



Nunatta Project 26-38

EXECUTIVE SUMMARY

Nunatta Environmental Services Inc. was retained by the City of Iqaluit to conduct a Phase I Environmental Site Assessment of a site adjacent to Toonik Pond on Niaqungusiariaq in the Tundra Ridge neighbourhood of Iqaluit, Nunavut. The site is on un-surveyed Commissioner's land within the boundary of the City. The site is divided into eastern and western portions by a rock outcrop in the centre of the site. It is currently undeveloped, with construction of a storage garage planned for the eastern portion of the site. The planned building has not been assigned a number in the Iqaluit building number system.

The objectives of the Phase I Environmental Site Assessment were to identify any areas of actual or potential environmental concern, potential off-site sources of contamination and associated contaminants of potential concern that could be present at, or near, the site. This was accomplished through a background historical search, a site visit, and an interview. Nunatta also collected two soil samples during the investigation.

Nunatta identified the following potential concerns at the site:

- Off-site spills at Aqsarniit school and House 2738 adjacent to the site.
- Storage of equipment on the western portion of the site.
- Snow dumping and debris in the western portion of the site.

Nunatta collected two soil samples to address potential impacts from the equipment storage and snow dumping/debris. Neither sample exhibited exceedances of guidelines, so Nunatta does not consider that these areas are environmental concerns.

Because of the historical spills, there is a potential that off-site petroleum hydrocarbon impacts have migrated onto the site. The off-site spills would affect the western portion of the site. Nunatta understands that development of the garage is not planned for this area. Based on a review of the current geotechnical investigation and the site visit, Nunatta does not believe that there are any areas of potential environmental concern or potential off-site impacts migrating onto the eastern portion of the site, which is separated from eastern portion by a large rock outcrop.

This Executive Summary should be read in conjunction with the main report and is subject to the same limitations, outlined in Section 8.

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ACRONYMS AND INITIALISMS

ACM	asbestos-containing material
APEC	area of potential environmental concern
AV	access vault
BTEX	benzene, toluene, ethylbenzene and xylenes
BV	Bureau Veritas
CALA	Canadian Association for Laboratory Accreditation, Inc.
CLSS	Canada Lands Survey System
COPC	contaminant of potential concern
CSA	Canadian Standards Association
CSQG	Canadian Soil Quality Guidelines
CWS-PHC	Canada-Wide Standards for Petroleum Hydrocarbons in Soil
DOE	Government of Nunavut Department of Environment
EGMCS	Environmental Guideline for the Management of Contaminated Sites
ESA	environmental site assessment
FCSI	Federal Contaminated Site Inventory
GN	Government of Nunavut
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PHC	petroleum hydrocarbon
POSS	potential off-site source
RPD	relative percent difference
UFFI	urea formaldehyde foam insulation
VOR	very high frequency omnidirectional radio station

1 INTRODUCTION

Nunatta Environmental Services Inc. (Nunatta) was retained by the City of Iqaluit to conduct a Phase I Environmental Site Assessment (ESA) of a site adjacent to Toonik Pond on Niaqungusiariaq in the Tundra Ridge neighbourhood of Iqaluit, Nunavut (the City). The site is on un-surveyed Commissioner's land within the boundary of the City. The site is divided into eastern and western portions by a rock outcrop in the centre of the site. The site is currently undeveloped, with construction of a storage garage planned for the eastern portion of the site. The planned building has not been assigned a number in the Iqaluit building number system.

The objectives of the Phase I ESA were to identify any areas of actual or potential environmental concern (APECs), potential off-site sources (POSSs) of contamination and associated contaminants of potential concern (COPCs) that could be present at, or near, the site. This was accomplished through a background historical search, a site visit, and an interview. Nunatta also collected two soil samples during the investigation.

Nunatta understands that the purpose of this project is to support the redevelopment of the site with a garage/storage facility for City Operations.

1.1 Scope of Work

A Phase I ESA is a preliminary environmental screening tool that provides a qualitative assessment of environmental conditions at a site. A historical review, interview, and site visit provide the basis for the conclusions reported in a Phase I ESA.

Nunatta conducted the work program of the current project according to its standard Phase I ESA procedures, which generally reflect the requirements outlined in the following document:

- "Phase I Environmental Site Assessment", Canadian Standards Association (CSA) standard CSA Z768-01, 2001 reaffirmed 2022.

Sampling and analysis of soil, groundwater, or other media are generally outside the scope of a Phase I ESA. In this "enhanced" ESA, Nunatta collected two characterization soil samples to assist with the identification of areas of potential environmental concern.

Engineering services for all aspects of the project were provided by Yedoma Inc. Yedoma is licensed by the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to provide engineering services in Nunavut.

1.2 Qualifications of Assessor

Mr. Andrew Henderson, P.Eng., PMP, was the Phase I ESA site assessor and report author. Andrew is an environmental engineer with more than 20 years of experience. He has managed environmental site assessments and long-term monitoring projects throughout Canada, including at remote sites in the Northwest Territories and Nunavut. He has also managed risk assessment projects, with a particular focus on the potential for vapour intrusion at northern sites. Andrew has provided expert advice to federal and provincial government departments on risk reduction and documenting site closure at contaminated sites and on achievable standards for soil and groundwater remediation. In a previous position, Andrew led a small team of technicians at a very large Superfund remediation site in the United States, where he supervised the collection of thousands of soils, surface water, sediment, air and wastewater samples.

A curriculum vitae for the assessor can be found in Appendix A.

1.3 Site Description

Iqaluit is located on the southern tip of Baffin Island. Archaeological evidence indicates that Inuit life in the area began nearly 4,000 years ago.

Beginning in 1941, the United States Air Force set up a weather station and air base in the area. The base was turned over to the Canadian government in 1944. The Canadian Government made Iqaluit (then known as Frobisher Bay) the centre of their eastern arctic operations in the late 1950s, and began to construct the local hospital, power and water treatment facilities, and utilidor. The 1960s, 1970s and 1980s saw land claims settlements and rights for the Inuit population of Iqaluit. In 1999, Iqaluit became the capital of the new Territory of Nunavut.

In 2021, the population of Iqaluit was 7,429 with residents living in 3,297 private dwellings (Statistics Canada, 2023).

The site is adjacent to Toonik Pond on Niaqungusiariaq in the Tundra Ridge neighbourhood of Iqaluit. The site is on un-surveyed Commissioner's land within the boundary of the City and is currently undeveloped. The City plans to build a garage/storage facility on the site.

A drawing of the site provided by the City is presented in Appendix B.

According to Iqaluit's Consolidated Zoning Bylaw (City of Iqaluit, 2021), the site is in the OR ("Open Area") zone.

The site is a curved rectangle, with an approximate area of 1.1 hectares. The frontage of the site on Niaqungusiariaq is 265 metres, and the property is 43 metres deep. The approximate site area is 11,000

m² or 1.1 hectares. There is a large rock outcrop that divides the site into an eastern and western portion. The general site area is shown on Figure 1, and the site itself is shown on Figure 2.

According to the City of Iqaluit's survey data (Government of Nunavut (GN), Department of Community and Government Services, Planning and Lands Division, 2026.), the approximate elevation of the centre of the site is 100 metres above mean sea level. The survey data indicates that there is a slight hump in the centre of the site, rising to 102 metres above mean sea level. The land in the area generally rises to the east and falls towards the west and south.

Toonik Pond abuts the site to the north.

According to the Geological Survey of Canada's surficial geology map of Iqaluit (Allard *et al.*, 2012), the site is in an area of glaciofluvial subaerial outwash plain. Materials in the area are stratified gravel and sand from one to 30 metres thick. The area consists of proglacial floodplains, terraces, and fans and includes kame terraces, buried esker ridges, minor subglacial, and subaquatic deposits. There are locally kettled sediments deposited by meltwater behind, at, and in front of ice margins. The area may contain ice wedges and massive ice bodies.

The Homeowner's Guide to Permafrost in Nunavut (Government of Nunavut, 2013) indicates that the site is in an area of mixed soils with a moderate likelihood of ice-rich permafrost.

