012/08/28		
Sum of cations and anions	16	2012/08/27	2012/08/28		
Metals	16	2012/08/23	2012/08/23	STL SOP-00006	MA.200- Mét 1.2
Total Extractable Metals	16	2012/08/22	2012/08/22	STL SOP-00006	MA.200- Mét 1.2
Ammonia Nitrogen	16	N/A	2012/08/22	STL SOP-00040	MA. 300 - N 1.1
Nitrate and/or Nitrite	16	N/A	2012/08/17	STL SOP-00014	MA. 300 - Ions 1.3
Total PCB	1	2012/08/20	2012/08/20	STL SOP-00132	MA. 400 - BPC 1.0
Total PCB	12	2012/08/20	2012/08/21	STL SOP-00132	MA. 400 - BPC 1.0
Total PCB	3	2012/08/20	2012/08/22	STL SOP-00132	MA. 400 - BPC 1.0
pH	6	N/A	2012/08/17	STL SOP-00038	MA.100- pH1.1
pH	10	N/A	2012/08/20	STL SOP-00038	MA.100- pH1.1
Ortho Phosphate	16	N/A	2012/08/17	STL SOP-00003	SM 4500-P E
Total Dissolved Solids	16	2012/08/20	2012/08/20	STL SOP-00050	MA. 103 - S.T. 1.0
Total Organic Carbon	16	N/A	2012/08/20	STL SOP-00243	SM 5310B

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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Your Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Your C.O.C. #: 8102001

Attention: Rory Farrell

EBA ENGINEERING CONSULTANTS LTD.
EDMONTON
14940 - 123 avenue
Edmonton, AB
CANADA T5V 1B4

Report Date: 2012/10/11
Report #: NM-416506
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Argyro Frangoulis, Project Manager
Email: AFrangoulis@maxxam.ca
Phone# (514) 448-9001 Ext:4229

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R95152	R95152	R95153	R95154	R95155	R95156		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**SHED**	**SHED Lab-Dup**	**U/G DÉBRIS AREA 1**	**SOURCE DÉBRIS AREA 1**	**D/G DÉBRIS AREA 1**	**OLD KITCHEN**	**RDL**	**QC Batch**
VOLATILES									
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Toluene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
p+m-Xylene	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
o-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Total_Xylenes	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
F1 (C6-C10)	ug/L	<100	<100	<100	<100	<100	<100	100	1045836
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	<100	<100	100	1045836
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	94	95	93	95	94	97	N/A	1045836
4-Bromofluorobenzene	%	103	103	103	103	104	102	N/A	1045836
D10-Ethylbenzene	%	102	102	101	101	99	107	N/A	1045836
D4-1,2-Dichloroethane	%	100	99	104	101	103	99	N/A	1045836

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R95157	R95158	R95159	R95160	R95161	R95164		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**DÉBRIS AREA 6**	**DOWNGRADIENT DÉBRIS AREA 04**	**SOURCE DÉBRIS AREA 04**	**UPGRADIENT DÉBRIS AREA 04**	**DUP-01**	**POTABLE SOURCE**	**RDL**	**QC Batch**
VOLATILES									
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Toluene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
p+m-Xylene	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
o-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Total_Xylenes	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
F1 (C6-C10)	ug/L	<100	<100	<100	<100	<100	<100	100	1045836
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	<100	<100	100	1045836
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	94	93	92	92	95	97	N/A	1045836
4-Bromofluorobenzene	%	104	104	105	105	103	103	N/A	1045836
D10-Ethylbenzene	%	108	106	104	109	110	112	N/A	1045836
D4-1,2-Dichloroethane	%	103	105	105	109	103	102	N/A	1045836

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		R95165	R95166	R95167	R95168	R95169		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**LAKE 2**	**W OF AST**	**HOUSE FOOTING**	**LAKE 3**	**DUP-02**	**RDL**	**QC Batch**
VOLATILES								
Benzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Toluene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Ethylbenzene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
p+m-Xylene	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
o-Xylene	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	0.4	1045836
Total_Xylenes	ug/L	<0.8	<0.8	<0.8	<0.8	<0.8	0.8	1045836
F1 (C6-C10)	ug/L	<100	<100	<100	<100	<100	100	1045836
F1 (C6-C10) - BTEX	ug/L	<100	<100	<100	<100	<100	100	1045836
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	95	94	95	94	95	N/A	1045836
4-Bromofluorobenzene	%	103	104	103	103	104	N/A	1045836
D10-Ethylbenzene	%	115	117	110	109	108	N/A	1045836
D4-1,2-Dichloroethane	%	102	105	102	104	103	N/A	1045836

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

HYDROCARBONS BY GCFID (WATER)

Maxxam ID		R95152	R95153	R95154	R95155	R95156		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**SHED**	**U/G DÉBRIS AREA 1**	**SOURCE DÉBRIS AREA 1**	**D/G DÉBRIS AREA 1**	**OLD KITCHEN**	**RDL**	**QC Batch**
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	ug/L	<100	<100	<100	<100	<100	100	1046957
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	N/A	1046957
Surrogate Recovery (%)								
O-Terphenyl	%	107	109	107	106	107	N/A	1046957

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95157	R95158	R95159	R95160	R95161		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**DÉBRIS AREA 6**	**DOWNGRADIENT DÉBRIS AREA 04**	**SOURCE DÉBRIS AREA 04**	**UPGRADIENT DÉBRIS AREA 04**	**DUP-01**	**RDL**	**QC Batch**
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	ug/L	<100	<100	<100	<100	<100	100	1046957
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	N/A	1046957
Surrogate Recovery (%)								
O-Terphenyl	%	110	107	106	109	108	N/A	1046957

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

HYDROCARBONS BY GCFID (WATER)

Maxxam ID		R95164	R95165	R95166	R95167	R95168		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**POTABLE SOURCE**	**LAKE 2**	**W OF AST**	**HOUSE FOOTING**	**LAKE 3**	**RDL**	**QC Batch**
Total Petroleum Hydro.								
Petroleum Hydrocarbons F2:C10-C16	ug/L	<100	<100	<100	<100	<100	100	1046957
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes	N/A	1046957
Surrogate Recovery (%)								
O-Terphenyl	%	104	107	109	105	108	N/A	1046957

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95169		
Sampling Date		2012/08/15		
COC Number		8102001		
	Units	**DUP-02**	**RDL**	**QC Batch**
Total Petroleum Hydro.				
Petroleum Hydrocarbons F2:C10-C16	ug/L	<100	100	1046957
Reached Baseline at C50	ug/L	Yes	N/A	1046957
Surrogate Recovery (%)				
O-Terphenyl	%	114	N/A	1046957

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

METALS (WATER)

Maxxam ID		R95152	R95152		R95153	R95154	R95155		
Sampling Date		2012/08/15	2012/08/15		2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001		8102001	8102001	8102001		
	Units	**SHED**	**SHED Lab-Dup**	**RDL**	**U/G DÉBRIS AREA 1**	**SOURCE DÉBRIS AREA 1**	**D/G DÉBRIS AREA 1**	**RDL**	**QC Batch**
METALS									
Mercury (Hg)	mg/L	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	0.00001	1051855
Total Hardness (CaCO3)	mg/L	190	N/A	1	6200	6300	6200	1	1047583
Manganese (Mn)	mg/L	0.027	N/A	0.003	<0.003	0.011	0.003	0.003	1047583
Sodium (Na)	mg/L	26	N/A	0.2	11000	11000	10000	200	1047583
Iron (Fe)	mg/L	0.1	N/A	0.1	0.1	0.5	0.1	0.1	1047583
Magnesium (Mg)	mg/L	6.5	N/A	0.2	1300	1300	1300	2	1047583
Potassium (K)	mg/L	0.8	N/A	0.2	390	390	390	2	1047583
Calcium (Ca)	mg/L	65	N/A	0.5	410	430	410	0.5	1047583

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95156	R95157		R95158	R95159		
Sampling Date		2012/08/15	2012/08/15		2012/08/15	2012/08/15		
COC Number		8102001	8102001		8102001	8102001		
	Units	**OLD KITCHEN**	**DÉBRIS AREA 6**	**RDL**	**DOWNGRADIENT DÉBRIS AREA 04**	**SOURCE DÉBRIS AREA 04**	**RDL**	**QC Batch**
METALS								
Mercury (Hg)	mg/L	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	0.00001	1051855
Total Hardness (CaCO3)	mg/L	39	34	1	5300	6100	1	1047583
Manganese (Mn)	mg/L	<0.003	<0.003	0.003	<0.003	<0.003	0.003	1047583
Sodium (Na)	mg/L	16	20	0.2	8600	10000	20	1047583
Iron (Fe)	mg/L	0.1	<0.1	0.1	<0.1	<0.1	0.1	1047583
Magnesium (Mg)	mg/L	2.5	2.3	0.2	1100	1200	20	1047583
Potassium (K)	mg/L	1.4	1.6	0.2	340	380	20	1047583
Calcium (Ca)	mg/L	12	9.6	0.5	350	400	0.5	1047583

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

METALS (WATER)

Maxxam ID		R95160		R95161	R95164	R95165	R95166		
Sampling Date		2012/08/15		2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001		8102001	8102001	8102001	8102001		
	Units	**UPGRADIENT DÉBRIS AREA 04**	**RDL**	**DUP-01**	**POTABLE SOURCE**	**LAKE 2**	**W OF AST**	**RDL**	**QC Batch**
METALS									
Mercury (Hg)	mg/L	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	1051855
Total Hardness (CaCO3)	mg/L	6200	1	41	82	140	120	1	1047583
Manganese (Mn)	mg/L	<0.003	0.003	<0.003	0.005	<0.003	<0.003	0.003	1047583
Sodium (Na)	mg/L	10000	200	16	18	71	22	0.2	1047583
Iron (Fe)	mg/L	<0.1	0.1	0.1	<0.1	0.2	<0.1	0.1	1047583
Magnesium (Mg)	mg/L	1300	200	2.6	4.1	9.2	6.6	0.2	1047583
Potassium (K)	mg/L	450	200	1.4	1.5	3.5	1.6	0.2	1047583
Calcium (Ca)	mg/L	410	0.5	12	26	40	37	0.5	1047583

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95167	R95168	R95169	R95169		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001		
	Units	**HOUSE FOOTING**	**LAKE 3**	**DUP-02**	**DUP-02 Lab-Dup**	**RDL**	**QC Batch**
METALS							
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	1051855
Total Hardness (CaCO3)	mg/L	160	110	81	N/A	1	1047583
Manganese (Mn)	mg/L	<0.003	0.006	0.005	N/A	0.003	1047583
Sodium (Na)	mg/L	26	20	17	N/A	0.2	1047583
Iron (Fe)	mg/L	<0.1	<0.1	<0.1	N/A	0.1	1047583
Magnesium (Mg)	mg/L	6.3	5.0	4.0	N/A	0.2	1047583
Potassium (K)	mg/L	1.9	1.3	1.4	N/A	0.2	1047583
Calcium (Ca)	mg/L	54	34	26	N/A	0.5	1047583

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

TOTAL EXTRACTABLE METALS (WATER)

Maxxam ID		R95152		R95153	R95154		R95155		R95156		
Sampling Date		2012/08/15		2012/08/15	2012/08/15		2012/08/15		2012/08/15		
COC Number		8102001		8102001	8102001		8102001		8102001		
	Units	**SHED**	**RDL**	**U/G DÉBRIS AREA 1**	**SOURCE DÉBRIS AREA 1**	**RDL**	**D/G DÉBRIS AREA 1**	**RDL**	**OLD KITCHEN**	**RDL**	**QC Batch**
METALS ICP-MS											
Aluminum (Al)	ug/L	<10	10	850	810	10	110	10	74	10	1046767
Antimony (Sb)	ug/L	<10	10	<10	<10	10	<10	10	<10	10	1046767
Silver (Ag)	ug/L	<1.0	1.0	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	1046767
Arsenic (As)	ug/L	<1.0	1.0	3.5	3.8	1.0	2.4	1.0	<1.0	1.0	1046767
Barium (Ba)	ug/L	88	20	30	35	20	<20	20	23	20	1046767
Cadmium (Cd)	ug/L	<0.30	0.30	<0.30	<0.30	0.30	<0.30	0.30	<0.30	0.30	1046767
Chromium (Cr)	ug/L	<5.0	5.0	8.1	8.4	5.0	6.0	5.0	<5.0	5.0	1046767
Cobalt (Co)	ug/L	<5.0	5.0	<5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	1046767
Copper (Cu)	ug/L	<2.0	2.0	2.6	2.3	2.0	<2.0	2.0	6.7	2.0	1046767
Manganese (Mn)	ug/L	27	4.0	32	37	4.0	4.9	4.0	<4.0	4.0	1046767
Molybdenum (Mo)	ug/L	<5.0	5.0	11	11	5.0	11	5.0	<5.0	5.0	1046767
Nickel (Ni)	ug/L	<2.0	2.0	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	1046767
Sodium (Na)	ug/L	31000	500	12000000	11000000	50000	12000000	50000	15000	500	1046767
Zinc (Zn)	ug/L	130	7.0	10	8.0	7.0	<7.0	7.0	11	7.0	1046767
Boron (B)	ug/L	<50	50	6200	5600	5000	5500	5000	<50	50	1046767
Iron (Fe)	ug/L	73	60	2200	2200	60	320	60	160	60	1046767
Magnesium (Mg)	ug/L	7000	500	1400000	1400000	5000	1400000	5000	2500	500	1046767
Lithium (Li)	ug/L	<100	100	150	150	100	150	100	<100	100	1046767
Potassium (K)	ug/L	1100	500	420000	410000	5000	420000	5000	1500	500	1046767
Selenium (Se)	ug/L	<10	10	<10	<10	10	<10	10	<10	10	1046767
Strontium (Sr)	ug/L	430	20	8400	8200	200	8300	20	49	20	1046767
Tin (Sn)	ug/L	<20	20	<20	<20	20	<20	20	<20	20	1046767
Titanium (Ti)	ug/L	<10	10	100	100	10	11	10	<10	10	1046767
Vanadium (V)	ug/L	<20	20	<20	<20	20	<20	20	<20	20	1046767
Beryllium (Be)	ug/L	<5.0	5.0	<5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	1046767
Bismuth (Bi)	ug/L	<2.5	2.5	<2.5	<2.5	2.5	<2.5	2.5	<2.5	2.5	1046767
Calcium (Ca)	ug/L	59000	500	460000	470000	5000	450000	5000	10000	500	1046767
Lead (Pb)	ug/L	<1.0	1.0	6.2	13	1.0	1.4	1.0	<1.0	1.0	1046767
Thallium (Tl)	ug/L	<20	20	<20	<20	20	<20	20	<20	20	1046767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

TOTAL EXTRACTABLE METALS (WATER)

Maxxam ID		R95157		R95158		R95159		R95160		
Sampling Date		2012/08/15		2012/08/15		2012/08/15		2012/08/15		
COC Number		8102001		8102001		8102001		8102001		
	Units	**DÉBRIS AREA 6**	**RDL**	**DOWNGRADIENT DÉBRIS AREA 04**	**RDL**	**SOURCE DÉBRIS AREA 04**	**RDL**	**UPGRADIENT DÉBRIS AREA 04**	**RDL**	**QC Batch**
METALS ICP-MS										
Aluminum (Al)	ug/L	200	10	60	10	51	10	19	10	1046767
Antimony (Sb)	ug/L	<10	10	<10	10	<10	10	<10	10	1046767
Silver (Ag)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	1046767
Arsenic (As)	ug/L	<1.0	1.0	2.2	1.0	2.0	1.0	2.0	1.0	1046767
Barium (Ba)	ug/L	52	20	<20	20	<20	20	<20	20	1046767
Cadmium (Cd)	ug/L	<0.30	0.30	<0.30	0.30	<0.30	0.30	<0.30	0.30	1046767
Chromium (Cr)	ug/L	<5.0	5.0	6.1	5.0	5.2	5.0	6.1	5.0	1046767
Cobalt (Co)	ug/L	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	1046767
Copper (Cu)	ug/L	2.9	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	1046767
Manganese (Mn)	ug/L	<4.0	4.0	<4.0	4.0	<4.0	4.0	<4.0	4.0	1046767
Molybdenum (Mo)	ug/L	<5.0	5.0	11	5.0	11	5.0	11	5.0	1046767
Nickel (Ni)	ug/L	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	1046767
Sodium (Na)	ug/L	21000	500	11000000	50000	10000000	50000	9400000	50000	1046767
Zinc (Zn)	ug/L	<7.0	7.0	<7.0	7.0	<7.0	7.0	<7.0	7.0	1046767
Boron (B)	ug/L	61	50	4500	500	4700	50	5100	50	1046767
Iron (Fe)	ug/L	110	60	130	60	140	60	<60	60	1046767
Magnesium (Mg)	ug/L	2200	500	1100000	500	1200000	500	1200000	500	1046767
Lithium (Li)	ug/L	<100	100	140	100	140	100	150	100	1046767
Potassium (K)	ug/L	1600	500	360000	5000	400000	5000	420000	5000	1046767
Selenium (Se)	ug/L	<10	10	<10	10	<10	10	<10	10	1046767
Strontium (Sr)	ug/L	240	20	7700	200	8100	200	8400	200	1046767
Tin (Sn)	ug/L	<20	20	<20	20	<20	20	<20	20	1046767
Titanium (Ti)	ug/L	<10	10	<10	10	<10	10	<10	10	1046767
Vanadium (V)	ug/L	<20	20	<20	20	<20	20	<20	20	1046767
Beryllium (Be)	ug/L	<5.0	5.0	<5.0	5.0	<5.0	5.0	<5.0	5.0	1046767
Bismuth (Bi)	ug/L	<2.5	2.5	<2.5	2.5	<2.5	2.5	<2.5	2.5	1046767
Calcium (Ca)	ug/L	7900	500	390000	5000	420000	5000	440000	500	1046767
Lead (Pb)	ug/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	1046767
Thallium (Tl)	ug/L	<20	20	<20	20	<20	20	<20	20	1046767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

TOTAL EXTRACTABLE METALS (WATER)

Maxxam ID		R95161	R95164	R95165	R95166	R95167	R95167		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001	8102001		
	Units	**DUP-01**	**POTABLE SOURCE**	**LAKE 2**	**W OF AST**	**HOUSE FOOTING**	**HOUSE FOOTING Lab-Dup**	**RDL**	**QC Batch**
METALS ICP-MS									
Aluminum (Al)	ug/L	69	14	29	<10	<10	<10	10	1046767
Antimony (Sb)	ug/L	<10	<10	<10	<10	<10	<10	10	1046767
Silver (Ag)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	1046767
Arsenic (As)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	1046767
Barium (Ba)	ug/L	23	31	99	58	92	95	20	1046767
Cadmium (Cd)	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	1046767
Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	1046767
Cobalt (Co)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	1046767
Copper (Cu)	ug/L	6.3	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	1046767
Manganese (Mn)	ug/L	<4.0	4.5	<4.0	<4.0	<4.0	<4.0	4.0	1046767
Molybdenum (Mo)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	1046767
Nickel (Ni)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	1046767
Sodium (Na)	ug/L	16000	17000	69000	21000	25000	25000	500	1046767
Zinc (Zn)	ug/L	8.8	<7.0	<7.0	<7.0	<7.0	<7.0	7.0	1046767
Boron (B)	ug/L	<50	67	80	51	<50	<50	50	1046767
Iron (Fe)	ug/L	160	67	1100	<60	<60	<60	60	1046767
Magnesium (Mg)	ug/L	2200	3600	9000	6100	5700	5700	500	1046767
Lithium (Li)	ug/L	<100	<100	<100	<100	<100	<100	100	1046767
Potassium (K)	ug/L	1300	1400	3400	1600	1800	1800	500	1046767
Selenium (Se)	ug/L	<10	<10	<10	<10	<10	<10	10	1046767
Strontium (Sr)	ug/L	47	140	410	160	380	390	20	1046767
Tin (Sn)	ug/L	<20	<20	<20	<20	<20	<20	20	1046767
Titanium (Ti)	ug/L	<10	<10	<10	<10	<10	<10	10	1046767
Vanadium (V)	ug/L	<20	<20	<20	<20	<20	<20	20	1046767
Beryllium (Be)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	1046767
Bismuth (Bi)	ug/L	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.5	1046767
Calcium (Ca)	ug/L	9400	22000	36000	32000	48000	48000	500	1046767
Lead (Pb)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	1046767
Thallium (Tl)	ug/L	<20	<20	<20	<20	<20	<20	20	1046767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

TOTAL EXTRACTABLE METALS (WATER)

Maxxam ID		R95168	R95169		
Sampling Date		2012/08/15	2012/08/15		
COC Number		8102001	8102001		
	Units	**LAKE 3**	**DUP-02**	**RDL**	**QC Batch**
METALS ICP-MS					
Aluminum (Al)	ug/L	<10	<10	10	1046767
Antimony (Sb)	ug/L	<10	<10	10	1046767
Silver (Ag)	ug/L	<1.0	<1.0	1.0	1046767
Arsenic (As)	ug/L	<1.0	<1.0	1.0	1046767
Barium (Ba)	ug/L	36	30	20	1046767
Cadmium (Cd)	ug/L	<0.30	<0.30	0.30	1046767
Chromium (Cr)	ug/L	<5.0	<5.0	5.0	1046767
Cobalt (Co)	ug/L	<5.0	<5.0	5.0	1046767
Copper (Cu)	ug/L	<2.0	<2.0	2.0	1046767
Manganese (Mn)	ug/L	4.1	4.5	4.0	1046767
Molybdenum (Mo)	ug/L	<5.0	<5.0	5.0	1046767
Nickel (Ni)	ug/L	<2.0	<2.0	2.0	1046767
Sodium (Na)	ug/L	19000	16000	500	1046767
Zinc (Zn)	ug/L	<7.0	<7.0	7.0	1046767
Boron (B)	ug/L	<50	<50	50	1046767
Iron (Fe)	ug/L	<60	66	60	1046767
Magnesium (Mg)	ug/L	4600	3600	500	1046767
Lithium (Li)	ug/L	<100	<100	100	1046767
Potassium (K)	ug/L	1300	1300	500	1046767
Selenium (Se)	ug/L	<10	<10	10	1046767
Strontium (Sr)	ug/L	160	140	20	1046767
Tin (Sn)	ug/L	<20	<20	20	1046767
Titanium (Ti)	ug/L	<10	<10	10	1046767
Vanadium (V)	ug/L	<20	<20	20	1046767
Beryllium (Be)	ug/L	<5.0	<5.0	5.0	1046767
Bismuth (Bi)	ug/L	<2.5	<2.5	2.5	1046767
Calcium (Ca)	ug/L	29000	22000	500	1046767
Lead (Pb)	ug/L	<1.0	<1.0	1.0	1046767
Thallium (Tl)	ug/L	<20	<20	20	1046767

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

CONVENTIONAL PARAMETERS (WATER)

Maxxam ID		R95152		R95153	R95153	R95154	R95155		
Sampling Date		2012/08/15		2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001		8102001	8102001	8102001	8102001		
	Units	**SHED**	**RDL**	**U/G DÉBRIS AREA 1**	**U/G DÉBRIS AREA 1 Lab-Dup**	**SOURCE DÉBRIS AREA 1**	**D/G DÉBRIS AREA 1**	**RDL**	**QC Batch**
CONVENTIONALS									
Conductivity	mS/cm	0.47	0.001	51	N/A	50	50	0.001	1045350
Fluoride (F)	mg/L	<0.1	0.1	0.9	N/A	0.9	0.9	0.1	1045352
Ion Balance	n/a	1.1	N/A	1.1	N/A	1.0	1.0	N/A	1049010
Nitrates (N-NO3-)	mg/L	0.02	0.02	<2	<2	<2	<2	2	1045292
Nitrites (N-NO2-)	mg/L	<0.02	0.02	<10	<10	<10	<10	10	1045292
Nitrogen ammonia (N-NH3)	mg/L	<0.02	0.02	0.08	N/A	0.08	0.04	0.02	1046585
Orthophosphate (P)	mg/L	<0.05	0.05	<0.05	N/A	<0.05	<0.05	0.05	1045293
pH	pH	7.84	N/A	7.85	N/A	7.94	7.97	N/A	1045349
Total Organic Carbon	mg/L	5.4	0.2	1.4	N/A	1.4	1.5	0.2	1045793
Alkalinity Total (as CaCO3) pH 4.5	mg/L	210	1	110	N/A	110	110	1	1045351
Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	1	<1	N/A	<1	<1	1	1045351
Bicarbonates (HCO3 as CaCO3)	mg/L	210	1	110	N/A	110	110	1	1045351
Carbonate (CO3 as CaCO3)	mg/L	<1	1	<1	N/A	<1	<1	1	1045351
Chloride (Cl)	mg/L	24	0.05	18000	19000	19000	18000	5	1045311
Hydroxide (OH-)	mg/L	<1	1	<1	N/A	<1	<1	1	1045351
Nitrate (N) and Nitrite(N)	mg/L	0.02	0.02	<10	<10	<10	<10	10	1045311
Sulfates (SO4)	mg/L	13	0.5	2500	2600	2600	2500	50	1045311
Total Dissolved Solids	mg/L	270	10	35000	N/A	34000	35000	10	1045528

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

CONVENTIONAL PARAMETERS (WATER)

Maxxam ID		R95156	R95157	R95157		R95158		
Sampling Date		2012/08/15	2012/08/15	2012/08/15		2012/08/15		
COC Number		8102001	8102001	8102001		8102001		
	Units	**OLD KITCHEN**	**DÉBRIS AREA 6**	**DÉBRIS AREA 6 Lab-Dup**	**RDL**	**DOWNGRADIENT DÉBRIS AREA 04**	**RDL**	**QC Batch**
CONVENTIONALS								
Conductivity	mS/cm	0.16	0.17	0.17	0.001	42	0.001	1045350
Fluoride (F)	mg/L	<0.1	<0.1	<0.1	0.1	0.8	0.1	1045352
Ion Balance	n/a	1.2	1.1	N/A	N/A	0.99	N/A	1049010
Nitrates (N-NO3-)	mg/L	0.03	0.08	N/A	0.02	<2	2	1045292
Nitrites (N-NO2-)	mg/L	<0.02	<0.02	N/A	0.02	<10	10	1045292
Nitrogen ammonia (N-NH3)	mg/L	<0.02	<0.02	N/A	0.02	0.03	0.02	1046585
Orthophosphate (P)	mg/L	<0.05	<0.05	<0.05	0.05	<0.05	0.05	1045293
pH	pH	8.08	7.95	7.83	N/A	7.71	N/A	1045349
Total Organic Carbon	mg/L	3.5	2.4	2.5	0.2	1.7	0.2	1045793
Alkalinity Total (as CaCO3) pH 4.5	mg/L	45	43	44	1	120	1	1045351
Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	<1	<1	1	<1	1	1045351
Bicarbonates (HCO3 as CaCO3)	mg/L	45	43	44	1	120	1	1045351
Carbonate (CO3 as CaCO3)	mg/L	<1	<1	<1	1	<1	1	1045351
Chloride (Cl)	mg/L	14	14	N/A	0.05	16000	5	1045311
Hydroxide (OH-)	mg/L	<1	<1	<1	1	<1	1	1045351
Nitrate (N) and Nitrite(N)	mg/L	0.03	0.08	N/A	0.02	<10	10	1045311
Sulfates (SO4)	mg/L	8.3	14	N/A	0.5	2200	50	1045311
Total Dissolved Solids	mg/L	110	100	N/A	10	30000	10	1045528

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

CONVENTIONAL PARAMETERS (WATER)

Maxxam ID		R95159		R95160		R95161	R95161		
Sampling Date		2012/08/15		2012/08/15		2012/08/15	2012/08/15		
COC Number		8102001		8102001		8102001	8102001		
	Units	**SOURCE DÉBRIS AREA 04**	**RDL**	**UPGRADIENT DÉBRIS AREA 04**	**RDL**	**DUP-01**	**DUP-01 Lab-Dup**	**RDL**	**QC Batch**
CONVENTIONALS									
Conductivity	mS/cm	48	0.001	48	0.001	0.16	N/A	0.001	1045350
Fluoride (F)	mg/L	0.9	0.1	0.9	0.1	0.3	N/A	0.1	1045352
Ion Balance	n/a	1.0	N/A	1.0	N/A	1.2	N/A	N/A	1049010
Nitrates (N-NO3-)	mg/L	<2	2	<2	2	0.05	N/A	0.02	1045292
Nitrites (N-NO2-)	mg/L	<10	10	<20	20	<0.02	N/A	0.02	1045292
Nitrogen ammonia (N-NH3)	mg/L	0.10	0.02	0.08	0.02	<0.02	<0.02	0.02	1046585
Orthophosphate (P)	mg/L	<0.05	0.05	<0.05	0.05	<0.05	N/A	0.05	1045293
pH	pH	7.79	N/A	7.84	N/A	7.91	N/A	N/A	1045349
Total Organic Carbon	mg/L	1.3	0.2	1.4	0.2	3.4	N/A	0.2	1045793
Alkalinity Total (as CaCO3) pH 4.5	mg/L	110	1	110	1	43	N/A	1	1045351
Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	1	<1	1	<1	N/A	1	1045351
Bicarbonates (HCO3 as CaCO3)	mg/L	110	1	110	1	43	N/A	1	1045351
Carbonate (CO3 as CaCO3)	mg/L	<1	1	<1	1	<1	N/A	1	1045351
Chloride (Cl)	mg/L	18000	5	18000	5	14	N/A	0.05	1045311
Hydroxide (OH-)	mg/L	<1	1	<1	1	<1	N/A	1	1045351
Nitrate (N) and Nitrite(N)	mg/L	<10	10	<20	20	0.05	N/A	0.02	1045311
Sulfates (SO4)	mg/L	2500	50	2500	50	8.0	N/A	0.5	1045311
Total Dissolved Solids	mg/L	33000	10	35000	10	170	N/A	10	1045528

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

889 Montée de Liesse, Ville St-Laurent, Québec, Canada H4T 1P5 Tél. : (514) 448-9001 Télécopieur : (514) 448-9199 Ligne sans frais : 1-877-4MAXXAM (462-9926)
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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

CONVENTIONAL PARAMETERS (WATER)

Maxxam ID		R95164		R95165	R95165		R95166		
Sampling Date		2012/08/15		2012/08/15	2012/08/15		2012/08/15		
COC Number		8102001		8102001	8102001		8102001		
	Units	**POTABLE SOURCE**	**RDL**	**LAKE 2**	**LAKE 2 Lab-Dup**	**RDL**	**W OF AST**	**RDL**	**QC Batch**
CONVENTIONALS									
Conductivity	mS/cm	0.27	0.001	0.61	N/A	0.001	0.32	0.001	1045350
Fluoride (F)	mg/L	0.2	0.1	0.2	N/A	0.1	0.2	0.1	1045352
Ion Balance	n/a	1.2	N/A	1.1	N/A	N/A	1.2	N/A	1049010
Nitrates (N-NO3-)	mg/L	0.11	0.02	0.06	N/A	0.02	0.04	0.02	1045292
Nitrites (N-NO2-)	mg/L	<0.02	0.02	<0.04	N/A	0.04	<0.02	0.02	1045292
Nitrogen ammonia (N-NH3)	mg/L	0.03	0.02	<0.02	N/A	0.02	<0.02	0.02	1046585
Orthophosphate (P)	mg/L	<0.05	0.05	<0.05	N/A	0.05	<0.05	0.05	1045293
pH	pH	8.05	N/A	8.20	N/A	N/A	8.37	N/A	1045349
Total Organic Carbon	mg/L	5.7	0.2	3.9	N/A	0.2	5.5	0.2	1045793
Alkalinity Total (as CaCO3) pH 4.5	mg/L	83	1	130	N/A	1	130	1	1045351
Alkalinity (PP as CaCO3) pH 8.3	mg/L	<1	1	<1	N/A	1	2	1	1045351
Bicarbonates (HCO3 as CaCO3)	mg/L	83	1	130	N/A	1	130	1	1045351
Carbonate (CO3 as CaCO3)	mg/L	<1	1	<1	N/A	1	3	1	1045351
Chloride (Cl)	mg/L	17	0.05	91	N/A	0.05	16	0.05	1045311
Hydroxide (OH-)	mg/L	<1	1	<1	N/A	1	<1	1	1045351
Nitrate (N) and Nitrite(N)	mg/L	0.11	0.02	0.06	N/A	0.04	0.04	0.02	1045311
Sulfates (SO4)	mg/L	10	0.5	22	N/A	0.5	8.5	0.5	1045311
Total Dissolved Solids	mg/L	140	10	330	330	10	180	10	1045528

N/A = Not Applicable
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QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

CONVENTIONAL PARAMETERS (WATER)

Maxxam ID		R95167	R95168	R95169	R95169		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001		
	Units	**HOUSE FOOTING**	**LAKE 3**	**DUP-02**	**DUP-02 Lab-Dup**	**RDL**	**QC Batch**
CONVENTIONALS							
Conductivity	mS/cm	0.42	0.30	0.24	0.24	0.001	1045350
Fluoride (F)	mg/L	0.2	0.2	0.2	0.2	0.1	1045352
Ion Balance	n/a	1.2	1.2	1.2	N/A	N/A	1049010
Nitrates (N-NO3-)	mg/L	0.03	<0.02	0.05	N/A	0.02	1045292
Nitrites (N-NO2-)	mg/L	<0.02	<0.02	<0.02	N/A	0.02	1045292
Nitrogen ammonia (N-NH3)	mg/L	<0.02	<0.02	0.02	N/A	0.02	1046585
Orthophosphate (P)	mg/L	<0.05	<0.05	<0.05	N/A	0.05	1045293
pH	pH	8.33	8.24	8.14	8.09	N/A	1045349
Total Organic Carbon	mg/L	5.5	4.8	5.7	N/A	0.2	1045793
Alkalinity Total (as CaCO3) pH 4.5	mg/L	170	110	74	80	1	1045351
Alkalinity (PP as CaCO3) pH 8.3	mg/L	1	<1	<1	<1	1	1045351
Bicarbonates (HCO3 as CaCO3)	mg/L	170	110	74	80	1	1045351
Carbonate (CO3 as CaCO3)	mg/L	3	<1	<1	<1	1	1045351
Chloride (Cl)	mg/L	21	17	18	N/A	0.05	1045311
Hydroxide (OH-)	mg/L	<1	<1	<1	<1	1	1045351
Nitrate (N) and Nitrite(N)	mg/L	0.03	<0.02	0.05	N/A	0.02	1045311
Sulfates (SO4)	mg/L	11	11	11	N/A	0.5	1045311
Total Dissolved Solids	mg/L	240	160	140	N/A	10	1045528

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

PCB CONGENERS (WATER)

Maxxam ID		R95152	R95153	R95154	R95155	R95156		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**SHED**	**U/G DÉBRIS AREA 1**	**SOURCE DÉBRIS AREA 1**	**D/G DÉBRIS AREA 1**	**OLD KITCHEN**	**RDL**	**QC Batch**
PCB								
Total PCB	ug/L	<0.012	0.016	0.013	<0.012	<0.012	0.012	1045568
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	88	88	89	89	91	N/A	1045568
2',3,5-Trichlorobiphenyl	%	85	87	83	85	88	N/A	1045568
22'33'44'566'-Nonachlorobiphenyl	%	102	108	106	104	110	N/A	1045568

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		R95157	R95158	R95159		R95160		
Sampling Date		2012/08/15	2012/08/15	2012/08/15		2012/08/15		
COC Number		8102001	8102001	8102001		8102001		
	Units	**DÉBRIS AREA 6**	**DOWNGRADIENT DÉBRIS AREA 04**	**SOURCE DÉBRIS AREA 04**	**QC Batch**	**UPGRADIENT DÉBRIS AREA 04**	**RDL**	**QC Batch**
PCB								
Total PCB	ug/L	<0.012	0.018	<0.012	1045568	<0.012	0.012	1045566
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	84	85	86	1045568	92	N/A	1045566
2',3,5-Trichlorobiphenyl	%	80	82	81	1045568	81	N/A	1045566
22'33'44'566'-Nonachlorobiphenyl	%	100	103	102	1045568	102	N/A	1045566

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

PCB CONGENERS (WATER)

Maxxam ID		R95161	R95164	R95165	R95166	R95167		
Sampling Date		2012/08/15	2012/08/15	2012/08/15	2012/08/15	2012/08/15		
COC Number		8102001	8102001	8102001	8102001	8102001		
	Units	**DUP-01**	**POTABLE SOURCE**	**LAKE 2**	**W OF AST**	**HOUSE FOOTING**	**RDL**	**QC Batch**
PCB								
Total PCB	ug/L	<0.012	<0.012	<0.012	<0.012	<0.012	0.012	1045566
Surrogate Recovery (%)								
2,3,3',4,6-Pentachlorobiphenyl	%	117	64	93	95	95	N/A	1045566
2',3,5-Trichlorobiphenyl	%	102	60	87	87	86	N/A	1045566
22'33'44'566'-Nonachlorobiphenyl	%	134 (1)	74	106	108	106	N/A	1045566

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Recovery or relative percent difference (RPD) for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria

Maxxam ID		R95168	R95169		
Sampling Date		2012/08/15	2012/08/15		
COC Number		8102001	8102001		
	Units	**LAKE 3**	**DUP-02**	**RDL**	**QC Batch**
PCB					
Total PCB	ug/L	<0.012	<0.012	0.012	1045566
Surrogate Recovery (%)					
2,3,3',4,6-Pentachlorobiphenyl	%	94	90	N/A	1045566
2',3,5-Trichlorobiphenyl	%	85	82	N/A	1045566
22'33'44'566'-Nonachlorobiphenyl	%	104	102	N/A	1045566

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B244975
Report Date: 2012/10/11

EBA ENGINEERING CONSULTANTS LTD.
Client Project #: 42201291
Site Location: NOTTINGHAM PHASE III ESA
Sampler Initials: R

GENERAL COMMENTS

Condition of sample(s) upon receipt: GOOD except for the following:
Petroleum Hydrocarbons (F2-F4): Arrived unpreserved, preserved upon reception at the laboratory.: R95152, R95153, R95154, R95155, R95156, R95157, R95158, R95159, R95160, R95161, R95164, R95165, R95166, R95167, R95168, R95169
Metals: Arrived unpreserved, preserved upon reception at the laboratory.: R95152, R95153, R95154, R95155, R95156, R95157, R95158, R95159, R95160, R95161, R95164, R95165, R95166, R95167, R95168, R95169
Ammonia Nitrogen: Arrived unpreserved, preserved upon reception at the laboratory.: R95152, R95153, R95154, R95155, R95156, R95157, R95158, R95159, R95160, R95161, R95164, R95165, R95166, R95167, R95168, R95169
pH: Holding time already past.: R95152, R95153, R95154, R95155, R95156, R95157, R95158, R95159, R95160, R95161, R95164, R95165, R95166, R95167, R95168, R95169
Petroleum Hydro. CCME F1 & BTEX: Incorrect container: R95152, R95153, R95154, R95155, R95156, R95157, R95158, R95159, R95160, R95161, R95164, R95165, R95166, R95167, R95168, R95169

PETROLEUM HYDROCARBONS (CCME)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

Note: The results for the totals are rounded off to two significant figures.

Volatile results were corrected for the instrument blank.

Please note that samples were analysed by Headspace GC/MS-FID

HYDROCARBONS BY GCFID (WATER)

Please note that the results have not been corrected for QC recoveries (spiked blank and surrogates). Please note that the results have not been corrected for the method blank.

METALS (WATER)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.

Reported detection limits are multiplied by dilution factors used for sample analysis.

TOTAL EXTRACTABLE METALS (WATER)

Please note that the results have not been corrected for QC recoveries nor for the method blank results.
Reported detection limits are multiplied by dilution factors used for sample analysis.

CONVENTIONAL PARAMETERS (WATER)

Veuillez noter que les résultats n'ont pas été corrigés ni pour la récupération des échantillons de contrôle qualité, ni pour le blanc de méthode.
Reported detection limits are multiplied by dilution factors used for sample analysis.

PCB CONGENERS (WATER)

Please note that the results have not been corrected for QC recovery (spiked blank) nor for the method blank. The results have been corrected for the percent surrogate recoveries.

Results relate only to the items tested.