2 RECORDS REVIEW

Nunatta conducted a review of historical records to obtain relevant information about the site regarding areas of actual or potential environmental concern. The records review consisted of the sources noted below.

2.1 Site Specific Records/Reports/Diagrams

Nunatta conducted a search of the Canada Lands Survey System (CLSS) to obtain a survey plan of the lot. According to surveys of adjacent properties, the site has not been surveyed. A site plan was provided to Nunatta by the City and was used to create the boundaries shown on Figure 2.

2.2 Previous Environmental and Audit Reports

Nunatta was not provided with any previous environmental or audit reports for the site.

The City provided preliminary data from a geotechnical investigation that is currently underway. The data included thermistor logs (Trek Engineering, 2026a) and borehole logs (Trek Engineering, 2026b). The investigation was conducted in the area planned for garage construction, in the eastern half of the site.

The investigation found surficial peat in some locations. Elsewhere, surficial materials were poorly graded sand, with silt, gravel and cobbles. Underlying this material was poorly graded sand with silt. The investigators noted that seepage and sloughing were not observed during the investigation.

The investigation encountered bedrock at depths from 1.8 to 6.4 metres below ground. The Precambrian bedrock was characterized as black and grey, monzogranite gneiss with surface fractures observed in one location. Bedrock was closest to the surface adjacent to the pond and deepest in the southwest corner of the area investigated (i.e., near the road in the centre of the site).

Thermistor logs indicate that the ground was frozen less than one metre below ground surface at the time of the investigation.

2.3 Adjacent Properties

Information on adjacent properties was obtained from all sources and databases available.

2.4 Aerial Photographs

Nunatta obtained aerial photographs of the site and surrounding areas from the National Air Photo Library in Ottawa, Ontario. Photographs were obtained for the years 1948, 1957, 1969, 1976, 1980, 1983, 1987, 1992, and 1998. Nunatta also reviewed images from 2003 through 2023 from Google Earth.

Nunatta noted historical land use changes as well as potential sources of environmental impacts from the photos. A summary of the observations has been included in Table 1 and copies of the aerial photographs that were reviewed are included in Appendix C.

Table 1: Aerial Photograph Summary of Subject Site

Date	Roll	Photo	Scale	Observations
1948-07-23	A11535	0031	1:20,000	Site is undeveloped with no roads nearby.
1957-09-03	REA-757	0012	1:20,000	Road to Apex (Niaqungusiariaq) has been constructed and there is some modification of the area next to the road as a result. No other changes to the site.
1969-08-13	A21180	0016	1:12,000	Similar to 1957 with more paths present on the site.
1976-08-18	A24492	0136	1:20,000	Similar to 1969.
1980-08-01	A25553	0129	1:8,000	Similar to 1976.
1983-07-17	A26392	0037	1:5,000	Similar to 1980.
1987-08-20	A27161	0129	1:6,000	Similar to 1983.
1992-08-26	A27862	0055	1:6,000	Similar to 1987.
1998-08-27	A28353	0109	1:10,000	Power lines have been installed at the southern edge of the site, adjacent to the road.
June 18, 2003	NA (Google Earth)			Similar to 1998.
July 24, 2006	NA (Google Earth)			Some storage of materials is occurring in the southwest corner of the site, likely building materials for construction of the school and arena.
July 4, 2009	NA (Google Earth)			Storage of materials no longer present. Otherwise, similar to 2006.
July 31, 2012	NA (Google Earth)			Similar to 2009.
July 20, 2015	NA (Google Earth)			Similar to 2012.
July 19, 2018	NA (Google Earth)			Similar to 2015.
July 14, 2023	NA (Google Earth)			Storage of boats, etc. is happening on far west edge of site.

Table 2: Aerial Photograph Summary of Adjacent Properties

Date	Roll	Photo	Scale
1948-07-23	A11535	0031	1:20,000
North	Toonik Pond is present, but there is no development further to the north.		
East	Area not developed.		
South	Area not developed.		
West	Area not developed.		
1957-09-03	REA-757	0012	1:20,000
North	Similar to 1948.		
East	Similar to 1948.		
South	Road to Apex has been built, but nothing south of the road has been developed.		
West	There is a path from Toonik Pond to an area to the west, possibly a source of aggregate.		
1969-08-13	A21180	0016	1:12,000
North	Similar to 1957.		
East	Similar to 1957.		
South	A small access road has been constructed south of the main road, with a small building at the end.		
West	Similar to 1957, although the area west of the site appears less like an active source of aggregate.		
1976-08-18	A24492	0136	1:20,000
North	Similar to 1969.		
East	The road immediately east of the site ("Bonfire Road") and Toonik Pond has been built. East of the road, the very high frequency omnidirectional radio station (VOR) Frobay has been constructed.		
South	Small building at end of access road remains present, otherwise the area south of the road is undeveloped.		
West	Similar to 1969.		
1980-08-01	A25553	0129	1:8,000
North	Similar to 1976.		
East	Similar to 1976.		
South	There is one additional access road and small building immediately south of the road, south of the site.		
West	Similar to 1976, although there is storage of some bags or piles of dirt in the area west of the site.		

Date	Roll	Photo	Scale
1983-07-17	A26392	0037	1:5,000
North	Similar to 1980.		
East	Similar to 1980.		
South	The older building south of the site has been expanded. There are large fence-like structures present between the site and these buildings.		
West	Piles of dirt or aggregate remain present.		
1987-08-20	A27161	0129	1:6,000
North	Similar to 1983.		
East	Similar to 1983.		
South	Similar to 1983.		
West	Similar to 1983.		
1992-08-26	A27862	0055	1:6,000
North	Similar to 1987.		
East	Similar to 1987.		
South	Similar to 1987.		
West	Similar to 1987.		
1998-08-27	A28353	0109	1:10,000
North	Similar to 1992.		
East	Similar to 1992.		
South	Some construction preparation for the Aqsarniit School is visible.		
West	Some construction preparation for residential buildings west of site is visible.		
2003 through 2023 (various as noted)	NA (Google Earth Imagery)	NA	NA
North	June 18, 2003: similar to 1998. July 24, 2006: similar to 2003. July 4, 2009: similar to 2006. July 31, 2012: similar to 2009. July 20, 2015: similar to 2012. July 19, 2018: similar to 2015. July 14, 2023: similar to 2018.		

Date	Roll	Photo	Scale
East	June 18, 2003: similar to 1998. July 24, 2006: similar to 2003. July 4, 2009: similar to 2006. July 31, 2012: similar to 2009. July 20, 2015: similar to 2012. July 19, 2018: similar to 2015. July 14, 2023: similar to 2018.		
South	June 18, 2003: Aqsarniit school, French school and Arctic Winter Games Arena have been constructed south of site. July 24, 2006: Aqsarniit school is undergoing expansion, adding east wing. July 4, 2009: similar to 2006. July 31, 2012: similar to 2009. July 20, 2015: similar to 2012. July 19, 2018: similar to 2015. July 14, 2023: similar to 2018.		
West	June 18, 2003: Residential buildings to the west have been constructed. July 24, 2006: similar to 2003. July 4, 2009: similar to 2006. July 31, 2012: similar to 2009. July 20, 2015: similar to 2012. July 19, 2018: similar to 2015. July 14, 2023: similar to 2018.		

2.5 City Directories

No city directories are available for Iqaluit.

2.6 Insurance Records/Plans

Based on Nunatta's previous experience, no fire insurance records or plans are available for Iqaluit.

2.7 Databases

Nunatta has developed a proprietary map of the most relevant databases for Iqaluit, both of which are publicly available. Nunatta has linked the site building numbers to locations and referred to the Nunavut Spills database and the Federal Contaminated Sites Inventory. The database is up to date as of May 15, 2026.

Nunatta's search did not identify any spills on the site itself.

Nunatta identified 10 spill records from the Nunavut Spills database within a 250-metre search area of the site. Details of the off-site results are presented in Table 3. The results of the database search are shown on Figure 3.