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #: 42201291
P.O. #:
Site Location: NOTTINGHAM PHASE III ESA

Quality Assurance Report

Maxxam Job Number: B244975

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1045292	AL8	Spiked Blank	Nitrates (N-NO3-)	2012/08/17		101	%
			Nitrites (N-NO2-)	2012/08/17		103	%
		Method Blank	Nitrates (N-NO3-)	2012/08/17	<0.02		mg/L
			Nitrites (N-NO2-)	2012/08/17	<0.02		mg/L
1045293	DKH	Spiked Blank	Orthophosphate (P)	2012/08/17		95	%
		Method Blank	Orthophosphate (P)	2012/08/17	<0.05		mg/L
1045311	AL8	Spiked Blank	Chloride (Cl)	2012/08/17		99	%
			Nitrate (N) and Nitrite(N)	2012/08/17		102	%
			Sulfates (SO4)	2012/08/17		100	%
		Method Blank	Chloride (Cl)	2012/08/17	<0.05		mg/L
			Nitrate (N) and Nitrite(N)	2012/08/17	<0.02		mg/L
			Sulfates (SO4)	2012/08/17	<0.5		mg/L
1045349	AL8	Spiked Blank	pH	2012/08/17		101	%
1045350	AL8	Spiked Blank	Conductivity	2012/08/17		105	%
		Method Blank	Conductivity	2012/08/17	<0.001		mS/cm
1045351	AL8	Spiked Blank	Alkalinity Total (as CaCO3) pH 4.5	2012/08/17		99	%
		Method Blank	Alkalinity Total (as CaCO3) pH 4.5	2012/08/17	<1		mg/L
			Alkalinity (PP as CaCO3) pH 8.3	2012/08/17	<1		mg/L
			Bicarbonates (HCO3 as CaCO3)	2012/08/17	<1		mg/L
			Carbonate (CO3 as CaCO3)	2012/08/17	<1		mg/L
			Hydroxide (OH-)	2012/08/17	<1		mg/L
1045352	AL8	Spiked Blank	Fluoride (F)	2012/08/17		109	%
		Method Blank	Fluoride (F)	2012/08/17	<0.1		mg/L
1045528	ON1	Spiked Blank	Total Dissolved Solids	2012/08/20		99	%
		Spiked Blank DUP	Total Dissolved Solids	2012/08/20		100	%
		Method Blank	Total Dissolved Solids	2012/08/20	<10		mg/L
1045566	CB5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/21		84	%
			2',3,5-Trichlorobiphenyl	2012/08/21		84	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/21		106	%
			Total PCB	2012/08/21		104	%
		Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/21		87	%
			2',3,5-Trichlorobiphenyl	2012/08/21		82	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/21		103	%
			Total PCB	2012/08/21	<0.012		ug/L
1045568	CB5	Spiked Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/20		95	%
			2',3,5-Trichlorobiphenyl	2012/08/20		89	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/20		107	%
			Total PCB	2012/08/20		102	%
		Method Blank	2,3,3',4,6-Pentachlorobiphenyl	2012/08/20		90	%
			2',3,5-Trichlorobiphenyl	2012/08/20		87	%
			22'33'44'566'-Nonachlorobiphenyl	2012/08/20		106	%
			Total PCB	2012/08/20	<0.012		ug/L
1045793	AL8	QC Standard	Total Organic Carbon	2012/08/20		101	%
		Spiked Blank	Total Organic Carbon	2012/08/20		101	%
		Method Blank	Total Organic Carbon	2012/08/20	<0.2		mg/L
1045836	ST1	Spiked Blank	1,4-Difluorobenzene	2012/08/20		95	%
			4-Bromofluorobenzene	2012/08/20		101	%
			D10-Ethylbenzene	2012/08/20		108	%
			D4-1,2-Dichloroethane	2012/08/20		98	%
			Benzene	2012/08/20		93	%
			Toluene	2012/08/20		100	%
			Ethylbenzene	2012/08/20		101	%
			p+m-Xylene	2012/08/20		101	%
			o-Xylene	2012/08/20		105	%
			Total_Xylenes	2012/08/20		103	%

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Attention: Rory Farrell
Client Project #: 42201291
P.O. #:
Site Location: NOTTINGHAM PHASE III ESA

Quality Assurance Report (Continued)

Maxxam Job Number: B244975

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1045836	ST1	Spiked Blank	F1 (C6-C10)	2012/08/20		90	%
		Method Blank	1,4-Difluorobenzene	2012/08/20		95	%
			4-Bromofluorobenzene	2012/08/20		101	%
			D10-Ethylbenzene	2012/08/20		109	%
			D4-1,2-Dichloroethane	2012/08/20		100	%
			Benzene	2012/08/20	<0.4		ug/L
			Toluene	2012/08/20	<0.4		ug/L
			Ethylbenzene	2012/08/20	<0.4		ug/L
			p+m-Xylene	2012/08/20	<0.8		ug/L
			o-Xylene	2012/08/20	<0.4		ug/L
			Total_Xylenes	2012/08/20	<0.8		ug/L
			F1 (C6-C10)	2012/08/20	<100		ug/L
			F1 (C6-C10) - BTEX	2012/08/20	<100		ug/L
1046585	DKH	Spiked Blank	Nitrogen ammonia (N-NH3)	2012/08/22		95	%
		Method Blank	Nitrogen ammonia (N-NH3)	2012/08/22	<0.02		mg/L
1046767	KQ	Spiked Blank	Aluminum (Al)	2012/08/22		83	%
			Antimony (Sb)	2012/08/22		105	%
			Silver (Ag)	2012/08/22		100	%
			Arsenic (As)	2012/08/22		99	%
			Barium (Ba)	2012/08/22		100	%
			Cadmium (Cd)	2012/08/22		99	%
			Chromium (Cr)	2012/08/22		99	%
			Cobalt (Co)	2012/08/22		92	%
			Copper (Cu)	2012/08/22		92	%
			Manganese (Mn)	2012/08/22		100	%
			Molybdenum (Mo)	2012/08/22		103	%
			Nickel (Ni)	2012/08/22		89	%
			Sodium (Na)	2012/08/22		102	%
			Zinc (Zn)	2012/08/22		94	%
			Boron (B)	2012/08/22		100	%
			Iron (Fe)	2012/08/22		97	%
			Magnesium (Mg)	2012/08/22		96	%
			Lithium (Li)	2012/08/22		89	%
			Potassium (K)	2012/08/22		98	%
			Selenium (Se)	2012/08/22		95	%
			Strontium (Sr)	2012/08/22		99	%
			Tin (Sn)	2012/08/22		105	%
			Titanium (Ti)	2012/08/22		98	%
			Vanadium (V)	2012/08/22		98	%
			Beryllium (Be)	2012/08/22		92	%
			Bismuth (Bi)	2012/08/22		91	%
			Calcium (Ca)	2012/08/22		87	%
			Lead (Pb)	2012/08/22		90	%
			Thallium (Tl)	2012/08/22		91	%
		Method Blank	Aluminum (Al)	2012/08/22	<10		ug/L
			Antimony (Sb)	2012/08/22	<10		ug/L
			Silver (Ag)	2012/08/22	<1.0		ug/L
			Arsenic (As)	2012/08/22	<1.0		ug/L
			Barium (Ba)	2012/08/22	<20		ug/L
			Cadmium (Cd)	2012/08/22	<0.30		ug/L
			Chromium (Cr)	2012/08/22	<5.0		ug/L
			Cobalt (Co)	2012/08/22	<5.0		ug/L
			Copper (Cu)	2012/08/22	<2.0		ug/L
			Manganese (Mn)	2012/08/22	<4.0		ug/L
			Molybdenum (Mo)	2012/08/22	<5.0		ug/L

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EBA ENGINEERING CONSULTANTS LTD.
Attention: Rory Farrell
Client Project #: 42201291
P.O. #:
Site Location: NOTTINGHAM PHASE III ESA

Quality Assurance Report (Continued)

Maxxam Job Number: B244975

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units
1046767	KQ	Method Blank	Nickel (Ni)	2012/08/22	<2.0		ug/L
			Sodium (Na)	2012/08/22	<500		ug/L
			Zinc (Zn)	2012/08/22	<7.0		ug/L
			Boron (B)	2012/08/22	<50		ug/L
			Iron (Fe)	2012/08/22	<60		ug/L
			Magnesium (Mg)	2012/08/22	<500		ug/L
			Lithium (Li)	2012/08/22	<100		ug/L
			Potassium (K)	2012/08/22	<500		ug/L
			Selenium (Se)	2012/08/22	<10		ug/L
			Strontium (Sr)	2012/08/22	<20		ug/L
			Tin (Sn)	2012/08/22	<20		ug/L
			Titanium (Ti)	2012/08/22	<10		ug/L
			Vanadium (V)	2012/08/22	<20		ug/L
			Beryllium (Be)	2012/08/22	<5.0		ug/L
			Bismuth (Bi)	2012/08/22	<2.5		ug/L
			Calcium (Ca)	2012/08/22	<500		ug/L
			Lead (Pb)	2012/08/22	<1.0		ug/L
			Thallium (Tl)	2012/08/22	<20		ug/L
1046957	NC1	Spiked Blank	O-Terphenyl	2012/08/24		113	%
		Spiked Blank DUP	O-Terphenyl	2012/08/24		112	%
		Spiked Blank DUP 2	O-Terphenyl	2012/08/24		103	%
		Spiked Blank	Petroleum Hydrocarbons F2:C10-C16	2012/08/24		117	%
		Spiked Blank DUP	Petroleum Hydrocarbons F2:C10-C16	2012/08/24		115	%
		Spiked Blank DUP 2	Petroleum Hydrocarbons F2:C10-C16	2012/08/24		113	%
		Method Blank	O-Terphenyl	2012/08/24		102	%
			Petroleum Hydrocarbons F2:C10-C16	2012/08/24	<100		ug/L
1047583	JS2	QC Standard	Manganese (Mn)	2012/08/23		100	%
			Iron (Fe)	2012/08/23		103	%
		Spiked Blank	Manganese (Mn)	2012/08/23		102	%
			Sodium (Na)	2012/08/23		100	%
			Iron (Fe)	2012/08/23		99	%
			Magnesium (Mg)	2012/08/23		97	%
			Potassium (K)	2012/08/23		97	%
			Calcium (Ca)	2012/08/23		100	%
		Method Blank	Total Hardness (CaCO3)	2012/08/23	<1		mg/L
			Manganese (Mn)	2012/08/23	<0.003		mg/L
			Sodium (Na)	2012/08/23	<0.2		mg/L
			Iron (Fe)	2012/08/23	<0.1		mg/L
			Magnesium (Mg)	2012/08/23	<0.2		mg/L
			Potassium (K)	2012/08/23	<0.2		mg/L
			Calcium (Ca)	2012/08/23	<0.5		mg/L
1051855	MA3	Spiked Blank	Mercury (Hg)	2012/09/05		102	%
		Method Blank	Mercury (Hg)	2012/09/05	<0.00001		mg/L

QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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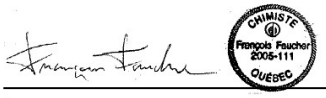
Validation Signature Page

Maxxam Job #: B244975

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

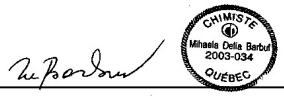
Alexandre Lemire, M.Sc., Analyst 2

Kathie Quevillon, B.Sc., Chemist

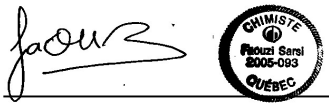


Francois Faucher, B.Sc., Chemist

Abdeslam Siaida, Analyst II



Delia Barbul, B.Sc., Chemist



Faouzi Sarsi, B.Sc. Chemist

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Maxxam Job #: B244975

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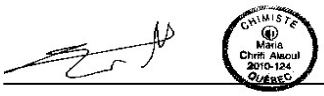
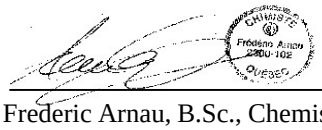
Madina Hamrouni, B.Sc., Chemist



Maria Chrifi Alaoui, B.Sc., Chemist



Frederic Arnau, B.Sc., Chemist

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Analytics International Corporation o/a Maxxam Analytique
889, montée de Liesse, Saint-Laurent, Quebec Canada H4T 1P5 Tel:(514) 448-9001 Toll-free:1-877-462-9926 Fax:(514)-448-9199 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:

Company Name: #3922 EBA ENGINEERING CONSULTANTS LTD.
Contact Name: ~~Michele Crawford~~ Rory FARRELL
Address: 14940- 123 avenue
Edmonton AB T5V 1B4
Phone: ~~(780)293-2091~~ 780 777 5463 Fax:
Email: ~~mcrawford@eba.ca~~ rfarrell@eba.ca

REPORT INFORMATION (if differs from invoice):

Company Name: EBA
Contact Name: Rory FARRELL
Address: AS ACROSS
Phone: 780 777 5463 Fax:
Email: rfarrell@eba.ca

PROJECT INFORMATION:

Quotation #:
P.O. #:
Project #: NOTTINGHAM PHASE III ESA
Project Name: 42201291
Site #:
Sampled By: Rory - F

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 81020
CHAIN OF CUSTODY #: C#81020-01-01
PROJECT MANAGER: Argyro Frangoulis

REGULATORY CRITERIA:

- Politique
- Solid Waste Reg.
- Hazardous Material Reg.
- REIMR
- Continuous Groundwater Sampling for Potability: 24h (Art. 6.1&6.2), 48h (Art. 6.2), 72h (Art. 6.1&6.2)
- BY-LAW 87 MUC: Domestic Sewer Art. 10, Storm Sewer Art. 11
- Pulp & Paper Regulation (Art. 104)
- Pulp & Paper Regulation (Art. 112)
- Quality of Quebec Drinking Water: Municipal, Non-municipal
- Other (specify)

SPECIAL INSTRUCTIONS

RECEIVED NO VIALS SO COULD ONLY USE BOTTLES PROVIDED. PLEASE TRY AND DO AS MANY TESTS OF NAMED TESTS AS POSSIBLE. RORY

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
[X]

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____ [ ]

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX/F1-F2 PHCs	Routine	Total Metals (Cone) FWM	PCB's	pH	Total Organic Carbon	# of Bottles	Comments
1		SHED	15 AUG 2012		WATER	N	N	X	X	X	X	X	X	2 GLASS 1 ROUTINE 1 PLASTIC	=4 TOTAL BOTTLES
2		DEBRIS U/G AREA 1				N	N								
3		DEBRIS SOURCE AREA 1				N	N								
4		DEBRIS D/G AREA 1				N	N								
5		OLD KITCHEN				N	N								
6		DEBRIS AREA 6				N	N								
7		DEBRIS DOWNGRADIENT AREA 04				N	N								
8		DEBRIS SOURCE AREA 04				N	N								
9		DEBRIS UPGRADIENT AREA 04				N	N								
10		DUP - 01				N	N								

17-Aug-12 09:30
Argyro Frangoulis
B244975
JP5 MTL-0050

REÇU LO 17 AOUT 2012 Rép 9h30

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
~~Rory~~ Rory FARRELL	16 AUG 2012	8am.				

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	2,2,1,2 / 20,20,18	[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

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889, montée de Liesse, Saint-Laurent, Quebec Canada H4T 1P5 Tel:(514) 448-9001 Toll-free:1-877-462-9926 Fax:(514)-448-9199 www.maxxam.ca

CHAIN OF CUSTODY RECORD

INVOICE INFORMATION:

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Address: 14940- 123 avenue
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Email: rfarrell@eba.ca

PROJECT INFORMATION:

Quotation #:
P.O. #:
Project #: NOTTINGHAM PHASE III EDA
Project Name: 422101291
Site #:
Sampled By: RORY-F

Laboratory Use Only:

MAXXAM JOB #:
BOTTLE ORDER #: 81020
CHAIN OF CUSTODY #: C#B1020-01-01
PROJECT MANAGER: Argyro Frangoulis

REGULATORY CRITERIA:

- ☐ Politique
- ☐ Solid Waste Reg.
- ☐ Hazardous Material Reg.
- ☐ REIMR
- Continuous Groundwater Sampling for Potability: ☐ 24h (Art. 6.1&6.2) ☐ 48h (Art. 6.2) ☐ 72h (Art. 6.1&6.2)
- BY-LAW 87 MUC: ☐ Domestic Sewer Art. 10 ☐ Storm Sewer Art. 11
- Quality of Quebec Drinking Water: ☐ Municipal ☐ Non-municipal
- ☐ Pulp & Paper Regulation (Art. 104)
- ☐ Pulp & Paper Regulation (Art. 112)
- Other (specify) _____

SPECIAL INSTRUCTIONS

RECEIVED NO VIALS SO USED ONLY BOTTLES AVAILABLE. LET ME KNOW WHAT OF BELOW TESTS CAN BE DONE.

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

RORY

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (Please be specific):

TURNAROUND TIME (TAT) REQUIRED:

PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: _____ Time Required: _____

Please note that all samples received after 15:00 will be considered as received the following working day at 9:00.

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	BTEX/F1-F2 PHCs	ROUTINE	TOTAL METALS (FINAL CCME)	PCB's	pH	TOTAL ORGANIC CARBON	# of Bottles	Comments
1		POTABLE SOURCE	15 AUG 2012		WATER	N	N	X	X	X	X	X	X	4	(2 GLASS, 1 ROUTINE, 1 PLASTIC)
2		LAKE 2	↓	↓	↓	N	N	↓	↓	↓	↓	↓	↓	↓	
3		W of AST				N	N								
4		HOUSE FOOTING				N	N								
5		LAKE 3				N	N								
6		DUP - 02	↓		↓	N	N	↓	↓	↓	↓	↓	↓		
7															
8															
9															
10														↓	

REC
17 AOUT 2012
Rè 09h30

*RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time:	# Jars Used and Not Submitted
RORY FARRELL	16 AUG 2012	8 am				

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
☐	20,21,21 / 20,20,19	☑ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

(2012/10/11 15:23

APPENDIX E

PHASE III ESA TESTPITS LOGS

TESTPIT LOGS FOR 2012 SAMPLING PROGRAM

APEC ID	Testpit ID	Depth m	PID (ppm)	Soil Description
Background Sampling	BG-1	0-0.2	-	Silty clay with cobbles and pebbles, grey, moist with medium plasticity
	BG-2	0-0.2	-	Sand/Silt-moist brown with some gravel, non plastic
	BG-3	0-0.15	-	very fine sand/silt, wet, brown, non plastic
	BG-4	0-0.1	-	Coarse sand with pebbles and some silt, brown organic layer top 0.05m
	BG-5	0-0.15	-	medium sand with some silt, some rounded gravel, brown organic layer top 0.03m
	BG-6	0-0.1	-	Medium sand with some pebbles, grey, wet, non plastic
	BG-7	0-0.15	-	Coarse sand with pebbles, brown moist, organic layer top 0.03m
	BG-8	0-0.15	-	Medium coarse sand with pebbles, brown grey, moist, loose, non plastic, organic layer top 0.04m
	BG-9	0-0.1	-	Medium coarse sand with some pebbles and gravel, brown
	BG-10	0-0.15	-	Very fine sand with pebbles and gravel, brown grey, moist, loose, medium plasticity, organic layer top 0.03m
APEC 1	SB-36	0-0.1	-	Organic rich humus with some calcareous sand interdispersed throughout
		0.1-0.35	13.5	Calcareous sand with some gravel and pebbles, brown grey, dry, loose, no odour
	SB-37	0-0.05	-	Rich, organic humus layer
		0.05-0.1	-	Organic rich humus with some calcareous sand interdispersed throughout
		0.1-0.25	30.5	Calcareous sand with gravel and pebbles, water intursion at termination, sheen noted on water surface
	SB-38	0-0.05	-	Rich, organic humus layer
		0.05-0.15	-	Organic layer with some silt, loose, black, no odour
		0.15-0.25	5.4	Clay with some silt, grey, stiff, moist, no odour
	SB-39	0-0.05	-	Rich, organic humus layer
		0.05-0.1	-	Gravel with some coarse sand, grey, wet, loose
		0.1-0.15	-	Silt and organic layer, some old rooting
		0.15-0.3	18.5	Calcareous sand with some gravel and pebbles, water at termination (0.3m)
APEC 3	SB-43	0-0.05	-	Rich, organic humus layer
		0.05-0.35	4.5	Calcareous sand with gravel and pebbles, brown, loose, no odour
	SB-44	0-0.1	-	Rich, organic humus layer
		0.1-0.4	25.1	Organic layer and sand, black, wet, loose, PHC odour, water noted at termination (0.35-0.4)
	SB-45	0-0.05	-	Rich, organic humus layer
		0.05-0.25	65.6	Medium/coarse sand with pebbles and gravel, brown grey, loose, water at termination, PHC odour
	SB-46	0-0.08	-	Rich, organic humus layer
		0.08-0.35	4.1	Medium coarse sand with some pebbles and gravel occasional cobbles, grey brown, wet, loose, no odour
	SB-47	0-0.05	-	Rich, organic humus layer
		0.05-0.1	-	Organic and sand with some pebbles and gravel, black
		0.1-0.15	6.1	Calcareous sand with gravel and pebbles, brown, wet, cobbles at refusal, water, no odour

TESTPIT LOGS FOR 2012 SAMPLING PROGRAM

APEC ID	Testpit ID	Depth m	PID (ppm)	Soil Description
APEC 4	SB-40	0-0.05	-	Rich, organic humus layer
		0.05-0.1	19.9	Coarse sand with some organics, brown, moist, refusal at cobbles
	SB-41	0-0.05	-	Rich, organic humus layer
		0.05-0.15	9.3	Calcareous sand with some mottling, brown, dry, loose, PHC odour, refusal at cobbles
	SB-42	0-0.05	-	Rich, organic humus layer
		0.05-0.15	16.5	Calcareous sand with some gravel and pebbles, brown, no odour
APEC 7	SB-50	0-0.05	-	Rich, organic humus layer
		0.05-0.15	4.7	Medium coarse sand with pebbles and gravel, brown grey, loose, cobbles at refusal
	SB-51	0-0.05	-	Rich, organic humus layer
		0.05-0.15	4	Medium coarse sand with pebbles and gravel, brown grey, loose, cobbles at refusal
	SB-52	0-0.05	-	Rich, organic humus layer
		0.05-0.15	10.5	Medium coarse sand with pebbles and gravel, brown grey, loose, cobbles at refusal
APEC 8	SB-48	0-0.1	-	Rich, organic humus layer
		0.1-0.15	3.5	Calcareous sand with pebbles and gravel, grey brown, wet, loose, cobbles at termination
	SB-49	0-0.08	-	Organic layer humus rich, some silt
		0.08-0.15	-	Clay with some silt, grey, wet, soft, pooling water on surface of clay
APEC 9	SB-20	0-0.03	-	Rich, organic humus layer
		0.03-0.20	12.7	Calcareous sand with some pebbles, brown, loose, refusal at rock
	SB-21	0-0.03	-	Rich, organic humus layer
		0.03-0.2	8	Calcareous sand with pebbles and gravel, dry, loose, brown grey no odour
	SB-22	0-0.04	-	Rich, organic humus layer
		0.04-0.24	5.6	Calcareous sand with some silt, organics mixed evenly, well sorted, moist, brown black, no odour
	SB-23	0-0.02	-	Rich, organic humus layer
		0.02-0.08	-	Organic layer poorly sorted with calcareous sand and gravel
		0.08-0.13	5.4	Calcareous sand with gravel, refusal at cobbles, no odour

TESTPIT LOGS FOR 2012 SAMPLING PROGRAM

APEC ID	Testpit ID	Depth m	PID (ppm)	Soil Description
APEC 10	SB-13	0-0.03	-	Rich, organic humus layer
		0.03-0.08	17.3	Calcareous sand with some pebbles, no odour, refusal at cobbles
	SB-14	0-0.03	-	Rich, organic humus layer
		0.03-0.08	15.1	Calcareous sand with some pebbles, no odour refusal at cobbles
	SB-15	0-0.03	-	Organic layer humus rich, PHC staining on surface from oil filters
		0.03-0.08	16.7	Calcareous sand with some pebbles, no odour, refusal at cobbles
	SB-16	0-0.05	-	Rich, organic humus layer
		0-05-0.17	0.1	Calcareous sand with gravel, brown grey, moist, no odour
	SB-18	0-0.08	-	Rich, organic humus layer
		0.08-0.13	-	Silt with some pebbles
		0.13-0.3	18	Clay with some silt, dry, very stiff, very plastic, refusal (frozen) at 30cm
	SB-19	0-0.02	-	Rich, organic humus layer
		0.02-0.2	14.2	Calcareous sand with some gravel, brown, loose, dry, PHC odour
APEC 11/12	SB-06	0-0.5	-	Rich, organic humus layer
		0.05-0.15	11.1	Calcareous sand with some silt with pebbles and gravel, wet, non plastic, no odour
	SB-07	0-0.06	-	Rich, organic humus layer
		0.06-0.16	154	Calcareous sand with some silt with pebbles and gravel, wet, non plastic, PHC odour
	SB-08	0-0.06	-	Rich, organic humus layer
		0.06-0.18	65	Calcareous sand with some silt, pebbles and gravel, brown, wet, non plastic, PHC odour
	SB-09	0-0.05	-	Rich, organic humus layer
		0.05-0.15	109	Calcareous sand and silt with some gravel and pebbles, brown, wet, PHC odour
	SB-10	0-0.05	-	Rich, organic humus layer
		0.05-0.1	24.2	Calcareous sand and silt with some gravel and pebbles, brown, wet, no odour
	SB-57	0-0.2	-	Rich, organic humus layer
		0.2-0.25	45.3	Calcareous sand and silt with some rounded pebbles and gravel, brown, very wet, water at termination, loose
	SB-58	0-0.08		Rich, organic humus layer
		0.08-0.2	13.4	Sand with some pebbles and rounded gravel, grey, loose, PHC odour, water filled excavation
	SB-59	0-0.1	-	Black sand, potential PAHs (creosote or coal)
		0.1-0.25	11.3	Sand with some pebbles, grey, very wet, water filled hole upon completion, PHC odour
	SB-60	0-0.05	-	Rich, organic humus layer
		0.05-0.15	-	Black gravel with clay chimney bricks
		0.15-0.25	106	Sand with some pebbles, grey, wet, loose, water filled excavation
	SB-61	0-0.05	-	Rich, organic humus layer
		0.05-0.1	-	Sand with some pebbles and clay, brick debris
		0.1-0.25	6.9	Sand with some gravel and pebbles, grey, very wet
	SB-62	0-0.03	-	Rich, organic humus layer
		0.03-0.1	-	Sand with pebbles and gravel, brown
		0.1-0.13	-	Band of organics, brown
		0.13-0.25	57.7	Sand with some pebbles and gravel

TESTPIT LOGS FOR 2012 SAMPLING PROGRAM

APEC ID	Testpit ID	Depth m	PID (ppm)	Soil Description
APEC 13	SB-03	0-0.04	-	Rich, organic humus layer
		0.04-0.08	48	Medium coarse calcareous sand, refusal at bedrock
	SB-04	0-0.04	-	Rich, organic humus layer
		0.04-0.06	-	Sand silt, grey, moist, loose, non plastic
		0.06-0.5	18.9	medium coarse calcareous sand, refusal at bedrock
	SB-05	0-0.04	-	Rich, organic humus layer
		0.04-0.06	-	Sand silt, grey, moist, loose, non plastic
		0.06-0.08	9.9	Medium coarse calcareous sand, brown, refusal at bedrock
	SB-55	0-0.08	-	Rich, organic humus layer
		0.08-0.15	6.8	Sand with some pebbles and rounded gravel, brown, wet, loose, no odour
APEC 14	SB-24	0-0.07	-	Rich, organic humus layer
		0.07-0.20	10.3	Calcareous sand with some pebbles and gravel, brown grey, wet, loose, non plastic, PHC odour
	SB-25	0-0.07	-	Rich, organic humus layer
		0.07-20	79.9	Calcareous sand with some pebbles and gravel, brown grey, loose, wet, PHC odour
	SB-26	0-0.05	-	Rich, organic humus layer
		0.05-0.45	13.4	Calcareous sand with pebbles, brown grey, wet, loose, non plastic, no odour, large cobbles at refusal
	SB-27	0-0.04	-	Rich, organic humus layer
		0.04-0.3	186	Calcareous sand with pebbles and gravel, brown grey, wet and poorly drained with pooling water at termination, PHC odour
	SB-28	0-0.05	-	Rich, organic humus layer
		0.05-0.35	9.2	Calcareous sand with gravel, brown, loose, non plastic, no odour
	SB-29	0-0.04	-	Rich, organic humus layer
		0.04-0.2	-	Calcareous sand with some gravel and pebbles, brown grey, PHC odour
		0.2-0.3	35.5	Clay with some silt, wet, grey, medium stiff, no odour
	SB-30	0-0.04	-	Rich, organic humus layer
		0.04-0.3	19.9	Fine medium sand, brown grey, dry, loose, no odour, large cobble at refusal
	SB-31	0-0.02	-	Rich, organic humus layer
		0.02-0.35	16.4	Calcareous sand with some pebbbles and gravel, loose, brown grey, non plastic, cobbles at refusal, no odour
	SB-33	0-0.05	-	Rich, organic humus layer
		0.05-0.25	-	Calcareous sand, brown, dry loose, non plastic
		0.25-0.35	-	Calcareous sand with some gravel, wet, PHC odour at water level (~0.3m), refusal at 0.35m

TESTPIT LOGS FOR 2012 SAMPLING PROGRAM

APEC ID	Testpit ID	Depth m	PID (ppm)	Soil Description
APEC 16	SB-01	0-0.05	-	Rich, organic humus layer
		0.05-0.15	36	Calcareous sand, brown, loose, non plastic, no odour, refusal at cobbles
	SB-02	0-0.4	-	Rich, organic humus layer
		0.04-0.12	9.9	Calcareous sand with clay, brown medium, moist, no odour, refusal at cobbles
	SB-53	0-0.06	-	Rich, organic humus layer
		0.06-0.20	13.4	Clay with some silt, grey, moist, soft, no odour
	SB-54	0-0.1	-	Rich, organic humus layer
		0.1-0.25	5.5	Calcareous sand with some pebbles and gravel, brown, moist, loose, no odour
	SB-56	0-0.15	-	Rich, organic humus layer
		0.15-0.2	13.8	Sand with some pebbles and rounded gravel, brown, very wet, loose, no odour, cobbles at refusal
APEC 17	SB-12	0-0.05	-	Rich, organic humus layer
		0.05-0.15	37.2	Calcareous sand with pebbles and gravel with some silt, wet, non plastic
	SB-17	0-0.03	-	Rich, organic humus layer
		0-03-0.18	6.1	Calcareous sand brwon, loose, moist, no odour
APEC 18	SB-32	0-0.05	-	Rich, organic humus layer
		0.05-0.25	23.1	Calcareous sand with gravel and pebbles, brown grey, loose, non plastic, cobbles at refusal
	SB-34	0-0.05		Rich, organic humus layer
		0.05-0.25	10	Calcareous sand with silt, some pebbles and gravel, brown, loose, moist, no odour
	SB-35	0-0.1	-	Rich, organic humus layer
		0.1-0.35	16.4	Medium sand with some gravel and pebbles, brown, moist, loose, non plastic no odour
Pipeline	SB-11	0-0.05	-	Rich, organic humus layer
		0.05-0.20	-	Medium coarse sand with pebbles, non calcareous, very wet, non plastic
	SB-63	0-0.05	-	Rich, organic humus layer
		0.05-0.35	31.9	Sand, no information as helicopter informed staff of immediate departure
	SB-64	0-0.05	-	Rich, organic humus layer
		0.05-0.3	67.2	Fine sand, water at termination, PHC odour, little information as helicopter informed staff of immediate departure

APPENDIX F
GEOTECHNICAL ASSESSMENT RESULTS

Table F1: Summary of testpits, samples collected, and lab test results for Phase III Environmental Site Assessment - Former Weather Station, Nottingham Island, NU

Testpit ID	Testpit Depth (m)	Source	Sample ID	Gravel (%)	Sand (%)	Fines (%)	Moisture(%)	Material Description	Comment
TP01	0.3	Borrow C	TP01_S01	36	58	6	5	SAND & GRAVEL trace fines, some subangular cobbles, fine to coarse subangular gravel, well-graded, damp, loose, medium brown, shell fragments	Blended sample taken from side wall of testpit 0.0 to 0.3 m
TP02	0.3	Borrow C	N/A	N/A	N/A	N/A	N/A	SAND & GRAVEL trace fines, some subangular cobbles, fine to coarse subangular gravel, well-graded, damp, loose, medium brown, shell fragments	Similar to TP01
TP03	0.3	Borrow C	N/A	N/A	N/A	N/A	N/A	SAND & GRAVEL trace fines, some subangular cobbles, fine to coarse subangular gravel, well-graded, damp, loose, medium brown, shell fragments	Similar to TP01
TP04	0.4	Main Site	TP04_S02	25	75	0	5	SAND gravelly, fine subrounded gravel, fine to coarse sand, well-graded, moist, very loose, light grey, shell fragments	Blended sample taken from side wall of testpit 0.0 to 0.4 m
TP05	0.25	Main Site	N/A	N/A	N/A	N/A	N/A	SAND & GRAVEL fine subrounded gravel, fine to coarse sand, well-graded, wet, very loose, light grey, shell fragments	Organic layer at surface 10 cm. Water table at 20 cm
TP06	0.5	Main Site	N/A	N/A	N/A	N/A	N/A	SAND some gravel, fine subangular gravel, fine to coarse sand, well-graded, wet, compact, dark brown/grey, shell fragments, strong hydrocarbon odour	Organic layer at surface 8 cm. Water table at 40 cm
TP07	0.4	Main Site	TP07_S03	25	64	11	14.1	SAND gravelly, some fines, fine subangular gravel, fine to coarse sand, well-graded, very wet, loose, dark brown/grey, shell fragments, slight hydrocarbon odour	Blended sample taken from side wall of testpit. Organic layer at surface 3 cm. Water encountered at 40 cm
TP08	0.25	Main Site	TP08_S04	20	68	12	12.4	SAND some gravel, some fines, fine subangular gravel, fine to coarse sand, well-graded, very wet, loose, dark brown/grey, shell fragments	Blended sample taken from side wall of testpit. Organic layer at surface 2 cm. Refusal on cobbles/boulders
TP09	0.5	Main Site	TP09_S05	5	94	1	5.9	SAND trace gravel, trace fines, fine to medium sand, uniformly graded, damp, compact, light brown, no shell fragments	Sample taken from 0.2 to 0.4 m depth. Below sand (possibly fill) layer was wet glaciomarine gravelly sand with shell fragments
TP10	0.3	Landfill A	TP10_S06	25	61	11	7.6	SAND gravelly, some fines, some subangular cobbles, fine to coarse subangular gravel, fine to coarse sand, well-graded, moist, compact, brown/grey	Blended sample taken from side wall of testpit. Surface 80-90% covered with subangular boulders < 1 m
TP11	0.4	Landfill A	TP11_S07	11	71	18	10.6	SAND some gravel, some fines, fine to coarse subangular gravel, well-graded, moist, compact, medium brown	Blended sample taken from side wall of testpit. Surface 80-90% covered with subangular boulders < 1 m
TP12	0.5	Borrow A	TP12_S08	86	13	1	1.7	GRAVEL some sand, some angular cobbles, fine to coarse angular gravel, dry, very loose, pink (feldspar)	Blended sample taken from side wall of testpit. Possibly mechanically crushed material
TP13	0.4	Borrow B	TP13_S09	34	64	2	4.3	SAND gravelly, trace fines, fine to coarse subangular gravel, medium to coarse sand, damp, loose, light grey, silica and calcareous particles	Blended sample taken from side wall of testpit. Surface 20% covered with subangular boulders < 1 m
TP14	0.4	Borrow B	TP14_S10	31	67	2	5.6	SAND gravelly, trace fines, fine to coarse subangular gravel, medium sand, damp, loose, light grey, silica and calcareous particles	Blended sample taken from side wall of testpit. Surface 20% covered with subangular boulders < 1 m
TP15	0.3	Landfill/ Landfarm B	TP15_S11	26	69	5	8.9	SAND gravelly, trace fines, fine to coarse subangular gravel, fine to coarse sand, moist, compact, light brown	Blended sample taken from side wall of testpit.
TP16	0.3	Landfill/ Landfarm B	TP16_S12	34	61	5	7.1	SAND gravelly, trace fines, fine to coarse subangular gravel, fine to coarse sand, moist, compact, light brown	Blended sample taken from side wall of testpit.

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

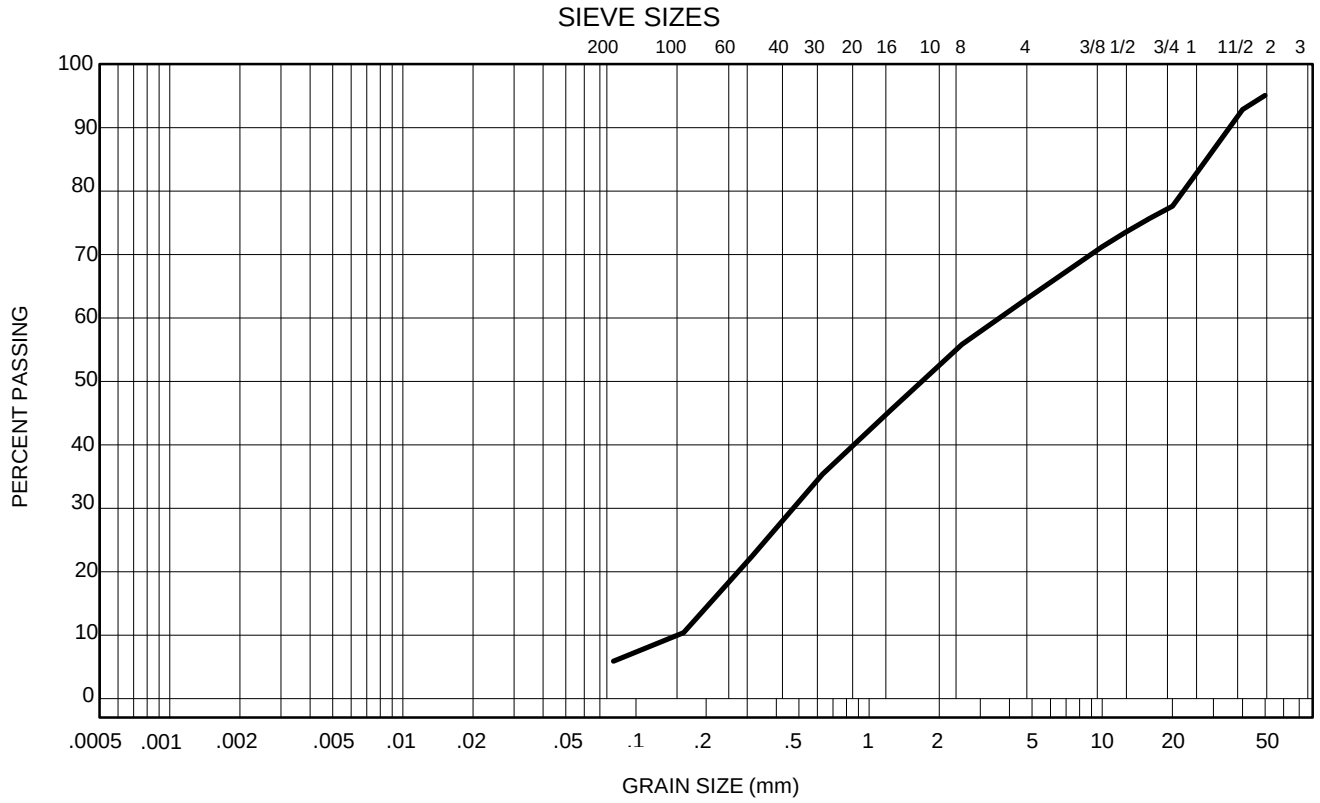
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP01_S01 - Borrow C
Depth:	0.0-0.3 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND & GRAVEL, trace fines, >50 mm 20% by weight, not sampled
Natural Moisture Content:	5.0%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	93
25	82
20	78
16	76
12.5	73
10	71
5	64
2.5	56
1.25	46
0.63	35
0.315	22
0.16	10
0.08	6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



Reviewed By: _____

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A TETRA TECH COMPANY

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

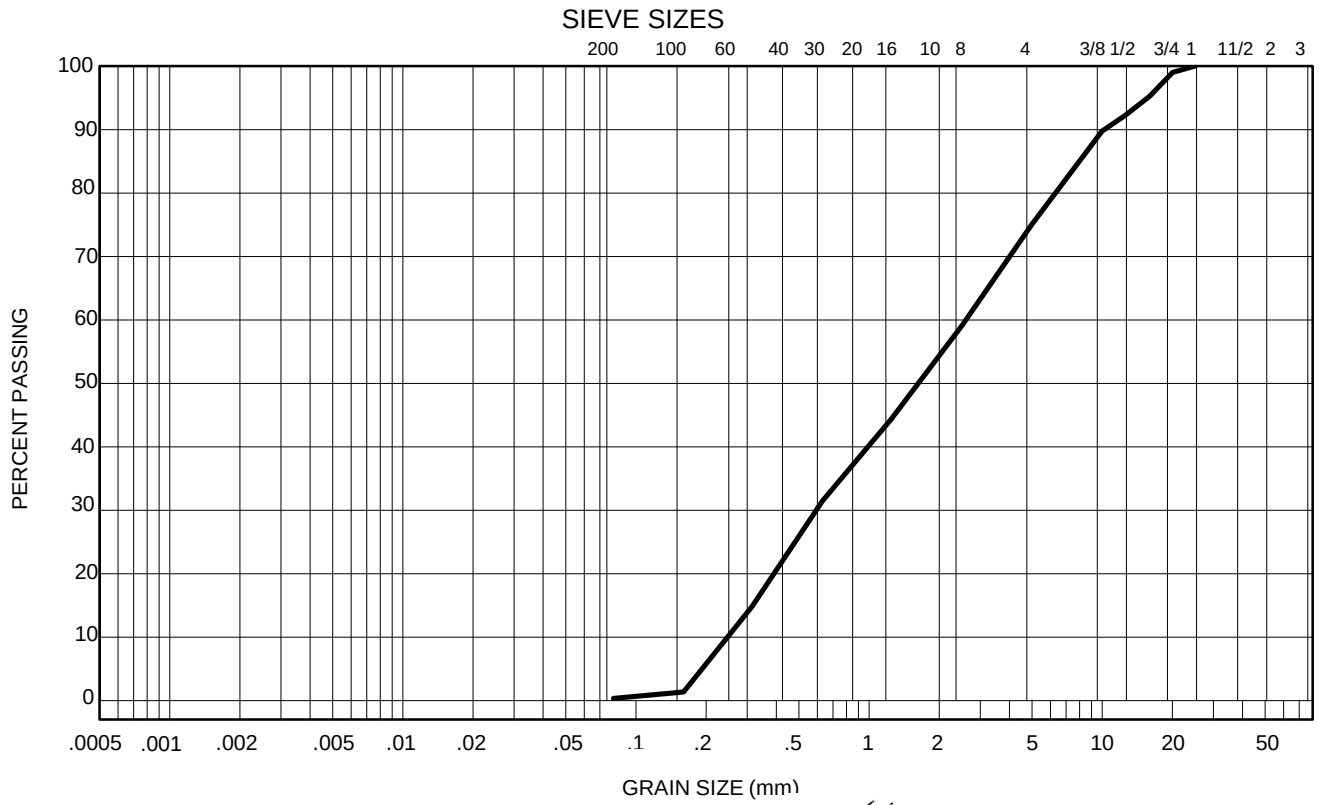
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP04_S02 - Main Camp
Depth:	0.0-0.4 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, gravelly
Natural Moisture Content:	5.0%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	
25	100
20	99
16	95
12.5	92
10	90
5	75
2.5	59
1.25	44
0.63	31
0.315	15
0.16	1
0.08	0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