Spill records are presented in Appendix D.

Table 3: Nunavut Spills Database Off-Site Records

Spill Number	Date	Location Description	Product	Quantity (Litres)	Nunatta Notes
2005260	May 29, 2005	On Apex Road House #2736	Petroleum - lubricating oil (lube, hydraulic)	68	Spill was reportedly caused by the Municipal government, likely a vehicle. Volume is relatively low. The exact location of the spill is unknown, but is presumed to be the southwest corner of the adjacent property closest to the road, as the cause was presumed to be a municipal vehicle's hydraulics. This is the furthest distance from the site.
2010212	June 3, 2010	Arctic Winter Games Facility Iqaluit, NU	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	20	Volume is relatively low; property is downgradient from the site.
2013110	April 9, 2013	French School	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	50	Volume is relatively low; property is downgradient from the site.
2015027	December 6, 2014	2719D Plan 3335, B1 213 Lt 9	Wastewater/impacted water	0	Spill is wastewater and at a relatively far distance from the site. Ditches and roadways are present between the spill and the site.
2019061	February 17, 2019	AV [access vault] 356	Wastewater/impacted water	Unknown Quantity	Spill is downgradient of the site.
2021356	August 19, 2021	House #2738, across Aqsarniit Ilinniarnvik School	Petroleum - gasoline (aviation, turbo B, jet B)	170	Spill volume is relatively large and adjacent to the site.

Spill Number	Date	Location Description	Product	Quantity (Litres)	Nunatta Notes
2022026	February 3, 2022	Aqsarniit Middle School	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity	Spill is downgradient of the site. The spill was substantial and reported on in the local media. The school was closed for worker safety concerns, but subsequently reopened.
2024009	January 10, 2024	2804 Niaqunngusia riaq Iqaluit	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	30	Spill is downgradient of the site at the Winter Games Arena.
2024229	June 17, 2024	2719 Tasilik Street Iqaluit	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity	Spill is low volume and at a relatively far distance from the site. Ditches and roadways are present between the spill and the site.
2025201	No date	2721 Tasilik Street Iqaluit	Sewage	Unknown Quantity	Spill is relatively removed from the site and consisted of sewage.

The spill at Aqsarniit school and at the spill at House 2738 are both relatively large volumes and adjacent to the western portion of the site. Spills in these areas may have migrated onto the western area of the site.

According to the Federal Contaminated Sites Inventory (FCSI), there are no known or suspected federal contaminated sites within 250 metres of the site.

Based on this review of spills and contaminated sites databases, Nunatta identified spills at adjacent properties as potential off-site sources of impacts.

2.8 Web Search

Nunatta reviewed newspaper articles and other information publicly accessible on the internet as part of the project. The search was conducted using “Toonik Pond” as the basis, given the absence of a name or building number for the site itself.

Nunatta did not identify any impacts associated with the site.

2.9 Summary of Historical Search

Based on the historical search, Nunatta identified the presence of spills adjacent to the site as a Potential Off-Site Source of contamination. Contaminants of concern associated with this POSS are petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and associated contaminants.

3 INTERVIEW

Nunatta personnel conducted an interview to obtain information about the site pertaining to items of actual and/or potential environmental concern. Nunatta interviewed Pat Wolfe from the City of Iqaluit about the site on June 23, 2026.

Because of the limited historical use of the site, the interview focused on Mr. Wolfe's knowledge of specific issues related to the environment at the site and in the surrounding area.

Mr. Wolfe was not aware of any environmental concerns at the site or in the surrounding area. He stated that there had been no historical storage of fuel or other materials in tanks or drums at the site. He noted that the site had been used for snow dumping in the past.

Nunatta did not identify any additional APECs or POSSs based on the interview.

4 SITE VISIT

4.1 Methodology

Nunatta conducted a site visit on June 10, 2026. At the time of the exterior site visit, the ground surface was clear of any cover. The site visit was documented with notes and photographs.

Photos of the site conditions during the site visit can be found in Appendix E.

The results of the site visits are discussed below.

4.2 Limitations

All areas of the site were accessible during the site visit.

4.3 Results

Table 4: General Observations, Site Visit

Area	Observation
Property Use	The site is not developed
Hazardous materials	Not observed
Unidentified substances	Not observed
Storage tanks	Not observed
Storage containers	Not observed
Odours	None noted
Potable water supply	Site does not appear to be serviced

Table 5: Exterior Observations, Site Visit

Area	Observation
Adjacent properties	See Section 4.3.2
Topographic, geologic and hydrogeologic conditions	There is a large rock outcrop, approximately 3 metres tall in the centre of the site. Otherwise, the site is relatively flat, with a slight slope towards Toonik Pond. The areas immediately beside the pond are wet, and the western portion of the site had some observable standing water present.

Area	Observation
General description of structures	None present
Wells	None present
Sewage disposal	Site is not serviced
Pits and lagoons	None noted
Stained materials	None noted
Stressed vegetation	None noted, although there is limited vegetation at the site due to its location.
Fill	None noted
Wastewater	Not serviced
Watercourses, ditches or standing water	Some wetness present in the western portion of the site. Site becomes wetter towards Toonik Pond.
Roads, parking facilities and rights-of-way	Not noted

Nunatta observed equipment storage in the western portion of the site, and an area of snow and debris.

4.3.1 Special Attention Items

Polychlorinated Biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are a group of persistent organic molecules. They were historically used as ingredients in industrial materials, coolants, and lubricants. They were often found in paint, sealing compounds, fluorescent lamp ballasts, and other materials that may still be found in buildings.

PCBs were manufactured and used primarily between 1929 and 1977. In 1977, PCB manufacture and importation was banned in North America; however, the ban did not cover PCBs that were already in use.

There are no buildings present on the site, but pole-mounted transformers on the power line at the southern property boundary may contain PCBs depending on their age.

Asbestos-Containing Materials (ACMs)

Asbestos fibres can cause serious risks to human health when they are inhaled. There are no significant health risks when they remain enclosed or stay tightly bound in a product (Health Canada, 2001 updated 2012).

Asbestos was commonly used in insulation and fireproofing in friable form (i.e., material that can be released into the air and inhaled). In Canada, this use of asbestos generally stopped in the 1970s.

Given the absence of a building, the presence of asbestos is unlikely.

Lead

In 1976, the lead content in interior paint was limited to 0.5% by weight under the federal Hazardous Products Act. Lead may also be present in plumbing solder and old pipes, as well as other lead-based products such as wall shielding.

Standards for lead in paint and other materials were reduced over time, and in 2016, the federal government reduced the permissible lead content of surface coating materials to 90 mg/kg with certain limited exceptions (Surface Coating Materials Regulations, SOR/2016-193, Section 2).

According to Nunavut regulations, “the likelihood of houses and other buildings containing lead paint depends on when they were built and painted. There is a high likelihood that buildings constructed before 1960 contain lead paint. If the building was constructed after 1980, it is unlikely that lead paint was used on interior walls, but there may be lead in paint used on the outside. Buildings constructed after 1992 likely do not contain lead paint because all consumer paints produced in Canada by that time were lead-free.” (Government of Nunavut, 2001).

Given the absence of a building, the presence of lead in paint and other building materials is unlikely.

Radon

Radon gas is generated by the breakdown of uranium in soil and rock below buildings. Because of the varied nature of soil and rock, some areas are more prone to radon gas generation than others. Long-term exposure to radon gas is the second-leading cause of lung cancer after smoking (Health Canada, 2014).

Nunatta did not assess the potential for the generation of radon as part of this investigation.

Urea Formaldehyde Foam Insulation

Urea Formaldehyde Foam Insulation (UFFI) was developed for areas that were difficult to reach with traditional insulation. It was typically made at a construction site using a foaming agent, urea

formaldehyde resin, and compressed air, which would cure into an insulating plastic (CMHC, 2000). Concerns about energy efficiency led to a boom in the use of UFFI in the late 1970s, but its use was banned in 1980 based on concerns about excess formaldehyde use and off-gassing. UFFI is typically not of concern after the immediate period after installation.

Given the absence of a building, the presence of UFFI is unlikely.

Ozone Depleting Substances

The presence of ozone-depleting substances was assessed based on an inventory of air-conditioning and refrigeration units at the property. Air conditioning units typically represent the largest single source of ODS at residential and institutional properties but are not present at this site.

There are no large cooling equipment or refrigerators at the site.

4.3.2 Adjacent Properties

During the site visit, Nunatta took note of the current land uses on neighbouring properties within 250 metres of the site and items of potential environmental concern on these properties (as could be observed from publicly accessible locations). Photographs of the subject property and adjacent properties are included in Appendix E.

Properties adjacent to each side of the subject property are described in Table 6.

Table 6: Adjacent Properties

Direction	Land Use
North	Toonik Pond and Recovery Centre
East	Campfire road and high frequency radio beacon
South	Institutional uses: Aqsarniit school, French school, and arena
West	Residential buildings

4.4 Site Visit Summary

Based on the site visit, Nunatta identified two areas for further investigation:

- The area of snow and debris, and
- The area of equipment storage.

These areas are shown on Figure 4.

5 LIMITED SAMPLING PROGRAM

Based on the historical review and interviews, Nunatta identified two locations where surface samples would be useful to assess the presence of impacts. These were the snow/debris area and the equipment storage area.

Nunatta collected surface soil samples from two locations at the site on June 12, 2026.

5.1 Guidelines

Analytical results of soil samples were compared to the Environmental Guideline for the Management of Contaminated Sites (EGMCS) developed by the Nunavut Department of Environment (DOE). The EGMCS focuses on the management of petroleum hydrocarbon (PHC) contaminated soil, because “[m]ost contaminated sites in Nunavut are the result of petroleum hydrocarbon spills (i.e. gasoline, jet fuel, diesel, bunker fuel).”

The EGMCS incorporates values for contaminants developed by the Canadian Council of Ministers of the Environment (CCME) that “may be adopted de facto as the site-specific remediation criteria and incorporated directly into the Remedial Action Plan or modified within certain limits,” according to the Guideline.

Relevant soil guidelines for the site can be found in the following CCME sources:

- Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil (CWS-PHC); and
- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CSQG).

Both guidelines contain numerical limits intended to maintain, improve or protect environmental quality and human health at contaminated sites. The limits come from models and are adjustable based on certain site characteristics, including land use, soil grain size, and whether groundwater is used as a source of drinking water. The guidelines are derived using toxicological data and aesthetic considerations.

For the site, Nunatta used the following characteristics:

- Land use: commercial, given that the proposed use of the site is for a garage/storage facility,
- Soil grain size: coarse, based on field observations.
- Groundwater: not used as a source of drinking water in Iqaluit.

Both the CWS-PHC and CSQG consider multiple exposure pathways as part of the development of numeric limit values for contaminants. These pathways consider risks posed to humans, plants, animals

and environmental processes. For PHCs on commercial land, for example, the guidelines consider the following exposure pathways.

- Direct contact (ingestion + dermal contact);
- Vapour inhalation (indoor);
- Protection of potable groundwater;
- Protection of groundwater for aquatic life;
- Nutrient cycling;
- Eco soil contact;
- Off-site migration; and
- Management limit.

Pathways are similar for benzene, toluene, ethylbenzene and xylenes (BTEX) compounds and polycyclic aromatic hydrocarbons (PAHs), with specific modifications required for carcinogenicity and other factors. Using the lowest pathway-specific limit value is deemed protective of all receptors based on the defined conditions in all settings, and is called the “Method 1” approach in the EGMCS.

For the site, Nunatta excluded the protection of potable groundwater pathway, as groundwater is not used for drinking water in Iqaluit. Nunatta retained all other pathways as appropriate for the site, with the following notes:

- Vapour inhalation pathway retained, which is very conservative. Typical building construction in Iqaluit does not include either slab-on-grade or basements. Instead, buildings are usually built on piles, which makes the risk of vapour intrusion into living and working areas much lower.
- The protection of aquatic life pathway provides for values that are very low. Given the site’s proximity to surface water, this pathway must be retained; however, the mobility of some hydrophobic contaminants makes downgradient impacts unlikely.

5.2 Site Investigation Methodology

5.2.1 General Description

Nunatta collected surface soil samples from two locations at the site. Sample locations are shown on Figure 4. Soil samples were collected 0-0.15 metres into the soil and material was transferred to the sample container.

The Nunatta field assessor recorded soil observations during sampling, including approximate grain size, colour, moisture content, stratigraphy, and nature and extent of apparent contamination.

Soil samples were placed directly into laboratory-supplied 125 mL glass jars with Teflon-lined lids. Nunatta used methanol preservation for volatile components.

5.2.2 Laboratory

The soil samples were submitted to Bureau Veritas (BV) in Ottawa, Ontario for chemical analysis. BV is certified by the Canadian Association for Laboratory Accreditation Inc. (CALA) and has an internal set of quality assurance and quality control protocols, including replicate analysis, blank spikes, matrix spikes, instrumentation calibration, internal standards, and method blanks. Samples were analyzed within hold time requirements. Analytical results, including quality data, are presented in Appendix F.

The laboratory QA/QC documentation is provided with the laboratory analytical report and was reviewed by Nunatta as part of the project QA/QC.

5.3 Findings

5.3.1 Soil Quality

Soils observed during the field program were primarily brown sand and rock. Field assessment of the soil texture was coarse.

Nunatta collected two soil samples. No field duplicates were collected because of the limited, preliminary nature of the field program. All samples were analyzed for PHCs, BTEX, PAHs and metals. Analytical results are presented in Tables 8 through 10, following the report.

5.3.2 Laboratory Quality Assurance and Quality Control

The laboratory quality control is summarized in Table 7, below.

Table 7: Laboratory QA/QC

Quality Control Method	Result and Comment
Blank	No detections of PHCs, PAHs, BTEX, or metals in the blank.
Laboratory duplicate	BTEX parameters and PHC fraction F1 were not detected in the parent or duplicate samples and were deemed acceptable as a result. Relative percent differences (RPDs) for metals parameters were within the acceptable range. RPDs for PHC fractions F2-F4 and PAHs were within the acceptable range.

Quality Control Method	Result and Comment
Spike	Spike recovery for the matrix spike and spiked blanks were within acceptable ranges for all parameters tested with the exception of antimony and boron, where the matrix spike was slightly below the acceptable range. According to the lab, this was probably the result of matrix interference.

Samples were received by the laboratory within hold times and at laboratory-acceptable temperatures. Each sample was accompanied by an entry in the chain of custody form. Certificates of analysis have been provided in full in Appendix F.

Based on a review of laboratory quality, Nunatta believes that the data quality is acceptable and can be used to draw conclusions about the site.

5.4 Evaluation of Findings

5.4.1 Physical Setting

The site is located in the Tundra Ridge neighbourhood of Iqaluit. Surface water and ground water in the broader area surrounding the site will likely travel from north to south, towards Frobisher Bay. Surface water and ground water on the site itself and in the immediate area will travel north towards Toonik Pond as a result of the local topography and surrounding roads.

The site soils are sandy with rocks and are expected to be relatively transmissive of water.

Nunatta only collected surficial soil samples and did not encounter permafrost during the investigation; however, it is expected to be present at relatively shallow depths (i.e., less than two metres below ground surface), especially in the area of the site further from the pond.

5.4.2 Assessment of Impacts

Based on the analytical results of soil samples collected during the sampling program, Nunatta does not confirm either of the areas of potential environmental concern as areas of environmental concern. No further investigation is recommended for the site.

6 REVIEW, ANALYSIS AND RECOMMENDATIONS

Nunatta reviewed the results of the historical review, the site visit and the interviews. Based on the review, Nunatta identified the following potential concerns at the site:

- Off-site spills at Aqsarniit school and House 2738 adjacent to the site.
- Storage of equipment on the western portion of the site.
- Snow dumping and debris in the western portion of the site.