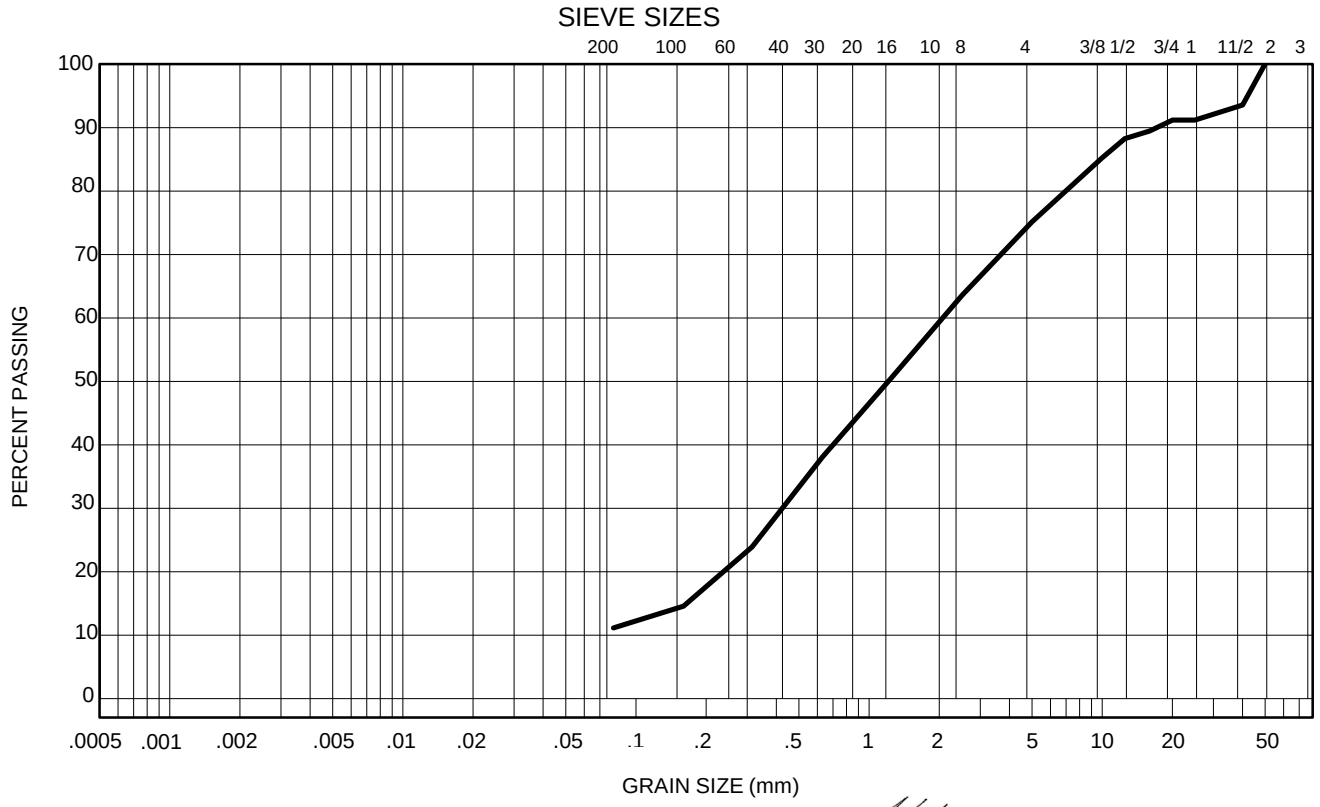
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP07_S03 - Main Camp
Depth:	0.0-0.6 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, gravelly, trace to some fines
Natural Moisture Content:	14.1%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	94
25	91
20	91
16	89
12.5	88
10	85
5	75
2.5	64
1.25	51
0.63	38
0.315	24
0.16	15
0.08	11

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

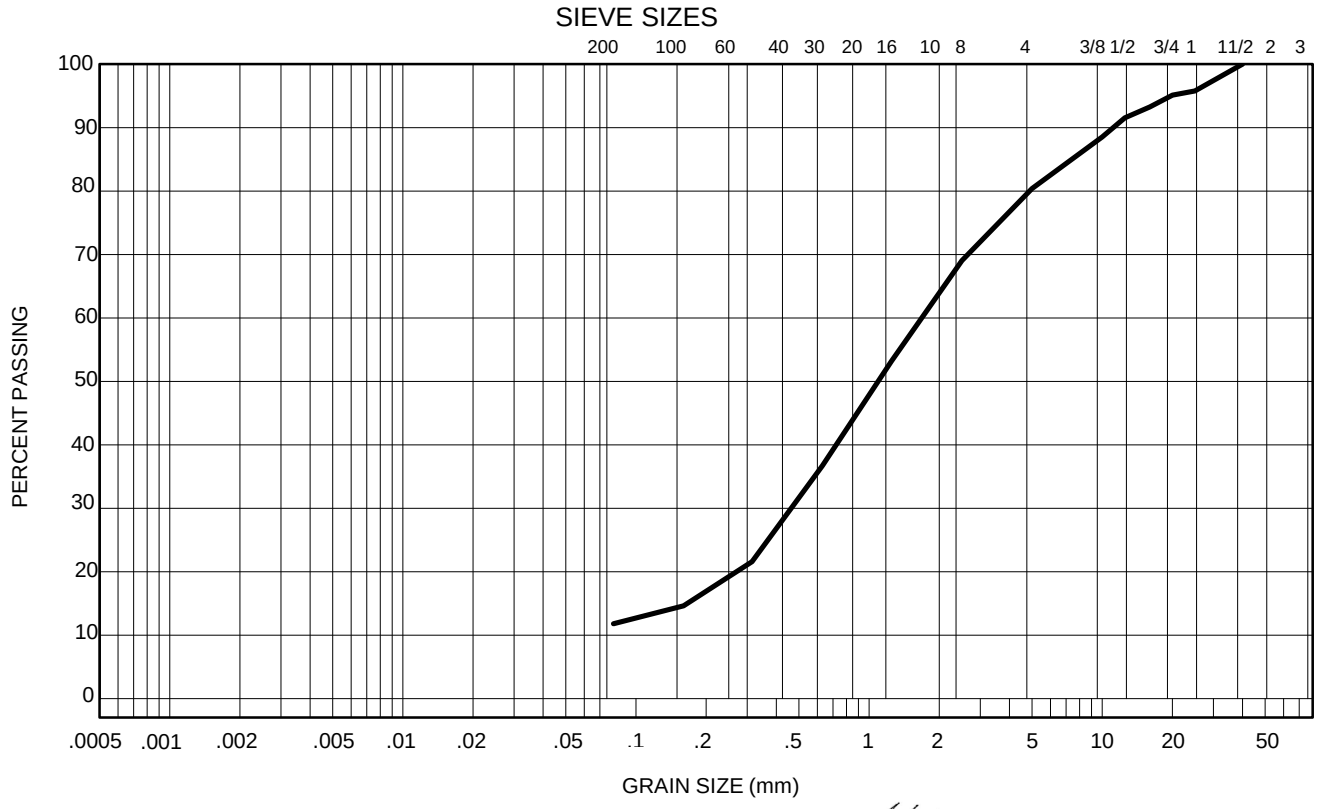
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP08_S04 - Main Camp
Depth:	0.0-0.25 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, some gravel, trace to some fines
Natural Moisture Content:	12.4%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	96
20	95
16	93
12.5	92
10	89
5	80
2.5	69
1.25	53
0.63	37
0.315	22
0.16	15
0.08	12

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

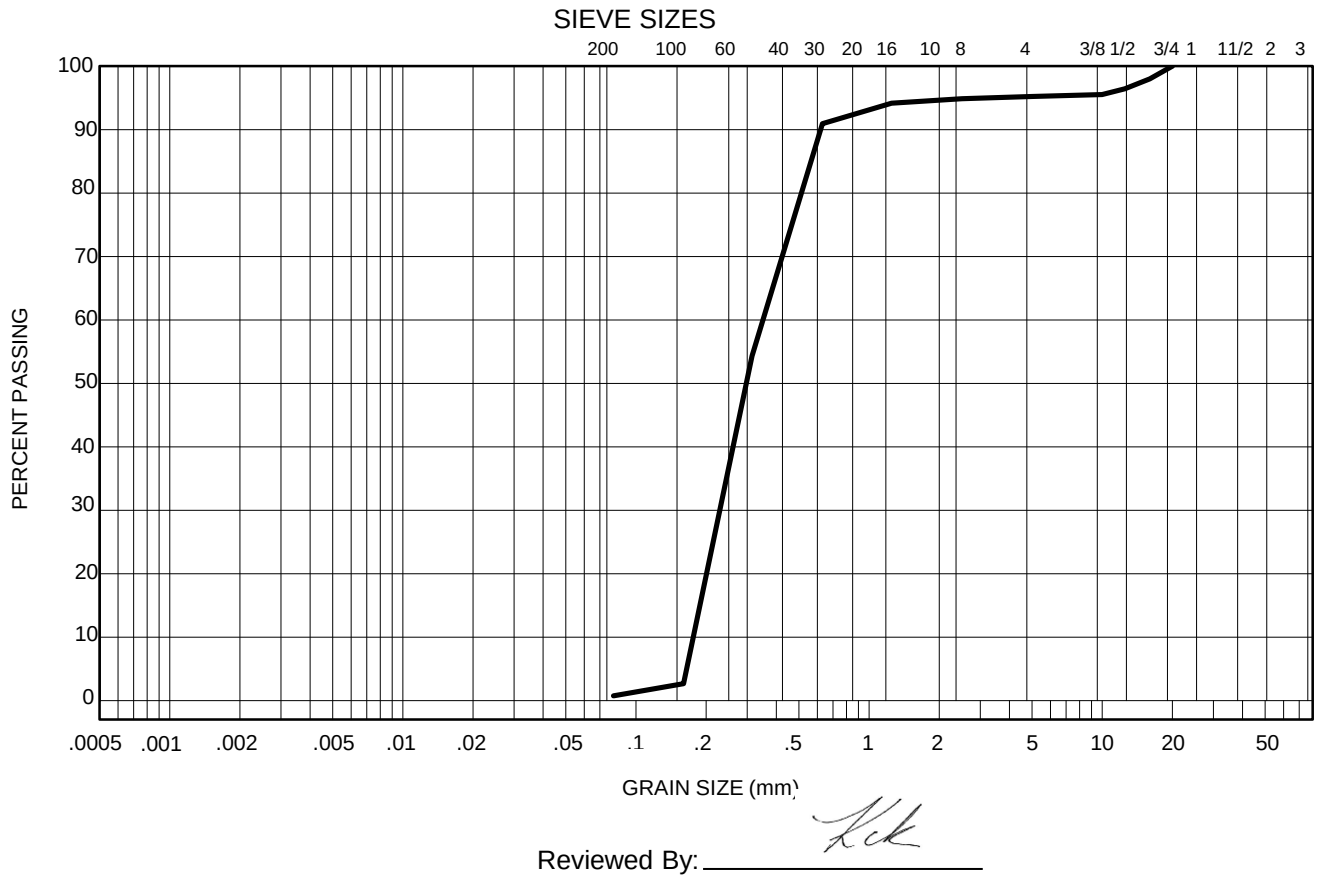
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP09_S05 - Main Camp
Depth:	0.2-0.4 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, trace gravel, trace fines
Natural Moisture Content:	5.9%
Remarks:	

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	
25	
20	100
16	98
12.5	96
10	96
5	95
2.5	95
1.25	94
0.63	91
0.315	54
0.16	3
0.08	1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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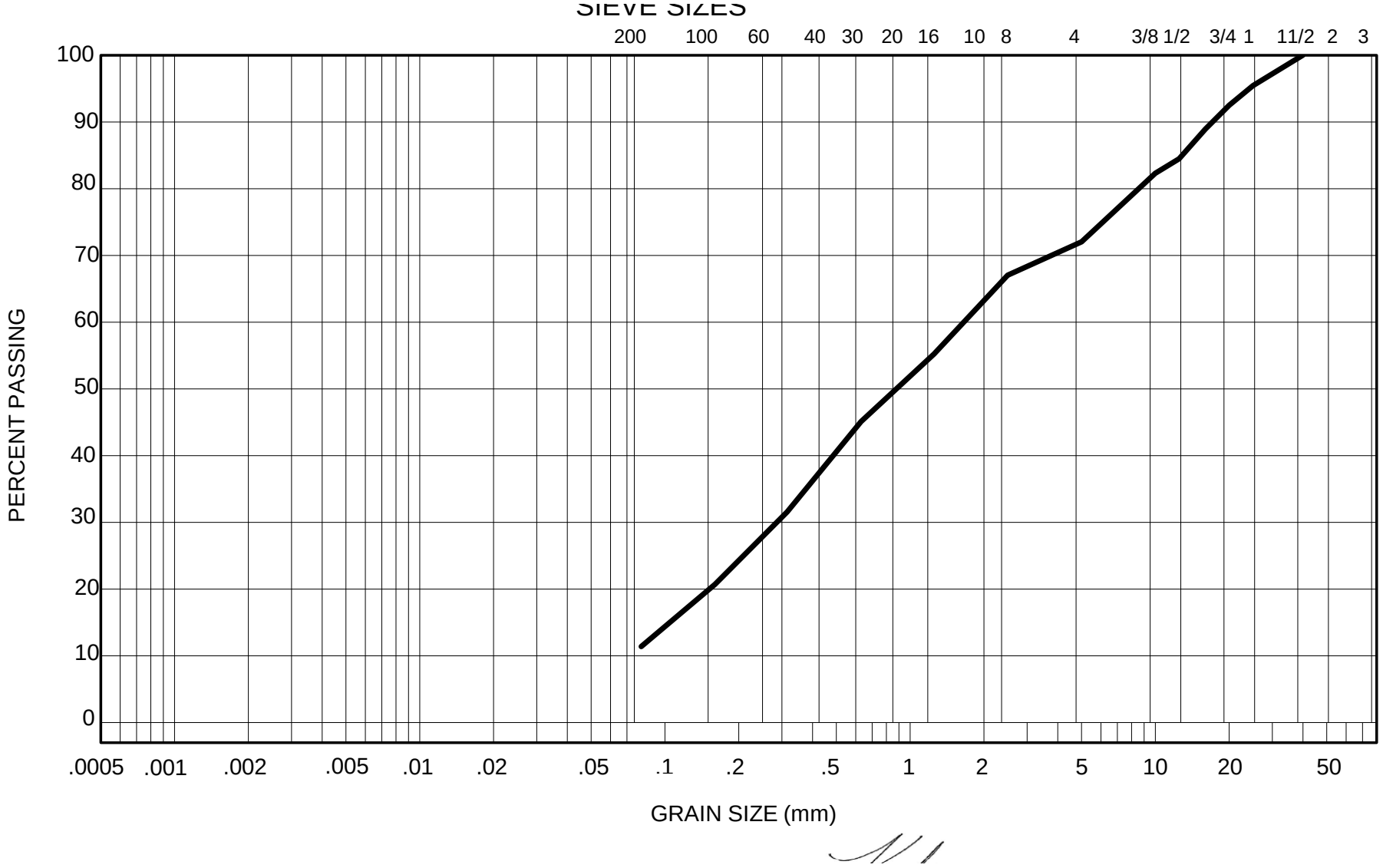

SIEVE SIZES
200 100 60 40 30 20 16 10 8 4 3/8 1/2 3/4 1 11/2 2 3
PERCENT PASSING
100 90 80 70 60 50 40 30 20 10 0
.0005 .001 .002 .005 .01 .02 .05 .1 .2 .5 1 2 5 10 20 50
GRAIN SIZE (mm)

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

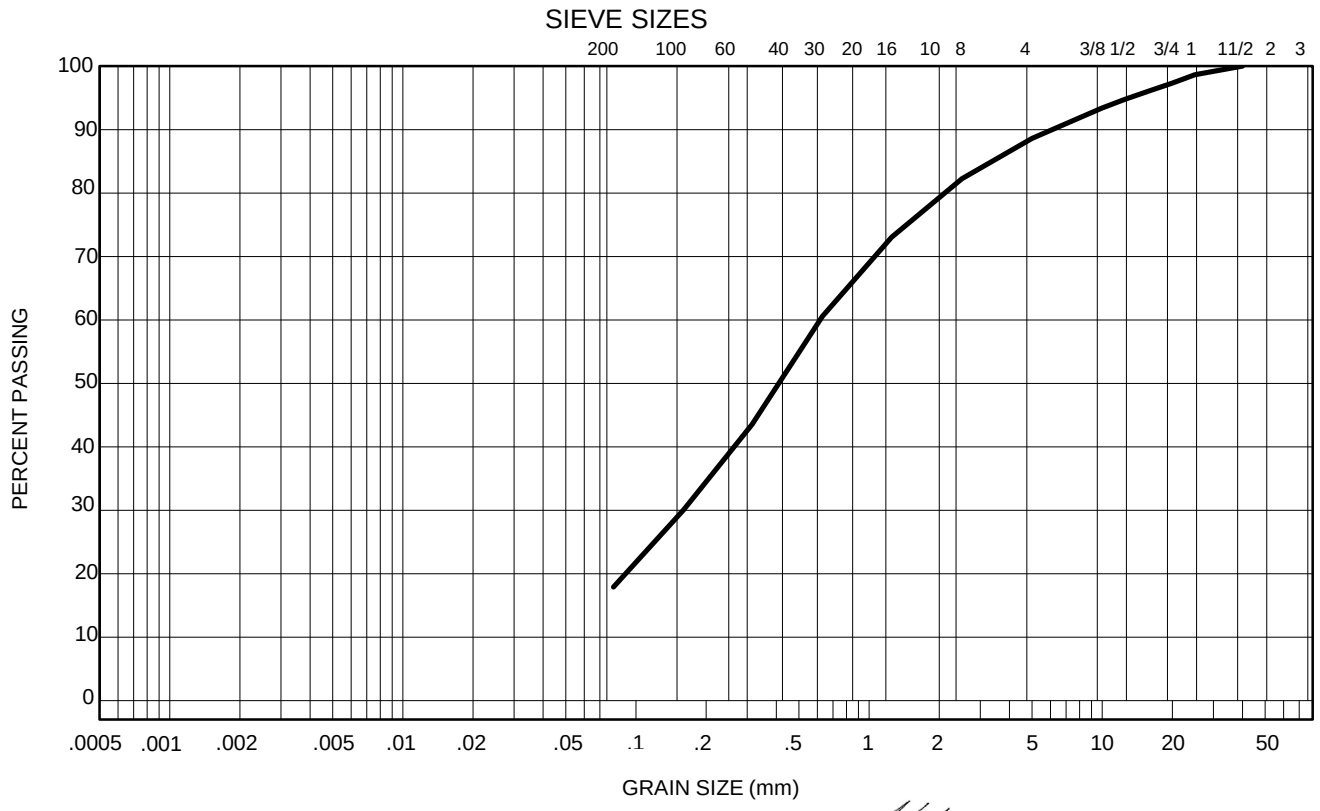
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP11_S07 - Landfill A
Depth:	0.0-0.4 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, some gravel, some fines, >50 mm 5% by weight, not sampled
Natural Moisture Content:	10.6%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	99
20	97
16	96
12.5	95
10	93
5	89
2.5	82
1.25	73
0.63	61
0.315	44
0.16	30
0.08	18

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

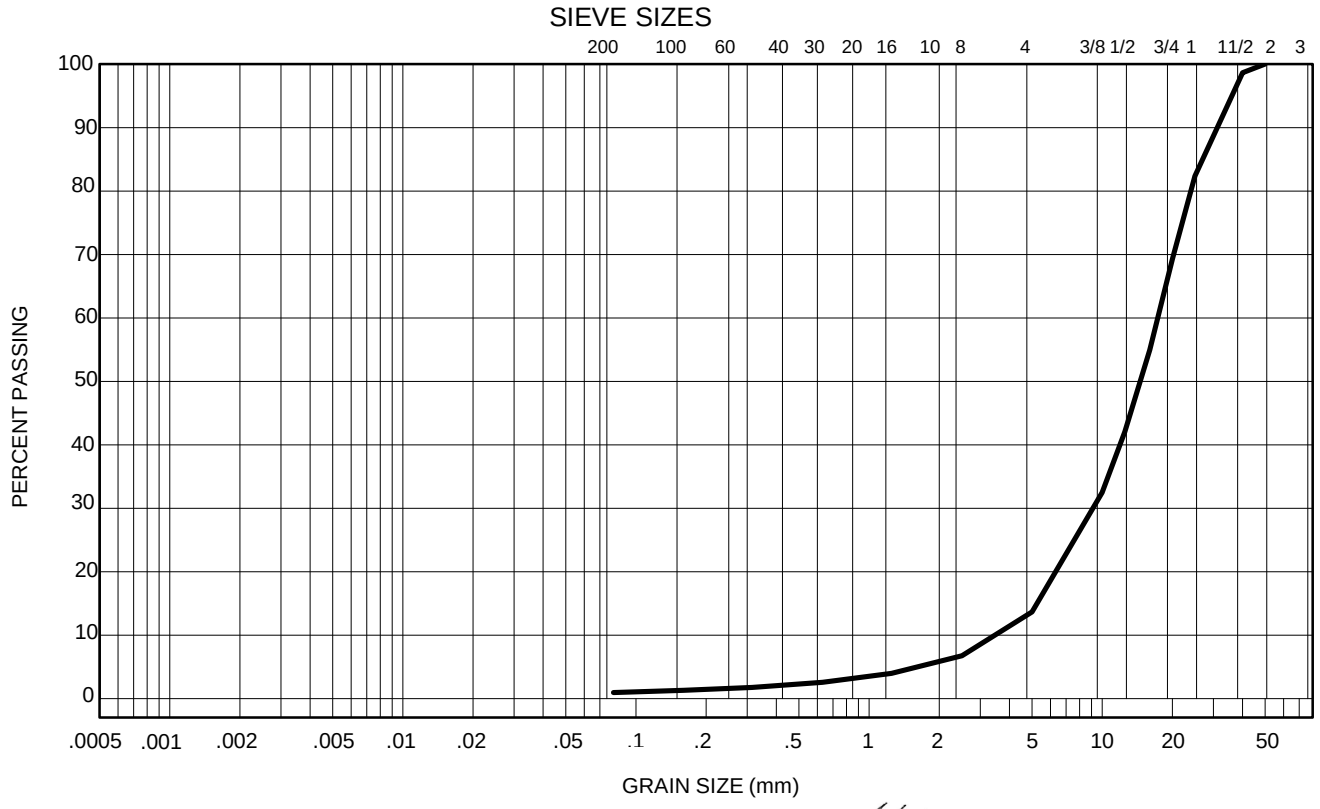
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP12_S08 - Borrow A
Depth:	0.0-0.6 m
Soil Index:	
Lab Number:	5723
Soil Description:	GRAVEL, some sand, trace fines
Natural Moisture Content:	1.7%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	99
25	82
20	69
16	55
12.5	42
10	32
5	14
2.5	7
1.25	4
0.63	3
0.315	2
0.16	1
0.08	1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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eba
A TETRA TECH COMPANY

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

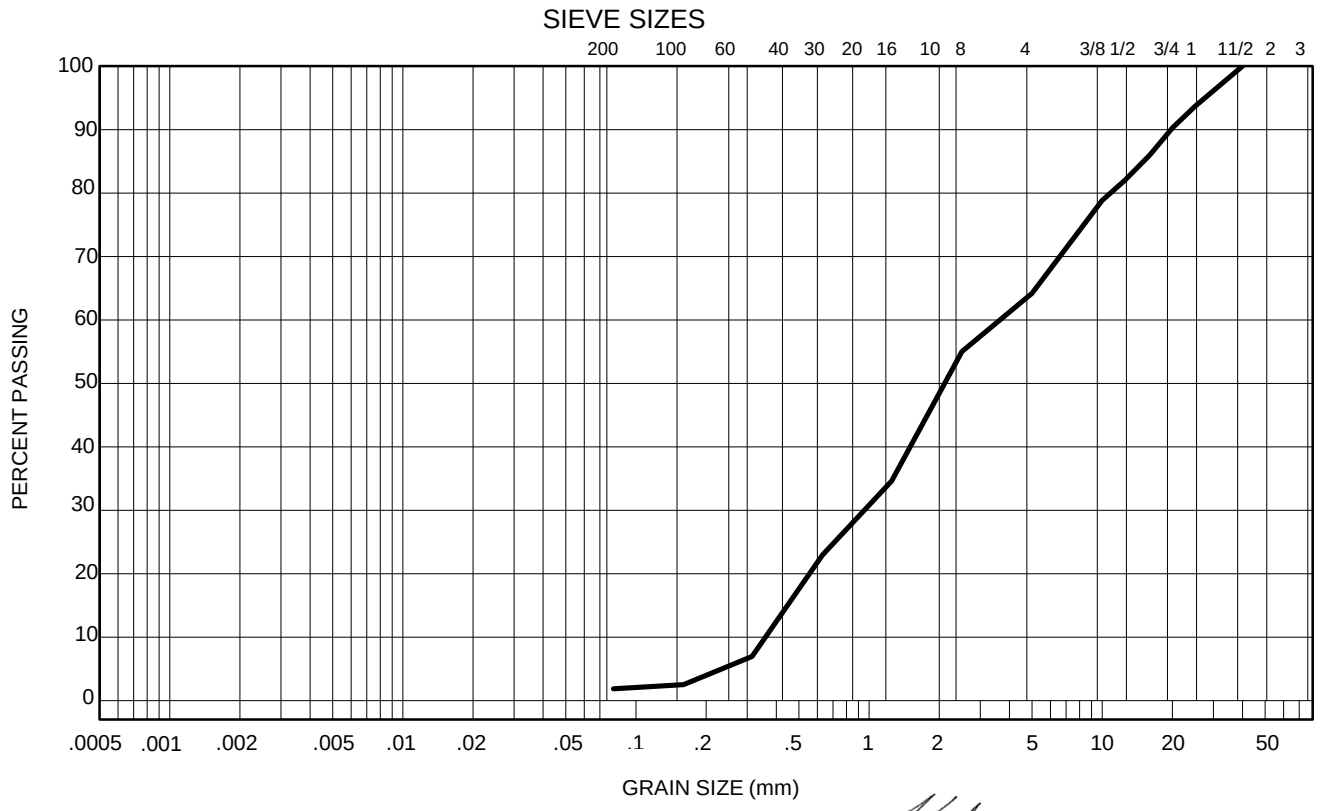
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP13_S09 - Borrow B
Depth:	0.0-0.4 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND & GRAVEL, trace fines
Natural Moisture Content:	4.3%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	94
20	90
16	86
12.5	82
10	79
5	64
2.5	55
1.25	35
0.63	23
0.315	7
0.16	3
0.08	2

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

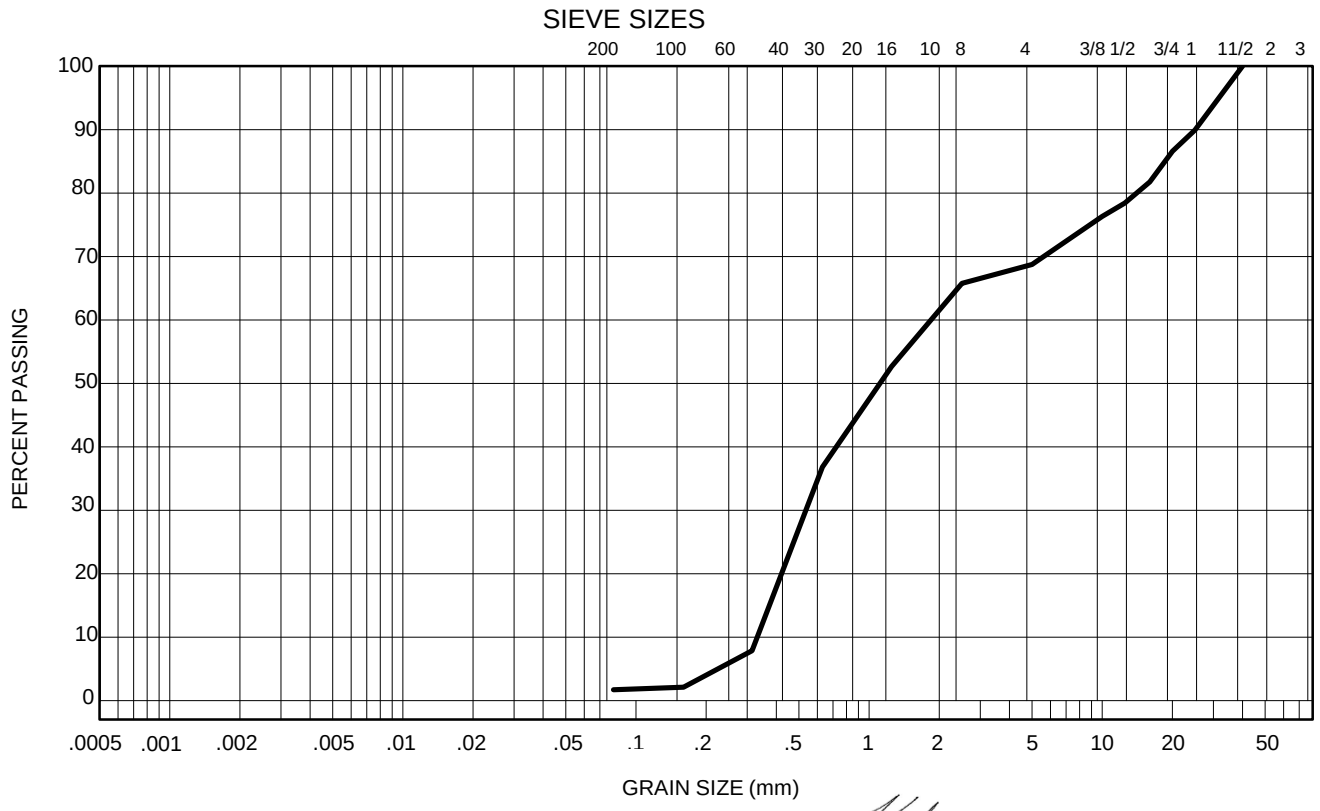
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP14_S10 - Borrow B
Depth:	0.0-0.4 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, gravelly, trace fines
Natural Moisture Content:	5.6%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	90
20	87
16	82
12.5	78
10	76
5	69
2.5	66
1.25	53
0.63	37
0.315	8
0.16	2
0.08	2

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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A TETRA TECH COMPANY

PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

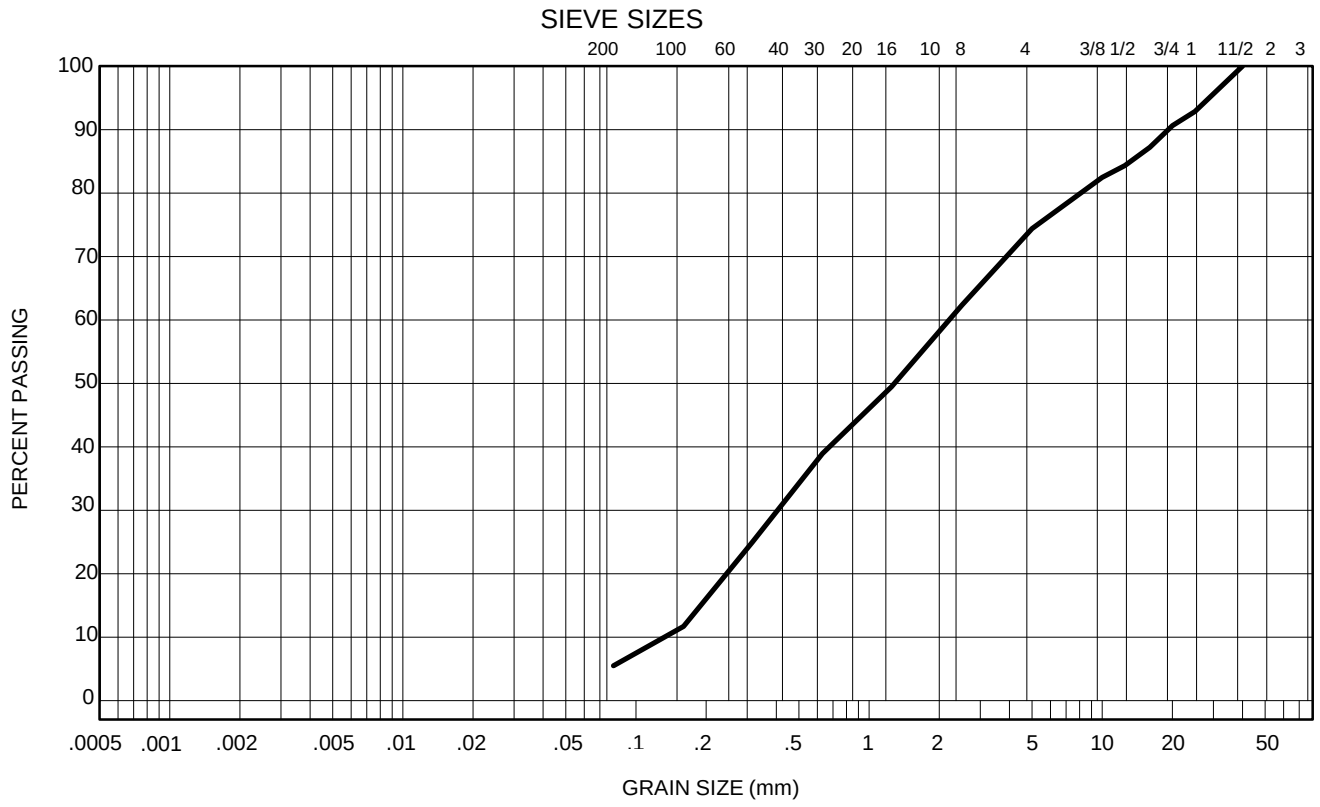
Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP15_S11- Landfarm B
Depth:	0.0-0.3m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, gravelly, trace fines
Natural Moisture Content:	8.9%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	93
20	91
16	87
12.5	84
10	82
5	74
2.5	62
1.25	49
0.63	39
0.315	25
0.16	12
0.08	5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE SIZE ANALYSIS TEST REPORT

ASTM C136 & D422

Project:	Phase 3 ESA & RAP Nottingham Island, NU
Project No.:	Y22101291
Client:	PWGSC Edmonton
Attention:	Jessie Hoyt
Date Tested:	October 3-6, 2012
Sample ID:	TP16_S12 - Landfarm B
Depth:	0.0-0.3 m
Soil Index:	
Lab Number:	5723
Soil Description:	SAND, gravelly, trace fines
Natural Moisture Content:	7.1%
Remarks:	Blended composite sample taken from side wall of testpit.

* The upper clay size of 2 µm is as per the Canadian Foundation Manual.

** The soil description is visually based, subject to EBA description protocols.

SIEVE SIZE (mm)	PERCENTAGE PASSING
40	100
25	87
20	81
16	78
12.5	75
10	73
5	66
2.5	62
1.25	48
0.63	39
0.315	24
0.16	10
0.08	5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

Reviewed By: _____

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APPENDIX G

HAZARDOUS AND NON-HAZARDOUS INVENTORY

Table G1 - Nottingham Island Inventory Table

APEC #	WESA Feature Designation	Material Type	Material Description	Volume (m^3), except drums and liquid	Material Items	Condition
1	Storage Shed 01 (18.5 x 9 x 2.4m)	Non-Hazardous	Unpainted wood	101	Building, external step, debris around building	Good, unpainted
			Metal	6	Cans, oil fired warm air furnace, ducting, electrical lines, external fence cover	Rusted, blue paint not lead containing lead
			Black felt	2	Black felt under exterior panels	Intact
			Glass windows	0.5	8 windows, no caulking	Some broken
			Flooring	3	Beige linoleum with textile backing	Good
			Drums (205L)	1 drum	Empty, rusted	Intact
			Asphalt shingles	3	Red/white shingles on roof	Good, some missing
			AST (900L)	0.5	Metal, no paint, no contents, no sludge	Rusted, intact
		Hazardous	Asbestos Insulation	50	Insulation in attic, some may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Friable, spread on floor of building
			Asbestos Panels	11	Interior wall and ceiling panels	Good, intact
			Asbestos Siding	5	Exterior white siding	Good, intact
			Fibre glass insulation (Asbestos contaminated)	33	Contaminated with the asbestos insulation, which may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Good, some on floor
			Total and leachable lead paint on wood	10	Window sills, exterior step, bottom exterior	Poor, peeling
2	Old Kitchen (8.7 x 17.8 x 3.4 m)	Non-Hazardous	Unpainted wood	41	Building interior, and adjacent wood pole, paint worn off	Weathered
			Metal	10	Electrical lines, metal sheeting	Pieces
			Black felt	2	On interior walls	Good, some ripped pieces
			Porcelain	0.5	One sink	Intact
			Asphalt shingles	3	Green and red shingles, adjacent and inside building	Poor, in pieces
			Flooring	3	Linoleum with textile backing	Poor, scattered on floor
			Brick and brick mortar	6	Two chimneys	Good, not asbestos containing
			Concrete	1	Two concrete cubes	Intact
		Hazardous	Total and leachable lead paint on wood	45	Various colors on exterior and interior walls and floor	Poor, peeling
3	New Radio Building (2.5 x 15.2 m) and Small Shed (3.4 x 2.5 x 2.1 m)	Non-Hazardous	Unpainted wood	101	Building, external step, debris around building	Good, unpainted
			Metal	9	Cans, oil fired warm air furnace, ducting, electrical lines, external fence cover, cables, electrical boxes	Rusted
			Concrete	2	Metal pole support, 4 cubes	Intact
			Asphalt shingles	2	Red/white shingles on roof	Good, some missing
			AST (900L)	0.5	Metal, no paint, no contents, no sludge	Rusted, intact
			Glass windows	0.5	9 windows	Most broken, shattered
		Hazardous	Asbestos floor tiles	0.5	Vinyl floor tiles (9x9')	Some broken
			Asbestos Insulation	50	Insulation in attic, some may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Friable
			Asbestos, total lead and leachable lead containing on panels	11	Painted interior wall and ceiling panels	Intact
			Asbestos Siding	3	Exterior white siding	Intact
			Asbestos Light Backings	0.01	Four double layer light fixture backings	Friable, in pieces
			Fibre glass insulation (Asbestos contaminated)	10	Contaminated with the asbestos insulation, which may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Good, some on floor
			Total and leachable lead paint on metal	6	On ducting and electrical equipment in small shed, adjacent fallen metal pole	Poor, peeling
			Total and leachable lead paint on wood	5	Various colors on exterior and interior walls and floor and small shed	Poor, peeling
			Mercury, PCBs and lead solder in electrical components	2	In capacitors and electrical boxes in the New Radio Building and small shed	Rusted
4	Old Radio Building (2.5 x 2.1 x 4.0 m)	Non-Hazardous	Unpainted wood	5	Building frame, interior walls and shelves	Moderate, visible mould and fire damage
			Metal	1	Electrical lines, debris	Intact
			Brick and brick mortar	1	One chimney	Moderate, some chipping
			Asphalt shingles	0.5	On roof, red	Peeling
			Concrete	1.5	Adjacent to the building	Intact
			Black felt	0.2	Around exterior of building	Peeling
			Batteries	0.08	Four batteries	Poor, crystallized
		Hazardous	Total lead paint on particulate board	4	On walls and ceiling, two layers	Poor, some burnt, in pieces
			Total lead and leachable lead on metal	1	Electrical box	Poor, peeling
			Mercury, PCBs and lead solder in electrical components	0.5	In capacitors and electrical boxes in the building	Rusted
			Total and leachable lead paint on wood	4	Exterior wood boards, window sills some interior wood	Poor, peeling
5	Outhouse (1.3 x 1.8 x 2.7 m)	Non-Hazardous	Unpainted wood	1	Building frame, toilet	Moderate, weathered and intact
			Concrete	1	Two cubes	Intact, partially buried
			Black felt	0.1	Under exterior wood boards	Moderate, some ripped off
		Hazardous	Asbestos Asphalt shingles	0.2	Green, on roof	Poor, peeling
			Total and leachable lead paint on wood	2	Various colors on exterior and interior wood boards	Moderate, weathered some boards on ground
6	Storage Shed 02 (2.8 x 2.2 x 2.6 m)	Non-Hazardous	Unpainted wood	4	Building frame, cable spools	Weathered, intact
			Metal	2	Wiring, parts, tools, in building and adjacent	Intact
			Cables	2	Rubber covering, some metal interior	Intact
		Hazardous	Asbestos asphalt shingles	0.5	Green, on roof and walls	Some blown off
7	Storage Building (4.9 x 6.4 x 3.0 m) 4.5 m is peak height and Small Shed (1.6 x 1.6 x 2.2 m)	Non-Hazardous	Unpainted wood	31	Building frame	
			Metal	1	Cans, some ducting electrical lines and non-hazardous electrical parts	Rusted, blue paint not lead containing lead
			Black felt	0.5	Under exterior white siding	Good, some ripped pieces
			Glass windows	0.1	3 windows	Some broken
			Asphalt shingles	1	Red/white shingles on roof	Good, some missing
			Flooring	1	Linoleum with textile backing	Good
			Drum (205L)	1 drum	Empty, unpainted, staining and odor on linoleum under drum	Rusted, intact
		Hazardous	Asbestos Insulation	9	Insulation in attic, some may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Friable, spread on floor of building
			Asbestos panels	3	Interior wall and ceiling panels	Good, intact
			Fibre glass insulation (Asbestos contaminated)	14	Pink, assumed to be in walls, similar to other buildings	Good, some on floor
			Asbestos Siding	2	Exterior white siding	Intact
			Total and leachable lead paint on wood	1	Window sills, exterior step, bottom exterior	Poor, peeling
			AST (900L)	0.5	Metal, some paint, some contents, some sludge	Rusted, intact
			Organic content in AST (900L)	675 L	3/4 full of heating oil	Rusted, intact
			Mercury, PCBs and lead solder in electrical components	1	Electrical boxes in building and adjacent small shed, some are transformers that contain PCBs and lead and mercury solder	Rusted, intact