Nunatta collected two soil samples to address potential impacts from the equipment storage and snow dumping/debris. Neither sample exhibited exceedances of guidelines, so Nunatta does not consider that these areas are environmental concerns.

Based on these historical spills, there is a potential that off-site petroleum hydrocarbon impacts have migrated onto the site. The off-site spills would affect the western portion of the site. Nunatta understands that development of the garage is not planned for this area. Based on a review of the current geotechnical investigation and the site visit, Nunatta does not believe that there are any areas of potential environmental concern or potential off-site impacts migrating onto the eastern portion of the site.

7 CONCLUSIONS

1. Nunatta Environmental Services Inc. was retained by the City of Iqaluit to conduct a Phase I Environmental Site Assessment of a site adjacent to Toonik Pond on Niaqungusiariaq in the Tundra Ridge neighbourhood of Iqaluit, Nunavut. The site is on un-surveyed Commissioner's land within the boundary of the City. The site is divided into eastern and western portions by a rock outcrop in the centre of the site. It is currently undeveloped, with construction of a storage garage planned for the eastern portion of the site. The planned building has not been assigned a number in the Iqaluit building number system.
2. The objectives of the Phase I Environmental Site Assessment were to identify any areas of actual or potential environmental concern, potential off-site sources of contamination and associated contaminants of potential concern that could be present at, or near, the site. This was accomplished through a background historical search, a site visit, and an interview. Nunatta also collected two soil samples during the investigation.
3. Nunatta identified the following potential concerns at the site:
 - Off-site spills at Aqsarniit school and House 2738 adjacent to the site.
 - Storage of equipment on the western portion of the site.
 - Snow dumping and debris in the western portion of the site.
4. Nunatta collected two soil samples to address potential impacts from the equipment storage and snow dumping/debris. Neither sample exhibited exceedances of guidelines, so Nunatta does not consider that these areas are environmental concerns.
5. Because of the historical spills, there is a potential that off-site petroleum hydrocarbon impacts have migrated onto the site. The off-site spills would affect the western portion of the site. Nunatta understands that development of the garage is not planned for this area. Based on a review of the current geotechnical investigation and the site visit, Nunatta does not believe that there are any areas of potential environmental concern or potential off-site impacts migrating onto the eastern portion of the site, which is separated from eastern portion by a large rock outcrop.

8 LIMITATIONS

This report was prepared by Nunatta Environmental Services Inc. exclusively for the use of the City of Iqaluit (“the Client”). Any use of this report by a third party other than the Client is solely at the risk of the third party. Nunatta makes no warranty and accepts no liability or responsibility for any losses, expenses, damages, fines, penalties or other harm resulting from reliance on this report by any other person.

Environmental investigations always contain uncertainty. Nunatta achieved the objectives of this project by using the information currently available to arrive at conclusions; however, this information may be incomplete or imprecise. As a result, Nunatta used professional judgment to collect and assess information, to draw conclusions, and to make recommendations. Nunatta conducts its work to the usual standard of the profession, and no other warranty or representation is intended in this report.

Information obtained from the Client, historical materials, and from others is assumed to be complete and correct. The information was obtained and used by Nunatta in good faith, and Nunatta does not accept responsibility for deficiencies or incompleteness of information from documents prepared by third parties.

The conclusions presented represent the best judgment of the assessors based on current environmental standards and on the site conditions observed at the time of the Nunatta site visit. Due to the nature of the investigation and the limited data available, the assessors cannot warrant against undiscovered environmental liabilities. If additional work is conducted at the site resulting in new information, Nunatta should be requested to re-evaluate the findings and conclusions of this report in light of the new information.

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10 CLOSURE

Please contact the undersigned with any questions or concerns. This historical review was conducted in general accordance with selected elements of the CSA Standard Z768-01.

Sincerely,

Nunatta Environmental Services Inc.

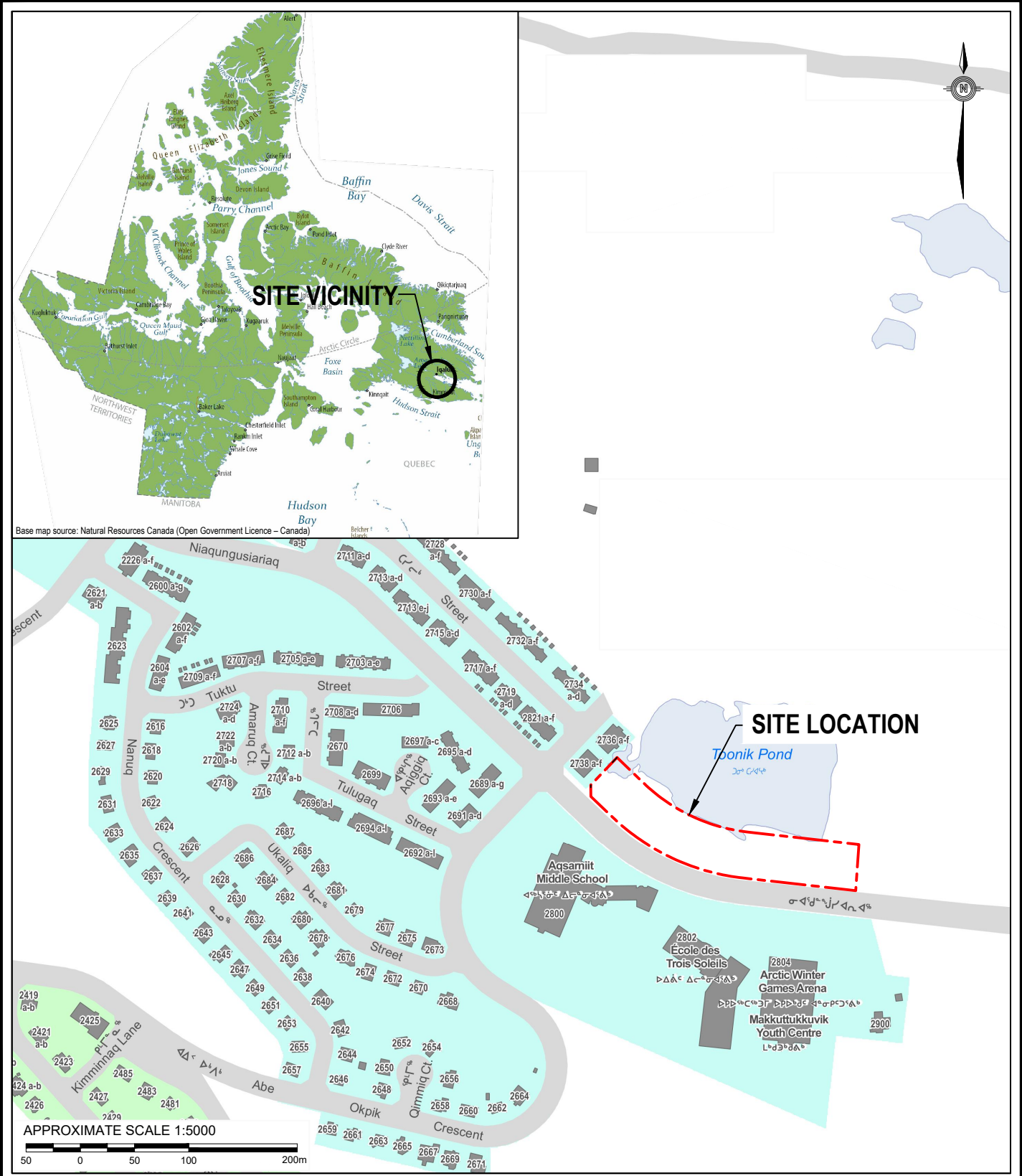
DRAFT

Andrew Henderson, P.Eng., PMP
Principal Engineer
Yedoma Inc.