Table G1 - Nottingham Island Inventory Table

APEC #	WESA Feature Designation	Material Type	Material Description	Volume (m^3), except drums and liquid	Material Items	Condition
8	Chicken Coop (10 x 3.8 x 3.2 m) Caged Area (3.7 x 3.8 x 2.1 m)	Non-Hazardous	Unpainted wood	20	Building and cage frame, interior plywood , unpainted	Poor, moss and mould growing on floor
			Metal	1	Wiring on caged area, stool, electrical wiring	Good, intact
			Black felt	0.5	Black, exterior	Poor, most is blown off
			Drum (205L)	1 drum	Rusted, empty	Rusted, holes
		Hazardous	Asbestos Insulation	6.5	Wall and ceiling insulation, fibreglass insulation is asbestos impacted	Poor, friable, spread out
			Fire Extinguisher	0.1	Red and partially full	Good, intact
			AST (900L)	0.5	Metal, some paint, some contents, some sludge	Rusted, intact
			Organic content in AST (900L)	675 L	3/4 full of heating oil	Rusted, intact
			Total and leachable lead paint on wood	0.2	Some red paint on exterior window sills, door frames and roof edges, some green paint on floors	Poor, peeling
			Total lead paint on particulate board	3	White paint on walls and ceiling particulate board	Poor, peeling
			Asbestos asphalt shingles	0.2	In pieces, on roof, black, assumed to be asbestos containing	Poor, most is blown off
9	Bunkhouse (31 x 9.2 x3.2 m)	Non-Hazardous	Unpainted wood	300	Building frame, adjacent wood walkway	Good, intact
			Metal	12	Cans, two oil fired warm air furnaces, ducting, electrical lines, water lines, external fence cover, cables, electrical boxes, flooring in furnace room, metal sheeting, exterior metal pole and vents	Good, rusted
			Glass windows	0.3	20 windows	Some broken
			Fibre glass insulation	137	Pink, assumed to be in walls and ceiling, similar to generator building	Good, some on floor
			Flooring	6	Linoleum with textile backing	Good, some mould
			Rubber	0.5	Piping running under building to exterior	Good, intact
			Porcelain	2	Four sinks, one bath tub	Good, intact
			AST (900L)	1	Two, peeling paint, sludge and fuel in both	Moderate, bear scratches, holes
			Asphalt shingles	6	Red/white shingles on roof	Good, some missing
			Exterior siding	15	White metal panels with fibrous insulation interior and black felt	Good, intact
		Hazardous	Asbestos furnace gasket	0.1	Grey gaskets on furnace, falling off	Poor, friable
			Total and leachable lead paint on asbestos panels	25	All walls and ceilings	Moderate, some holes
			Total and leachable lead paint on wood	7	Some red and white paint on exterior window sills, door frames, roof edges, vents and steps, shelves	Poor, peeling
			Total and leachable lead interior painted metal	18	Two water holding tanks in bathroom, silver and orange, white toilet and shower, painted ducting	Good, intact
			Organic contents in AST (900L)	50L	Partially full of heating oil and some sludge	N/A
			Mercury in fluorescent lights	0.3	Mercury vapor in bulbs	Moderate, one broken
			PCBs in light ballasts	1	Fluorescent light ballasts	Poor, some leaking
			Mercury, PCBs and lead solder in electrical components	0.5	Electrical boxes and panels	Open, rusted
10	Generator Building (14 x 6.8 x 3.2 m)	Non-Hazardous	Unpainted wood	60	Building frame (walls, attic is painted)	Good, intact
			Metal	24	Exterior metal sheeting, oil fired warm air furnace, ducting, electrical lines, water lines, cables, electrical boxes, exterior sheeting and vents, flooring	Good, rusted
			Glass windows	0.1	8 windows	Some broken
			Fibre glass insulation	30	Pink, assumed to be in walls and ceiling	Good, some on floor
			Cables	5	Rubber exterior, in attic	Good, intact
			Drum (205L)	3 drums	One 1/2 full, two partially full	Moderate rusted
			Concrete	4	Pad holding generators	Good, intact
			Asphalt shingles	2	Red/white shingles on roof	Good, some missing
			Exterior siding	4	White metal panels with fibrous insulation interior and black felt	Good, intact
		Hazardous	Asbestos panels	1	Exterior bottom panels and interior painted ceiling and wall panels	Moderate, some holes
			Aqueous content in drum (205L)	200L	Weathered, watery content, hydrocarbon odor	N/A
			Total lead painted generators	3	Total lead paint, Not leachable paint on three generators	Poor, peeling
			Total and leachable lead paint on wood	40	Various colors of paint on shelves and attic on exterior window sills, door frames, roof edges, vents and steps	Poor, peeling
			Total and leachable lead paint on asbestos panels	12.5	All walls and ceilings are painted surfaces	Good, intact
			Total and leachable lead interior paint on metal	10	On electrical boxes, metal shelves, debirs	Good, intact
			Equipment contents	500 L	Anti-freeze, oil and fuel in generators and open drum	Weathered liquids
			Mercury in fluorescent lights	0.2	Mercury vapor in bulbs	Moderate, one broken
			PCBs in light ballasts	1	Fluorescent light ballasts	Poor, some leaking
			Batteries	0.06	Two intact in building, one broken apart adjacent to the building	Poor
			Mercury, PCBs and lead solder in electrical components	1	Electrical boxes and panels, some could contain PCBs and lead and mercury solder	Open, rusted
	Debris Adjacent to the Generator Building	Non-hazardous	Unpainted wood	6	Wooden supports for the power line	Intact
			Metal	3	Pipes	Rusted
11	House and Garage (15 x 8 x 2.4 m)	Non-hazardous	Unpainted wood	115	Building frame, external step, debris around building	Good, unpainted
			Metal	2	Cans, toilet, oil fired furnace, ducting, electrical lines, external fence cover, stove	Rusted, blue paint not lead containing lead
			Black felt	3.5	Black felt under exterior panels	Good, intact
			Glass windows	N/A	All broken	All broken
			Flooring	3	Linoleum with textile backing	Good
			Asphalt shingles	2.5	Red/white shingles on roof	Good, some missing
			Drums (205L)	3	Empty, rusted	Good, rusted
		Hazardous	Asbestos Insulation	36	Insulation in attic, some may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Friable, spread on floor of building
			Fibre glass insulation (Asbestos contaminated)	15	Contaminated with the asbestos insulation, which may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations	Good, some on floor
			Asbestos panels	7	Interior wall and ceiling panels	Good, intact
			Asbestos siding	4	Exterior white siding	Good, intact
			Asbestos light backings	0.01	Two double layer light fixture backings	Good, intact
			Total and leachable lead paint on wood	10	Interior and exterior wood	Poor, peeling
			PCBs in light ballasts	0.6	Fluorescent light ballasts	Poor, some leaking
			AST (900L)	0.5	Metal, some paint, no contents, some sludge	Rusted, intact
	Building Foundation (Adjacent to the House and Garage)	Non-hazardous	Unpainted wood	4	Wood frame of previous building, wood spools	Weathered, partially buried
			Metal	0.5	Debris	Rusted
			Concrete	6	Foundation	Intact
		Hazardous	Creosote soaked wood	0.5	One wood beam	Weathered

Table G1 - Nottingham Island Inventory Table

APEC #	WESA Feature Designation	Material Type	Material Description	Volume (m^3), except drums and liquid	Material Items	Condition
12	Shed (6.5 x 6.5 x 2.9 m)	Non-hazardous	Unpainted wood	10	Building frame	Roof caved, weathered
			Metal	5	Debris, venting	Scattered
			Brick and brick mortar	6	Two chimneys	Good, not asbestos containing
			Asphalt shingles	1	Red shingles from roof, inside building and adjacent	Good, some missing
		Hazardous	Total and leachable lead paint on equipment	8	Orange tracked vehicles and trailer	Poor, paint peeling
			Equipment contents	1 L	Possible fuel, oil and vehicles fluids left	N/A
			Asbestos panels	2	Panels inside building	Poor, broken
13	House (9.6 x 8.8 x 2.9 m)	Non-hazardous	Unpainted wood	46	Attic and interior of walls, ceiling and floor	Intact
			Metal	5	Cans, metal sheeting in attic, electrical lines, stove, adjacent pulley and wire	Intact
			Black felt	2	Black felt on exterior	Good, intact
			Flooring	2	Linoleum with textile backing	Good
			Drums (205L)	3	Empty, rusted	Good, rusted
			Brick and brick mortar	3	One chimney	Good, not asbestos containing
			Asphalt shingles	0.5	Red shingles from roof, inside building and adjacent	Good, some missing
		Hazardous	Fibreglass insulation (contaminated with asbestos)	9	Contaminated with the asbestos insulation, which may have fallen into walls, if so, abate fibre glass insulation following asbestos regulations in back, newer part of house	Intact
			Asbestos insulation	7	Insulation in the back, newer part of the house attic	Friable, spread on floor of building
			Asbestos panels	4	Most interior wall and ceiling panels	Good, intact
			Total and leachable lead paint on wood	14	Various colors of paint: Exterior the roof of the older, front roof and interior cabinets, window frames	Poor, peeling
			Total and leachable paint on particulate board	3	On some interior walls and ceiling	
			Total and leachable lead paint on metal	3	Exterior metal entry way and some interior	Poor, peeling
			AST (900L)	0.5	Metal, some paint, no contents, some sludge	Rusted, intact
			Total and leachable lead paint on equipment	16	Orange steel mine cart	Poor, paint peeling
			Battery	0.02	Lead and acid car battery	Poor, broken
14	AST Farm	Non-hazardous	Metal	20	Pipeline from ASTs to the end 173 m length	Peeling paint
			Drum (205L)	1 drum	1 rusted drum	Intact
		Hazardous	Aqueous content in drum (205L)	20L	Weathered, watery content, hydrocarbon odor	N/A
			Total lead paint on ASTs (73000L each)	146	Two, with peeling paint, minor stain and rust on the bottom	Intact, rusted
15	Food Cache Storage	Non-hazardous	Unpainted wood	5	Partially buried, posts	Weathered
		Hazardous	Battery	0.02	Lead and acid car battery	Intact
16	Debris Area 01 Located within 10m north of Hudson Strait, appears	Non-hazardous	Unpainted wood	5	Partially burned building	Weathered, burned
			Metal	2	Debris, stoves	Scattered
17	Debris Area 02 Located south of the AST tank farm and West of the Generator building and Bunkhouse	None (inventory listed in other rows)	None (inventory listed in other rows)	None (inventory listed in other rows)	None (inventory listed in other rows)	None (inventory listed in other rows)
18	Debris Area 03 Located Northeast of the AST next to the Food Cache(west) To the Southeast Storage Shed 01, and to the Northeast-Old Kitchen	Non-hazardous	Unpainted wood	5	Wood staircase up the side of the outcrop	Weathered, unstable
			Metal	1	Pole and wires, debris	Intact, rusted
			Concrete	1	Supports, cubes	Some crumbling
		Hazardous	Battery	0.02	One lead and acid car battery	Broken apart
19	Debris Area 04 Located to the Southeast of site next to Hudson Strait appears to be the main dumping area	Non-hazardous	Unpainted wood	1	Partially buried debris	
			Metal	2	Debris, venting, partially buried	Scattered
			Brick and brick mortar	2	In pieces, partially buried	Good, not asbestos containing
		Hazardous	Battery	0.06	Three lead and acid car batteries	Broken apart
20	Debris Area 05 Surrounding Features: Located to the East of the main site removed from area	Non-hazardous	Unpainted wood	16.5	Debris, top of two upright and two laying wood poles	Weathered
			Metal	1.5	Debris, cables	Rusted
		Hazardous	Total and leachable paint on wood	4	Exterior of building	Rusted
			Creosote soaked wood	2	Bottom of four upright poles	Rusted
21	Debris Area 06	Non-hazardous	Unpainted wood	1	Debris	Weathered
			Metal	0.5	Debris	Rusted
22	Road to East of Site	None	None	None	None	None
23	Offsite Communication Tower	N/A	Tower	N/A	New beacon tower, not to be decommissioned	N/A
24	Lake 01	N/A	N/A	N/A	N/A	N/A
25	Lake 02	N/A	N/A	N/A	N/A	N/A
26	Hudson Strait (Materials are located on the shoreline)	Non-hazardous	Unpainted wood	2	A ramp to the strait, parts of a dock	
			Metal	1	Debris, track, stove	Rusted
			Drums (205L)	20 drums	Rusted, partially buried, some in pieces	Rusted
		Hazardous	Compressed gas cylinder	50L	Partially full, unknown contents	Intact, rusted
			Total and leachable lead painted equipment	4	Yellow and green painted machine	Peeling paint, rusted
			Battery	0.02	Lead and acid car battery	Broken apart
N/A	Drums from the ASTs (73000 L) to the Hudson Strait	Non-hazardous	Drums (205L)	44 drums	Approximately nine drums with content, as indicated below, mostly rusted	Good, rusted
		Hazardous	Aqueous content in drum (205L)	400 L	Weathered, watery content, partially organic	N/A
			Compressed gas cylinder	50L	Partially full, some water in it	Intact, rusted
N/A	Various Debris (Throughout and adjacent to the Site)	Non-hazardous	Unpainted wood	17.5	Poles (West and south of site, upright and laying)	Weathered
			Metal	2	Poles and supporting wires	Intact
			Cables	10	Power cables running throughout the site, mostly underground, with a rubber exterior and metal interior	Intact, rusted
			Concrete	5	Cubes	Intact
		Hazardous	Creosote soaked wood	2.5	Bottom of poles	Rusted

Totals: (Uncrushed / m^3)			
	Non-Hazardous	Unpainted wood	898
		Metal	111.5
		Black felt	10.8
		Brick and brick mortar	18
		Cables	17
		Concrete	21.5
		Drum (205L)	77 drums
		Exterior siding	19
		Fibre glass insulation	176
		Flooring	18
		Glass windows	1.5
		Porcelain	2.5
		Rubber	0.5
		ASTs (900L)	4
		Asphalt shingles	17.7
	Hazardous	Aqueous content in drum (205L)	620 L
		Organic contents in ASTs (900L)	1400 L
		Asbestos asphalt shingles	0.9
		Asbestos floor tiles	0.5
		Asbestos furnace gasket	0.1
		Asbestos Insulation	158.5
		Asbestos Light Backings	0.02
		Fibre glass insulation (Asbestos contaminated)	162
		Asbestos panels	28
		Asbestos siding	14
		Asbestos, total lead and leachable lead containing on panels	48.5
		Batteries	0.28
		Compressed gas cylinder	100L
		Creosote soaked wood	5
		Equipment contents	501 L
		Fire Extinguisher	0.1
		Mercury in fluorescent lights	0.5
		Mercury, PCBs and lead solder in electrical components	5
		PCBs in light ballasts	2.6
		Total lead paint on particulate board	7
		Total and leachable lead paint on particulate board	3
		Total and leachable lead paint on equipment	28
		Total and leachable lead paint on metal	38
		Total and leachable lead paint on wood	128.2
		Total lead paint on ASTs (73000L each)	146
		Total lead painted generators	3

Notes:
1. All volumes: uncrushed
2. Volumes of total and leachable amended paint includes the painted substrate
3. Drums volumes are numbers of drums, not m3
4. Liquid volmes are in litres, not m3.

Table G2 - Nottingham Island Uncrushed and Crushed Material Volumes Table

		Material Description	Volume Uncrushed (m^3), except drums and liquid	Crush Ratio	Volume Crushed (m3), except liquid
Totals	Non-Hazardous	Unpainted wood	898	1:1	898
		Metal	111.5	4:1	27.875
		Black felt	10.8	1:1	10.8
		Brick and brick mortar	18	1:1	18
		Cables	17	1:1	17
		Concrete	21.5	1:1	21.5
		Drum (205L)	77 drums	4.4:1	4.35
		Exterior siding	19	1:1	19
		Fibre glass insulation	176	5:1	35
		Flooring	18	1:1	18
		Glass windows	1.5	1:1	1.5
		Porcelain	2.5	1:1	2.5
		Rubber	0.5	1:1	0.5
		ASTs (900L)	4	4:1	1
		Asphalt shingles	17.7	1:1	17.7
	Hazardous	Aqueous content in drum (205L)	620 L	1:1	620 L
		Organic contents in ASTs (900L)	1400 L	1:1	1400 L
		Asbestos asphalt shingles	0.9	1:1	0.9
		Asbestos floor tiles	0.5	1:1	0.5
		Asbestos furnace gasket	0.1	1:1	0.1
		Asbestos Insulation	158.5	1:1	158.5
		Asbestos Light Backings	0.02	1:1	0.02
		Asbestos siding	14		
		Fibre glass insulation (Asbestos contaminated)	162	5:1	32.4
		Asbestos panels	28	1:1	28
		Asbestos, total lead and leachable lead containing on panels	48.5	1:1	48.5
		Batteries	0.28	1:1	0.28
		Compressed gas cylinder	100L	1:1	100L
		Creosote soaked wood	5	1:1	5
		Equipment contents	501 L	1:1	501 L
		Fire Extinguisher	0.1	1:1	0.1
		Mercury in fluorescent lights	0.5	1:1	0.5
		Mercury, PCBs and lead solder in electrical components	5	1:1	5
		PCBs in light ballasts	2.6	1:1	2.6
		Total lead paint on particulate board	7	1:1	7
		Total and leachable lead paint on particulate board	3	1:1	3
		Total and leachable lead paint on equipment	28	1:1	28
		Total and leachable lead paint on metal	38	4:1	9.5
		Total and leachable lead paint on wood	128.2	1:1	128.2
		Total lead paint on ASTs (73000L each)	146	4:1	36.5
		Total lead painted generators	3	1:1	3
			Notes: 1. All volumes: uncrushed. 2. Volumes of total and leachable amended paint includes the painted substrate. 3. Drums volumes are numbers of drums, not m3. 4. Liquid volmes are in litres, not m3.		Notes: 1. Non-hazardous wood is to be burned and landfilled on-site if ash does not contain leachable metals. 2. Volumes of total and leachable amended paint includes the painted substrate. 3. Drums volumes are in m3 not number of drums, assuming 1 crushed drum is 0.0565m3. 4. Liquid volmes are in litres, not m3.

APPENDIX H

ARCHAEOLOGICAL ASSESSMENT REPORTS

FINAL REPORT

ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF THE NOTTINGHAM ISLAND WEATHER STATION, NOTTINGHAM ISLAND, NUNAVUT

Submitted to:

The Department of Culture and Heritage,
Nunavut
Nunavut Permit No. 2012-07A

DISTRIBUTION:

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March 2013 **12-1372-0044**

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EXECUTIVE SUMMARY

During August of 2012, Golder Associates Ltd. (Golder) conducted an Archaeological Impact Assessment (AIA) of the Nottingham Island Weather Station on Nottingham Island, Nunavut on behalf of EBA, a Tetra Tech Company (EBA) working for Public Works and Government Services Canada (PWGSC) and Aboriginal Affairs and Northern Development Canada (AANDC). This AIA was carried out in conjunction with the Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, and Geotechnical Evaluation and Remedial Action Plan. All required fieldwork was completed under an Archaeological Permit (2012-007A) issued by the Department of Culture and Heritage, Nunavut to Julie Ross and later amended to Brent Murphy of Golder.

The weather station is located on Nottingham Island, approximately 80 kilometres (km) north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut. Low-level aerial reconnaissance of the site area was conducted in order to assess the locations of all structures and debris requiring further investigation and to identify areas of archaeological potential. Limited vegetation and sedimentation enabled surface examination of the facility areas to adequately assess the presence of cultural materials. As requested, areas which will not be impacted during remediation were not examined. During the study four previously unrecorded archaeological sites, KgFr-1, KgFr-2, KgFr-3 and KgFr-4, were recorded and documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations* (Government of Nunavut 2003). In addition seven land use sites were documented.

PWGSC has fulfilled the requirements to identify the potential for impact to heritage resources during the proposed remediation/reclamation of the Nottingham Island Weather Station on Nottingham Island. The AIA included the participation of Qalingo Ainalik and Salimuni Qavavauk from the local community of Ivujivik, Quebec, who acted as bear monitors and participated in the identification and recordation of the heritage resource sites.

The AIA included the identification of four previously unrecorded heritage sites: KgFr-1, KgFr-2, KgFr-3, and KgFr-4. KgFr-1 is a stone circle feature; KgFr-2 is a lithic scatter; KgFr-3 is a small stone square feature; and KgFr-4 is a possible stone circle. Three sites are considered to be of moderate significance. KgFr-4 has being assigned a low cultural significance. None of the sites will be impacted by the proposed remediation activities.

It is recommended that PWGSC and AANDC have met their obligations to assess the potential for impact to heritage resources during the proposed Remedial Action Plan. It is also recommended that the newly identified sites KgFr-1, KgFr-2, KgFr-3, and KgFr-4 be avoided during reclamation activities.

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1. INTRODUCTION

During August of 2012, Golder Associates Ltd. (Golder) conducted an Archaeological Impact Assessment (AIA) of the Nottingham Island Weather Station on Nottingham Island, Nunavut on behalf of EBA, a Tetra Tech Company (EBA) working for Public Works and Government Services Canada (PWGSC) and Aboriginal Affairs and Northern Development Canada (AANDC). The weather station is located on Nottingham Island, approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut (Figure 1). This AIA was carried out in conjunction with the Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, and Geotechnical Evaluation and Remedial Action Plan. All required fieldwork was completed under an Archaeological Permit (2012-007A) issued by the Department of Culture and Heritage, Nunavut to Julie Ross and later amended to Brent Murphy of Golder.

Initially low-level aerial reconnaissance of the site area was initially flown in order to assess the locations of all structures and debris requiring further investigation and to identify areas of archaeological potential. The AIA was intended to identify any artifacts or heritage resource areas that might be impacted by a remediation program and, as such, only those areas of previous and potential disturbance were assessed. The intent of this program was not to conduct a full AIA of the entire Nottingham Island; however, during traverses of the former weather station some lands outside of proposed impacts were surveyed.

The amount of previous disturbance associated with the weather station site and limited vegetation facilitated assessment of the facility areas and increased visual assessment for the presence and/or absence of cultural materials. As requested, areas that will not be impacted during remediation were not fully examined. During the AIA four previously unrecorded sites, KgFr-1, KgFr-2, KgFr-3, and KgFr-4 were recorded and documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations* (Government of Nunavut 2003).

LEGEND

APPROXIMATE WEATHER STATION LOCATION

REFERENCE

TOPOGRAPHIC MAP 035/N AND 036/C OBTAINED FROM Canmatrix © 2008. HER MAJESTY THE QUEEN IN RIGHT OF CANADA. DEPARTMENT OF NATURAL RESOURCES. DATUM: NAD83 PROJECTION: UTM ZONE 18

PROJECT

NOTTINGHAM ISLAND WEATHER STATION

TITLE

SITE LOCATION NOTTINGHAM ISLAND WEATHER STATION

Golder Associates

PROJECT	12.1372.0044.1000		FILE No.	12137200441000A001
DESIGN	BM	17/10/2012	SCALE AS SHOWN	REV. 0
CADD	VI	19/10/2012		
CHECK	BM	18/03/2013		
REVIEW	DB	18/03/2013		

FIGURE: 1

L:\2012\1372\12-1372-0044\1000\Report_A\Fig1_12137200441000A001_SiteLoc_HisResSites.dwg Mar 18, 2013 - 9:58am

2. LOCATION, POTENTIAL IMPACTS, AND OBJECTIVES

2.1 Location

The weather station is located on Nottingham Island, approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut. Nottingham Island is located off the southwest coast of Baffin Island in the Hudson Strait in a small inlet. The weather station buildings are situated on a small upland approximately 25 m above sea level (ASL) which is almost surrounded by bedrock outcrops (Plate 1). Access to the modern beach is between bedrock outcrops leading southeast to the water. The weather station was constructed in 1927 and decommissioned in the 1970s at which time the buildings were purchased by the West Baffin Co-Operative Ltd. (WESA Ltd 2010).

Plate 1 View south of Nottingham Island Weather Station from bedrock outcrop.

2.2 Potential Impacts

The potential impacts to heritage resources around the Nottingham Island Weather Station are dependent upon the proximity of those resources to the remediation activities that will be conducted to remove the remnants of the former weather station site. Heritage resource sites are non-renewable resources that may be located at or near ground level or may be deeply buried. Prehistoric or precontact archaeological sites are those sites which contain features, artifacts, or ecofacts reflecting the use of a given land base by people prior to European influences and technologies. Features are non-portable articles that indicate a human modification of the local environment such as hearths, pits, tent rings, stone cairns, and Inuksuit. Artifacts are portable items that have been modified by people at some time in the past. These include such items as projectile points, stone flaking debris, and cut and modified bone. Ecofacts are naturally occurring items such as preserved plant remains or pollen that can aid in the interpretation of archaeological sites. Historic archaeological sites include the features, artifacts, and ecofacts relating to the past few hundred years of human occupation. These sites are typically identified by the presence of buildings or structural remains, but may include any site that has evidence of historic use of the landscape.

Alteration of the landscape can result in the damage or complete destruction of all or portions of historic resource sites. These alterations often involve the displacement of artifacts resulting in the loss of valuable contextual information or may involve the destruction of the artifacts and features themselves resulting in complete information loss. These losses are permanent and irreversible. Primary, secondary, and tertiary impacts are possible with any new development. Remediation can be considered a new development in this context if it impacts previously undisturbed areas during operation.

Primary impacts include those disturbances resulting immediately from a project. The primary impact zone is the area within the remediation footprint including access roads, temporary work zones, borrow pits, and dumps. Individual sites are likely to be affected to varying degrees if they are located within the development area. Artifact context is

fundamental to interpretation of archaeological sites. By disturbing the context in which artifacts and features are recovered, interpretations of heritage resources sites and, ultimately, past lifeways are affected negatively.

Secondary impacts can occur when the support services or additional access required by development adversely affects heritage resources outside the primary target areas. The remediation project should have no secondary effect on heritage resources.

Tertiary impacts are the results of project induced changes in demography and land use patterns. Increased rates of intentional and unintentional impacts can be expected as a result of increased visitation to an area if the project were large enough to affect regional population bases. Tertiary impacts are anticipated to be very low for this project, especially because changes to the site through remediation will probably only negatively affect the visitation rates.

The study detailed in this report is intended to identify areas of possible impact and to determine whether the current proposed project will disturb those heritage resources located in proximity to the development.

2.3 Project Objectives

The objective of the 2012 study at the Nottingham Island Weather Station located on Nottingham Island is to ensure that heritage resources are not inadvertently impacted by the proposed clean-up and remediation project. The purpose of this AIA is to:

- conduct a pre-impact assessment of the proposed remediation areas;
- identify any archaeological sites within proposed remediation areas (if present);
- make recommendations to Culture and Heritage, EBA, and PWGSC to mitigate or avoid those sites;

- make recommendations on surveillance and monitoring;
- provide a cost estimate on implementing the recommendations during the construction phase; and
- prepare a draft Final Report to be reviewed by EBA and PWGSC, followed by a Final Report for distribution as required and submission to Culture and Heritage.

3. PHYSICAL AND CULTURAL SETTING

3.1 Environmental Context

An understanding of past environmental conditions and the environmental factors that shape human approaches to subsistence and settlement patterns enable archaeologists to not only locate sites, but also to provide more accurate interpretations of individual sites. The physical aspects of the environs (topography, drainage, climate, and soils) as well as resource availability (flora, fauna, lithic materials, and water) are prime criteria for the identification of site location and function. Assessments of the cultural activities of site location, travel within and through the area, and resource exploitation are key components of any archaeological site analysis.

The anthropological theory of environmental determinism suggests that, to a great extent, environmental factors condition human behavioural and cultural adaptations, or patterns of behaviour. The environment has likely influenced many of the activities that contribute to the character of the regional prehistoric record. All available environmental variables must be considered as indicators of prehistoric use of the landscape.

The regional environment influences where specific activities and occupation are located in a pattern of seasonal movements according to the availability of resources: a seasonal round. The variables of archaeological site distribution can be identified and combined into useful criteria for suggesting the potential of an environment to hold heritage resources that includes a wide variety of landforms frequently associated with coastlines and lake shores, river banks, boulder fields, eskers and kames, and bedrock knolls in Arctic environs. Distribution patterns partially reflect environmental opportunities presented to human groups as well as cultural preferences demonstrated by site location. Topography influences much human activity including travel, communication, resource catchments, dwelling locations, and eventually constrains human activity areas to defined localities. Based on existing heritage resources, the environment is a key factor in human settlement patterns.

3.2 Regional Environment

Prior to contact with Europeans, the environment in which the people of North America lived strongly influenced their culture and economy. The people who inhabited the North took advantage of the seasons and all the resources that were available.

Nottingham Island is part of the Canadian Shield which makes up much of the southern portion of the Qikiqtani region of Nunavut. The island consists of undivided gneiss Mesoproterozoic rock (Wheeler et al 1997). This island has numerous fjords, inlets, and cliffs (Collignon 2005). The vegetation of the southern Qikiqtani is diverse, but sparse and include dwarfed with sedges, saxifrage, dryas, Arctic willows, cottongrass, broad-leafed willows, herbs, and Arctic poppies being the most common plants. Caribou, wolf, Arctic fox, lemming, Arctic hare, and polar bears are the most common land mammals on the island while sea mammals include walrus and several species of seals and whales are found in coastal waters. Nottingham Island is a walrus hunting destination for both Nunavummiut and Nunavimuit and is known as Tutjatt (an old Inuktitut word with a general meaning of a place to settle down [personal communication L. Otak 2012]).

3.3 Heritage Resources

Archaeology is the study of human history through the material remains of culture, now known as heritage resources. The ultimate goal in archaeology is to describe the cultures and events responsible for the creation and deposition of the remains at a given archaeological site. As such, archaeologists use material remains to determine the nature and age of cultural occupations at a site. Artifacts, ecofacts and features deposited into the natural environment, along with their inter-relationships, are the integral parts that make up an archaeological site. The *Nunavut Archaeological and Palaeontological Sites Regulations* (Government of Nunavut 2003) define heritage resources as: “but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historical buildings and cairns.”

Predating the arrival of Europeans, precontact archaeological sites are comprised of artifacts, features and residues of native origin typically characterized by modified bone and stone, and stone structures. Historic sites are those structures, features, and objects of European influence that date back to contact with the Europeans but can also represent more recent activity of more than 50 years. Depending on the context, sites less than 50 years old may be considered to represent traditional land use and are identified to document continued use and occupation of an area to the present time. A key component of the historic period record are the sites, artifacts and affiliated resources relating to post-contact Aboriginal people's use of the landscape. These include both archaeological sites and objects such as standing and collapsed cabins, campsites, graves, and traditional sites and resources, such as special places, hunting and plant collecting areas, traplines and their associated remains, oral traditions, and various documents. These latter resources are usually identified through consultation procedures such as Traditional Use Studies or community consultations.

Additionally, heritage resources include, as well as the sites where events took place in the past, all of the objects that they contain and any of the contextual information that may be associated with them and will aid in their interpretation, including natural specimens and documents or verbal accounts.

Heritage resources are non-renewable and are susceptible to alteration, damage, and destruction by construction and development activities. The value of heritage resources cannot be measured in terms of individual artifacts or biological specimens, rather the value of these resources lies in the integrated information which is derived from the relationship of the individual artifacts and fossil specimens, associated features, spatial relationships (distribution), and contextual situations. Interpretation of heritage resource materials, and the ability to interpret the significance of particular sites in a landscape, is based on an understanding of the nature of the relationship between individual archaeological and palaeontological materials as well as the sediments and strata within which they are contained. As such, removal or mixing of cultural or fossil bearing

sediments results in the permanent loss of information basic to the understanding of these resources. As a result, heritage resources are increasingly susceptible to destruction and depletion through disturbance.

Similarly, tundra areas north of the tree line are characterized by extremely slow rates of soil development and sediment accumulation. Accordingly, at repeatedly occupied sites, there is little chance of distinguishing occupations relating to different periods within the 5,000-year record of human occupation in the region without recovering a diagnostic indicator. Some areas of high sediment deposition rates are present within the study area, but these are not the typical scenario.

The lack of temporally diagnostic artifacts, the absence of materials suitable for radiocarbon dating, and the natural mixing of shallow archaeological deposits serve to limit the definition of the recognized prehistory for the region. In contrast, extant documents, records, and oral testimony provide a firmer basis for understanding the historic period of the region.

3.3.1 Cultural Chronology

Many of the archaeological materials in the project area represent human activity after the ice sheet receded from the study area about 5,000 years ago. Soon afterward the Arctic was colonized by peoples archaeologists referred to as the Arctic Small Tool tradition (ASTt) with Southwestern Baffin Island, Melville Peninsula, Southampton Island, and the northern portion of Quebec being considered to be part of the core area of ASTt Culture Development.

3.3.1.1 Early Arctic Small Tool Tradition (4200 B.P. to 2800 B.P.)

The ASTt represents a widespread cultural manifestation that covers all of the Canadian Arctic as well as parts of Alaska and Greenland. The early ASTt is typically thought to date between approximately 4,200 and 2,800 B.P. (McGhee 1990). It includes the

Denbigh Flint complex in northern Alaska, the Independence I culture of the Canadian High Arctic, the Inuvik Phase, the Pre-Dorset culture in Arctic Canada, and the Sarqaq culture in Greenland. It is thought that the ASTt relates to a separate migration of peoples from Siberia and does not appear to be related to the preceding Palaeo-Arctic tradition, known from areas further south in Nunavut. As the name implies, the toolkit of the ASTt is comprised of lithic artifacts that are finely made and smaller than tools of similar function and age from elsewhere in North America. These include microblades and microcores, burins, gravers, small side and end scrapers, side and end blades, and bipointed (arrow) and triangular (harpoon) projectile points (Wright 1995). The region was first inhabited by the Pre-Dorset approximately 4,200 years ago, supported by archaeological sites identified at Mansel Island, Lake Harbour, Frobisher Bay, and Pond Inlet (d'Anglure 1984:480; Desrosiers 2005:193.). Prior to this inhabitation, a large ice sheet had covered the island until its melting 5,000 years ago (Desrosiers 2005:193). In Alaska Early ASTt appears to have developed into the cultures of the Norton tradition while in Canada it developed into the Late ASTt or the Dorset culture. Dorset groups are identified in the archaeological record, between 2,500 and 600 years ago. The regions of Southwestern Baffin Island, Melville Peninsula, Southampton Island, and northern Quebec are considered the central regions of Pre-Dorset and Dorset cultural development (Desrosiers 2005:193).

3.3.1.2 Dorset Culture (2,500 B.P. to 600 B.P.)

The Dorset culture of the Canadian Arctic are best known for miniature carvings, Dorset appears to have been a more successful adaptation to the conditions of the north than the preceding ASTt cultures from which it developed. This is demonstrated by the huge area occupied by Dorset groups and by evidence that they had perfected winter hunting on the sea ice. Cooler conditions in the northern hemisphere around 3,000 years ago resulted in expansion of the sea ice and a shift away from terrestrial hunting of caribou and hunting of sea mammals from boats in open water to a procurement of sea mammals from coastal edges and sea ice. This is evidenced in the archaeological record with a shift away from bow hunting to harpoon and spear hunting (McGhee 1990). Artifacts recovered from

sites representing this period are more diverse and "reflect a richer and more secure way of life than that of earlier Palaeo-Eskimos or Pre-Dorset." including the establishment of permanent winter villages (McGhee 1990).

Thule or Neo-Eskimo groups entered the area during the final 200 years of the Dorset occupation of the area. These two archaeologically distinct cultures may have coexisted in the region, but the character of this relationship is unclear (McGhee 2001, 2009; Wright 1999).

3.3.1.3 Thule (800 B.P. to 400 B.P.)

The Thule tradition dates from approximately 800 to 400 B.P. and is derived from the Norton tradition in northern Alaska. More specifically, Thule grows out of the Old Bering Sea and Punuk traditions, which have numerous similarities to Thule cultural assemblages. These assemblages suggest subsistence based on maritime resources such as seals and whales that were hunted from kayaks or umiaks as identified by harpoon floats. Thule represented a new kind of adaptation to the Arctic environment, based on the hunting of large sea mammals in open water through the use of drag floats attached to the harpoon line. Large skin boats and the use of dogs to pull large sleds were other Thule innovations. Winters were spent in sometimes large communities of semi-subterranean houses, subsisting on a stored surplus obtained most typically by hunting bowhead whales. The introduction of Thule into the Canadian Arctic is noted by a distinct change in a number of cultural markers from the Dorset culture. The earliest Thule occupations currently recognized are on islands in the Bering Strait and exhibit an almost complete reliance on maritime resources; however, later sites demonstrate that both maritime and terrestrial resources were utilized (McGhee 1990). Climatic changes following the thirteenth century likely caused the Thule to modify their way of life into that of the various historic Inuit groups.

3.3.2 Historic Inhabitants

Historic use of the project area is identified with the 'Inuit of Quebec' but was likely also used by 'Baffin Eskimo'. Much of the information known of the historic Thule, or Baffin Inuit and Quebec Inuit, is based on the ethnographic recordings of Franz Boas and Jens Haven from the late 1800 and 1700's respectively. At this time, Boas recognized seven distinct regional populations within the Baffin Inuit area (Kemp 1984:464). These populations were "linked together by [bilateral] kinship and the mutual use of hunting and territory, to form larger territorial and social groupings...bands" (Kemp 1984:464). Importantly, by the time of Boas' ethnography the Baffin Inuit possessed many European goods, which influenced and altered the traditional life-ways of the local groups. Baffin Inuit groups inhabited the southern two-thirds of Baffin Island and some of the nearby islands off its shores (Kemp 1984:464). Ten Inuit groups were identified in Quebec in a 1773 manuscript written by the Moravian missionary Jens Haven and four additional names were forwarded by Turner in 1888 (d'Anglure 1984:476). The Quebec Inuit most likely to have used Nottingham Island would have been the Tarramiut (d'Anglure 1984:476,478). Nottingham and Button islands were used as stopping over placed when people were crossing the Hudson Strait (d'Anglure 1984: 478). It was noted by occupants of the weather station what the Tarramiut were more traditional than other Inuit groups, owing to limited previous contact (d'Anglure 1984:500). Some of the trade goods in this region came from shipwrecks associated with both military and trade activities in the area (d'Anglure 1984:499).

European contact with the Baffin and Quebec Inuit populations began in the 16th Century with efforts to find the North West Passage (d'Anglure 1984: 480; Desrosiers 2005:193; Kemp 1984:467). However, previously Baffin Bay had been explored by the Norse (Heinrichs 2005:191) and there may be a Norse Site near Kimmirut (Sutherland 2009). During the 10th Century these Norseman built settlements on Greenland and perhaps Newfoundland but little evidence remains of where and how far they had actually travelled as these same settlements collapsed during the 13th Century. Baffin Bay was next explored and recorded by John Davis in 1587. European interaction gradually

increased with the rise of European whale hunting; whaling stations began operating throughout the eastern arctic in the 1880s (Kemp 1984:466). Such whaling activities around Davis Strait originated in the 1700s, but it was not until the 1850s that all the inhabitants of the Cumberland Sound and Davis Strait regions were in contact with whalers (Kemp 1984:466). For the Quebec Inuit more intensive contact first came with the establishment of the Fort Richmond Hudson Bay post established to exploit trade and mineral exploration and mining (d'Anglure 1984:499). Settlement patterns changed as families from south Hudson Strait moved to Baffin Island and occasionally emigrated to more distant locations owing to kinship ties developed with Europeans. Soon after the first International Polar year 1882-1883, Nottingham Island Weather station was built as a means of asserting Canadian Dominion over the area, the station was a draw for Inuit and in the 1940 the census of the region counted 24 Inuit on the island (d'Anglure 1984:506). The whaling industry was eventually eclipsed by fur trapping in 1910 (Kemp 1984:474). Also in the early 1900s Anglican missionaries entered the Baffin region and Morvaians entered the Quebec region (d'Anglure 1984:501, Kemp 1984:474).

The Baffin and Quebec Inuit have historically utilized a vast array of subsistence resources, including marine, terrestrial, avian, and freshwater game (Kemp 1984:467). A vast array of tools was used for hunting, such as plugs to stop the bleeding of seals that made it easier for their transport. Bird nets were also constructed and used to ensnarl various avian species (Kemp 1984:468). Hunting weapons included breathing-hole harpoons that had compound elements, and single-curve bows (Kemp 1984:69). Metal, along with driftwood, antler, bone, and stone, were used in the construction of these implements. In addition, Baffin Inuit technology allowed for water transportation via kayaks and umiaks, or women's boats (Kemp 1984:469); the form of the kayaks was not consistent throughout the Baffin Inuit area. Dog sleds were used as well. These sleds were the dominant method of transportation until the 1960s when snowmobiles were introduced (Kemp 1984:469). With these forms of transportation, Inuit interacted with neighbouring groups such as those from northern Quebec (Kemp 1984:465).

Different subsistence resources were procured based on the season. For instance, seals (particularly ringed seal) were hunted along the floe-edge during the spring months, and caribou herds were hunted during the fall in the interior and coastal regions (sometimes with the aid of drives) (Kemp 1984:467-468); As this instance suggests, Baffin Inuit mobility was seasonal and influenced by the location of what game they were pursuing. As a rule, Baffin Inuit groups resided primarily in the coastal regions. It was the caribou that pulled groups into the interior, whereby three particular lakes were favoured as hunting locals: Nettling, Amadjuak, and Sylvia Grinnel Lakes (Kemp 1984:468). During these interior hunts, if excess caribou meat was produced, then it would be cached at these interior locations and retrieved at times of food stress during the winter months (Kemp 1984:468). In addition to there being differences in subsistence procurement based on seasonality, there were also differences in dwellings. Winter dwellings were commonly snow houses, although occasionally early and abandoned Thule houses were reused through the addition of roofs (Kemp 1984:470). In contrast to the winter, skin tents were utilized during the warmer months. These tents varied in form and size depending on how far they were to be transported and their use (Kemp 1984:470). A further seasonal distinction is found in Baffin Inuit clothing; only caribou skin was used for winter clothing, and seal skin was used in addition to caribou for summer clothes (Kemp 1984:470).

For the Quebec Inuit caribou was hunted by bow in August and September; this was followed by the walrus hunt. Mid-October to mid-November the island was used as wolf hunting grounds. Hunting activities diminished in the winter, in part in association with taboos, although walrus and ring seal were taken during the winter. The taboo period ended with the spring, coinciding with the birth of baby seals. Sealing was a May activity but this was also a period when small inland animals were hunted and cached food sought out. In April the caribou return from the south and lake ice fishing occurred. June is the busiest month with the procurement of seals, walrus, belugas and occasional

bow heads, hunting birds, and collection of egg and mollusk. July brought open water and travel by umiak to caribou hunting grounds (d'Anglure 1984:498).

3.3.3 Heritage Studies

Prior to the current study of the Nottingham Island Weather Station, only one heritage resources site was recorded in the Nunavut or Canadian Museum of Civilization database for this location. The site, KzFz-0 is a partial Borden designation indicating the location of the site is unknown; however the site is described as being on the south end of Nottingham Island. A small collection including a bone toggle and two bone pegs were collected by Dr. Robert Bell with the geological survey. The site is described as "old Eskimo graves"; however there are no human remains associated with the collection held at the Canadian Museum of Civilisations (Johanis personal communication 2012).

Ten sites have been recorded on Mill Island to the North of Nottingham Island (O'Bryan 1963). These sites are campsites made up of clusters of tent rings ranging in number from one to seven. Most are not associated with a cultural affiliation however one camp site it more recent and is classified as having an Inuit affiliation and two sites are associated with a Dorset affiliation. The remains at the two Dorset sites, LaFr-1, and LaFr-2 are more diverse and include house feature, tent rings, fox trap, cairn, cache, caribou fence, and hunting blind. One additional site, KlFq-3, is located on Putnam Island and it consists of a campsite with eleven tent rings.

4. METHODOLOGY

4.1 Field Inventory and Assessment

All field work was conducted under a valid Class II Archaeological Permit issued by the department of Culture and Heritage. The field program focused on assessment of all areas of high and moderate archaeological potential within the disturbed weather station site, and the proposed borrow source, land farm and landfill locations. The purpose of the field investigation was to identify archaeological materials, document location and content, and provide data to be used in the development of recommendations for future remediation programs. Inventory and assessment techniques followed established practices and consisted of the following:

- visual examination of the identified areas to determine the presence of such surficial features such as standing or collapsed buildings, dumps, cache pits, cabin foundations, etc. and exposed precontact cultural materials such as stone tool making debris and tools;
- visual examination of the identified areas to determine the presence of items of historical military interest;
- excavation of shovel tests (ca. 40 x 40 cm) to varying depths to determine the potential for subsurface precontact cultural remains if deposition is present;
- visual examination of bedrock exposures (if any) or gravels for precontact quarrying activity;
- excavation of either additional shovel tests or 1 x 1 m units for the purpose of identifying the distribution, density, and nature of cultural remains associated with sites identified through inventory procedures;
- documentation of the location (GPS coordinates), nature, size, and complexity of each identified site; and

- documentation of individual site features to record content, context, potential identity, and to provide information required to develop a mitigation program.