DRAFT

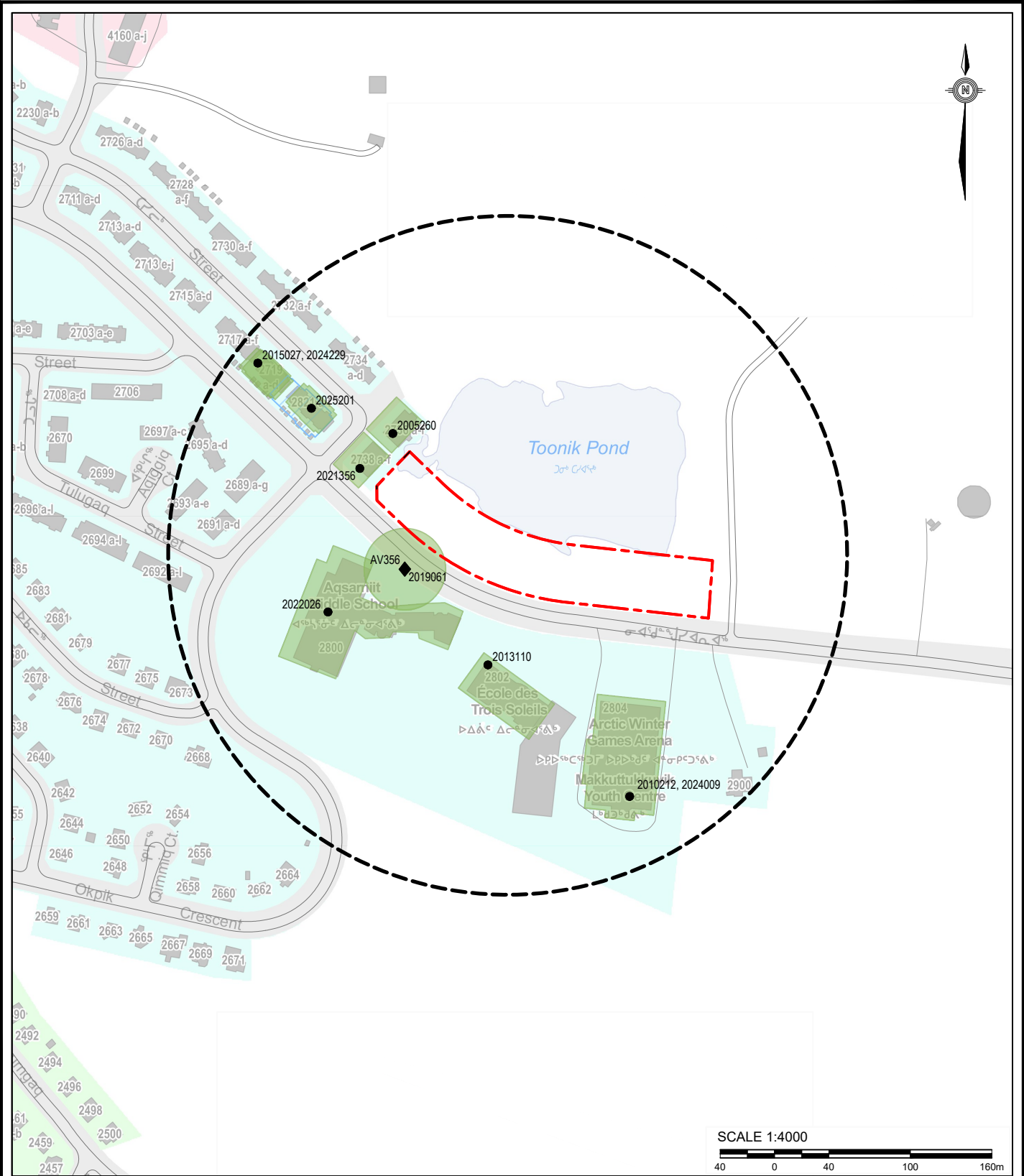
Jim Wilson
President
Nunatta Environmental Services Inc.

FIGURES

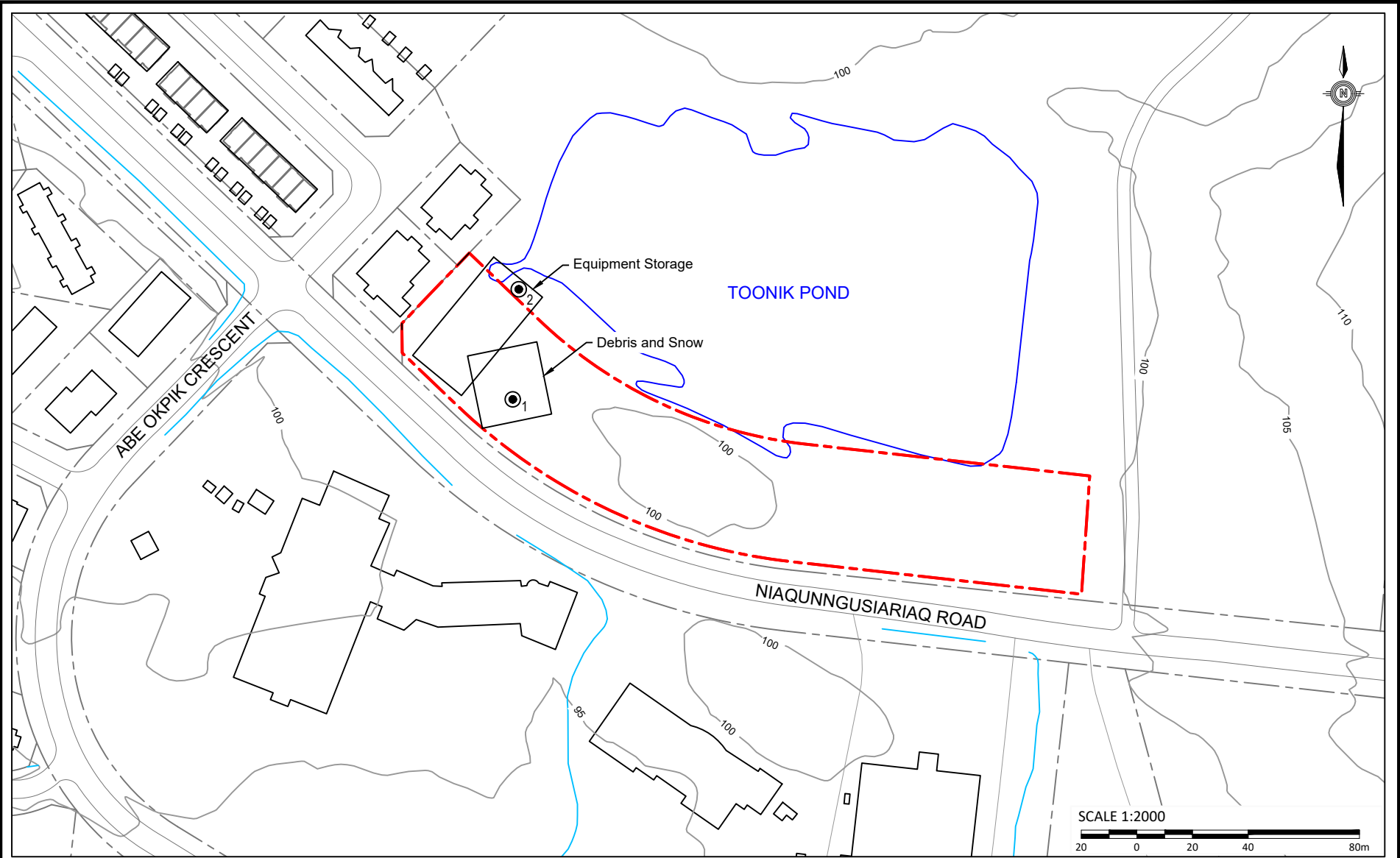


LEGEND Subject Property (Approximate)	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE SITE VICINITY				
		REFERENCES: 1. City of Iqaluit Building Numbers 2021 by Honeside GIS and Northern Futures Planning	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH

FIGURE 2



LEGEND Subject Property 250 Metres From Site Spill Location - Northwest Territories/Nunavut Spills Database Source: City of Iqaluit Building Numbers 2017 by Honeyside GIS and Northern Futures Planning	CLIENT City of Iqaluit NUNATTA ENVIRONMENTAL SERVICES	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE DATABASE SEARCH RESULTS				
		PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE 3



LEGEND Subject Property (Approximate) Surface Sample Location	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE SAMPLING LOCATIONS				
		Source: Government of Nunavut, Community & Government Services Planning & Lands Division (https://cgs-pals.ca/downloads/cad/) 2024-04-18	NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH

TABLES

Table 8
Soil Analytical Results, PHCs and BTEX

PARAMETER	Guidelines			
Sample ID	CCME ¹ Soil Quality Guideline	CWS for PHC ² in Soil	S-GAR-01	S-GAR-02
Sampling Date			2026-06-12	2026-06-12
Location			Snow dump, debris	Equipment storage
BTEX Parameters (mg/kg)				
Benzene	0.3	---	<0.0060	<0.0060
Toluene	0.1	---	<0.020	<0.020
Ethylbenzene	50	---	<0.010	<0.010
m/p-Xylene	---	---	<0.020	<0.020
o-Xylene	---	---	<0.020	<0.020
Xylenes, total	37	---	<0.020	<0.020
Petroleum Hydrocarbons (mg/kg)				
F1 (C6-C10)	---	---	<10	<10
F1 (C6-C10) - BTEX	---	320	<10	<10
F2 (C10-C16)	---	260	<7.0	<7.0
F3 (C16-C34)	---	1700	140	58
F4 (C34-C50)/F4G	---	3300	66	<50
Reached Baseline at C50			Yes	Yes

Notes:

- 1 Canadian Council of Ministers of the Environment, Canadian Soil Quality Guidelines, (coarse-grained surface soils, commercial land use). Potable groundwater pathway excluded.

- 2 Canada-Wide Standards for Petroleum Hydrocarbons in Soil, coarse-grained surface soils, commercial land use. Potable groundwater pathway excluded.

<10	Not detected at detection limit noted
20	Exceedance of guideline

Table 9
Soil Analytical Results, PAHs

PARAMETER	CCME ¹ Soil Quality Guidelines	BaP Potency Equivalence Factor ²		
Sample Number			S-GAR-01	S-GAR-02
Sampling Date			2026-06-12	2026-06-12
Location			Snow dump, debris	Equipment storage
Polycyclic Aromatics (mg/kg)				
Acenaphthene	0.28		<0.0050	<0.0050
Benzo[a]pyrene TPE	5.3		<0.0071	<0.0071
Acenaphthylene			<0.0050	<0.0050
Acridine			<0.010	<0.010
Anthracene	32		<0.0040	<0.0040
Benzo(a)anthracene	10	0.1	<0.0050	<0.0050
Benzo(b&j)fluoranthene	10	0.1	<0.0050	<0.0050
Benzo(k)fluoranthene	10	0.1	<0.0050	<0.0050
Benzo(g,h,i)perylene		0.01	<0.0050	<0.0050
Benzo(c)phenanthrene			<0.0050	<0.0050
Benzo(a)pyrene	72	1	<0.0050	<0.0050
Benzo(e)pyrene			<0.0050	<0.0050
Chrysene		0.01	<0.0050	<0.0050
Dibenz(a,h)anthracene	10	1	<0.0050	<0.0050
Fluoranthene	180		<0.0050	0.010
Fluorene	0.25		<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	10	0.1	<0.0050	<0.0050
1-Methylnaphthalene ³			<0.0050	<0.0050
2-Methyl Naphthalene			<0.0050	<0.0050
Naphthalene	0.013	---	<0.0050	<0.0050
Phenanthrene	0.046	---	<0.0050	<0.0050
Perylene			<0.0050	<0.0050
Pyrene	100	---	<0.0050	0.0062
Quinoline		---	<0.010	<0.010

Notes:

- 1 Canadian Council of Ministers of the Environment, Canadian Soil Quality Guidelines, (coarse-grained surface soils, commercial land use). See report for pathways.
- 2 BaP TPE is the sum of estimated cancer potency relative to B[a]P for all potentially carcinogenic unsubstituted PAHs. The B[a]P TPE for a soil sample is calculated by multiplying the concentration of each PAH in the sample by its B[a]P Potency Equivalence Factor (PEF).

<10	Not detected at detection limit noted
20	Exceedance of guideline
<0.050	Detection limit exceeds guideline

Table 10
Soil Analytical Results, Metals

PARAMETER	CCME ¹ Soil Quality Guidelines		
Sample Number		S-GAR-01	S-GAR-02
Sample Date		2026-06-12	2026-06-12
Location		Snow dump, debris	Equipment storage
Total Metals (mg/kg)			
Antimony (Sb)	40	<0.20	<0.20
Arsenic (As)	12	<1.0	<1.0
Barium (Ba)	2000	31	13
Beryllium (Be)	8	0.21	<0.20
Boron (B)	No Data	<5.0	<5.0
Cadmium (Cd)	22	<0.10	<0.10
Chromium (Cr)	87	24	20
Cobalt (Co)	300	6.0	3.6
Copper (Cu)	91	11	7.5
Lead (Pb)	154	4.8	4.1
Mercury	24	<0.050	<0.050
Molybdenum (Mo)	40	0.89	0.53
Nickel (Ni)	89	9.1	5.7
Selenium (Se)	2.9	<0.50	<0.50
Silver (Ag)	40	<0.20	<0.20
Thallium (Tl)	1	<0.050	<0.050
Tin (Sn)	300	<1.0	<1.0
Uranium (U)	33	0.47	0.33
Vanadium (V)	130	44	44
Zinc (Zn)	410	45	23

Notes:

- 1 Canadian Council of Ministers of the Environment, Canadian Soil Quality Guidelines, (commercial land use, coarse grained soil). See report for details.

<10	Not detected at detection limit noted
20	Exceedance of guideline

APPENDIX A

Qualifications of Assessor



Andrew Henderson B.A.Sc., P.Eng., PMP

SUMMARY

- Engineer with more than twenty years of experience in consulting and public sector
- Experienced project manager (\$1M+) and project management skills trainer
- Expert technical writer for all audiences: requests for proposals and responses, briefing notes, technical reports, training material
- Design and implementation of contaminated sites projects of all sizes, from Phase I Environmental Site Assessments through remediation, risk assessment and closure.
- Leader of consultations with stakeholders in government, private sector, Indigenous groups

WORK EXPERIENCE

Yedomia Inc.

Principal Engineer | Ottawa, Ontario (2016 - present)

- Strategic advice on contaminated sites priorities and budgets for federal government depts.
- Management of real property and environmental projects across Canada: regulatory requirements, litigation support, pre-purchase due diligence.
- Phased Environmental Site Assessment (ESA) and Risk Assessment project management

Franz Environmental Inc. / Arcadis Canada Inc.

Senior Engineer, Project Manager | Ottawa, Ontario (2008 - 2011, 2012 - 2016)

- Project management for real property and environmental projects for multiple government departments: from initiation to closure, including cost, schedule and scope management.
- Leading teams of technical staff in the execution of contaminated sites projects across Canada, with a particular focus on remote, northern sites.
- Establishing and maintaining quality standards for field staff.
- Project management trainer for federal clients.

Foreign Affairs and International Trade Canada

Trade Policy Officer, Environment | Ottawa, Ontario (2011 - 2012)

- Co-author of Strategic Environmental Assessment of the Canada – EU Trade Agreement

Conestoga Rovers & Associates

Field Team Manager | Bedford, Indiana (2005 - 2008)

- Led a sampling team of 5 technologists and scientists at a large US Superfund site
- Contractor oversight for >\$1M monthly excavation and construction program.

DEGREES AND CERTIFICATIONS

- Professional Engineer, Ontario (2010), Northwest Territories and Nunavut (2019)
- PMP (2016), Project Management Institute
- B.A.Sc. (2004), Environmental Engineering, University of Waterloo, Waterloo, Ontario

SELECTED RECENT PROJECTS

Project: Advice and Review of Contaminated Sites Portfolio, National Capital Region		
Client: National Research Council		Value: \$25,000
Role: Contaminated Sites Advisor		Years: 2023-24
The National Research Council (NRC) required expert advice on the management of its portfolio of Contaminated Sites. Andrew reviewed submissions from the NRC’s consultants on site assessment, risk assessment, and long term monitoring, and made recommendations about additional work. Andrew also provided training on regulatory requirements for excess soils for the NRC’s project managers, with a focus on Ontario Regulation 406/19.		