These results, along with updates and recommendations will be included in written submissions to the department of Culture and Heritage as required by the Permit to conduct the AIA, and discussed with the Territorial Archaeologist of Nunavut.

4.2 Heritage Feature / Structure Evaluation

Evaluations of heritage features and standing structures were to be completed for features/structures that are observed during the investigations. These evaluations would consider perceived heritage resource value and community cultural value as well as the predicted impact from the proposed program. In general, disturbed sites with limited cultural remains would be assigned lower archaeological resource values than undisturbed sites, large sites with large amounts of cultural material, complex sites, and multicomponent sites. Undisturbed multicomponent sites would generally be assigned the highest heritage resource value.

Community input will play a role in the evaluation of site value, and the inclusion of members of the local community on the field crew aided in the in-field discussions regarding site significance.

4.3 Detailed Archaeological Site Investigations/Mitigation

If required, mitigation of significant heritage resources sites may include a number of different options. Prior to evaluation of these mitigative options, the perceived value of the identified archaeological sites will be discussed with the EBA project team to determine the feasibility of avoiding important sites. Only if site avoidance is not possible, will other mitigative measures such as collection and documentation, and controlled mapping/excavation be considered. In areas of no sediment deposition surface collection and mapping of artifacts and features may satisfy regulatory requirements for

mitigation. Recommendations for excavation may include a controlled excavation mitigative plan and will specify the number of square metres and suggest locations for excavation units/blocks.

Overall mitigative options may be summarized by:

- collection and documentation undertaken at the time of the field assessment at all sites with low archaeological resource value;
- avoidance if feasible at all sites assigned high archaeological resource value;
- mitigative excavations which will be recommended at those sites assigned high archaeological resource value that could not be avoided by borrow source relocation; and
- a management plan for required mitigation relative to the proposed construction schedule will be discussed with the site project team.

4.4 Reporting

Analysis of collected artifacts includes cleaning, cataloguing, identification, inventory, and description of each piece for inclusion in the Final Report. GPS site information is provided for mapping relative to the former site structures at the site and to the Department of Culture and Heritage, but not included in the final versions of this report. Archaeological site maps, photographs, and artifact scans are prepared as digital files.

5. RESULTS

Upon completion of the field component and the artifact curation, a draft report was prepared. This permit report on the archaeological studies will be forwarded to EBA for review, and then submitted to the Department of Culture and Heritage for review. This report includes a project description, the environmental setting, the historical and archaeological context for the project area, field methodology, and the results of the field reconnaissance. The report includes descriptive data on the sites, artifacts, and features identified, as well as detailed information on the nature, content, and significance of the artifacts and features identified. Cultural material that was recovered was inventoried, described, and discussed within the report text to aid in evaluation of scientific and interpretive value. All identified sites have been documented on appropriate site inventory forms.

If required, a summary of the findings will be prepared for inclusion in a screening document.

The following workplan was followed:

- avoidance has been recommended where feasible at all sites assigned high archaeological resource value (this to include all constructed features: burials, tent rings, caches, hunting blinds, hearths);
- collection and documentation has been undertaken as a mitigative option of sites with low archaeological resource value and as a method of protecting the heritage resource from future undocumented impacts due to increased personnel activity in the vicinity; and
- acceptable methods of mitigation were discussed with Department of Culture and Heritage and the Territorial Archaeologist, and may lead to a recommendation for detailed mapping, collection, and/or test excavations at those sites assigned high archaeological resource value that cannot be avoided by reclamation project.

A management plan for required mitigation, monitoring or surveillance relative to the proposed remediation will be developed as part of the contracted services deliverable to

PWGSC. This includes site mitigation, additional survey of any project re-locates required due to site avoidance, and verification of those heritage sites located outside the proposed development activity area that should remain outside re-located areas.

A search of the Canadian Museum of Civilization database identified only one previously recorded site on Nottingham Island. That site, KzFz-0, was reported as is an old grave site, and is associated with very general geographic information. The current study did not confirm the location of this site and therefore KzFz-0 is likely further south on the Inuit Owned Lands.

5.1 Community Consultation

Consultation with the communities of Cape Dorset, Salluit and Ivujivik regarding the Nottingham Island Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, and Geotechnical Evaluation and Remedial Action Plan was undertaken on January 28, 2013 in Cape Dorset and January 29, 2013 in Salluit and Ivujivik. During the permit application process the community of Cape Dorset was consulted by means of letter from the Permit Holder and the Inuit Heritage Trust Incorporated (IHTI) was in contact with the community.

5.2 Field Results

The AIA assessment included all of the areas of moderate to high archaeological potential that had been disturbed by the Nottingham Island Weather Station (Plate 2). Previously undisturbed areas that were examined included the periphery of all the impacted areas as well as several areas that were identified as potential landfarms and landfills for remediation activities (Plate 3).

During the survey the previously recorded site KzFz-0 location was not confirmed however four previously unrecorded sites, KgFr-1, KgFr-2, KgFr-3 and KgFr-4 were identified and recorded.

Plate 2 View east of bull dozer push.

Plate 3 View northwest across potential borrow.

5.3 Nottingham Weather Station

The station consists of several buildings including: house, kitchen, two storage sheds, radio building, outhouse, chicken coop, garage, generator building, a newer bunkhouse/kitchen facility, a newer radio building and two newer storage buildings (WESA Ltd. 2010). Occupants of the weather station also build stone structures such as carins. While the weather station is not an archaeological site; the buildings and associated debris do represent a period in Canadian Arctic History (Plates 4-10).

Plate 4 View south across weather station.

5.4 Archaeological Sites

During the survey of the project area and surrounding area four previously unrecorded archaeological sites were recorded and documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations* (Government of Nunavut 2003). In addition nine Land use sites were noted (Figure 2).

Plate 5 Burnt building or debris area 1.

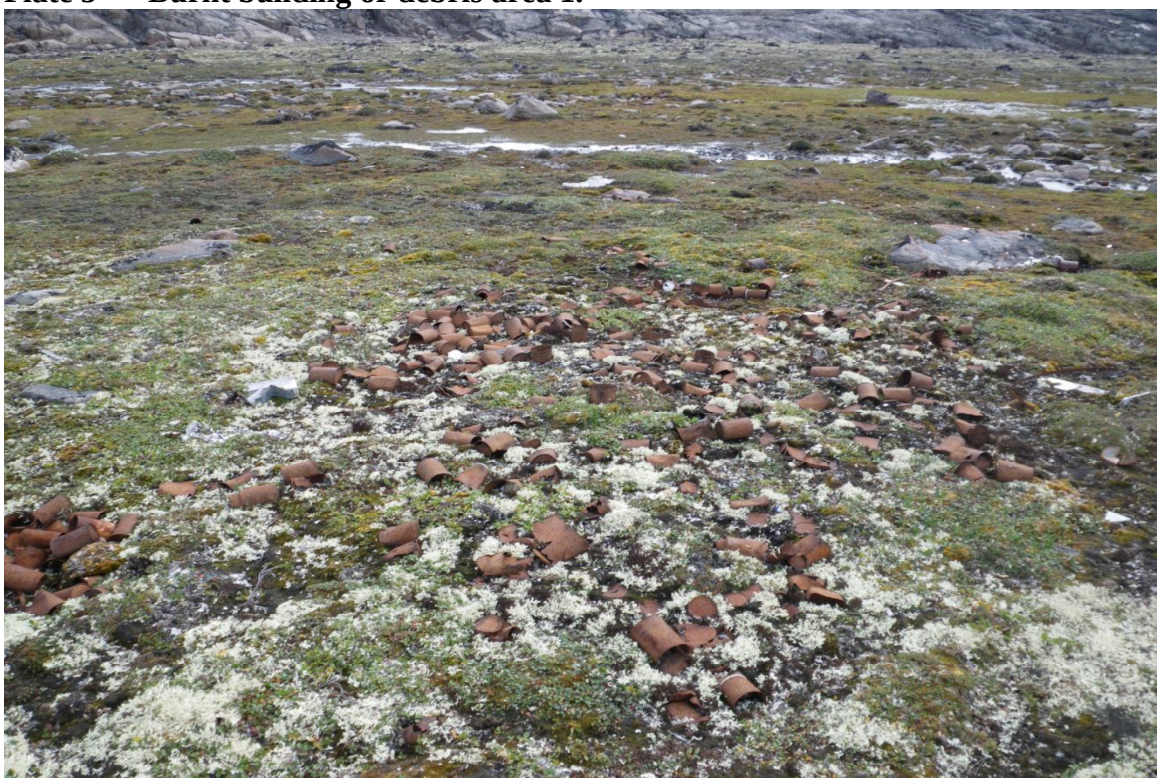


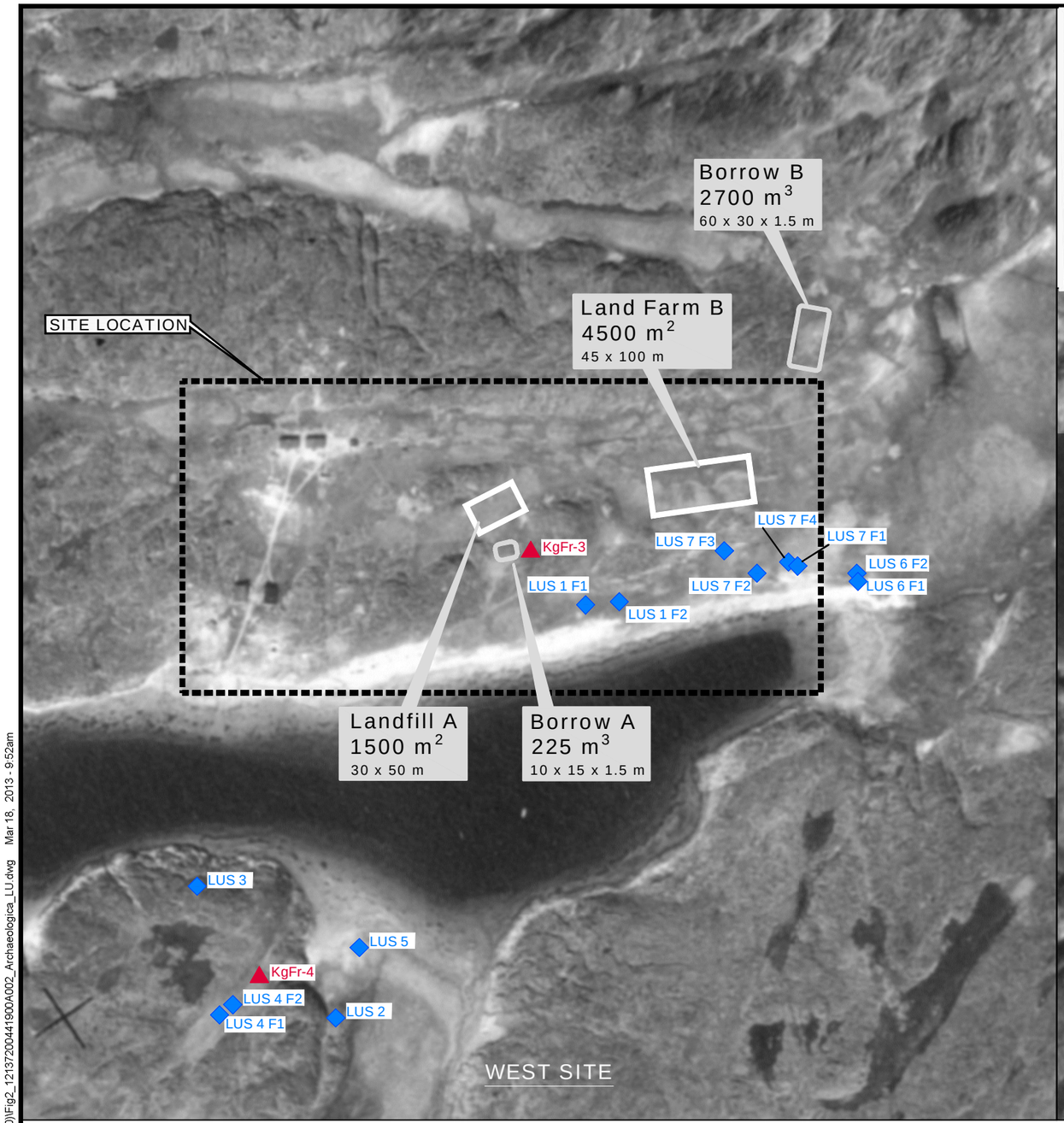
Plate 6 Can dump - 150+ food cans, various ages.

Plate 7 Modern cairn.

Plate 8 View east of House.

Plate 9 Sewing machine in Debris area 4 on the beach.

Plate 10 Cold food storage.



LEGEND

- ARCHAEOLOGICAL SITE
- LAND USE SITE

NOTE

FIGURE CREATED FROM DRAWING PROVIDED BY EBA, A Tetra Tech Company.

REFERENCE

ORIGINAL DWG: EBA, A Tetra Tech Company. Y22101291 FIGURE G2
SITE PLAN SHOWING TESTPIT LOCATIONS AND AREAS OF BORROW, LANDFARM AND LANDFILL

100 0 100
SCALE METRES

PROJECT

NOTTINGHAM ISLAND WEATHER STATION

TITLE

ARCHAEOLOGICAL AND LAND USE SITE LOCATION

Golder Associates

PROJECT	12.1372.0044.1000		FILE No.	121372004419000A002
DESIGN	BM	17/10/2012	SCALE AS SHOWN	REV. 0
CADD	VI	19/10/2012		
CHECK	BM	18/03/2013		
REVIEW	DB	18/03/2013		

FIGURE: 2

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5.4.1 KgFr-1

KgFr-1 s a stone feature site that is made up of a single stone circle on a bedrock ridge overlooking two unnamed lakes (Plate 11). The stone feature is rectangular in shape and made up of 14 stones and measures 2.5 m by 1.4 m. The feature also has an internal feature made up of five stones. KgFr-1 is thought to be moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-1 during the remediation of the Nottingham Island Weather Station.

Plate 11 View west of stone feature, KgFr-1.

5.4.2 KgFr-2

KgFr-2 is a lithic scatter that was recorded on an alluvial fan (Plates 12-14). The scatter is made up of flakes, cores, and one end blade. The end blade is made on a flake of white crystal quartzite; the base has been thinned and ground. The lithic assemblage also includes two quartzite cores, one small chert core, and 120 flakes. Ninety chert flakes

(brown, green, and red) and 30 quartzite flakes (brown) were observed, but not collected. KgFr-2 is thought to be moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-2 during the remediation of the Nottingham Island Weather Station.

Plate 12 Close up photo of lithic scatter concentration with scale, KgFr-2.

Plate 13 Endblade KgFr-2.

Plate 14 Example of one of the quartzite cores, KgFr-2.

5.4.3 KgFr-3

KgFr-3 is a small square stone feature (Plate 15). The site was recorded on a bedrock outcrop above the beach east of the weather station. The feature is approximate 50 cm by 40 cm. The feature appears to be a box hearth with one of the outline stones having fallen in to the center. KgFr-3 is thought to be of moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-3 during the remediation of the Nottingham Island Weather Station.

Plate 15 Square stone feature, KgFr-3.

5.4.4 KgFr-4

KgFr-4 is a stone circle feature (Plate 16) which is situated about 150 m inland from the bottom of the inlet across from the Nottingham weather station. The feature is approximately 4 m in diameter and made up of more than 80 stones. KgFr-4 is thought to be of limited significance. It is recommended that impacts to the site be avoided. At this time there are no plans to disturb KgFr-4 during the remediation of the Nottingham Island Weather Station.

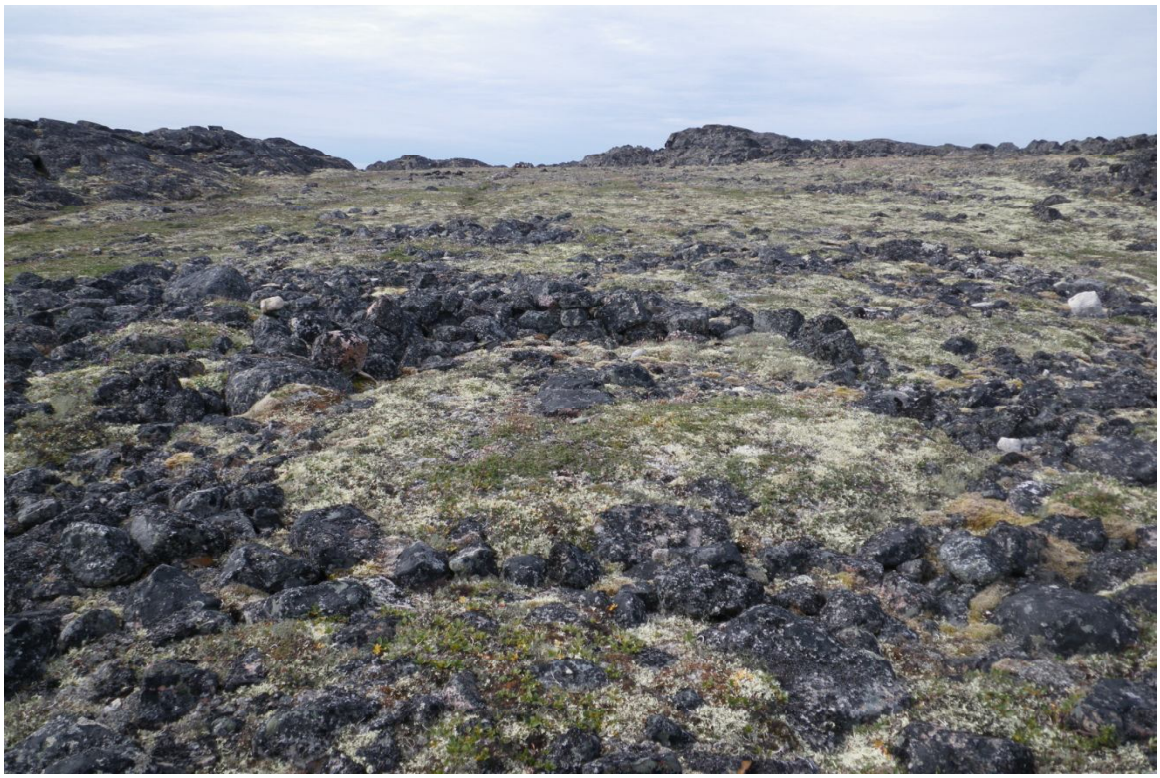


Plate 16 View south of stone feature, KgFr-4.

5.5 Land Use Site

Land use sites represent evidence of human, typically but not exclusively Inuit, use of the land within the past 50 years. They are not assigned Borden numbers, there is no obligation to report them and they are not afforded protection under law. Therefore there is no requirement to make accommodations for them during non-traditional land use planning. However, they are important to note because as time passes, should these sites

not be disturbed, they will qualify as archaeological sites; they provide important information about changes in land use and technology and they may indicate the presence of other valued environmental components for which it is prudent for land developers to be aware of these sites.

5.5.1 Land Use 1

Land use site 1 consist of two modern stone circle on the north side of the Weather Station Inlet. The features are about 35 m from the shore and approximately 30 m from each other (Plates 17 and 18).

Plate 17 View north of modern tent ring, Land Use Site 1, Feature 1.

Plate 18 View north of modern tent ring, Land Use Site 1, Feature 2.

5.5.2 Land Use 2

Land use site 2 is a possible Artisanal 'mine' (Plate 19). Beyond the extraction hole surrounded by whole quartzite there is evidence of a fire pit and a chisel at the site. The site is located down the south side of the inlet on which the weather station is situated.

Plate 19 Possible Artisanal 'mine'.

5.5.3 Land Use 3: Stone Cairn

Land use site 3 is also situated on the southern side of the weather station inlet. The site consists of a tall modern cairn/ inuksuk (Plate 20).

Plate 20 Stone cairn/modern Inuksuk.

5.5.4 Land Use 4: Cache and Tent Ring

Land Use site 4 consists of two features. These features are situated on the south side of the inlet. Feature 1 is a partially opened cache with wood inside (Plate 21). Feature two is a disperse tent ring (Plate 22).

Plate 21 Land use site 4, feature 1 modern stone cache with wood inside.

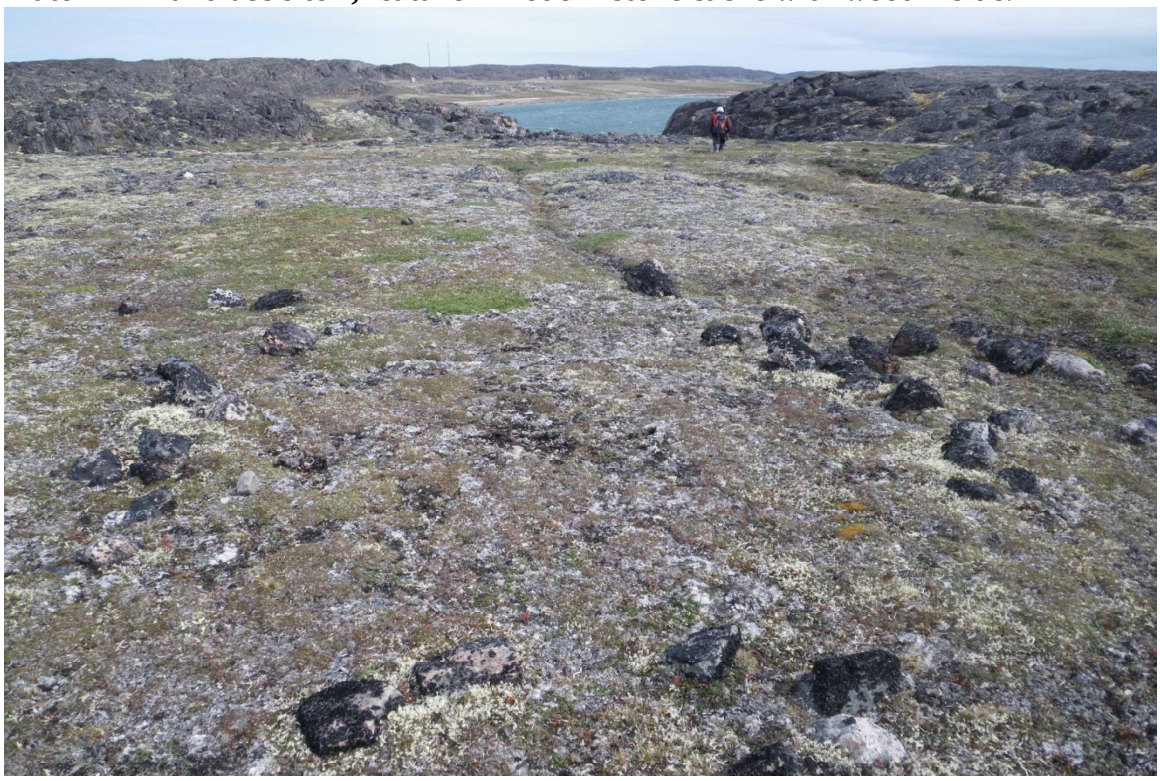


Plate 22 Land use site 4, feature 2 disperse tent ring.

5.5.5 Land Use 5

Land use site 5 is located a few meters from the shore on the south side of the inlet across from the weather station. The feature is reminiscent of a square tent outline (Plate 23). The feature is surrounded by debris and some faunal remains of a walrus. Some of the debris appears to be from the weather station.

Plate 23 Land use site 5, tent ring.

5.5.6 Land Use 6

Land use site 6 consists of two features, both of which are tent rings (Plate 24 and 25). The features are located almost at the bottom of the inlet but slightly on the north side.

Plate 24 Land use site 6, Feature 1 tent ring.

Plate 25 Land use site 6, Feature 2 tent ring.

5.5.7 Land Use 7

Land use site 7 consists of three tent ring features. The site is approximately 50 m N-S and 100 m E-W. There is not more than 40 m between each feature. The features are located almost at the bottom of the inlet on the north side (Plates 26 to 28).

Plate 26 Land use site 7, feature 1 tent ring.

Plate 27 Land use site 7, feature 2 tent ring.

Plate 28 Land use site 7, feature 3 tent ring.

6. SUMMARY AND RECOMMENDATIONS

The AIA of the Nottingham Island Weather Station site was conducted under Nunavut Permit 2012-007A. The results of the study are discussed in Section 5 and outlined in Table 1. The disturbed nature of the site and limited vegetation and sedimentation enabled a high visibility surface examination of the facility areas to adequately assess for the presence of cultural materials. As requested, areas which will not be impacted during remediation were not fully examined. During the background study one previously recorded site, KzFz-0, was identified as possibly being in the vicinity of the weather station. However, the location of KzFz-0 could not be confirmed and it is likely located further south. Four previously unrecorded sites, KgFr-1, KgFr-2, KgFr-3, and KgFr-4 were identified and recorded as per the *Guidelines for Applicants and Holders of Nunavut Territory Archaeology and Palaeontology Permits* (Government of Nunavut 2003).

Table 1 Heritage Site Recommendations

Site	Type	Significance	Recommendations
KgFr-1	stone feature	moderate	avoidance is recommended
KgFr-2	lithic scatter	moderate	avoidance is recommended
KgFr-3	square stone feature	moderate	avoidance is recommended
KgFr-4	stone circle	low	avoidance is recommended

PWGSC has fulfilled the requirements to identify the potential for impact to heritage resources during the proposed remediation/reclamation of the former Nottingham Island Weather Station. The AIA of the weather station included the participation of Qalingo Ainalik and Salimuni Qavavauk from the local community of Ivujivik, Quebec, who acted as bear monitors and participated in the identification and recordation of the heritage resource sites.

The AIA included identification of four previously unrecorded heritage resource sites: KgFr-1, KgFr-2, KgFr-3, and KgFr-4. KgFr-1 is a stone circle feature; KgFr-2 is a lithic scatter; KgFr-3 is a small square stone feature; and KgFr-4 is a possible stone circle.

Three sites are considered to be of moderate significance. KgFr-4 has been assigned a low cultural significance. None of the sites will be impacted by the proposed remediation activities.

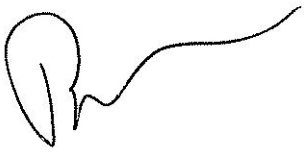
It is recommended that PWGSC and AANDC have met their obligations to assess the potential for impacts to heritage resources during the proposed Remedial Action Plan. It is also recommended that the newly identified sites KgFr-1, KgFr-2, KgFr-3, and KgFr-4 be avoided during reclamation activities.

7. CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Report prepared by:



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1995 *A History of the Native People of Canada, Volume I (10,000 – 1,000 B.C.)* Mercury Series, Archaeological Survey of Canada, Paper 152. Canadian Museum of Civilization, Hull.

1999 *A History of the Native People of Canada, Volume II (1,000 B.C. – A.D. 500.)* Mercury Series, Archaeological Survey of Canada, Paper 152. Canadian Museum of Civilization, Hull.

APPENDIX I

PHOTOGRAPH LOG

Nottingham Island Weather Station AIA Photo Log

Number	Site	Comment
2012-07Aphoto1		photo of coast guard light near site
2012-07Aphoto2		House and garage' building on site
2012-07Aphoto3		Coast guard 212 on site
2012-07Aphoto4		View south across site from muster point/storage shed
2012-07Aphoto5		Burnt building or debris area 1
2012-07Aphoto6		Burnt building or debris area 1
2012-07Aphoto7		Graffiti near burnt building
2012-07Aphoto8		Stove at burnt building
2012-07Aphoto9		Second stove at burnt building
2012-07Aphoto10		Detail of bed frame and debris at burnt building
2012-07Aphoto11		Detail of graffiti near burnt building
2012-07Aphoto12		Detail of graffiti near burnt building
2012-07Aphoto13		View across bay of Inukshuk on other side
2012-07Aphoto14		View across bay of Inukshuk on other side
2012-07Aphoto15		View east of shed and house and garage
2012-07Aphoto16		View east of debris area 4 from west end
2012-07Aphoto17		View east-southeast of debris - barrels
2012-07Aphoto18		View west of debris area 4 with large wooden (10 x 10) beams
2012-07Aphoto19		Detail of wooden beam and tractor track in debris area 4
2012-07Aphoto20		Detail of barrels in debris area 4
2012-07Aphoto21		Detail of debris area 4 with rail flat cart, stove and barrels
2012-07Aphoto22		View northeast of debris area 4
2012-07Aphoto23		Detail of modern fuel can, debris area 4
2012-07Aphoto24		Detail of 'Klik' can in Debris area 4
2012-07Aphoto25		View northeast of debris area 4
2012-07Aphoto26		Detail of wheelbarrow, in debris area 4
2012-07Aphoto27		Detail of sewing machine in debris area 4
2012-07Aphoto28		Detail of train/tractor thing in debris area 4
2012-07Aphoto29		View west of debris area 4
2012-07Aphoto30		Detail of train/tractor thing in debris area 4
2012-07Aphoto31		Detail of train/tractor thing in debris area 4
2012-07Aphoto32		Detail of train/tractor thing in debris area 4
2012-07Aphoto33		View southeast of modern hunting camp
2012-07Aphoto34		View west of fresh water lake
2012-07Aphoto35		Sled - wooden with metal runners

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto36		Sled - wooden with metal runners
2012-07Aphoto37		View north of west end of the big lake
2012-07Aphoto38	KgFr-1	Salimuni Qavavauk looking at stone feature site KgFr-1 (GA 01)
2012-07Aphoto39	KgFr-1	Salimuni Qavavauk looking at stone feature siteKgFr-1 (GA 01)
2012-07Aphoto40	KgFr-1	View east of stone feature site KgFr-1 (GA 01)
2012-07Aphoto41	KgFr-1	View west of stone feature site KgFr-1 (GA 01)
2012-07Aphoto42	KgFr-1	View west of stone feature site KgFr-1 (GA 01)
2012-07Aphoto43	KgFr-1	Detail of stone feature site KgFr-1 (GA 01)
2012-07Aphoto44	KgFr-1	View north of stone feature site KgFr-1 (GA 01)
2012-07Aphoto45		Crew looking at shell soil matrix in valley
2012-07Aphoto46	KgFr-2	View east of site area, KgFr-2 (GA 02)
2012-07Aphoto47	KgFr-2	View east of site area, KgFr-2 (GA 02)
2012-07Aphoto48	KgFr-2	View north of site area, KgFr-2 (GA 02)
2012-07Aphoto49	KgFr-2	View north of site area, KgFr-2 (GA 02)
2012-07Aphoto50	KgFr-2	Detail of core, KgFr-2 (GA 02)
2012-07Aphoto51	KgFr-2	Detail of core, KgFr-2 (GA 02)
2012-07Aphoto52	KgFr-2	Detail of debitage concentration, site KgFr-2 (GA 02)
2012-07Aphoto53	KgFr-2	Detail of debitage concentration, site KgFr-2 (GA 02)
2012-07Aphoto54	KgFr-2	Detail of debitage concentration, site KgFr-2 (GA 02)
2012-07Aphoto55	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto56	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto57	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto58	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto59	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto60	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto61	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto62	KgFr-2	Detail of end blade, site KgFr-2 (GA 02)
2012-07Aphoto63	KgFr-2	Detail of core, KgFr-2 (GA 02)
2012-07Aphoto64	KgFr-2	Detail of core, KgFr-2 (GA 02)
2012-07Aphoto65	KgFr-2	Detail of core, KgFr-2 (GA 02)
2012-07Aphoto66		View east of topography walking back to the weather station
2012-07Aphoto67		View north of gravel testing in progress
2012-07Aphoto68		View north of gravel testing in progress
2012-07Aphoto69		Approaching the site from the air
2012-07Aphoto70		Approaching the site from the air

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto71		Approaching the site from the air
2012-07Aphoto72		Approaching the site from the air
2012-07Aphoto73		Approaching the site from the air
2012-07Aphoto74		Crew getting ready for the day
2012-07Aphoto75		View north of bunkhouse
2012-07Aphoto76		View west of generator building
2012-07Aphoto77		View north of AST
2012-07Aphoto78		View north of old kitchen
2012-07Aphoto79		View north of stairs up to antenna
2012-07Aphoto80		Old radio/weather station equipment on site
2012-07Aphoto81		View east of chicken coop
2012-07Aphoto82		View northwest of chicken coop - back and side of the building
2012-07Aphoto83		View southeast of storage building
2012-07Aphoto84		View south of storage shed - that acted as our muster point
2012-07Aphoto85		View west along plowed road at site
2012-07Aphoto86		View west along plowed road at site
2012-07Aphoto87		View west along road from debris area 6
2012-07Aphoto88		View west along road from debris area 6
2012-07Aphoto89		Detail of debris with lots of motor parts
2012-07Aphoto90		Detail of another pile associated with debris area 6
2012-07Aphoto91		Detail of another pile associated with debris area 6
2012-07Aphoto92		Graffiti near debris area 6
2012-07Aphoto93		View southeast of small building and antenna poles
2012-07Aphoto94		View southeast of small building and antenna poles
2012-07Aphoto95		View southeast of small building and antenna poles
2012-07Aphoto96		View west of road with one of the fallen poles
2012-07Aphoto97		View west of road with one of the fallen poles
2012-07Aphoto98		Small building associated with antennae
2012-07Aphoto99		Board from crate that says Nottingham Island NWT
2012-07Aphoto100		View north of antenna from beach
2012-07Aphoto101		View east of bull dozer push
2012-07Aphoto102		View east of bull dozer push
2012-07Aphoto103		Debris area 5 (?)
2012-07Aphoto104		View southwest of debris area 5 (?)
2012-07Aphoto105		Detail of furnace

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto106		Random radio parts
2012-07Aphoto107		View southwest of site from on top of bedrock outcrop
2012-07Aphoto108		View southwest of site from on top of bedrock outcrop
2012-07Aphoto109		View south of antenna
2012-07Aphoto110		View south of site from on top of bedrock outcrop
2012-07Aphoto111		View south of site from on top of bedrock outcrop
2012-07Aphoto112		View south of site from on top of bedrock outcrop
2012-07Aphoto113		View east of Salimuni Qavavauk standing on bedrock outcrop above site
2012-07Aphoto114		Modern cairn on top of bedrock outcrop - may have held guy wire anchor
2012-07Aphoto115		View south of site from top of bedrock near antenna
2012-07Aphoto116		View south of old kitchen, storage shed and ASTs from bedrock outcrop
2012-07Aphoto117		View south of site
2012-07Aphoto118		View southeast of storage buildings - muster point
2012-07Aphoto119		Detail of concrete guy wire anchor - can make out "D Moriar, Halifax, NS"
2012-07Aphoto120		Detail of second concrete guy wire anchor - writing was not clear
2012-07Aphoto121		Modern cairn close to smaller concrete anchor - second generation anchor
2012-07Aphoto122		View south of site from bedrock outcrop
2012-07Aphoto123		View south of site from bedrock outcrop
2012-07Aphoto124		View south of site from bedrock outcrop
2012-07Aphoto125		Detail of wires and poles on top of bedrock outcrop
2012-07Aphoto126		Wires with the site in the background
2012-07Aphoto127		View south of site from bedrock outcrop
2012-07Aphoto128		View south of site from bedrock outcrop
2012-07Aphoto129		View south of site from bedrock outcrop - old kitchen and storage shed
2012-07Aphoto130		View south of site from bedrock outcrop - ASTs
2012-07Aphoto131		View south of site from bedrock outcrop
2012-07Aphoto132		View south of site from bedrock outcrop
2012-07Aphoto133		Photo of bridge to stairway that leads up to antenna on top of bedrock outcrop
2012-07Aphoto134		Photo of ASTs from bedrock outcrop
2012-07Aphoto135		View south of site from bedrock outcrop - new radio building

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto136	KgFr-3	Small box hearth in bedrock outcrop, KgFr-3
2012-07Aphoto137	KgFr-3	Small box hearth in bedrock outcrop, KgFr-3
2012-07Aphoto138	KgFr-3	Small box hearth in bedrock outcrop, KgFr-3
2012-07Aphoto139	KgFr-3	Small box hearth in bedrock outcrop - with scale, KgFr-3
2012-07Aphoto140	KgFr-3	Small box hearth in bedrock outcrop - with scale,KgFr-3
2012-07Aphoto141	Beach 1	View north of modern campsite - stone ring may have older stone ring underneath
2012-07Aphoto142	Beach 1	View north of modern campsite - stone ring may have older stone ring underneath
2012-07Aphoto143	Beach 1	View west of modern campsite - stone ring may have older stone ring underneath
2012-07Aphoto144	Beach 1	View west of modern campsite - stone ring may have older stone ring underneath
2012-07Aphoto145	Beach 1	Walrus skull
2012-07Aphoto146	Beach 2	View north of modern stone ring - #2
2012-07Aphoto147		View west of modern stone ring #2
2012-07Aphoto148		Detail of sea mammal remains and debris near stone feature
2012-07Aphoto149		Detail of sea mammal remains and debris near stone feature
2012-07Aphoto150		Debris area - view north
2012-07Aphoto151		Detail of debris area - detail
2012-07Aphoto152		Detail of debris area - detail
2012-07Aphoto153		View south off debris area
2012-07Aphoto154		Detail of hole in top can - condensed milk
2012-07Aphoto155		Detail of hole in top can - condensed milk
2012-07Aphoto156		View north of site from other side of bay
2012-07Aphoto157		View north of site from other side of bay
2012-07Aphoto158		View northwest across potential borrow on other side of bay
2012-07Aphoto159		View northwest across potential borrow on other side of bay
2012-07Aphoto160		View northeast across potential borrow on other side of bay
2012-07Aphoto161		View northwest across potential borrow across the bay from the site from the landform
2012-07Aphoto162		View northwest across potential borrow across the bay from the site from the landform
2012-07Aphoto163		artisanal 'mine' - lots of white quartzite
2012-07Aphoto164		Artisanal 'mine' - lots of white quartzite
2012-07Aphoto165		Artisanal 'mine' - lots of white quartzite
2012-07Aphoto166		Chisel left behind at 'mine'

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto167		Small fire pit at 'mine'
2012-07Aphoto168		Light bulb close to the fire pit at 'mine'
2012-07Aphoto169		Stone cairn - modern Inukshuk across the bay from the weather station
2012-07Aphoto170		Stone cairn - modern Inukshuk across the bay from the weather station
2012-07Aphoto171		Salimuni Qavavauk standing beside modern Inukshuk
2012-07Aphoto172		Salimuni Qavavauk standing beside modern Inukshuk
2012-07Aphoto173		Detail of modern Inukshuk
2012-07Aphoto174		Detail of modern Inukshuk
2012-07Aphoto175		View north of weather station from Inukshuk
2012-07Aphoto176		Photo of modern stone cache - there is wood in side
2012-07Aphoto177		View northeast of stone cache with dispersed stone tent ring
2012-07Aphoto178		Detail of dispersed stone ring - some sea mammal remains - modern?
2012-07Aphoto179	KgFr-4	View southwest of stone circle, site KgFr-4 (GA 03)
2012-07Aphoto180	KgFr-4	View southwest of stone circle, site KgFr-4 (GA 03)
2012-07Aphoto181	KgFr-4	View west of stone circle, site KgFr-4 (GA 03)
2012-07Aphoto182	KgFr-4	View northeast of stone circle, site KgFr-4 (GA 03)
2012-07Aphoto183		View east of beach with debris
2012-07Aphoto184		View east of beach with debris
2012-07Aphoto185		graffiti on cliff
2012-07Aphoto186		graffiti on cliff - "Dec 28, 1970"
2012-07Aphoto187		Braided wire on beach - couple hundred feet
2012-07Aphoto188		Can dump - 150+ food cans, various ages, pull top pop cans to top fill condensed milk cans. Also some vacuum tubes glass containers, green plastic, metal strapping, misc wood and sea mammal bones
2012-07Aphoto189	Beach 3	View north of modern tent ring
2012-07Aphoto190	Beach 3	Detail of modern tent ring
2012-07Aphoto191		Modern camp site - walrus bone, rusted metal, no features
2012-07Aphoto192	Beach 4	Modern tent ring on beach east of weather station
2012-07Aphoto193	Beach 4	Modern tent ring on beach east of weather station
2012-07Aphoto194	Beach 5	View north of modern tent ring
2012-07Aphoto195	Beach 5	View east of modern tent ring
2012-07Aphoto196		Can dump - 200+ cans plus misc debris from weather station
2012-07Aphoto197		Detail of can dump
2012-07Aphoto198		Debris west (5 m) of can dump

Nottingham Island Weather Station AIA Photo Log (continued)

Number	Site	Comment
2012-07Aphoto199		Detail of debris
2012-07Aphoto200	Beach 6	View east of modern tent ring
2012-07Aphoto201	Beach 7	View west of modern tent ring
2012-07Aphoto202	Beach 8	View west of modern tent ring
2012-07Aphoto203	Beach 9	View west of modern tent ring
2012-07Aphoto204		Sign on the house
2012-07Aphoto205		Photo of the house
2012-07Aphoto206		Photo of the cat near the sea lift
2012-07Aphoto207		Photo of the cat near the sea lift
2012-07Aphoto208		Graffiti near burned down building
2012-07Aphoto209		Wooden ramp from sea lift area
2012-07Aphoto210		Cat beside shed
2012-07Aphoto211		Garage
2012-07Aphoto212		Coal on the ground around shed
2012-07Aphoto213		Foundation west of the garage
2012-07Aphoto214		Graffiti
2012-07Aphoto215		Generator building
2012-07Aphoto216		ASTs and helicopter landing area
2012-07Aphoto217		Storage shed
2012-07Aphoto218		Cold storage
2012-07Aphoto219		Cold storage
2012-07Aphoto220		Area behind ASTs that appears to have been a foundation
2012-07Aphoto221		Small dump east of weather station
2012-07Aphoto222		Small dump east of weather station
2012-07Aphoto223		Road leading to small dump
2012-07Aphoto224		Coast Guard 212 getting ready to leave the island

APPENDIX II

SITE FORMS

Nottingham Island, 2012:

BN= **KgFr-1**

NAM= GA01

OWN=

RN=

PN= Nunavut 12-07A

PRO= AIA of the Nottingham Island Weather Station, Nottingham Island, Nunavut

LOC= the Nottingham Island Weather Station is on Nottingham Island approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut.

TER= Nunavut

DST= Qikiqtani

MR= 35n Nottingham Island

JUR= Federal

LAT= N63.11742

LNG= W77.90247

UTM=18 V 353610 7001980

UTM DET= NAD 83; Zone 18

AIR=

EL(ASL)= 24 m

EL(ASL) DET= Garmin 76 CS GPS

SIZ= 2.5 x 1.5 km

CON= The site is located on Nottingham Island in bedrock with sparse vegetation.

TYC= Prehistoric

TY= Stone feature, stone ring

FE= One stone ring.

CU= Inuit

PER= Unknown

DAT= Unknown

RES= Brent Murphy 2012

OD= 2012

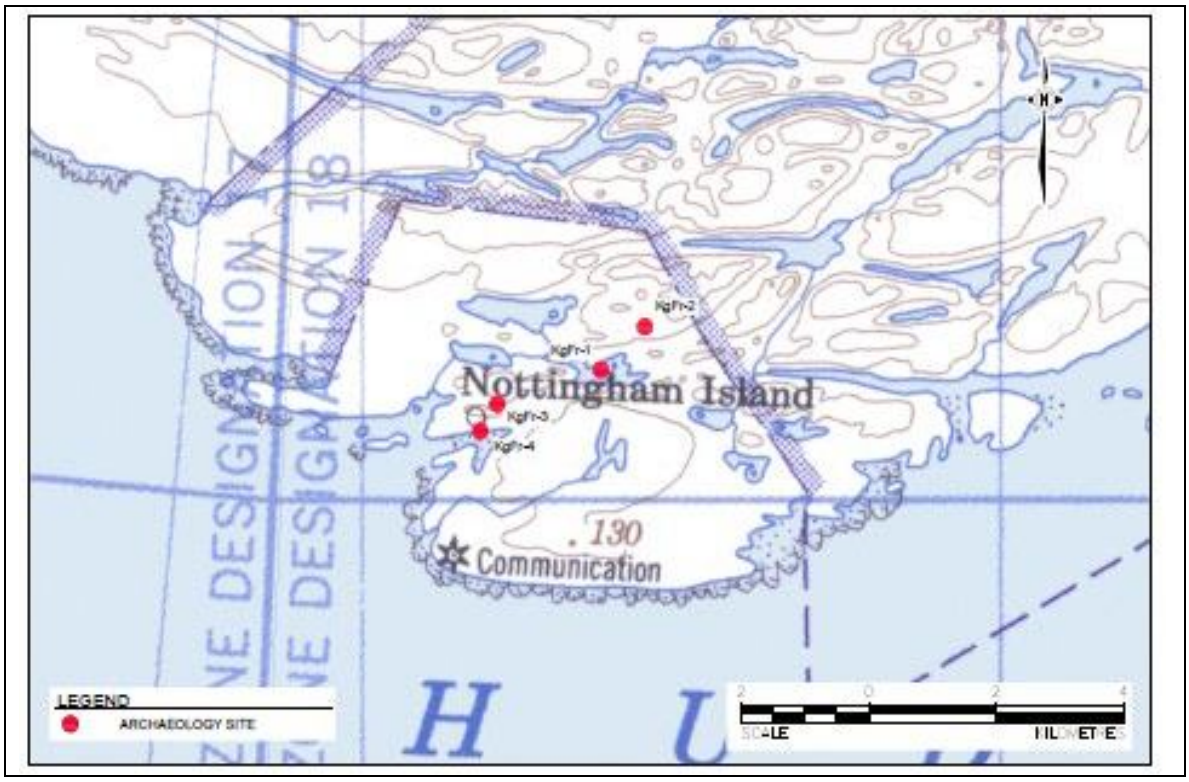
COL= None

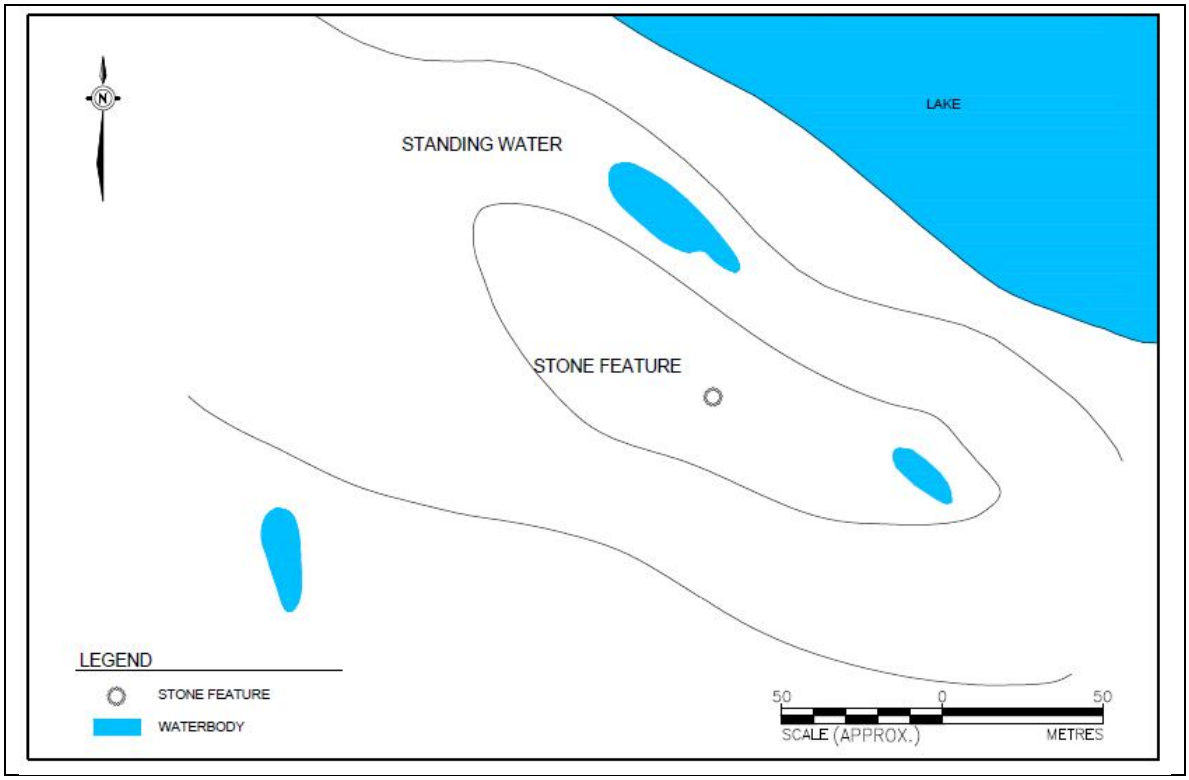
PRE=

UPRE=

RE= KgFr-1 is a stone feature site that is made up of a single stone circle on a bedrock ridge overlooking two unnamed lakes. The stone feature is rectangular in shape and made up of 14 stones and measures 2.5 m by 1.4 m. The feature also has an internal feature made up of 5 stones.

KgFr-1 is thought to be moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-1 during the remediation of the Nottingham Island Weather Station.




LAKE
STANDING WATER
STONE FEATURE
LEGEND
STONE FEATURE
WATERBODY
50 0 50
SCALE (APPROX.)
METRES

Nottingham Island, 2012:

BN= **KgFr-2**

NAM= GA02

OWN=

RN=

PN= Nunavut 12-07A

PRO= AIA of the Nottingham Island Weather Station, Nottingham Island, Nunavut

LOC= The Nottingham Island Weather Station is on Nottingham Island approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut.

TER= Nunavut

DST= Qikiqtani

MR= 35n Nottingham Island

JUR= Federal

LAT= N63.12366

LNG= W77.88942

UTM=18 V 354299 7002645

UTM DET= NAD 83; Zone 18

AIR=

EL(ASL)= 12 m

EL(ASL) DET= Garmin 76 CS GPS

SIZ= 10x 5 m

CON= The site located on an aluvial fan.

TYC= Unknown

TY= Lithic scatter

FE= None

CU= Inuit

PER= unknown

DAT= unknown

RES= Brent Murphy 2012

OD= 2012

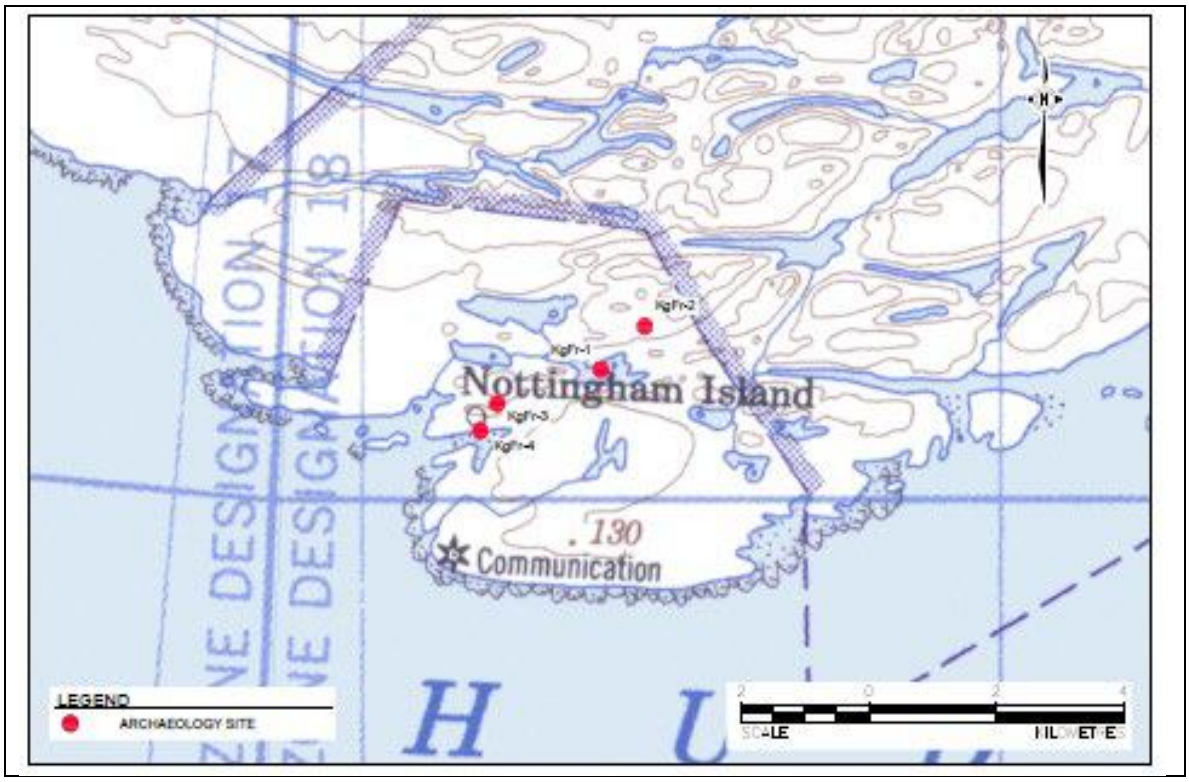
COL= None

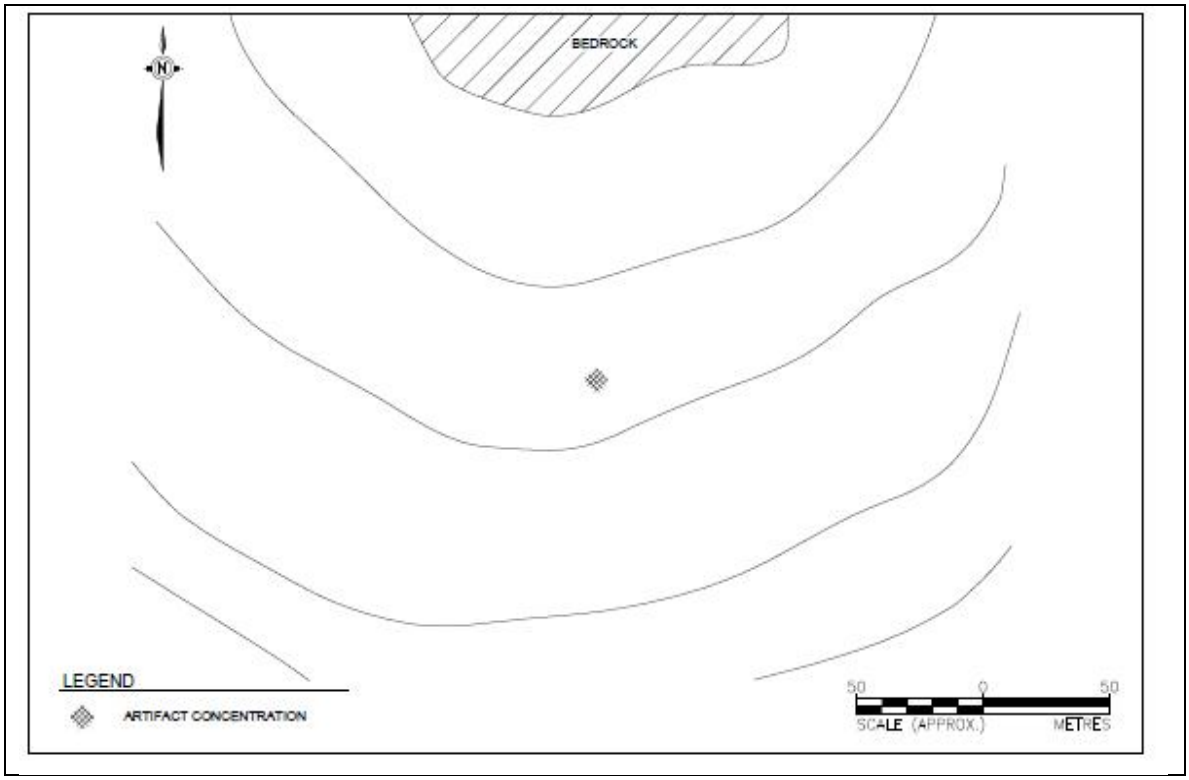
PRE=

UPRE=

RE= KgFr-2 is a lithic scatter that was recorded on an aluvial fan. The scatter is made up of flakes, cores and one end blade. The end blade is made on a flake of white crystal quartzite, the base has been thinned and ground. The lithic assemblage also includes two quartzite cores, one small chert core and 120 flakes. Ninety chert flakes (brown, green and red) and thirty quartzite flakes (brown) were observed.

KgFr-2 is thought to be moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-2 during the remediation of the Nottingham Island Weather Station.




BEDROCK
N
LEGEND
ARTIFACT CONCENTRATION
50 0 50
SCALE (APPROX.) METRES

Nottingham Island, 2012:

BN= **KgFr-3**

NAM= GA03

OWN=

RN=

PN= Nunavut 12-07A

PRO= AIA of the Nottingham Island Weather Station, Nottingham Island, Nunavut

LOC= The Nottingham Island Weather Station is on Nottingham Island approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut.

TER= Nunavut

DST= Qikiqtani

MR= 35n Nottingham Island

JUR= Federal

LAT= N63.11203

LNG= W77.93418

UTM=18 V 351984 7001452

UTM DET= NAD 83; Zone 18

AIR=

EL(ASL)= 19 m

EL(ASL) DET= Garmin 76 CS GPS

SIZ= 10x 5 m

CON= The site located on a bedrock outcrop above the beach.

TYC= Unknown

TY= Stone Feature – box hearth

FE= None

CU= Inuit

PER= unknown

DAT= unknown

RES= Brent Murphy 2012

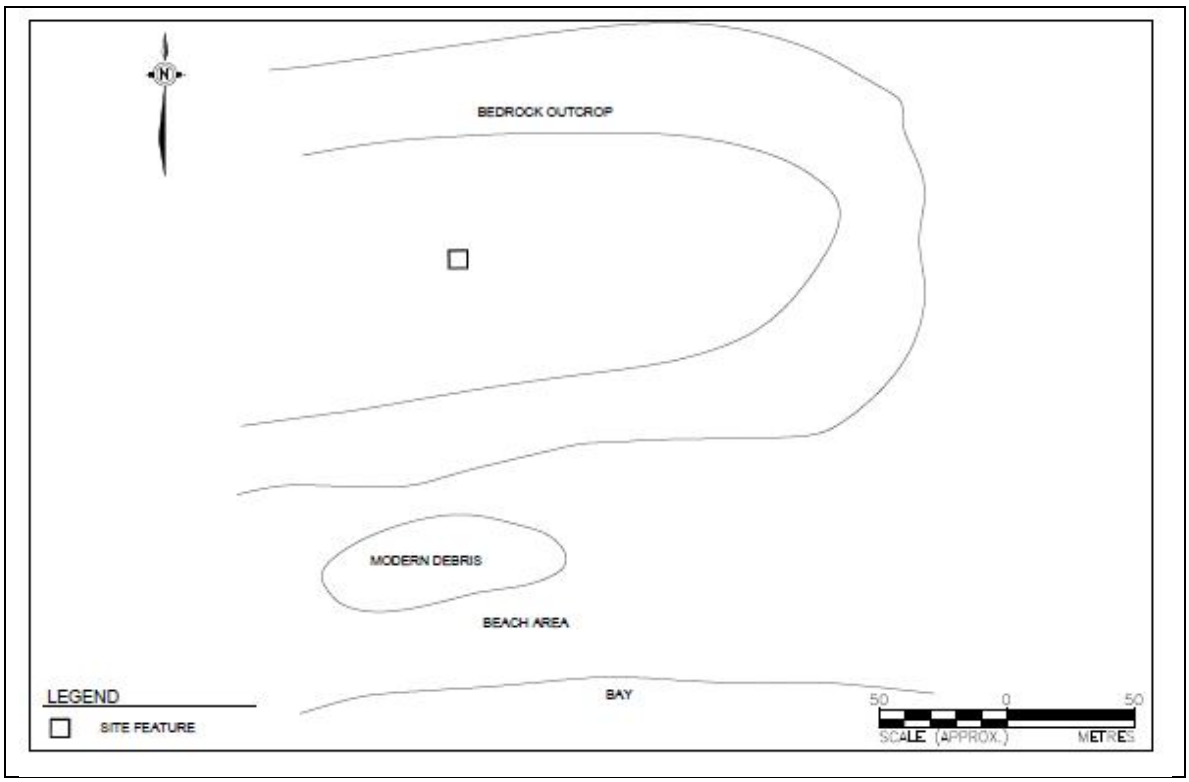
OD= 2012

COL= None

PRE=

UPRE=

RE= KgFr-3 is a small square stone feature. The site was recorded on a bedrock outcrop above the beach east of the weather station. The feature is approximate 50 cm by 40 cm. The feature appears to be a box hearth with one of the outline stones having fallen in to the center. KgFr-3 is thought to be of moderate significance and it is recommended that any impacts to the site be avoided. At this time there are no plans to disturb KgFr-3 during the remediation of the Nottingham Island Weather Station.


N
BEDROCK OUTCROP
MODERN DEBRIS
BEACH AREA
BAY
LEGEND
SITE FEATURE
50 0 50
SCALE (APPROX.) METRES

Nottingham Island, 2012:

BN= **KgFr-4**

NAM= GA04

OWN=

RN=

PN= Nunavut 12-07A

PRO= AIA of the Nottingham Island Weather Station, Nottingham Island, Nunavut

LOC= The Nottingham Island Weather Station is on Nottingham Island approximately 80 km north of the community of Ivujivik, Quebec and 140 km southwest of Cape Dorset, Nunavut. .

TER= Nunavut

DST= Qikiqtani

MR= 35n Nottingham Island

JUR= Federal

LAT= N63.10818

LNG= W77.93908

UTM=18 V 351718 7001035

UTM DET= NAD 83; Zone 18

AIR=

EL(ASL)= 15 m

EL(ASL) DET= Garmin 76 CS GPS

SIZ= 10x 5 m

CON= The site between two bedrock outcrops about 100 m from the water.

TYC= Unknown

TY= Stone feature – stone circle

FE= None

CU= Inuit

PER= unknown

DAT= unknown

RES= Brent Murphy 2012

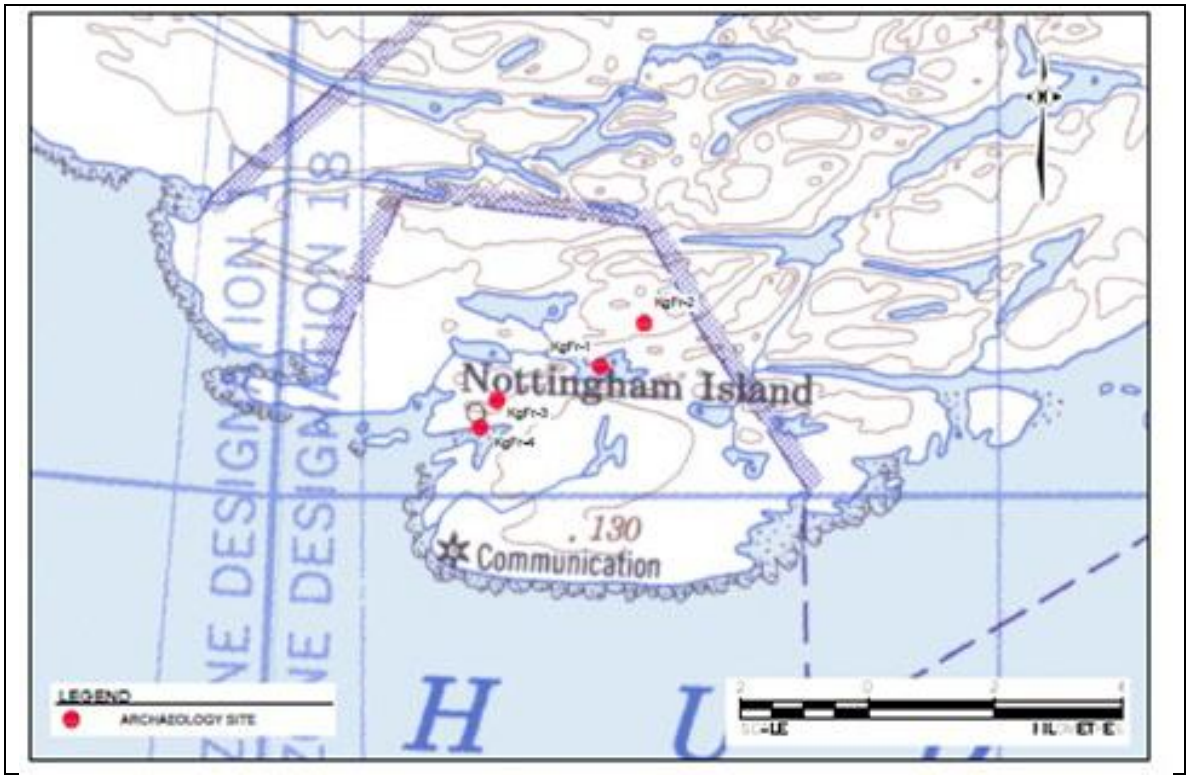
OD= 2012

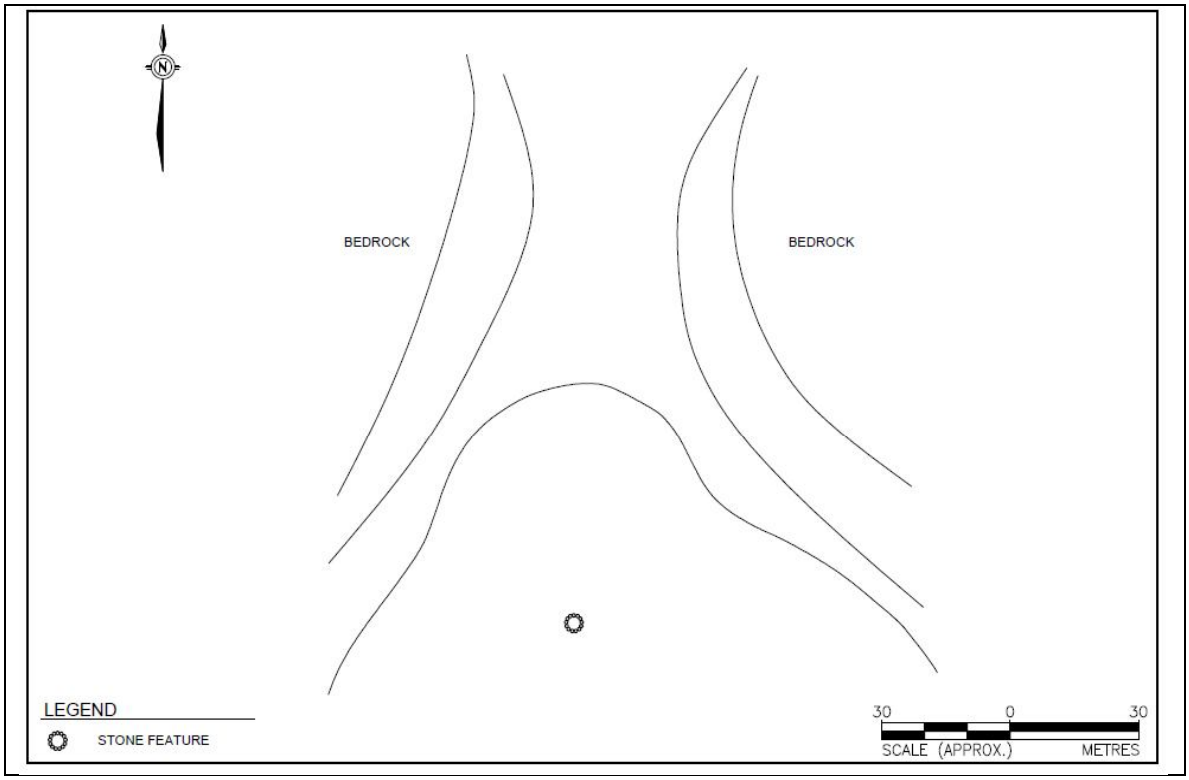
COL= None

PRE=

UPRE=

RE= KgFr-4 is a stone circle feature which is situated about 100 m inland from the bottom of the inlet across from the Nottingham weather station. The feature is approximately 4 m in diameter and made up of more than 80 stones. KgFr-4 is thought to be of limited significance. It is recommended that impacts to the site be avoided. At this time there are no plans to disturb KgFr-4 during the remediation of the Nottingham Island Weather Station.




BEDROCK
BEDROCK
LEGEND
STONE FEATURE
30 0 30
SCALE (APPROX.) METRES

APPENDIX I
NCSCS WORKSHEETS

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Pre-Screening Checklist

Question	Response (yes / no)	Comment
1. Are **Radioactive material**, **Bacterial contamination** or **Biological hazards** likely to be present at the site?	No	If yes, do not proceed through the NCSCS. Contact applicable regulatory agency immediately.
2. Are there **no contamination exceedances** (known or suspected)? Determination of exceedances may be based on: 1) CCME environmental quality guidelines; 2) equivalent provincial guidelines/standards if no CCME guideline exists for a specific chemical in a relevant medium; or 3) toxicity benchmarks derived from the literature for chemicals not covered by CCME or provincial guidelines/standards.	No	If yes (i.e., there are no exceedances), do not proceed through the NCSCS.
3. Have **partial/incompleted or no environmental site investigations** been conducted for the Site?	No	If yes, do not proceed through the NCSCS.
4. Is there direct and signficant evidence of **impacts to humans** at the site, or off-site due to migration of contaminants from the site?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
5. Is there direct and significant evidence of **impacts to ecological receptors** at the site, or off-site due to migration of contaminants from the site?	Yes	Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are considered to be severe, the site may be categorized as Class 1, regardless of the numerical total NCSCS score. For the purpose of application of the NCSCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction.
6. Are there indicators of significant **adverse effects in the exposure zone** (i.e., the zone in which receptors may come into contact with contaminants)? Some examples are as follows: -Hydrocarbon sheen or NAPL in the exposure zone -Severely stressed biota or devoid of biota; -Presence of material at ground surface or sediment with suspected high concentration of contaminants such as ore tailings, sandblasting grit, slag, and coal tar.	Yes	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, regardless of the total score obtained should one be calculated (e.g., for comparison with other Class 1 sites).
7. Do measured concentrations of volatiles or unexploded ordnances represent an **explosion hazard**?	No	If yes, automatically rate the site as Class 1, a priority for remediation or risk management, and do not continue until the safety risks have been addressed. Consult your jurisdiction's occupational health and safety guidance or legislation on exposive hazards and measurement of lower explosive limits.

If none of the above applies, proceed with the NCSCS scoring.

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Summary of Site Conditions

Subject Site:	**Nottingham Island-Former Deparment of Transport Weather Station**	
Civic Address: *(or other description of location)*	Not Applicable	
Site Common Name : *(if applicable)*	Nottingham Island	
Site Owner or Custodian: *(Organization and Contact Person)*	Crown owned land (Aboriginal Affairs and Northern Development Canada)	
Legal description *or* metes and bounds:	Not Applicable	
Approximate Site area:	3 ha	
PID(s) : *(or Parcel Identification Numbers [PIN] if untitled Crown land)*	Unknown	
Centre of site: *(provide latitude/longitude or UTM coordinates)*	Latitude: Longitude:	63 degrees 06 min 43 secs 77 degrees 56 min 19 secs
	UTM Coordinate:	Northing 7001457 Easting 351760 ZONE??
Site Land Use:	Current:	Residential/Parkland
	Proposed:	Residential/Parkland
Site Plan	**To delineate the bounds of the Site a site plan MUST be attached. The plan must be drawn to scale indicating the boundaries in relation to well-defined reference points and/or legal descriptions. Delineation of the contamination should also be indicated on the site plan.**	
Provide a brief description of the Site:	The Nottingham Island Weather Station is located about 140 km southwest of Cape Dorset, NU at approximately 63.111974 N latitude and 77.938633 W longitude. The nearest community is Ivujivik, QU located approximately 80km to the south of the site. The site is situated on the banks of the Hudson Strait. Nottingham Island, NU is the site of a former Department of Transport weather station and radio transmitter station, the Site was originally established is 1884 and was decommissioned in 1970. Nottingham Island was named by the English explorer Henry Hudson (Grant, 2010) in the 1600s. The island has been used historically for hunting and fishing by the surrounding Inuit communities. The site consists of 17 structures, two large above ground storage tanks (including a fuel distribution line) a number of antennas both standing and collapsed and a large amount of debris scattered around the site (including fuel drums, fuel lines, scrap metal, wood, tin cans, machine parts, bricks, electrical wire, batteris, radio equipment and concrete).	

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
Summary of Site Conditions

Affected media and Contaminants of Potential Concern (COPC):	The sampling program conducted as part of the Phase III ESA consisted of soil, surface water, paint, and building materials. A total of 74 samples were collected for soil, 14 surface water samples, 16 paint samples, 35 building material samples and 1 concrete sample. COPCs in soil include Type B Hydrocarbons (AMSRP criteria), BTEX, metals including Ba, Cu, Sn, Pb, Se, Zn. COPCs in surface water include Floride, Al, Cu, Fe, Se, Zn and PCBs COPCs in building materials include asbestos and lead paint. COPCs in site debris include PCBs, asbestos, lead paint, organic contents in ASTs, batteries (lead acid), compressed gas cylinders, creosote (wood), ODS, equipment antifreeze, fuel oil, mercury vapour, mercury/lead solder in electrical components. Abandoned Military Site Remediation Protocols are the predominate guideline established for the Site. CCME residential guideline were used where parameter gaps existed.

Please fill in the "letter" that best describes the level of information available for the site being assessed:

Site Letter Grade **C**

If letter grade is F, do not continue, you must have a minimum of a Phase I Environmental Site Assessment or equivalent.

Scoring Completed By:	Sean Whitaker, EBA Engineering Consultants Ltd.
Date Scoring Completed:	22-Oct-12

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

1) Please review the following overview of contents. The revised CCME National Classification System for Contaminated Sites (NCSCS) consists of a pre-screening checklist, summary of site conditions, summary score sheet, and three instruction/worksheet pages for the user to fill out: Contaminant Characteristics, Migration Potential and Exposure. For ease of printing, the method of evaluation for scoring each section of the worksheet is provided in a separate Instructions tab. Reference material is also provided to assist with the evaluation. A brief description of each sheet is as follows:

Pre-Screening Checklist - Used to determine if the Site can either be considered a Class 1 site (to be remediated immediately) or more information must be collected before the Site can be ranked, or other hazards exist at the Site that must be addressed first before the Site can be ranked using the revised NCSCS.

Site Description Sheet - Summarizes Site information. It also indicates the level of information available (Site Letter Grade) for the site to conduct the NCSCS scoring evaluation. The known/potential contaminants of concern and affected media will also be summarized here.

Contaminant Characteristics Instructions & Worksheet - Prompts the user for information related to the contaminants of potential concern (COPC) found at the site.

Migration Potential Instructions & Worksheet - Prompts the user for information related to physical transport processes which may move contamination to neighboring sites or re-distribute contamination within a site. Migration potential includes many of the exposure pathways, but is not limited to exposure pathways. Migration potential does not require clearly defined receptors.

Exposure Instructions & Worksheet - Prompts the user for information related to exposure pathways and receptors which may be located on the site.

Summary Score Sheet - Generates a total site score by adding up the scores generated on each of the three worksheets and provides the corresponding Site Classification. It also provides an estimate of certainty in the score provided (Certainty Percentage).

Reference Material - Additional information which may be useful to refer to when conducting the evaluation.
- Contaminant Hazard Ranking
- Examples of Persistent Substances
- Examples of Substances in the Various Chemical Classes
- Chemical-specific Properties
- Range of Values of Hydraulic Conductivity and Permeability

The worksheet titles and sub headings are as follows.

I. Contaminant Characteristics

1. Residency Media
2. Chemical Hazard
3. Contaminant Exceedance Factor
4. Contaminant Quantity
5. Modifying Factors

II. Migration Potential

1. Groundwater Movement
2. Surface water Movement
3. Soil
4. Vapour
5. Sediment Movement
6. Modifying Factors

III. Exposure

1. Human Receptors
   - A. Known Impact
   - B Potential
     - a. Land Use
     - b. Accessibility
     - c. Exposure Route
2. Human Modifying Factors
3. Ecological Receptors
   - A. Known Impact
   - B. Potential
     - a. Terrestrial
     - b. Aquatic
4. Ecological Modifying Factors
   - a. Species at Risk
   - b. Aesthetics
5. Other Receptors
   - a. Permafrost

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

2) This is an electronic form which will prompt the user for information. Based on the answers provided, a score is calculated for the contaminated site in question. In most cases, the user will be asked to select amongst two or more choices in a drop down checklist. To access the drop down checklist, move the mouse towards the right side of the "action box". If a drop down is available, an arrow will appear, which must be selected to access the drop down choices. An "action box" requires input from the user. All action boxes have an amber background. action box

3) When assigning scores for each factor, it is highly recommended to give a rationale (a column has been provided for this purpose in Worksheets I, II and III). Information that would be useful in justifying the scores assigned may include: a statement of any assumptions, a description of site-specific information, and references for any data sources (e.g., site visit, personal interview, site assessment reports, or other documents consulted).

4) The Site Letter Grade is related to the level of information available for the Site (as defined by the User) and provides an indication of completeness of information based on the level of investigation and remediation work that has been carried out at the site. More detailed descriptions of the various categories are provided below.

Site Letter Grade:	*Detailed Descriptions:*
F	***Pre Phase I ESA –*** No environmental investigations have been conducted or there are only partial or incomplete Phase I ESA for the Site. It is not recommended to continue through the NCSCS when insufficient data are available. In these cases, it will generally be necessary to conduct a Phase I ESA or other site investigation tasks in order to complete the NCSCS scoring.
E	***Phase I ESA –*** A preliminary desk-top type study has been conducted, involving non-intrusive data collection to determine whether there is a potential for the Site to be contaminated and to provide information to direct any intrusive investigations. Data collected may include a review of available information on current site conditions and history of the property, a site inspection and interviews with personnel familiar with the Site. [Note: This stage is similar to "Phase I: Site Information Assessment" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
D	***Limited Phase II ESA –*** An initial intrusive investigation and assessment of the property has been conducted, generally focusing on potential sources of contamination, to determine whether there is contamination present above the relevant screening guidelines or criteria, and to broadly define soil and groundwater conditions; samples have been collected and analyzed to identify, characterize and quantify contamination that may be present in air, soil, groundwater, surface water or building materials. [Note: This stage is similar to "Phase II: Reconnaissance Testing Program" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
C	***Detailed Phase II ESA –*** Further intrusive investigations have been conducted to characterize and delineate the contamination, to obtain detailed information on the soil and groundwater conditions, to identify the contaminant pathways, and to provide other information required to develop a remediation plan. [Note: This stage is similar to "Phase III: Detailed Testing Program" as described in Guidance Document on the Management of Contaminated Sites in Canada (CCME 1997).]
B	***Risk Assessment with or without Remedial Plan or Risk Management Strategy –*** A risk assessment has been completed, and if the risk was found to be unacceptable, a site-specific remedial action plan has been designed to mitigate environmental and health concerns associated with the Site, or a risk management strategy has been developed.
A	***Confirmation Sampling –*** Remedial work, monitoring, and/or compliance testing have been conducted and confirmatory sampling demonstrates whether contamination has been removed or stabilized effectively and whether cleanup or risk management objectives have been attained.

5) A few terms are used throughout which require definition, they are as follows:

Known - refers to scores that are assigned based on documented scientific and/or technical observations

Potential - refers to scores that are assigned when something is not known, though it may be suspected

Allowed Potential - If, in a given category, known and potential scores are provided by the user, the checklist will typically default to the "known" score. If a "known" score is provided, the "allowed potential" score will equal zero. Exceptions can be found within the Modifying Factors categories in each worksheet where there are often several independent questions. Therefore, "known" and "potential" scores are allowed to contribute to the total modifying factor score.

Raw - refers to score totals which have not been adjusted down to the total maximum score for the given category. In most cases the possible total raw score is greater than the maximum allowed

CCME National Classification System for Contaminated Sites (2008, 2010 v 1.2)
User's Guide - Instructions

Note: For some questions in the worksheets, the option selected will determine whether a "known" or "potential" score is assigned. In these cases, if "Do Not Know" is selected, a score will automatically be listed as "potential", whereas all of the other options in the list will provide a "known" score.

6) Certainty Percentage: The ratio of “Known” to “Potential” responses reflects the relative certainty, or confidence, of the resulting final score and the classification. The NCSCS system defines this ratio as the “Certainty Percentage”. The Certainty Percentage is generated from the number of sections assigned scores based on “known” information divided by the total number of sections. A high percentage indicates that more is known about the Site, and therefore there is more confidence in the ranking, whereas a low percentage suggests that the ranking should be treated with caution.

7) Site Classification Categories: Sites should not be ranked relative to one another. Sites must be classifed on their individual characteristics in order to determine the appropriate classification (Class 1, 2, 3, or N) according to their priority for action, or Class INS (Insufficient Information) for sites that require further information before they can be classifed. The classification groupings are as follows:

Class 1 - High Priority for Action (Total NCSCS Score greater than 70)

The available information indicates that action (e.g., futher site characterization, risk management, remediation, etc.) is required to address existing concerns. Typically, Class 1 sites indicate high concern for several factors, and measured or observed impacts have been documented.

Class 2 - Medium Priority for Action (Total NCSCS Score between 50 and 69.9)

The available information indicates that there is high potential for adverse impacts, although the threat to human health and the environment is generally not imminent. There will tend not to be indication of off-site contamination, however, the potential for this was rated high and therefore some action is likely required.

Class 3 - Low Priority for Action (Total NCSCS Score between 37 and 49.9)

The available information indicates that this site is currently not a high concern. However, additional investigation may be carried out to confirm the site classification, and some degree of action may be required.

Class N - Not a Priority for Action (Total NCSCS Score less than 37)

The available information indicates there is probably no significant environmental impact or human health threats. There is likely no need for action unless new information becomes available indicating greater concerns, in which case the site should be re-examined.

Class INS - Insufficient Information (>15% of Responses are "Do Not Know")

There is insufficient information to classify the site. In this event, additional information is required to address data gaps.

8) Additional Complementary Tools to the NCSCS

The CCME Soil Quality Index (SoQI) is a complementary tool that focuses more on evaluating the relative hazard, by comparing contaminant concentrations with their respective soil quality guidelines. The SoQI uses three factors for its calculations, namely: 1) scope (% of contaminants that do not meet their respective guidelines), 2) frequency (% of individual tests of contaminants that do not meet their respective guidelines), and 3) amplitude (the amount by which the contaminants do not meet their respective guidelines). The soil quality index can be used to compare different contaminated sites with similar types of contamination as well as to see if the jurisdictional requirements have been met after remediation of a particular site.

The NCSCS was not developed for and is not readily applicable for the assessment of sites with a significant marine or aquatic component. Environmental conditions at marine and aquatic sites are best measured in the bed sediments as they act as long-term reservoirs of chemicals to the aquatic environment and to organisms living in or having direct contact with sediments. The CCME Sediment Quality Index (SeQI) provides a convenient means of summarizing sediment quality data and can complement the NCSCS. The SeQI provides a mathematical framework for assessing sediment quality conditions by comparing contaminant concentrations with their respective sediment quality guidelines.

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
1. Residency Media (replaces physical state)				
Which of the following residency media are known (or strongly suspected) to have one or more exceedances of the applicable CCME guidelines? **yes** = has an exceedance or strongly suspected to have an exceedance **no** = does not have an exceedance or strongly suspected not to have an exceedance		A Phase III, detailed ESA was conducted on Site in August 2012. A. It is estimated that approximately ???? m3 of soil at the site is impacted by Type B hydrocarbons and metals. This was scored as Yes. B. Groundwater was determined to not be present on site based upon the ESA. This was scored as No. C. Surface water is prevalent accross the site due to active ice melt resulting in pooled areas of surface water. Hudson Strait is the terminal extent for any migration of contaminates. Several surface water samples were collected and exceeded CCME FWAL/MWAL parameters. This was scored as Yes. D. Minimal sediment was present and it was not in sufficient quantity to sample. (Reference: EBA, 2012).	The overall score is calculated by adding the individual scores from each residency media (having one or more exceedance of the most conservative media specific and land-use appropriate CCME guideline). Summary tables of the Canadian Environmental Quality Guidelines for soil, water (aquatic life, non-potable groundwater environments, and agricultural water uses) and sediment are available on the CCME website at http://www.ccme.ca/publications/cegg_rcqe.html?category_id=124. For potable groundwater environments, guidelines for Canadian Drinking Water Quality (for comparison with groundwater monitoring data) are available on the Health Canada website at http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html.	An increasing number of residency media containing chemical exceedances often equates to a greater potential risk due to an increase in the number of potential exposure pathways.
A. Soil	Yes			
Yes				
No				
Do Not Know				
B. Groundwater	No			
Yes				
No				
Do Not Know				
C. Surface water	Yes			
Yes				
No				
Do Not Know				
D. Sediment	No			
Yes				
No				
Do Not Know				
"Known" -score	4			
"Potential" - score	---			
2. Chemical Hazard				
What is the relative degree of chemical hazard of the contaminant in the list of hazard rankings proposed by the Federal Contaminated Sites Action Plan (FCSAP)?	High	Due to the prevalent amount of F2 hydrocarbons including small amounts of BTEX and select metals (cadmium and lead) the degree of chemical hazard contamination has been classified as High.	The relative degree of chemical hazard should be selected based on the most hazardous contaminant known or suspected to be present at the site. The degree of hazard has been defined by the Federal Contaminated Sites Action Plan (FCSAP) and a list of substances with their associated hazard (Low, Medium and High) has been provided as a separate sheet in this file. *See Attached Reference Material for Contaminant Hazard Rankings.*	Hazard as defined in the revised NCS pertains to the physical properties of a chemical which can cause harm. Properties can include toxic potency, propensity to biomagnify, persistence in the environment, etc. Although there is some overlap between hazard and contaminant exceedance factor below, it will not be possible to derive contaminant exceedance factors for many substances which have a designated chemical hazard designation, but don't have a CCME guideline. The purpose of this category is to avoid missing a measure of toxic potential.
High				
Medium				
Low				
Do Not Know				
"Known" -score	8			
"Potential" - score	---			
3. Contaminant Exceedence Factor				
What is the ratio between the measured contaminant concentration and the applicable CCME guidelines (or other "standards")?	High (>100x)	Copper is 300x criteria scoring the the contaminant exceedance factor as high. The second major contaminate scoring the exceedance factor is F2 hydrocarbons with an exceedance of the CCME criteria by 86x (Reference: EBA, 2012).	Ranking of contaminant "exceedance" is determined by comparing contaminant concentrations with the *most conservative media-specific and land-use appropriate CCME* environmental quality guidelines. **Ranking should be based on contaminant with greatest exceedance of CCME guidelines.** Ranking of contaminant hazard as high, medium and low is as follows: High = One or more measured contaminant concentration is greater than 100 X appropriate CCME guidelines Medium = One or more measured contaminant concentration is 10 - 99.99 X appropriate CCME guidelines Low = One or more measured contaminant concentration is 1 - 9.99 X appropriate CCME guidelines Mobile NAPL = Contaminant is a non-aqueous phase liquid (i.e., due to its low solubility, it does not dissolve in water, but remains as a separate liquid) and is present at a sufficiently high saturation (i.e., greater than residual NAPL saturation) such that there is significant potential for mobility either downwards or laterally. Other standards may include local background concentration or published toxicity benchmarks. Results of toxicity testing with site samples can be used as an alternative. This approach is only relevant for contaminants that do not biomagnify in the food web, since toxicity tests would not indicate potential effects at higher trophic levels. High = lethality observed. Medium = no lethality, but sub lethal effects observed. Low = neither lethal nor sub lethal effects observed.	In the event that elevated levels of a material with no associated CCME guidelines are present, check provincial and USEPA environmental criteria. Hazard Quotients (sometimes referred to as a screening quotient in risk assessments) refer to the ratio of measured concentration to the concentration believed to be the threshold for toxicity. A similar calculation is used here to determine the contaminant exceedance factor (CEF). Concentrations greater than one times the applicable CCME guideline (i.e., CEF=>1) indicate that risks are possible. Mobile NAPL has the highest associated score (8) because of its highly concentrated nature and potential for increase in the size of the impacted zone.
Mobile NAPL				
High (>100x)				
Medium (10x to 100x)				
Low (1x to 10x)				
Do Not Know				
"Known" -score	6			
"Potential" - score	---			

CCME National Classification System (2008, 2010 v 1.2)

(I) Contaminant Characteristics

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method of Evaluation	Notes
4. Contaminant Quantity (known or strongly suspected)				
What is the known or strongly suspected quantity of all contaminants? >10 hectare (ha) or 5000 m^3 2 to 10 ha or 1000 to 5000 m^3 <2 ha or 1000 m^3 Do Not Know	2 to 10 ha or 1000 to 5000 m3	The extimated quantity of impacted media exceeding the applicable guidelines at the site is ???? m3. The estmiated quntity of all contaminates is therefore betwee 1000-5000m3 (EBA 2012).	Measure or estimate the area or quantity of total contamination (i.e, all contaminants known or strongly suspected to be present on the site). The "Area of Contamination" is defined as the area or volume of contaminated media (soil, sediment, groundwater, surface water) exceeding appropriate environmental criteria.	A larger quantity of a potentially toxic substance can result in a larger frequency of exposure as well as a greater probability of migration, therefore, larger quantities of these substances earn a higher score.
"Known" -score	6			
"Potential" - score	---			
5. Modifying Factors				
Does the chemical fall in the class of persistent chemicals based on its behavior in the environment? Yes No Do Not Know	Yes	PCBs were detected in surface water, this is a persistant chemical as per the CEPA. There are no criteria for PCBs in water. The presence indicates a potential source (EBA, 2012).	Persistent chemicals, e.g., PCBs, chlorinated pesticides etc. either do not degrade or take longer to degrade, and therefore may be available to cause effects for a longer period of time. Canadian Environmental Protection Act (CEPA) classifies a chemical as persistent when it has at least one of the following characteristics: (a) in air, (i) its half-life is equal to or greater than 2 days, or (ii) it is subject to atmospheric transport from its source to a remote area; (b) in water, its half-life is equal to or greater than 182 days; (c) in sediments, its half-life is equal to or greater than 365 days; or (d) in soil, its half-life is equal to or greater than 182 days. This list does not include metals or metalloids, which in their elemental form do not degrade. However metals and metalloids form chemical species in the environment, many of which are not readily bioavailable.	*Examples of Persistent Substances are provided in attached Reference Materials*
Are there contaminants present that could cause damage to utilities and infrastructure, either now or in the future, given their location? Yes No Do Not Know	No	There are currently no utilities on the site and the contaminates do not pose a threat to existing infrastructure (EBA, 2012).		Some contaminants may react or absorb into underground utilities and infrastructure. For example, organic solvents may degrade some plastics, and salts could cause corrosion of metal.
How many different contaminant classes have representative CCME guideline exceedances? one two to four five or more Do Not Know	five or more	The COS are members of six contaminate classes: inorganic substances, volatile petroleum hydrocarbons, light extractable PHCs, heavy extractable hydrocarbons, and asbestos containing material. (EBA, 2012)	For the purposes of the revised NCS ranking system, the following chemicals represent distinct chemical "classes": inorganic substances (including metals), volatile petroleum hydrocarbons, light extractable petroleum hydrocarbons, heavy extractable petroleum hydrocarbons, PAHs, phenolic substances, chlorinated hydrocarbons, halogenated methanes, phthalate esters, pesticides.	*Refer to the Reference Material sheet for a list of example substances that fall under the various chemical classes.*
"Known" - Score	5			
"Potential" - Score	---			

Contaminant Characteristic Total

Raw Total Scores- "Known"	29
Raw Total Scores- "Potential"	0
Raw Combined Total Scores	29
Total Score (Raw Combined / 40 * 33)	**23.9**

CCME National Classification System (2008, 2010 v 1.2)

(II) Migration Potential (Evaluation of contaminant migration pathways)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Groundwater Movement				
A. Known COPC exceedances and an operable groundwater pathway within and/or beyond the property boundary.				
i) For **potable groundwater environments**, 1) groundwater concentrations exceed background concentrations and 1X the Guideline for Canadian Drinking Water Quality (GCDWQ) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater contamination. For **non-potable environments** (typically urban environments with municipal services), 1) groundwater concentrations exceed 1X the applicable non potable guidelines or modified generic guidelines (which exclude ingestion of drinking water pathway) or 2) there is known contact of contaminants with groundwater, based on physical evidence of groundwater impacts.	12	Groundwater was not encountered at the Site during the ESA. The Site is predominately surficial soil covering bedrock within a continuous permafrost zone. Active melting of surface ice and pooled surface water were prevalent on Site (EBA, 2012).	Review chemical data and evaluate groundwater quality. The evaluation method concentrates on 1) a potable or non-potable groundwater environment; 2) the groundwater flow system and its potential to be an exposure pathway to known or potential receptors An aquifer is defined as a geologic unit that yields groundwater in usable quantities and drinking water quality. The aquifer can currently be used as a potable water supply or could have the potential for use in the future. Non-potable groundwater environments are defined as areas that are serviced with a reliable alternative water supply (most commonly provided in urban areas). The evaluation of a non-potable environment will be based on a site specific basis. Physical evidence includes significant sheens, liquid phase contamination, or contaminant saturated soils. Seeps and springs are considered part of the groundwater pathway. In Arctic environments, the potability and evaluation of the seasonal active layer (above the permafrost) as a groundwater exposure pathway will be considered on a site-specific basis.	The 1992 NCS rationale evaluated the off-site migration as a regulatory issue. The exposure assessment and classification of hazards should be evaluated regardless of the property boundaries. Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a groundwater supply source in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resources such as internet links. Note that for potable groundwater that also daylights into a nearby surface water body, the more stringent guidelines for both drinking water and protection of aquatic life should be considered. **Selected References** Potable Environments Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html Non-Potable Environments Canadian Water Quality Guidelines for Protection of Aquatic Life. CCME. 1999 www.ccme.ca Compilation and Review of Canadian Remediation Guidelines, Standards and Regulations. Science Applications International Corporation (SAIC Canada), report to Environment Canada, January 4, 2002.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	9			
iii) Meets GCDWQ for **potable environments**; meets non-potable criteria or modified generic criteria (excludes ingestion of drinking water pathway) for **non-potable environments** **or** Absence of groundwater exposure pathway (i.e., there is no aquifer (see definition at right) at the site or there is an adequate isolating layer between the aquifer and the contamination, and within 5 km of the site there are no aquatic receiving environments and the groundwater does not daylight).	0			
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known COPC Exceedances, then you can skip Part B (Potential for groundwater pathway) and go to Section 2 (Surface Water Pathway)				
B. Potential for groundwater pathway.				
a. Relative Mobility High Moderate Low Insignificant Do Not Know		The most prominent and mobile contaminates at the site are PHCs. Koc values are not available for PHC fractions but are available for aliphatic and aromatic components of the various fractions. A koc value of 3.6 scoring 2 was used from the F1 fraction as it is the most mobile component of PHCs. F2 (moderate mobility) and F3 (low mobility) would score 2 and 1 respectively. Based on this a score of 2 (moderate) was given for the mobility of PHCs (EBA, 2012).	Organics Koc (L/kg) / Metals with higher mobility at acidic conditions / Metals with higher mobility at alkaline conditions Koc < 500 (i.e., log Koc < 2.7) — pH < 5 — pH > 8.5 Koc = 500 to 5000 (i.e., log Koc = 2.7 to 3.7) — pH = 5 to 6 — pH = 7.5 to 8.5 Koc = 5,000 to 100,000 (i.e., log Koc = 3.7 to 5) — pH > 6 — pH < 7.5 Koc > 100,000 (i.e., log Koc > 5)	Reference: US EPA Soil Screening Guidance (Part 5 - Table 39) If a score of zero is assigned for relative mobility, it is still recommended that the following sections on potential for groundwater pathway be evaluated and scored. Although the Koc of an individual contaminant may suggest that it will be relatively immobile, it is possible that, with complex mixtures, there could be enhanced mobility due to co-solvent effects. Therefore, the Koc cannot be relied on solely as a measure of mobility. An evaluation of other factors such as containment, thickness of confining layer, hydraulic conductivities and precipitation infiltration rate are still useful in predicting potential for groundwater migration, even if a contaminant is expected to have insignificant mobility based on its chemistry alone.
	Moderate			
Score	2			
b. Presence of engineered sub-surface containment? No containment Partial containment Full containment Do Not Know		Permafrost is considered continuous, but low ground ice was encountered due to the limited soil veneer over bedrock. Permafrost is not considered a containment system for migration. Berms surrounding two former above ground storage tanks were present. There was no lining system beyod the sand berm, contamination was prevalent on the downward slope from the ASTs. The berm is not considered a containment system. (EBA, 2012).	Review the existing engineered systems or natural attenuation processes for the site and determine if full or partial containment is achieved. Full containment is defined as an engineered system or natural attenuation processes, monitored as being effective, which provide for full capture and/or treatment of contaminants. All chemicals of concern must be contained for "Full Containment" scoring. Natural attenuation must have sufficient data, and reports cited with monitoring data to support steady state conditions and the attenuation processes. If there is no containment or insufficient natural attenuation process, this category is evaluated as high. If there is less than full containment or if uncertain, then evaluate as medium. In Arctic environments, permafrost will be evaluated, as appropriate, based on detailed evaluations, effectiveness and reliability to contain/control contaminant migration.	Someone experienced must provide a thorough description of the sources researched to determine the containment of the source at the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps, geotechnical reports or natural attenuation studies and other resources such as internet links. **Selected Resources:** United States Environmental Protection Agency (USEPA) 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater. EPA/600/R-98/128. Environment Canada – Ontario Region – Natural Attenuation Technical Assistance Bulletins (TABS) Number 19 –21.
	No containment			
Score	3			
c. Thickness of confining layer over aquifer of concern or groundwater exposure pathway 3 m or less including no confining layer or discontinuous confining layer 3 to 10 m > 10 m Do Not Know		Groundwater was not encountered on site during the ESA. The Site is predominately surficial soil covering bedrock within a continuous permafrost zone. Active melting of surface ice and pooled surface water were present on Site. Bedrock is predominantly fractured gneiss. Fractures are likely discontinuous and any water within the rock is likely frozen (EBA, 2012).	The term "confining layer" refers to geologic material with little or no permeability or hydraulic conductivity (such as unfractured clay); water does not pass through this layer or the rate of movement is extremely slow. Measure the thickness and extent of materials that will impede the migration of contaminants to the groundwater exposure pathway. The evaluation of this category is based on: 1) The presence and thickness of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as drinking water sources or 2) The presence and thickness of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated zone (e.g., water table aquifer, first hydrostratigraphic unit or other groundwater pathway).	
	> 10 m			
Score	0			
d. Hydraulic conductivity of confining layer >10^{-4} cm/s or no confining layer 10^{-4} to 10^{-6} cm/s <10^{-6} cm/s Do Not Know		During the Phase III ESA sporadic interdisbursment of sand, clay and silt overlying bedrock was idenitifed but incosistent. Bedrock is considered the confining layer. A score of <10^-6 will be used for scoring of the site due to the bedrock on site (EBA, 2012).	Determine the nature of geologic materials and estimate hydraulic conductivity from published material (or use "Range of Values of Hydraulic Conductivity and Permeability" figure in the Reference Material sheet). Unfractured clays should be scored low. Silts should be scored medium. Sand, gravel should be scored high. The evaluation of this category is based on: 1) The presence and hydraulic conductivity ("K") of saturated subsurface materials that impede the vertical migration of contaminants to lower aquifer units which can or are used as a drinking water source, groundwater exposure pathway or 2) The presence and permeability ("k") of unsaturated subsurface materials that impede the vertical migration of contaminants from the source location to the saturated water table aquifer, first hydrostratigraphic unit or other groundwater pathway.	
	<10-6 cm/s			
Score	0			

(II) Migration Potential (Evaluation of contaminant migration pathways)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for groundwater pathway.				
e. Precipitation infiltration rate (Annual precipitation factor x surface soil relative permeability factor) High Moderate Low Very Low None Do Not Know	None	The region experiences rainfall between April and October, with monthly averages ranging from 0.1 to 55 mm. Precipitation in the form of snow can occur at any time throughout the year. Maximum snowfall typically occurs in November at an average amount of 50 cm. The mean annual precipitation ranges from 200-400 mm . Surficial soils consist primarly of medium to coarse grained sand but site is predominantly bedrock. A score of 0 .4 for precipitation (using a conservative estimate from the maximum anticipated rainfall volume) and a score of 0 for bedrock multiplied together give a precipitation infiltration of 0.0 . Therefore the score is "none" (EBA, 2012).	Precipitation Refer to Environment Canada precipitation records for relevant areas. Divide annual precipitation by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). Permeability For surface soil relative permeability (i.e., infiltration) assume: gravel (1), sand (0.6), loam (0.3) and pavement or clay (0). Multiply the surface soil relative permeability factor with precipitation factor to obtain the score for precipitation infiltration rate.	
Score	0			
f. Hydraulic conductivity of aquifer $>10^{-2}$ cm/s 10^{-2} to 10^{-4} cm/s $<10^{-4}$ cm/s Do Not Know	<10-4 cm/s	Aquifer would be contained within predominantly gneiss bedrock and water is most likely frozen. This would lead to a very low hydraulic conductivity rate.	Determine the nature of geologic materials and estimate hydraulic conductivity of all aquifers of concern from published material (refer to "Range of Values of Hydraulic Conductivity and Permeability" in the Reference Material sheet).	
Score	0			
Potential groundwater pathway total	5			
Allowed Potential score	5	Note: If a "known" score is provided, the "potential" score is disallowed.		
Groundwater pathway total	**5**			
2. Surface Water Movement				
A. Demonstrated migration of COPC in surface water above background conditions				
Known concentrations of surface water: i) Concentrations exceed background concentrations and exceed CCME CWQG for protection of aquatic life, irrigation, livestock water, and/or recreation (whichever uses are applicable at the site) by >1 X; or There is known contact of contaminants with surface water based on site observations. or In the absence of CWQG, chemicals have been proven to be toxic based on site specific testing (e.g. toxicity testing; or other indicator testing of exposure).	12	Both F1 and F2 hydrocarbon contamination on site, with some BTEX. The surface water on-site is pooling from active layer melt and is in contact with contamiinated soil. The hydrocarbons from the most impacted areas are considered leachable. For the purposes of surface water concentrations surface water has been classified as 12 high (EBA, 2012).	Collect all available information on quality of surface water near to site. Evaluate available data against Canadian Water Quality Guidelines (select appropriate guidelines based on local water use, e.g., recreation, irrigation, aquatic life, livestock watering, etc.). The evaluation method concentrates on the surface water flow system and its potential to be an exposure pathway. Contamination is present on the surface (above ground) and has the potential to impact surface water bodies. Surface water is defined as a water body that supports one of the following uses: recreation, irrigation, livestock watering, aquatic life.	General Notes: Someone experienced must provide a thorough description of the sources researched to classify the surface water body in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References: CCME. 1999. Canadian Water Quality Guidelines for the Protection of Aquatic Life www.ccme.ca CCME. 1999. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (Irrigation and Livestock Water) www.ccme.ca Health and Welfare Canada. 1992. Guidelines for Canadian Recreational Water Quality.
ii) Same as (i) except the information is not known but strongly suspected based on indirect observations.	8			
iii) Meets CWQG or absence of surface water exposure pathway (i.e., Distance to nearest surface water is > 5 km.)	0			
Score	12 12			
NOTE: If a score is assigned here for Demonstrated Migration in Surface Water, then you can skip Part B (Potential for migration of COPCs in surface water) and go to Section 3 (Surface Soils)				
B. Potential for migration of COPCs in surface water				
a. Presence of containment No containment Partial containment Full containment Do Not Know	No containment	Not applicable, migration is anticipated	Review the existing engineered systems and relate these structures to site conditions and proximity to surface water and determine if full containment is achieved: score low if there is full containment such as capping, berms, dikes; score medium if there is partial containment such as natural barriers, trees, ditches, sedimentation ponds; score high if there are no intervening barriers between the site and nearby surface water. Full containment must include containment of all chemicals.	
Score	5			
b. Distance to Surface Water 0 to <100 m 100 - 300 m >300 m Do Not Know	0 to <100 m	Not applicable, migration is anticipated	Review available mapping and survey data to determine distance to nearest surface water bodies.	
Score	3			

(II) Migration Potential (Evaluation of contaminant migration pathways)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
c. Topography Contaminants above ground level and slope is steep Contaminants at or below ground level and slope is steep Contaminants above ground level and slope is intermediate Contaminants at or below ground level and slope is intermediate Contaminants above ground level and slope is flat Contaminants at or below ground level and slope is flat Do Not Know	At/below and flat	Not applicable migration is anticipated	Review engineering documents on the topography of the site and the slope of surrounding terrain. Steep slope = >50% Intermediate slope = between 5 and 50% Flat slope = < 5% Note: Type of fill placement (e.g., trench, above ground, etc.).	
Score	0			
d. Run-off potential High (rainfall run-off score > 0.6) Moderate (0.4 < rainfall run-off score <0.6) Low (0.2 < rainfall run-off score <0.4) Very Low (0 < rainfall run-off score < 0.2) None (rainfall run-off score = 0) Do Not Know	None	Not applicable migration is anticipated	Rainfall Refer to Environment Canada precipitation records for relevant areas. Divide rainfall by 1000 and round to nearest tenth (e.g., 667 mm = 0.7 score). The former definition of "annual rainfall" did not include the precipitation as snow. This minor adjustment has been made. The second modification was the inclusion of permeability of surface materials as an evaluation factor. Permeability For infiltration assume: gravel (0), sand (0.3), loam (0.6) and pavement or clay (1). Multiply the infiltration factor with precipitation factor to obtain rainfall run off score.	Selected Sources: Environment Canada web page link: www.msc.ec.gc.ca Snow to rainfall conversion apply ratio of 15 (snow):1(water)
Score	0			
e. Flood potential 1 in 2 years 1 in 10 years 1 in 50 years Not in floodplain Do Not Know	Do Not Know	Not applicable, migration is anticipated	Review published data such as flood plain mapping or flood potential (e.g., spring or mountain run-off) and Conservation Authority records to evaluate flood potential of nearby water courses both up and down gradient. Rate zero if site not in flood plain.	
Score	0.5			
Potential surface water pathway total	8.5			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Surface water pathway total	**12**			
3. Surface Soils (potential for dust, dermal and ingestion exposure)				
A. Demonstrated concentrations of COPC in surface soils (top 1.5 m)				
COPCs measured in surface soils exceed the CCME soil quality guideline.	12	COPCs exceed CCME soil quality guidelines. A score of 12 has been applied (EBA, 2012).	Collect all available information on quality of surface soils (i.e., top 1.5 metres) at the site. Evaluate available data against Canadian Soil Quality Guidelines. Select appropriate guidelines based on current (or proposed future) land use (i.e, agricultural, residential/parkland, commercial, or industrial), and soil texture if applicable (i.e., coarse or fine).	Selected References: CCME. 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health www.ccme.ca
Strongly suspected that soils exceed guidelines	9			
COPCs in surface soils does not exceed the CCME soil quality guideline or is not present (i.e., bedrock).	0			
	12			
Score	12			
NOTE: If a score is assigned here for Demonstrated Concentrations in Surface Soils, then you can skip Part B (Potential for a surface soils migration pathway) and go to Section 4 (Vapour)				
B. Potential for a surface soils (top 1.5 m) migration pathway				
a. Are the soils in question covered? Exposed Vegetated Landscaped Paved Do Not Know	Vegetated	The soils are a combination of exposed surficial soil around buildings but primarily vegatated. More than 80% of the contaminated area is considered vegetated. By this reasoning a score of vegetated has been applied (EBA, 2012).	Consult engineering or risk assessment reports for the site. Alternatively, review photographs or perform a site visit. Landscaped surface soils must include a minimum of 0.5 m of topsoil.	The possibility of contaminants in blowing snow have not been included in the revised NCS as it is difficult to assess what constitutes an unacceptable concentration and secondly, spills to snow or ice are most efficiently mitigated while freezing conditions remain.
Score	4			
b. For what proportion of the year does the site remain covered by snow? 0 to 10% of the year 10 to 30% of the year More than 30% of the year Do Not Know	>30% of year	Based on the average daily temperatures and the possibility of year round snow cover a score of more than 30% has been applied (EBA, 2012).	Consult climatic information for the site. The increments represent the full span from soils which are always wet or covered with snow (and therefore less likely to generate dust) to those soils which are predominantly dry and not covered by snow (and therefore are more likely to generate dust).	
Score	0			
Potential surface soil pathway total	4			
Allowed Potential score	---	**Note: If a "known" score is provided, the "potential" score is disallowed.**		
Soil pathway total	**12**			

(II) Migration Potential (Evaluation of contaminant migration pathways)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
4. Vapour				
A. Demonstrated COPCs in vapour.				
Vapour has been measured (indoor or outdoor) in concentrations exceeding risk based concentrations.	12	Volatile hydrocarbons including F1 and BTEX were found on the Site in concentrations exceeding the CCME. Based upon the level of contamination and the presence of volatile organic a score of 9 as been applied (EBA, 2012).	Consult previous investigations, including human health risk assessments, for reports of vapours detected.	
Strongly suspected (based on observations and/or modelling)	9			
Vapour has not been measured and volatile hydrocarbons have not been found in site soils or groundwater.	0			
	9			
Score	9			
NOTE: If a score is assigned here for Demonstrated COPCs in Vapour, then you can skip Part B (Potential for COPCs in vapour) and go to Section 5 (Sediment)				
B. Potential for COPCs in vapour				
a. Relative Volatility based on Henry's Law Constant, H' (dimensionless) High (H' > 1.0E-1) Moderate (H' = 1.0E-1 to 1.0E-3) Low (H' < 1.0E-3) Not Volatile Do Not Know		Not applicable, vapours are anticipated.	Reference: US EPA Soil Screening Guidance (Part 5 - Table 36) *Provided in Attached Reference Materials*	If the Henry's Law Constant for a substance indicates that it is not volatile, and a score of zero is assigned here for relative volatility, then the other three questions in this section on Potential for COPCs will be automatically assigned scores of zero and you can skip to section 5.
	Do Not Know			
Score	2.5			
b. What is the soil grain size? Fine Coarse Do Not Know		Not applicable, vapours are anticipated.	Review soil permeability data in engineering reports. The greater the permeability of soils, the greater the possible movement of vapours. Fine-grained soils are defined as those which contain greater than 50% by mass particles less than 75 µm mean diameter (D50 < 75 µm). Coarse-grained soils are defined as those which contain greater than 50% by mass particles greater than 75 µm mean diameter (D50 > 75 µm).	
	Do Not Know			
Score	3			
c. Is the depth to the source less than 10m? Yes No Do Not Know		Not applicable, vapours are anticipated.	Review groundwater depths below grade for the site.	
	Do Not Know			
Score	1			
d. Are there any preferential pathways? Yes No Do Not Know		Not applicable, vapours are anticipated.	Visit the site during dry summer conditions and/or review available photographs. Where bedrock is present, fractures would likely act as preferential pathyways.	Preferential pathways refer to areas where vapour migration is more likely to occur because there is lower resistance to flow than in the surrounding materials. For example, underground conduits such as sewer and utility lines, drains, or septic systems may serve as preferential pathways. Features of the building itself that may also be preferential pathways include earthen floors, expansion joints, wall cracks, or foundation perforations for subsurface features such as utility pipes, sumps, and drains.
	Do Not Know			
Score	1			
Potential vapour pathway total	7.5			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Vapour pathway total	**9**			
5. Sediment Movement				
A. Demonstrated migration of sediments containing COPCs				
There is evidence to suggest that sediments originally deposited to the site (exceeding the CCME sediment quality guidelines) have migrated.	12	No sediment samples were collected during the Phase III ESA conducted by EBA; a sediment sample collected by WESA as part of the Phase II ESA study did not exceed CCME guidelines (EBA, 2012).	Review sediment assessment reports. Evidence of migration of contaminants in sediments must be reported by someone experienced in this area.	Usually not considered a significant concern in lakes/marine environments, but could be very important in rivers where transport downstream could be significant.
Strongly suspected (based on observations and/or modelling)	9			
Sediments have been contained and there is no indication that sediments will migrate in future. **or** Absence of sediment exposure pathway (i.e., within 5 km of the site there are no aquatic receiving environments, and therefore no sediments).	0			
	0			
Score	0			
NOTE: If a score is assigned here for Demonstrated Migration of Sediments, then you can skip Part B (Potential for Sediment Migration) and go to Section 6 (Modifying Factors)				

CCME National Classification System (2008, 2010 v 1.2)

(II) Migration Potential (Evaluation of contaminant migration pathways)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for sediment migration				
a. Are the sediments having COPC exceedances capped with sediments having no exceedances ("clean sediments")?	Yes		Review existing sediment assessments. If sediment coring has been completed, it may indicate that historically contaminated sediments have been covered over by newer "clean" sediments. This assessment will require that cores collected demonstrate a low concentration near the top and higher concentration with sediment depth.	
Yes				
No				
Do Not Know	0			
b. For lakes and marine habitats, are the contaminated sediments in shallow water and therefore likely to be affected by tidal action, wave action or propeller wash?	No		Review existing sediment assessments. If the sediments present at the site are in a river, select "no" for this question.	
Yes				
No				
Do Not Know	0			
c. For rivers, are the contaminated sediments in an area prone to sediment scouring?	No		Review existing sediment assessments. It is important that the assessment is made under worst case flows (high yearly flows). Under high yearly flows, areas which are commonly depositional may	
Yes				
No				
Do Not Know	0			
Potential sediment pathway total	0			
Allowed Potential score	---	Note: If a "known" score is provided, the "potential" score is disallowed.		
Sediment pathway total	**0**			
6. Modifying Factors				
		There are no known subsurface utilities present on site (EBA, 2012).		
Are there subsurface utility conduits in the area affected by contamination?	No		Consult existing engineering reports. Subsurface utilities can act as conduits for contaminant migration.	
Yes				
No				
Do Not Know				
Known	0			
Potential	0			

Migration Potential Total		
Raw "known" total	33	
Raw "potential" total	5.0	
Raw combined total	38.0	Note: If "Known" and "Potential" scores are provided, the checklist defaults to known. Therefore, the total "Potential" Score may not reflect the sum of the individual "Potential" scores.
Total (max 33)	**19.6**	

CCME National Classification System (2008, 2010 v 1.2)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
1. Human				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to humans as a result of the contaminated site. (Class 1 Site*)	22	A risk assessment has not been conducted for the Site. Historically there is no evidence of human exposure. There is the potential for human exposure.	*Where adverse effects on humans are documented, the site should be automatically designated as a Class 1 site (i.e., action required). There is no need to proceed through the NCS in this case. However, a scoring guideline (22) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	Known adverse impact includes domestic and traditional food sources. Adverse effects based on food chain transfer to humans and/or animals can be scored in this category. However, the weight of evidence must show a direct link of a contaminated food source/supply and subsequent ingestion/transfer to humans. Any associated adverse effects to the environment are scored separately later in this worksheet. Someone experienced must provide a thorough description of the sources researched to evaluate and determine the quantified exposure/impact (adverse effect) in the vicinity of the contaminated site.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	10		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1 for noncarcinogenic chemicals and incremental cancer risks that exceed acceptable levels defined by the jurisdiction for carcinogenic chemicals (for most jurisdictions this is typically either $>10^{-5}$ or $>10^{-6}$). Known impacts can also be evaluated based on blood testing (e.g. blood lead >10 ug/dL) or other health based testing.	**Selected References:** Health Canada – Federal Contaminated Site Risk Assessment in Canada Parts 1 and 2 Guidance on Human Heath Screening Level Risk Assessments (www.hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html) United States Environmental Protection Agency, Integrated Risk Information System (IRIS) – http://toxnet.nml.nih.gov
No quantified or suspected exposures/impacts in humans.	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 0.2 for non-carcinogenic chemicals and incremental lifetime cancer risks for carcinogenic chemicals that are within acceptable levels as defined by the jurisdiction (for most jurisdictions this is less than either 10^{-4} or 10^{-5}).	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Human Exposure) and go to Section 2 (Human Exposure Modifying Factors)				
B. Potential for human exposure				
a) Land use (provides an indication of potential human exposure scenarios)		The site is accesible by boat and is a location frequented by local hunters. Due to the presence of residential buildings with the possiblity of future settlement Resdential/Parkland Criteria has been applied when there is no AMSRP criteria available (EBA, 2012).	Review zoning and land use maps over the distances indicated. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place. Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	This is the main "receptor" factor used in site scoring. A higher score implies a greater exposure and/or exposure of more sensitive human receptors (e.g., children).
Agricultural Residential / Parkland Commercial Industrial Do Not Know				
	Res / Parkland			
Score	2			
b. Indicate the level of accessibility to the contaminated portion of the site (e.g., the potential for coming in contact with contamination)		The Site is remote and contaminates are not isolated. Moderate access with no intervening barriers has been chosen for scoring (EBA, 2012).	Review location and structures and contaminants at the site and determine if there are intervening barriers between the site and humans. A low rating should be assigned to a (covered) site surrounded by a fence or in a remote location, whereas a high score should be assigned to a site that has no cover, fence, natural barriers or buffer.	
Limited barriers to prevent site access; contamination not covered Moderate access or no intervening barriers, contaminants are covered. Remote locations in which contaminants not covered. Controlled access or remote location and contaminants are covered Do Not Know				
	Mod. access, covered			
Score	1			
B. Potential for human exposure				
c) Potential for intake of contaminated soil, water, sediment or foods for operable or potentially operable pathways, as identified in Worksheet II (Migration Potential).		Soil exceeds the CCME guidelines applied during the ESA, therfore dermal contact is possible (EBA, 2012).	If soils or potable groundwater are present exceeding their respective CCME guidelines, dermal contact is assumed. Exposure to surface water, non-potable groundwater or sediments exceeding their respective CCME guidelines will depend on the site. Select "Yes" if dermal exposure to surface water, non-potable groundwater or sediments is expected. For instance, dermal contact with sediments would not be expected in an active port. Only soils in the top 1.5 m are defined by CCME (2003) as surface soils. If contaminated soils are only located deeper than 1.5 m, direct contact with soils is not anticipated to be an operable contaminant exposure pathway.	Exposure via the skin is generally believed to be a minor exposure route. However for some organic contaminants, skin exposure can play a very important component of overall exposure. Dermal exposure can occur while swimming in contaminated waters, bathing with contaminated surface water/groundwater and digging in contaminated dirt, etc.
i) direct contact Is dermal contact with contaminated surface water, groundwater, sediments or soils anticipated? Yes No Do Not Know				
	Yes			
Score	3			
ii) inhalation (i.e., inhalation of dust, vapour)		Volatile contamination (BTEX F1) is present within inhabitatable buildings on the site (EBA, 2012).	If inhabitable buildings are on the site within 30 m of soils or groundwater exceeding their respective guidelines for volatile chemicals, there is a potential of risk to human health (Health Canada, 2004). Review site investigations for location of soil samples (having exceedances of volatile substances) relative to buildings. Refer to (II) Migration Potential worksheet, 4B.a), *Potential for COPCs in Vapour* for a definition of volatility.	Exposure via the lungs (inhalation) can be a very important exposure pathway. Inhalation can be via both particulates (dust) and gas (vapours). Vapours can be a problem where buildings have been built on former industrial sites or where volatile contaminants have migrated below buildings resulting in the potential for vapour intrusion. Assesses the potential for humans to be exposed to vapours originating from site soils. The closer the receptor is to a source of volatile chemicals in soil, the greater the potential of exposure. Also, coarser-grained soil will convey vapour much more efficiently in the soil than finer grained material such as clays and silts. General Notes; Someone experienced must provide a thorough description of the sources researched to determine the presence/absence of a vapour migration and/or dust generation in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links. Selected References; Canadian Council of Ministers of the Environment (CCME). 2006. Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. PN 1332. www.ccme.ca Golder, 2004. Soil Vapour Intrusion Guidance for Health Canada Screening Level Risk Assessment (SLRA) Submitted to Health Canada, Burnaby, BC
Vapour - Are there inhabitable buildings on the site within 30 m of soils or groundwater with volatile contamination as determined in Worksheet II (Migration Potential)? Yes No Do Not Know				
	Yes			
Score	3			
Dust - If there is contaminated surface soil (e.g. top 1.5 m) , indicate whether the soil is fine or coarse textured. If it is known that surface soil is not contaminated, enter a score of zero. Fine Coarse Surface soil is not contaminated or absent (bedrock) Do Not Know Texture		Contaminated surface soil is present and is primarily medium to coarse grained sand (EBA, 2012).	Consult grain size data for the site. If soils (containing exceedances of the CCME soil quality guidelines) predominantly consist of fine material (having a median grain size of 75 microns; as defined by CCME (2006)) then these soils are more likely to generate dusts.	
	Coarse			
Score	1			
inhalation total	4			

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for human exposure				
iii) Ingestion (i.e., ingestion of food items, water and soils [for children]), including traditional foods.		The closest water body (Hudson Strait) is adjacent to the contaminated area (approximately 45 m). There is also surface water ponded throughout the site. The nearest drinking water source (small lake) is approximately 1 km away from the Site (EBA, 2012).	Review available site data to determine if drinking water (groundwater, surface water, private, commercial or municipal supply) is known or suspected to be contaminated above Guidelines for Canadian Drinking Water Quality. If drinking water supply is known to be contaminated, some immediate action (e.g., provision of alternate drinking water supply) should be initiated to reduce or eliminate exposure.	**Selected References:** Guidelines for Canadian Drinking Water Quality: www.hc-sc.gc.ca/hecs-sesc/water/publications/drinking_water_quality_guidelines/toc.htm
Drinking Water: Choose a score based on the proximity to a drinking water supply, to indicate the potential for contamination (present or future). 0 to 100 m 100 to 300 m 300 m to 1 km 1 to 5 km No drinking water present Do Not Know	1 to 5 km		The evaluation of significant potential for exceedances of the water supply in the future may be based on the capture zones of the drinking water wells; contaminant travel times; computer modelling of flow and contaminant transport.	Drinking water can be an extremely important exposure pathway to humans. If site groundwater or surface water is not used for drinking, then this pathway is considered to be inoperable.
Score	1.5			
Is an alternative water supply readily available? Yes No Do Not Know	No			Consider both wild foods such as salmon, venison, caribou, as well as agricultural sources of food items if the contaminated site is on or adjacent to agricultural land uses.
Score	1			
Is human ingestion of contaminated soils possible? Yes No Do Not Know	Yes	Human ingestion of contaminated soil is possible as impacts are surficial. The site is accessed infrequently but the potential for exposure is possible (EBA, 2012).	If contaminated soils are located within the top 1.5 m, it is assumed that ingestion of soils is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely, and the duration is shorter. Refer to human health risk assessment reports for the site in question.	
Score	3			
Are food items consumed by people, such as plants, domestic animals or wildlife harvested from the contaminated land and its surroundings? Yes No Do Not Know	Yes	Local hunters rely on the wildlife and natural surroundings during their expeditions (EBA, 2012).	Use human health risk assessment reports (or others) to determine if there is significant reliance on traditional food sources associated with the site. Is the food item in question going to spend a large proportion of its time at the site (e.g., large mammals may spend a very small amount of time at a small contaminated site)? Human health risk assessment reports for the site in question will also provide information on potential bioaccumulation of the COPC in question.	
Score	1			
Ingestion total	6.5			
Human Health Total "Potential" Score	16.5	Note if a "Known" Human Health score is provided, the "Potential" score is disallowed.		
Allowed "Potential" Score	16.5			
2. Human Exposure Modifying Factors				
a) Strong reliance of local people on natural resources for survival (i.e., food, water, shelter, etc.) Yes No Do Not Know	Yes	Local hunters rely on the wildlife and natural surroundings during their expeditions (EBA, 2012).		
Known	6			
Potential	---			
Raw Human "known" total	6			
Raw Human "potential" total	16.5			
Raw Human Exposure Total Score	22.5			
Human Health Total (max 22)	**22.0**			
3. Ecological				
A. Known exposure				
Documented adverse impact or high quantified exposure which has or will result in an adverse effect, injury or harm or impairment of the safety to terrestrial or aquatic organisms as a result of the contaminated site.	18		Some low levels of impact to ecological receptors are considered acceptable, particularly on commercial and industrial land uses. However, if ecological effects are deemed to be severe, the site may be categorized as class one (i.e., a priority for remediation or risk management), regardless of the numerical total NCS score. For the purpose of application of the NCS, effects that would be considered severe include observed effects on survival, growth or reproduction which could threaten the viability of a population of ecological receptors at the site. Other evidence that qualifies as severe adverse effects may be determined based on professional judgement and in consultation with the relevant jurisdiction. If ecological effects are determined to be severe and an automatic Class 1 is assigned, there is no need to proceed through the NCS. However, a scoring guideline (18) is provided in case a numerical score for the site is still desired (e.g., for comparison with other Class 1 sites).	CCME, 1999: Canadian Water Quality Guidelines for the Protection of Aquatic Life. www.ccme.ca CCME, 1999: Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses. www.ccme.ca Sensitive receptors- review: Canadian Council on Ecological Areas; www.ccea.org. Ecological effects should be evaluated at a population or community level, as opposed to at the level of individuals. For example, population-level effects could include reduced reproduction, growth or survival in a species. Community-level effects could include reduced species diversity or relative abundances. Further discussion of ecological assessment endpoints is provided in *A Framework for Ecological Risk Assessment: General Guidance* (CCME 1996). Notes: Someone experienced must provide a thorough description of the sources researched to classify the environmental receptors in the vicinity of the contaminated site. This information must be documented in the NCS Site Classification Worksheet including contact names, phone numbers, e-mail correspondence and/or reference maps/reports and other resource such as internet links.
Same as above, but "Strongly Suspected" based on observations or indirect evidence.	12		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients >1. Alternatively, known impacts can also be evaluated based on a weight of evidence assessment involving a combination of site observations, tissue testing, toxicity testing and quantitative community assessments. Scoring of adverse effects on individual rare or endangered species will be completed on a case-by-case basis with full scientific justification.	
No quantified or suspected exposures/impacts in terrestrial or aquatic organisms	0		This category can be based on the outcomes of risk assessments and applies to studies which have reported Hazard Quotients of less than 1 and no other observable or measurable sign of impacts. Alternatively, it can be based on a combination of other lines of evidence showing no adverse effects, such as site observations, tissue testing, toxicity testing and quantitative community assessments.	
	Go to Potential			
Score	---			
NOTE: If a score is assigned here for Known Exposure, then you can skip Part B (Potential for Ecological Exposure) and go to Section 4 (Ecological Exposure Modifying Factors)				

CCME National Classification System (2008, 2010 v 1.2)

(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
B. Potential for ecological exposure (for the contaminated portion of the site)				
a) Terrestrial i) Land use Agricultural (or Wild lands) Residential/Parkland Commercial Industrial Do Not Know	Residential/Parkland	The site is accesible by boat and is a location frequented by local hunters. Due to the presence of residential buildings with the possiblity of future settlement Resdential/Parkland Criteria has been applied when there is no AMSRP criteria available. PWGSC and AANDC have classified the Site as an" Abandoned Military Site" (EBA, 2012).	Review zoning and land use maps. If the proposed future land use is more "sensitive" than the current land use, evaluate this factor assuming the proposed future use is in place (indicate in the worksheet that future land use is the consideration). Agricultural land use is defined as uses of land where the activities are related to the productive capability of the land or facility (e.g., greenhouse) and are agricultural in nature, or activities related to the feeding and housing of animals as livestock. Wild lands are grouped with agricultural land due to the similarities in receptors that would be expected to occur there (e.g., herbivorous mammals and birds) and the similar need for a high level of protection to ensure ecological functioning. Residential/Parkland land uses are defined as uses of land on which dwelling on a permanent, temporary, or seasonal basis is the activity (residential), as well as uses on which the activities are recreational in nature and require the natural or human designed capability of the land to sustain that activity (parkland). Commercial/Industrial land uses are defined as land on which the activities are related to the buying, selling, or trading of merchandise or services (commercial), as well as land uses which are related to the production, manufacture, or storage of materials (industrial).	
Score	2			
ii) Uptake potential Direct Contact - Are plants and/or soil invertebrates likely exposed to contaminated soils at the site? Yes No Do Not Know	Yes	Soil is confined to the top 0.35cm due to active ice melt and surficial pooling thus there is uptake potential by plants and invertebrates at the Site (EBA, 2012).	If contaminated soils are located within the top 1.5 m, it is assumed that direct contact of soils with plants and soil invertebrates is an operable exposure pathway. Exposure to soils deeper than 1.5 m is possible, but less likely.	
Score	1			
iii) Ingestion (i.e., wildlife or domestic animals ingesting contaminated food items, soils or water) Are terrestrial animals likely to be ingesting contaminated water at the site? Yes No Do Not Know	Yes	Surficial water from active ice melt was observed throughout the site thus ingestion of impacted surface water is possible (EBA, 2012).	Refer to an Ecological Risk Assessment for the site. If there is contaminated surface water at the site, assume that terrestrial organisms will ingest it.	
Score	1			
Are terrestrial animals likely to be ingesting contaminated soils at the site? Yes No Do Not Know	Yes	The impacted soils are not covered and present at the surface thus there is a possiblity of ingestion by terrestrial animals (EBA, 2012).	Refer to an Ecological Risk Assessment report. Most animals will co-ingest some soil while eating plant matter or soil invertebrates.	
Score	1			
Can the contamination identified bioaccumulate? Yes No Do Not Know	Yes	Heavy metals were identified throughout the Site in both surface water and soil thus bioaccumualation is possible. The main driver is lead bioaccumulation in plants and humus rich topsoil (EBA, 2012).	Bioaccumulation of contaminants within food items is considered possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in soils exceed the most conservative CCME soil quality guideline for the intended land use, or 2) The contaminant in collected tissue samples exceeds the Canadian Tissue Residue Guidelines.	
Score	1			
Distance to sensitive terrestrial ecological area 0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m	There are several sensitive species including barren ground caribou and polar bear in the area; these are considered of special concern under the Committee on the Status of Endangered Wildlife in Canada (EBA, 2012).	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor located within this area of the site will be subject to further evaluations. It is also considered that any environmental receptor located greater than 5 km will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance; arctic environments (on a site specific basis); nature preserves, habitats for species at risk, sensitive forests, natural parks or forests.
Score	3			
Raw Terrestrial Total Potential	9	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Terrestrial Total Potential	9			
B. Potential for ecological exposure (for the contaminated portion of the site)				
b) Aquatic i) Classification of aquatic environment Sensitive Typical Not Applicable (no aquatic environment present) Do Not Know	Sensitive	The Hudson Stait is a sensitive aquatic environment as it is used for aquatic food sources and breeding grounds (EBA, 2012).	"Sensitive aquatic environments" include those in or adjacent to shellfish or fish harvesting areas, marine parks, ecological reserves and fish migration paths. Also includes those areas deemed to have ecological significance such as for fish food resources, spawning areas or having rare or endangered species. "Typical aquatic environments" include those in areas other than those listed above.	
Score	3			
ii) Uptake potential Does groundwater daylighting to an aquatic environment exceed the CCME water quality guidelines for the protection of aquatic life at the point of contact? Yes No (or Not Applicable) Do Not Know	No	Groundwater is not anticipated on site as the terminal extent of surficial soil to bedrock is approximately 0.5m. Groundwater has been determined not applicable (EBA, 2012).	Groundwater concentrations of contaminants at the point of contact with an aquatic receiving environment can be estimated in three ways: 1) by comparing collected nearshore groundwater concentrations to the CCME water quality guidelines (this will be a conservative comparison, as contaminant concentrations in groundwater often decrease between nearshore wells and the point of discharge). 2) by conducting groundwater modeling to estimate the concentration of groundwater immediately before discharge. 3) by installing water samplers, "peepers", in the sediments in the area of daylighting groundwater.	
Score	0			
Distance from the contaminated site to an important surface water resource 0 to 300 m 300 m to 1 km 1 to 5 km > 5 km Do Not Know	0 to 300 m	The Hudson Strait is an important surface water source and is adjacent to the Site. Contaminates on site have the potential for bioaccumulation (EBA, 2012).	It is considered that within 300 m of a site, there is a concern for contamination. Therefore an environmental receptor or important water resource located within this area of the site will be subject to further evaluation. It is also considered that any environmental receptor located greater than 5 km away will not be a concern for evaluation. Review Conservation Authority mapping and literature including Canadian Council on Ecological Areas link: www.ccea.org.	Environmental receptors include: local, regional or provincial species of interest or significance, sensitive wetlands and fens and other aquatic environments.
Score	3			
Are aquatic species (i.e., forage fish, invertebrates or plants) that are consumed by predatory fish or wildlife consumers, such as mammals and birds, likely to accumulate contaminants in their tissues? Yes No Do Not Know	Yes	PCBs not observed in sediment but was present in surface water samples. (EBA, 2012)	Bioaccumulation of food items is possible if: 1) The Log(Kow) of the contaminant is greater than 4 (as per the chemical characteristics work sheet) and concentrations in sediments exceed the CCME ISQGs. 2) The contaminant in collected tissue samples exceeds the CCME tissue quality guidelines.	
Score	1			
Raw Aquatic Total Potential	7	Note if a "Known" Ecological Effects score is provided, the "Potential" score is disallowed.		
Allowed Aquatic Total Potential	7			

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(III) Exposure (Demonstrates the presence of an exposure pathway and receptors)

Nottingham Island-Former Deparment of Transport Weather Station

Definition	Score	Rationale for Score (document any assumptions, reports, or site-specific information; provide references)	Method Of Evaluation	Notes
4. Ecological Exposure Modifying Factors				
a) Known occurrence of a species at risk. Is there a potential for a species at risk to be present at the site? Yes No Do Not Know	Yes	The Site is located in a habitat for species of special concern, including barren ground caribou and polar bear (EBA, 2012).	Consult any ecological risk assessment reports. If information is not present, utilize on-line databases such as Eco Explorer. Regional, Provincial (Environment Ministries), or Federal staff (Fisheries and Oceans or Environment Canada) should be able to provide some guidance.	Species at risk include those that are extirpated, endangered, threatened, or of special concern. For a list of species at risk, consult Schedule 1 of the federal Species at Risk Act (http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1). Many provincial governments may also provide regionally applicable lists of species at risk. For example, in British Columbia, consult: BCMWLAP. 2005. Endangered Species and Ecosystems in British Columbia. Provincial red and blue lists. Ministry of Sustainable Resource Management and Water, Land and Air Protection. http://srmwww.gov.bc.ca/atrisk/red-blue.htm
	2			
Score	---			
b) Potential impact of aesthetics (e.g., enrichment of a lake or tainting of food flavor).		No evidence of aesthetic or olfactory impacts to Hudson Strait or other surface water bodies on site were observed during the site visit. (EBA, 2012).		
Is there evidence of aesthetic impact to receiving water bodies?	No		Documentation may consist of environmental investigation reports, press articles, petitions or other records.	This Item will require some level of documentation by user, including contact names, addresses, phone numbers, e-mail addresses. Evidence of changes must be documented, please attach copy of report containing relevant information.
Yes				
No	0			
Do Not Know	---			
Is there evidence of olfactory impact (i.e., unpleasant smell)?	No		Examples of olfactory change can include the smell of a COPC or an increase in the rate of decay in an aquatic habitat.	
Yes				
No	0			
Do Not Know	---			
Is there evidence of increase in plant growth in the lake or water body?	No	No evidence of excessive plant growth in surface water was observed during the site visit (EBA, 2012).	A distinct increase of plant growth in an aquatic environment may suggest enrichment. Nutrients e.g., nitrogen or phosphorous releases to an aquatic body can act as a fertilizer.	
Yes				
No	0			
Do Not Know	---			
Is there evidence that fish or meat taken from or adjacent to the site smells or tastes different?	Do Not Know	Information on the condition of fish or meat taken from or adjacent to the site was not availble during the site investigation. No fish were harvested during the site investigation (EBA, 2012).	Some contaminants can result in a distinctive change in the way food gathered from the site tastes or smells.	
Yes	---			
No	1			
Do Not Know				
Ecological Modifying Factors Total - Known	**2**			
Ecological Modifying Factors Total - Potential	**1**			
Raw Ecological Total - Known	2			
Raw Ecological Total - Potential	17			
Raw Ecological Total	19			
Ecological Total (Max 18)	**18.0**			
5. Other Potential Contaminant Receptors				
a) Exposure of permafrost (leading to erosion and structural concerns)		The site is located in a region of continuous permafrost but low ground ice was encountered on the site due to surficial soil covering bedrock. There was no evidence of erosion or structural concerns (EBA, 2012).		Plants and lichens provide a natural insulating layer which will help prevent thawing of the permafrost during the summer. Plants and lichens may also absorb less solar radiation. Solar radiation is turned into heat which can also cause underlying permafrost to melt.
Are there improvements (roads, buildings) at the site dependant upon the permafrost for structural integrity?	No		Consult engineering reports, site plans or air photos of the site. When permafrost melts, the stability of the soil decreases, leading to erosion. Human structures, such as roads and/or buildings are often dependent on the stability that the permafrost provides.	
Yes				
No	0			
Do Not Know	---			
Is there a physical pathway which can transport soils released by damaged permafrost to a nearby aquatic environment?	No	The site is located in an area of low ground ice and surficial soil cover over bedrock. This was evident in soil conditions encountered during sampling. No evidence of permafrost slumping was observed on the Site (EBA, 2012).	Melting permafrost leads to a decreased stability of underlying soils. Wind or surface run-off erosion can carry soils into nearby aquatic habitats. The increased soil loadings into a river can cause an increase in total dissolved solids and a resulting decrease in aquatic habitat quality. In addition, the erosion can bring contaminants from soils to aquatic environments.	
Yes				
No	0			
Do Not Know	---			
Other Potential Receptors Total - Known	**0**			
Other Potential Receptors Total - Potential	**0**			

Exposure Total		
Raw Human Health + Ecological Total - Known	8	
Raw Human Health + Ecological Total - Potential	33.5	Only includes "Allowed potential" - if a "Known" score was supplied under a given category then the "Potential" score was not included.
Raw Total	41.5	
Exposure Total (max 34)	**30.7**	

CCME National Classification System (2008, 2010 v 1.2)
Score Summary

Scores from individual worksheets are tallied in this worksheet.
Refer to this sheet after filling out the revised NCS completely.

I. Contaminant Characteristics	Known	Potential
1. Residency Media	4	---
2. Chemical Hazard	8	---
3. Contaminant Exceedance Factor	6	---
4. Contaminant Quantity	6	---
5. Modifying Factors	5	---
Raw Total Score	29	0
Raw Total Score (Known + Potential)	29	
Adjusted Total Score (Raw Total / 40 *33)	**23.9**	(max 33)

II. Migration Potential	Known	Potential
1. Groundwater Movement	---	5
2. Surface Water Movement	12	---
3. Soil	12	---
4. Vapour	9	---
5. Sediment Movement	0	---
6. Modifying Factors	0	0
Raw Total Score	33	5
Raw Total Score (Known + Potential)	38	
Adjusted Total Score (Raw Total / 64 * 33)	**19.6**	(max 33)

III. Exposure	Known	Potential
1. Human Receptors		
A. Known Impact	---	
B Potential		
a. Land Use		2
b. Accessibility		1
c. Exposure Route		
i. Direct Contact		3
ii. Inhalation		4
iii. Ingestion		6.5
2. Human Receptors Modifying Factors	6	---
Raw Total Human Score	6	16.5
Raw Total Human Score (Known + Potential)	22.5	
Adjusted Total Human Score	22.0	(maximum 22)
3. Ecological Receptors		
A. Known Impact	---	
B. Potential		
a. Terrestrial		9
b. Aquatic		7
4. Ecological Receptors Modifying Factors	2	1
Raw Total Ecological Score	2	17
Raw Total Ecological Score (Known + Potential)	19	
Adjusted Total Ecological Score	18.0	(maximum 18)
5. Other Receptors	0	0
Total Other Receptors Score (Known + Potential)	0	
Total Exposure Score (Human + Ecological + Other)	**40.0**	
Adjusted Total Exposure Score (Total Exposure / 46 * 34)	**29.6**	(max 34)

Site Score

Nottingham Island-Former Deparment of Transport Weather Station

Site Letter Grade	**C**
Certainty Percentage	**81%**
% Responses that are "Do Not Know"	**-14%**
Total NCSCS Score for site	**73.1**
Site Classification Category	**1**

Site Classification Categories*:

Class 1 - High Priority for Action (Total NCS Score >70)
Class 2 - Medium Priority for Action (Total NCS Score 50 - 69.9)
Class 3 - Low Priority for Action (Total NCS Score 37 - 49.9)
Class N - Not a Priority for Action (Total NCS Score <37)
Class INS - Insufficient Information (>15% of responses are "Do Not Know")

* NOTE: The term "action" in the above categories does not necessarily refer to remediation, but could also include risk assessment, risk management or further site characterization and data collection.

CCME National Classification System (2008, 2010 v 1.2)

Contaminant Hazard Ranking

(Based on the Proposed Hazard Ranking developed for the FCSAP Contaminated Sites Classification System)

This information is used in Sheet I (Contaminant Characteristics), section 2 (Chemical Hazard).

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Acetaldehyde	H	*	PHC	
Acetone	L			
Acrolein	H	*		
Acrylonitrile	H	*	PHC	
Alachlor	M			
Aldicarb	H			
Aldrin	H			
Allyl Alcohol	H			
Aluminum	L			
Ammonia	L	*		
Antimony	H			
Arsenic	H	*		
Atrazine	M			
Azinphos-Methyl	H			
Barium	L			
Bendiocarb	H			
Benzene	H	*	CHC	BTEX
Benzidine	H	*	CHC	
Beryllium	H		CHC	
Biphenyl, 1,1-	M			
2,3,4,5-Bis(2-Butylene)tetrahydro-2-furfural	H			
Bis(Chloromethyl)Ether	H	*	CHC	
Bis(2-Chloroethyl)Ether	H		CHC	
Bis(2-Chloroisopropyl)Ether	H			
Bis(2-Ethylhexyl)Phthalate	H	*		PH
Boron	L			
Bromacil	M			
Bromate	M			
Bromochlorodifluoromethane	M	*		HM
Bromochloromethane	H	*		HM
Bromodichloromethane	H			HM
Bromoform (Tribromomethane)	H		PHC	HM
Bromomethane	M			HM
Bromotrifluoromethane	M	*		HM
Bromoxynil	H			
Butadiene, 1,3-	H	*	CHC	
Cadmium	H	*	CHC	
Carbofuran	M			
Carbon Tetrachloride (Tetrachloromethane)	H		PHC	HM
Captafol	M			
Chloramines	M	*		
Chloride	L			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Chloroaniline, P-	H			
Chlorobenzene (mono)	M			
Chlorobenzilate	M			
Chlorodimeform	M			
Chloroform	H		PHC	HM
Chloromethane	M			
Chloromethyl Methyl Ether	M	*		
(4-Chlorophenyl)Cyclopropylmethanone, O-((4-Nitrophenyl)Methyl)Oxime	H			
Chlorinated Benzenes				
Monochlorobenzene	M			
Dichlorobenzene, 1,2- (O-DCB)	M			
Dichlorobenzene, 1,3- (M-DCB)	M			
Dichlorobenzene, 1,4- (P-DCB)	H			
Trichlorobenzene, 1,2,3-	M			
Trichlorobenzene, 1,2,4-	M			
Trichlorobenzene, 1,3,5-	M			
Tetrachlorobenzene, 1,2,3,4-	M			
Tetrachlorobenzene, 1,2,3,5-	M			
Tetrachlorobenzene, 1,2,4,5-	M			
Pentachlorobenzene	M			
Hexachlorobenzene	H			
Chlorinated Ethanes				
Dichloroethane, 1,1-	M			
Dichloroethane, 1,2- (Ethylene Dichloride (EDC))	H		PHC	
Trichloroethane, 1,1,1-	H	*		
Trichloroethane, 1,1,2-	M			
Tetrachloroethane, 1,1,1,2-	M			
Tetrachloroethane, 1,1,2,2-	M			
Chlorinated Ethenes				
Monochloroethene (Vinyl Chloride)	H	*	CHC	
Dichloroeth(yl)ene, 1,1-	H			
Dichloroeth(yl)ene, 1,2- (cis or trans)	M			
Trichloroeth(yl)ene (TCE)	H	*		
Tetrachloroeth(yl)ene (PCE)	H	*		
Chlorinated Phenols		*		
Monochlorophenols	M			
Chlorophenol, 2-	M			
Dichlorophenols				
Dichlorophenol, 2,4-	M			
Trichlorophenols				
Trichlorophenol, 2,4,5-	H			
Trichlorophenol, 2,4,6-	H		PHC	
Tetrachlorophenols				
Tetrachlorophenol, 2,3,4,6-	H			
Pentachlorophenol (PCP)	H			
Chloromethane	M			HM
Chlorophenol, 2-	M			CP
Chlorothalonil	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Chlorpyrifos	H			
Chromium (Total)	M	*		
Chromium (III)	L	*		
Chromium (VI)	H	*	CHC	
Coal Tar	H		CHC	Refer to PAHs
Cobalt	L			
Copper	L			
Creosote	M	*		Refer to PAHs
Crocidolite	L			
Cyanide (Free)	H			
Cyanazine	M			
Dibenzofuran	H	*		DF
Dibromoethane, 1,2- (Ethylene Dibromide (EDB))	H		PHC	
1,2-Dibromo-3-Chloropropane	H		PHC	
Dibromochloromethane	M	*		HM
Dibromotetrafluoroethane	M			
Dichlorobenzene, 1,2- (O-DCB)	M			CB
Dichlorobenzene, 1,3- (M-DCB)	M			CB
Dichlorobenzene, 1,4- (P-DCB)	H			CB
Dichlorobenzidine, 3,3'-	H		PHC	
DDD	H			
DDE	H			
DDT	H		PHC	
Deltamethrin	M			
Diazinon	M			
Dicamba	H			
Dichloroethane, 1,1-	H			CEA
Dichloroethane, 1,2- (EDC)	H		PHC	CEA
Dichloroeth(yl)ene, 1,1-	H			CEE
Dichloroeth(yl)ene, Cis-1,2-	M			CEE
Dichloroeth(yl)ene, Trans-1,2-	M			CEE
Dichloromethane (Methylene Chloride)	H		PHC	HM
Dichlorophenol, 2,4-	M			CP
Dichloropropane, 1,2-	H			
Dichloropropene, 1,3-	H		PHC	
Diclofop-Methyl	H			
Didecyl Dimethyl Ammonium Chloride	H			
Dieldrin	H			
Dimethoate	H			
Diethyl Phthalate	M			PH
Diethylene Glycol	L			GL
Dimethyl Phthalate	M			PH
Dimethylphenol, 2,4-	L			
Dinitrophenol, 2,4-	M			
Dinitrotoluene, 2,4-	H			
Dinoseb	H			
Di-n-octyl Phthalate	H			
Dioxane, 1,4-	H		PHC	
Dioxins/Furans	H			
Diquat	M			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Diuron	M			
Endosulfan	H			
Endrin	H			
Ethylbenzene	M			BTEX
Ethylene Dibromide (EDB)	H		PHC	
Ethylene Glycol	L			GL
Ethylene Oxide	H		CHC	
Fluoroacetamide	M			
Fluorides	L	*		
Glycols				
Ethylene Glycol	L			
Diethylene Glycol	L			
Propylene Glycol	L			
Glyphosate	M			
Halogenated Methanes				
Bromochlorodifluoromethane	M	*		
Bromochloromethane	M	*		
Bromodichloromethane	H		PHC	
Bromomethane	M			
Bromotrifluoromethane	M	*		
Chloroform	M		PHC	HM
Chloromethane	M			
Dibromochloromethane	M			
Dichloromethane (Methylene Chloride)	H		PHC	
Methyl Bromide	M	*		
Tetrachloromethane (Carbon Tetrachloride)	H			
Tribromomethane (Bromoform)	H			
Trihalomethanes (THM)	M			
Heptachlor	H			
Heptachlor Epoxide	H			
Hexachlorobenzene	H		PHC	
Hexachlorobutadiene	H			
Hexachlorocyclohexane, Gamma	H		PHC	
Hexachloroethane	H		PHC	
Hydrobromofluorocarbons (HBFCS)	M	*		
Hydrochlorofluorocarbons (HCFCS)	M	*		
3-Iodo-2-propynyl Butyl Carbamate	H			
Iron	L			
Lead	H	*		neurotoxins / teratogens
Lead Arsenate	H			
Leptophos	H			
Lindane	H			
Linuron	H			
Lithium	L			
Malathion	M			
Manganese	L			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Mercury	H	*		
Methamidophos	H			
Methoxylchlor	H			
Methyl Bromide (Bromomethane)	M	*		
2-Methyl-4-chloro-phenoxy Acetic Acid	M			
Methyl Ethyl Ketone	L			
Methyl Isobutyl Ketone	L			
Methyl Mercury	H			
Methyl-Parathion	H			
Methyl Tert Butyl Ether (MTBE)	M			
Metolachlor	M			
Metribuzin	H			
Molybdenum	L			
Monochloramine	M			
Monocrotophos	H			
Nickel	H	*		CEPA - inhalation
Nitrilotriacetic Acid	H		PHC	
Nitrate	L			
Nitrite	M			
Nonylphenol + Ethoxylates	H	*		
Organotins				
Tributyltin	H			
Tricyclohexyltin	H			
Triphenyltin	H			
Parathion	H			
Paraquat (as Dichloride)	H			
Pentachlorobenzene	M			CB
Pentachlorophenol (PCP)	H			CP
Petroleum Hydrocarbons				Ranking based upon fraction of toxic and mobile components in product. Lighter compounds such as benzene are more toxic and mobile.
Petroleum Hydrocarbons (Gasoline)	H			
Petroleum Hydrocarbons (Kerosene incl. Jet Fuels)	H			
Petroleum Hydrocarbons (Diesel incl Heating Oil)	M			
Petroleum Hydrocarbons (Heavy Oils)	L			
Petroleum Hydrocarbons (CCME F1)	H			
Petroleum Hydrocarbons (CCME F2)	M			
Petroleum Hydrocarbons (CCME F3)	L			
Petroleum Hydrocarbons (CCME F4)	L			
Phenol	L			
Phenoxy Herbicides	M			
Phorate	H			
Phosphamidon	H			
Phthalate Esters				
Bis(2-Ethylhexyl)Phthalate	H	*		
Diethyl Phthalate	H			
Dimethyl Phthalate	H			
Di-n-octyl Phthalate	H			
Polybrominated Biphenyls (PBB)	H	*		
Polychlorinated Biphenyls (PCB)	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Polychlorinated Terphenyls	H	*		
Polycyclic Aromatic Hydrocarbons	H	*	PHC	
Acenaphthene	M			
Acenaphthylene	M			
Acridine	H			
Anthracene	M			
Benzo(a)anthracene	H		PHC	
Benzo(a)pyrene	H		PHC	
Benzo(b)fluoranthene	H		PHC	
Benzo(g,h,i)perylene	H			
Benzo(k)fluoranthene	H		PHC	
Chrysene	M			
Dibenzo(a,h)anthracene	H		PHC	
Fluoranthene	M			
Fluorene	M			
Indeno(1,2,3-c,d)pyrene	H		PHC	
Methylnaphthalenes	M			
Naphthalene	M			
Phenanthrene	M			
Pyrene	M			
Quinoline	H			
Propylene Glycol	L			GL
Radium	H			
Radon	H			
Selenium	M			
Silver	L			
Simazine	M			
Sodium	L			
Strontium-90	H			
Strychnine	H			
Styrene	H			
Sulphate	L			
Sulphide	L			
2,3,7,8-Tetrachlorodibenzo-p-dioxins (TCDD)	H	*		DF
Tebuthiuron	H			
Tetrachloroeth(yl)ene (PCE)	H	*		CEE
Tetraethyl Lead	H			
Tetrachlorobenzene, 1,2,3,4-	H			CB
Tetrachlorobenzene, 1,2,3,5-	H			CB
Tetrachlorobenzene, 1,2,4,5-	H			CB
Tetrachloroethane, 1,1,1,2-	M			CEA
Tetrachloroethane, 1,1,2,2-	M			CEA
Tetrachlorophenol, 2,3,4,6-	H			CP
Tetramethyl Lead	H	*		
Thallium	M			
Thiophene	M			
Tin	L			
Toluene	M			BTEX
Toxaphene	H			

Chemical/Parameter	Hazard	CEPA	Carcinogenicity	Notes
Triallate	M			
Tribromomethane (Bromoform)	H			HM
Tributyltetradecylphosphonium Chloride	H	*		
Trichlorobenzene, 1,2,3-	H			CB
Trichlorobenzene, 1,2,4-	H			CB
Trichlorobenzene, 1,3,5-	H			CB
Trichloroethane, 1,1,1-	H	*		CEA
Trichloroethane, 1,1,2-	M			CEA
Trichloroeth(yl)ene (TCE)	H	*		CEE
Tricyclohexyltin Hydroxide	H			
Trichlorophenol, 2,4,5-	H			CP
Trichlorophenol, 2,4,6-	H		PHC	CP
Trifluralin	H			
Trihalomethanes (THM)	M			
Tris(2,3-Dibromopropyl)phosphate	H			
Tritium	L			
Uranium (Non-radioactive) / (Radioactive)	M/H			
Vanadium	M			
Vinyl Chloride	H	*	CHC	CEE
Xylenes	M			BTEX
Zinc	L			

H = High Hazard
M = Medium Hazard
L = Low Hazard
Hazard ratings based on a number of factors including potential human and ecological health effects.

PHC = Potential Human Carcinogen
CHC = Confirmed Human Carcinogen

BTEX = benzene, toluene, ethylbenzene, and xylenes
CB = chlorobenzenes
CEA = chlorinated ethanes
CEE = chlorinated ethenes
CP = chlorophenols
DF = dioxins and furans
GL = glycols
HM = halomethanes
PAH = polycyclic aromatic hydrocarbons
PH = phthalate esters

CCME National Classification System (2008, 2010 v 1.2)

Reference Material (Information to assist in scoring)

Examples of Persistent Substances

This information is used in Sheet I (Chemical Characteristics), section 5 (Modifying Factors).

aldrin	dieldrin	PCBs
benzo(a)pyrene	hexachlorobenzene	PCDDs/PCDFs (dioxins and furans)
chlordane	methylmercury	toxaphene
DDT	mirex	alkylated lead
DDE	octachlorostyrene	

Examples of Substances in the Various Chemical Classes

This information is used in Sheet I (Chemical Characteristics), section 5 (Modifying Factors).

Chemical Class	Examples *
inorganic substances (including metals)	arsenic, barium, cadmium, hexavalent chromium, copper, cyanide, fluoride, lead, mercury, nickel, selenium, sulphur, zinc; brines or salts
volatile petroleum hydrocarbons	benzene, toluene, ethylbenzene, xylenes, PHC F1
light extractable petroleum hydrocarbons	PHC F2
heavy extractable petroleum hydrocarbons	PHC F3
PAHs	Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h0anthracene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene
phenolic substances	phenol, pentachlorophenol, chlorophenols, nonchlorinated phenols (e.g., 2,4-dinitrophenol, cresol, etc.)
chlorinated hydrocarbons	PCBs, tetrachloroethylene, trichloroethylene, dioxins and furans, trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene
halogenated methanes	carbon tetrachloride, chloroform, dichloromethane
phthalate esters	di-isononyl phthalate (DINP), di-isodecyl phthalate (DIDP), di-2-ethylhexyl phthalate (DEHP)
pesticides	DDT, hexachlorocyclohexane

* Note: Specific chemicals that belong to the various classes are not limited to those listed in this table. These lists are not exhaustive and are meant just to provide examples of substances that are typically encountered.

Chemical-specific Properties
(Adapted from USEPA Soil Screening Criteria)

The information on Koc is used in Sheet II (Migration Potential), section 1,B,a (Relative Mobility).
The information on the dimensionless Henry's law constant is used in Sheet II (Migration Potential), section 4,B,a (Relative Volatility).
The information on log Kow is used in Sheet III (Exposure), section 3,B,a,iii (Potential for Ecological Exposure - terrestrial ingestion), and section 3,B,b,ii (Potential for Ecological Exposure - aquatic uptake potential).

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
83-32-9	Acenaphthene	4.24E+00	1.55E-04	6.36E-03	3.92	3.85
67-64-1	Acetone	1.00E+06	3.88E-05	1.59E-03	-0.24	-0.24
309-00-2	Aldrin	1.80E-01	1.70E-04	6.97E-03	6.5	6.39
120-12-7	Anthracene	4.34E-02	6.50E-05	2.67E-03	4.55	4.47
56-55-3	Benz(a)anthracene	9.40E-03	3.35E-06	1.37E-04	5.7	5.6
71-43-2	Benzene	1.75E+03	5.55E-03	2.28E-01	2.13	1.77
205-99-2	Benzo(b)fluoranthene	1.50E-03	1.11E-04	4.55E-03	6.2	6.09
207-08-9	Benzo(k)fluoranthene	8.00E-04	8.29E-07	3.40E-05	6.2	6.09
65-85-0	Benzoic acid	3.50E+03	1.54E-06	6.31E-05	1.86	—
50-32-8	Benzo(a)pyrene	1.62E-03	1.13E-06	4.63E-05	6.11	6.01
111-44-4	Bis(2-chloroethyl)ether	1.72E+04	1.80E-05	7.38E-04	1.21	1.19
117-81-7	Bis(2-ethylhexyl)phthalate	3.40E-01	1.02E-07	4.18E-06	7.3	7.18
75-27-4	Bromodichloromethane	6.74E+03	1.60E-03	6.56E-02	2.1	1.74
75-25-2	Bromoform	3.10E+03	5.35E-04	2.19E-02	2.35	1.94
71-36-3	Butanol	7.40E+04	8.81E-06	3.61E-04	0.85	0.84
85-68-7	Butyl benzyl phthalate	2.69E+00	1.26E-06	5.17E-05	4.84	4.76
86-74-8	Carbazole	7.48E+00	1.53E-08	6.26E-07	3.59	3.53
75-15-0	Carbon disulfide	1.19E+03	3.03E-02	1.24E+00	2	1.66
56-23-5	Carbon tetrachloride	7.93E+02	3.04E-02	1.25E+00	2.73	2.24
57-74-9	Chlordane	5.60E-02	4.86E-05	1.99E-03	6.32	5.08
106-47-8	*p-Chloroaniline*	5.30E+03	3.31E-07	1.36E-05	1.85	1.82
108-90-7	Chlorobenzene	4.72E+02	3.70E-03	1.52E-01	2.86	2.34
124-48-1	Chlorodibromomethane	2.60E+03	7.83E-04	3.21E-02	2.17	1.8
67-66-3	Chloroform	7.92E+03	3.67E-03	1.50E-01	1.92	1.6
95-57-8	2-Chlorophenol	2.20E+04	3.91E-04	1.60E-02	2.15	—
218-01-9	Chrysene	1.60E-03	9.46E-05	3.88E-03	5.7	5.6
72-54-8	DDD	9.00E-02	4.00E-06	1.64E-04	6.1	6
72-55-9	DDE	1.20E-01	2.10E-05	8.61E-04	6.76	6.65
50-29-3	DDT	2.50E-02	8.10E-06	3.32E-04	6.53	6.42
53-70-3	Dibenz(a,h)anthracene	2.49E-03	1.47E-08	6.03E-07	6.69	6.58
84-74-2	Di-n-butyl phthalate	1.12E+01	9.38E-10	3.85E-08	4.61	4.53
95-50-1	1,2-Dichlorobenzene	1.56E+02	1.90E-03	7.79E-02	3.43	2.79

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
106-46-7	1,4-Dichlorobenzene	7.38E+01	2.43E-03	9.96E-02	3.42	2.79
91-94-1	3,3-Dichlorobenzidine	3.11E+00	4.00E-09	1.64E-07	3.51	2.86
75-34-3	1,1-Dichloroethane	5.06E+03	5.62E-03	2.30E-01	1.79	1.5
107-06-2	1,2-Dichloroethane	8.52E+03	9.79E-04	4.01E-02	1.47	1.24
75-35-4	1,1-Dichloroethylene	2.25E+03	2.61E-02	1.07E+00	2.13	1.77
156-59-2	cis-1,2-Dichloroethylene	3.50E+03	4.08E-03	1.67E-01	1.86	1.55
156-60-5	trans-1,2-Dichloroethylene	6.30E+03	9.38E-03	3.85E-01	2.07	1.72
120-83-2	2,4-Dichlorophenol	4.50E+03	3.16E-06	1.30E-04	3.08	—
78-87-5	1,2-Dichloropropane	2.80E+03	2.80E-03	1.15E-01	1.97	1.64
542-75-6	1,3-Dichloropropene	2.80E+03	1.77E-02	7.26E-01	2	1.66
60-57-1	Dieldrin	1.95E-01	1.51E-05	6.19E-04	5.37	4.33
84-66-2	Diethylphthalate	1.08E+03	4.50E-07	1.85E-05	2.5	2.46
105-67-9	2,4-Dimethylphenol	7.87E+03	2.00E-06	8.20E-05	2.36	2.32
51-28-5	2,4-Dinitrophenol	2.79E+03	4.43E-07	1.82E-05	1.55	—
121-14-2	2,4-Dinitrotoluene	2.70E+02	9.26E-08	3.80E-06	2.01	1.98
606-20-2	2,6-Dinitrotoluene	1.82E+02	7.47E-07	3.06E-05	1.87	1.84
117-84-0	Di-n-octyl phthalate	2.00E-02	6.68E-05	2.74E-03	8.06	7.92
115-29-7	Endosulfan	5.10E-01	1.12E-05	4.59E-04	4.1	3.33
72-20-8	Endrin	2.50E-01	7.52E-06	3.08E-04	5.06	4.09
100-41-4	Ethylbenzene	1.69E+02	7.88E-03	3.23E-01	3.14	2.56
206-44-0	Fluoranthene	2.06E-01	1.61E-05	6.60E-04	5.12	5.03
86-73-7	Fluorene	1.98E+00	6.36E-05	2.61E-03	4.21	4.14
76-44-8	Heptachlor	1.80E-01	1.09E-03	4.47E-02	6.26	6.15
1024-57-3	Heptachlor epoxide	2.00E-01	9.50E-06	3.90E-04	5	4.92
118-74-1	Hexachlorobenzene	6.20E+00	1.32E-03	5.41E-02	5.89	4.74
87-68-3	Hexachloro-1,3-butadiene	3.23E+00	8.15E-03	3.34E-01	4.81	4.73
319-84-6	a-HCH (a-BHC)	2.00E+00	1.06E-05	4.35E-04	3.8	3.09
319-85-7	b-HCH (b-BHC)	2.40E-01	7.43E-07	3.05E-05	3.81	3.1
58-89-9	g -HCH (Lindane)	6.80E+00	1.40E-05	5.74E-04	3.73	3.03
77-47-4	Hexachlorocyclopentadiene	1.80E+00	2.70E-02	1.11E+00	5.39	5.3
67-72-1	Hexachloroethane	5.00E+01	3.89E-03	1.59E-01	4	3.25
193-39-5	Indeno(1,2,3-cd)pyrene	2.20E-05	1.60E-06	6.56E-05	6.65	6.54
78-59-1	Isophorone	1.20E+04	6.64E-06	2.72E-04	1.7	1.67
7439-97-6	Mercury	—	1.14E-02	4.67E-01	—	—
72-43-5	Methoxychlor	4.50E-02	1.58E-05	6.48E-04	5.08	4.99
74-83-9	Methyl bromide	1.52E+04	6.24E-03	2.56E-01	1.19	1.02
75-09-2	Methylene chloride	1.30E+04	2.19E-03	8.98E-02	1.25	1.07
95-48-7	2-Methylphenol	2.60E+04	1.20E-06	4.92E-05	1.99	1.96
91-20-3	Naphthalene	3.10E+01	4.83E-04	1.98E-02	3.36	3.3
98-95-3	Nitrobenzene	2.09E+03	2.40E-05	9.84E-04	1.84	1.81

CAS No.	Compound	Solubility in Water @ 20-25°C (mg/L)	Henry's Law Constant (atm-m3/mol)	Dimensionless Henry's law constant (HLC [atm-m3/mol] * 41) (25 °C).	log Kow	Log Koc (L/kg)
86-30-6	N-Nitrosodiphenylamine	3.51E+01	5.00E-06	2.05E-04	3.16	3.11
621-64-7	N-Nitrosodi-n-propylamine	9.89E+03	2.25E-06	9.23E-05	1.4	1.38
1336-36-3	PCBs	—	—	—	5.58	5.49
87-86-5	Pentachlorophenol	1.95E+03	2.44E-08	1.00E-06	5.09	—
108-95-2	Phenol	8.28E+04	3.97E-07	1.63E-05	1.48	1.46
129-00-0	Pyrene	1.35E-01	1.10E-05	4.51E-04	5.11	5.02
100-42-5	Styrene	3.10E+02	2.75E-03	1.13E-01	2.94	2.89
79-34-5	1,1,2,2-Tetrachloroethane	2.97E+03	3.45E-04	1.41E-02	2.39	1.97
127-18-4	Tetrachloroethylene	2.00E+02	1.84E-02	7.54E-01	2.67	2.19
108-88-3	Toluene	5.26E+02	6.64E-03	2.72E-01	2.75	2.26
8001-35-2	Toxaphene	7.40E-01	6.00E-06	2.46E-04	5.5	5.41
120-82-1	1,2,4-Trichlorobenzene	3.00E+02	1.42E-03	5.82E-02	4.01	3.25
71-55-6	1,1,1-Trichloroethane	1.33E+03	1.72E-02	7.05E-01	2.48	2.04
79-00-5	1,1,2-Trichloroethane	4.42E+03	9.13E-04	3.74E-02	2.05	1.7
79-01-6	Trichloroethylene	1.10E+03	1.03E-02	4.22E-01	2.71	2.22
95-95-4	2,4,5-Trichlorophenol	1.20E+03	4.33E-06	1.78E-04	3.9	—
88-06-2	2,4,6-Trichlorophenol	8.00E+02	7.79E-06	3.19E-04	3.7	—
108-05-4	Vinyl acetate	2.00E+04	5.11E-04	2.10E-02	0.73	0.72
75-01-4	Vinyl chloride	2.76E+03	2.70E-02	1.11E+00	1.5	1.27
108-38-3	m-Xylene	1.61E+02	7.34E-03	3.01E-01	3.2	2.61
95-47-6	o-Xylene	1.78E+02	5.19E-03	2.13E-01	3.13	2.56
106-42-3	p-Xylene	1.85E+02	7.66E-03	3.14E-01	3.17	2.59

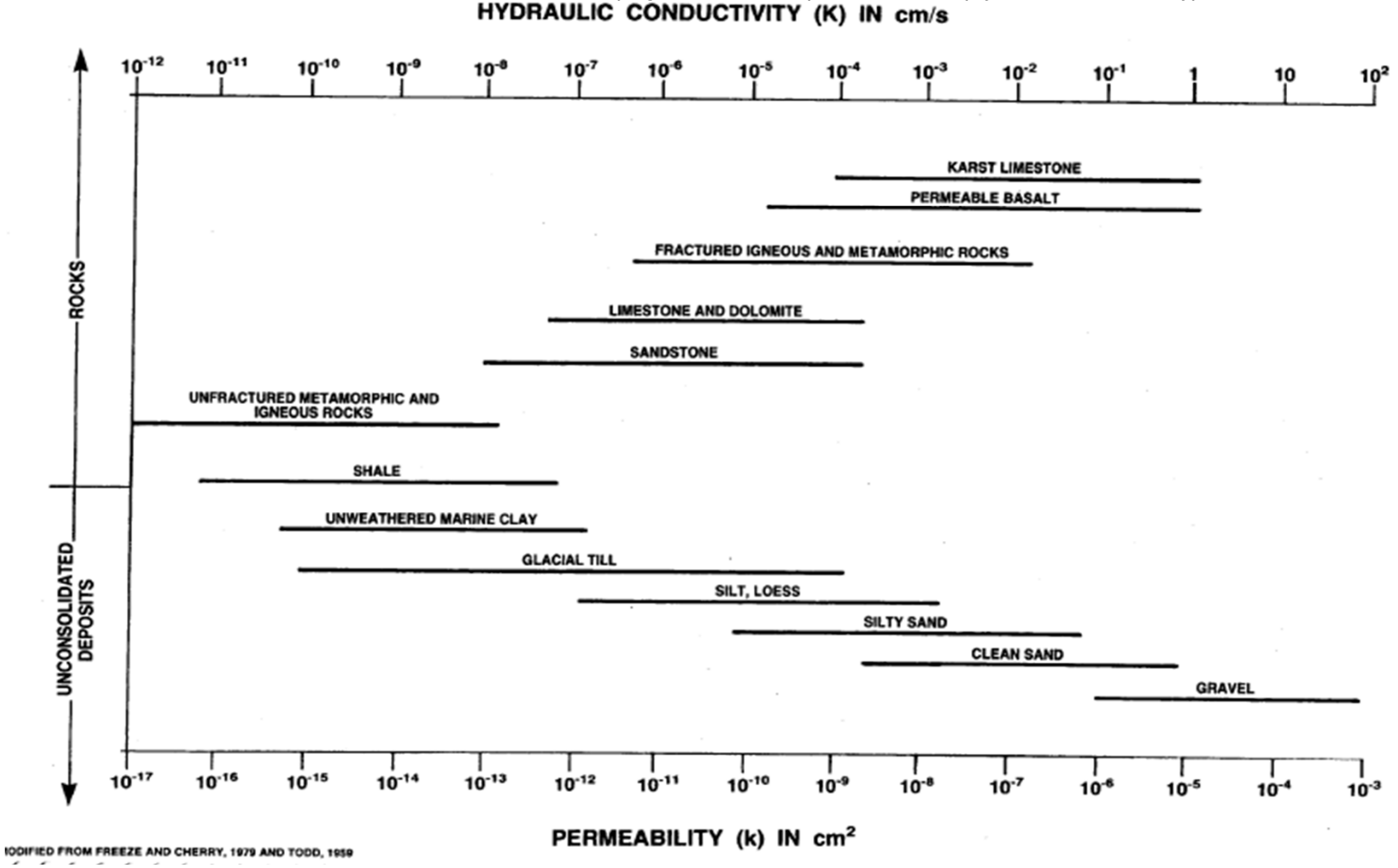
Source: United States Environmental Protection Agency. 1996. Soil Screening Guidance: Technical Background Document. EPA/540/R-95/128 (http://www.epa.gov/superfund/resources/soil/toc.htm#p5)

CAS = Chemical Abstracts Service

Kow = Octanol/water partition coefficient

RANGE OF VALUES OF HYDRAULIC CONDUCTIVITY AND PERMEABILITY

The information on Koc is used in Sheet II (Migration Potential), section 1,B,f (Hydraulic Conductivity)



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