Project: Contaminant Migration Investigation, Southwestern Ontario	
Client: Confidential	Value: \$200,000
Role: Project Manager	Years: 2014-2024
Groundwater at the site is impacted by spills and releases on multiple adjacent properties. The objective of the project was to gain a fuller understanding of the conditions at the site, and to assess the potential for off-site migration. The area around the site is the location of the municipal well field, the source of drinking water for the community. A remediation system had previously been implemented to the satisfaction of the provincial regulator, but the system was not effective at reducing the migration of certain types of contaminants across the property boundary. In order to provide a fuller understanding of the site conditions, Andrew supervised the review of reports prepared for the site and adjacent properties, worked with other consultants and academics to design and implement a sampling program, supervised the submission of access requests to various levels of government, and reviewed update reports. Andrew also managed a Phase I ESA, Phase II ESA and a duty of care risk assessment for the site.	

Project: Asset Retirement Obligations Portfolio Cost Estimate, Asbestos, Canada-Wide	
Client: Correctional Services Canada	Value: \$375,000
Role: Senior Cost Specialist, Project Leader	Years: 2022-23
To fulfill its Asset Retirement Obligations reporting requirements, Correctional Services Canada (CSC) required a baseline cost estimate for asbestos remediation for more than 500 buildings across Canada. In addition to managing the project, Andrew collected and assessed designated substance surveys from CSC’s real property portfolio in every region, supervised the preparation of cost estimate methodology, and reviewed cost estimates. Cost estimates were prepared for every structure in CSC’s inventory, irrespective of the volume, quality or presence of previous reports. The project was delivered ahead of schedule and under budget.	

Project: Environmental Consulting / Hazardous Materials Cost Estimate Review, Nunavut		
Client: Office of the Auditor General		Value: \$25,000
Role: Project Leader		Years: 2023 (ongoing)
In 2023-23, the Government of Nunavut and its territorial corporations were required to adopt Public Sector Accounting Standard 3280 on Asset Retirement Obligations. The accounting standard describes the requirements to recognize obligations to remediate hazardous materials, remove storage tanks, and address other environmental and building materials impacts at the end of life of facilities. Andrew supported the Office of the Auditor General in its review of cost estimates prepared pursuant to PS 3280, particularly estimates of hazardous materials abatement.		

Andrew Henderson B.A.Sc., P.Eng., PMP

+1 (613) 286 7760 | ahenderson@yedoma.com

Project: Program Support, Federal Contaminated Sites Action Plan, Ottawa

Client: Environment and Climate Change Canada

Value: \$35,000

Role: Senior Adviser

Years: 2022-24 (ongoing)

FCSAP is a multi-year program to address federal contaminated sites. The program began as a 15-year, \$4.54 billion program in 2005 and was recently renewed. The objective of the program is to reduce environmental and human health risks and associated federal financial liabilities, while focusing on the highest priority sites. Andrew provided assistance to the program's Secretariat on liability reporting, assisted departments with liability estimates for individual sites, and made recommendations for approaches to cost estimating for the next phases of the program.

Project: Environmental Site Assessments, North 40, Iqaluit

Client: Government of Nunavut

Value: \$145,000

Role: Project Leader

Years: 2022-23

The North 40 area of Iqaluit has been used as a metal dump, for firefighter training, as a shooting range and for other purposes since it was first developed in the 1940s. The site is now being used as a construction yard for local contractors. The City of Iqaluit and the Government of Nunavut would like to regularize the land use situation, but an ESA was required before this could be completed. Andrew conducted interviews, reviewed many historical reports, visited the site, and made recommendations about next steps as part of a Phase I ESA. He planned and implemented an intrusive investigation across the 60-hectare site for the Phase II ESA. The site had numerous historical land uses and included a metal dump, construction laydown yards, a former firefighter training area and aggregate pits.

Project: Real Property Project Management, Ottawa

Client: Indigenous Services Canada

Value: \$250,000

Role: Senior Consultant

Years: 2019-2020

Indigenous Services Canada is responsible for managing more than two hundred properties across Canada: former operational sites of the government, land being held for future addition to reserves, and sites being used for program purposes. Andrew provided expert advice and project management expertise on ESAs for contaminated sites, remediation, hazardous building materials abatement, and fit-up for multiple sites.

Project: Long-Term Monitoring, High Arctic Weather Station, Nunavut

Client: PSPC/Environment Canada

Value: \$500,000

Role: Project Manager

Years: 2015, 2017-19

The project was the implementation of a long-term monitoring plan at the Eureka High Arctic Weather Station to address site environmental issues. The site is accessible only by chartered aircraft and the field program required careful planning and project risk management to ensure successful delivery. Special considerations included the remoteness of the facility requiring a set window of opportunity for completing field work, the proximity of a drinking water reservoir to fuel storage facilities, the nearby Slidre fjord, and the presence of wildlife, including a wolf pack, in targeted sampling areas. Andrew developed the proposal and budget, managed all aspects of the project, and was the senior reviewer for client deliverables.

Project: Mid-Canada Line Labrador Assessment, Quebec	
Client: National Defence Canada	Value: \$600,000
Role: Project Manager	Years: 2018
The Mid-Canada Line and Pinetree Line were a series of radar stations constructed in the 1950s at the height of the cold war that quickly became obsolete and were abandoned in the 1960s. At DND, Andrew supervised the preparation of statements of work (with Defence Construction Canada) for the assessment of sites in Labrador and managed the contracts and consultants throughout the project. He supervised the preparation of cost estimates for remediation and reviewed reports and cost estimates prepared for other stakeholders. The project involved close coordination with the provincial government and regular updates to senior management.	

Project: Program Management at National Defence Canada, Ottawa	
Client: National Defence Canada	Value: NA
Role: Program Support	Years: 2017-2018
Program management at Department of National Defence. DND's \$100M+ contaminated sites program requires regular prioritization, planning and management. Andrew designed information management tools to assess priority using large data sets generated by DND project managers in DND's enterprise software system (using Excel Pivot Tables and bespoke VBA coding); made estimates of future funding requirements for central agencies; and identified high-priority sites for assessment, remediation and closure. Program management required extensive communication across DND, and the preparation of briefing material for senior management.	

Project: Building Demolition, Fort Simpson, Northwest Territories	
Client: Public Services and Procurement Canada	Value: \$650,000
Role: Project Manager	Years: 2017-18
The project required the review and revision of existing specifications for hazardous materials abatement and demolition at two residential structures in Fort Simpson, retaining a contractor, and supervising the building demolition. Andrew also provided support to Public Services and Procurement Canada (PSPC) during the tendering process, managed field staff, and provided on-the-ground suggestions to the contractor where possible. Andrew also reviewed the contractor submittals and was the senior reviewer for reports detailing abatement and demolition activities.	

Project: Project Management Training for Federal Contaminated Sites Custodians, Gatineau	
Client: Public Services and Procurement Canada	Value: \$50,000
Role: Trainer, Training Materials Developer	Years: 2016
The success of contaminated sites projects depends on both technical expertise and the ability of the project manager to deliver the project within the planned scope, schedule and budget. The goal of Project Management Tools training is to facilitate change/improvement across the federal contaminated sites community. Andrew updated the training on the PM Tools and delivered the two-day training session to members of the federal contaminated sites community. The tools can be used by federal contaminated sites project managers to manage the initiation, scope, cost, time, risk, quality, communications, procurement, lessons learned and closure of contaminated sites projects.	

APPENDIX B

Site Location Drawing

Z:\Projects\0013 AECOM\0013 060 00 Iqaluit Garage\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 2026-04-21 Iqaluit Garage 0_A 0013-060-00.dwg, 2026-04-21 4:42:52 PM

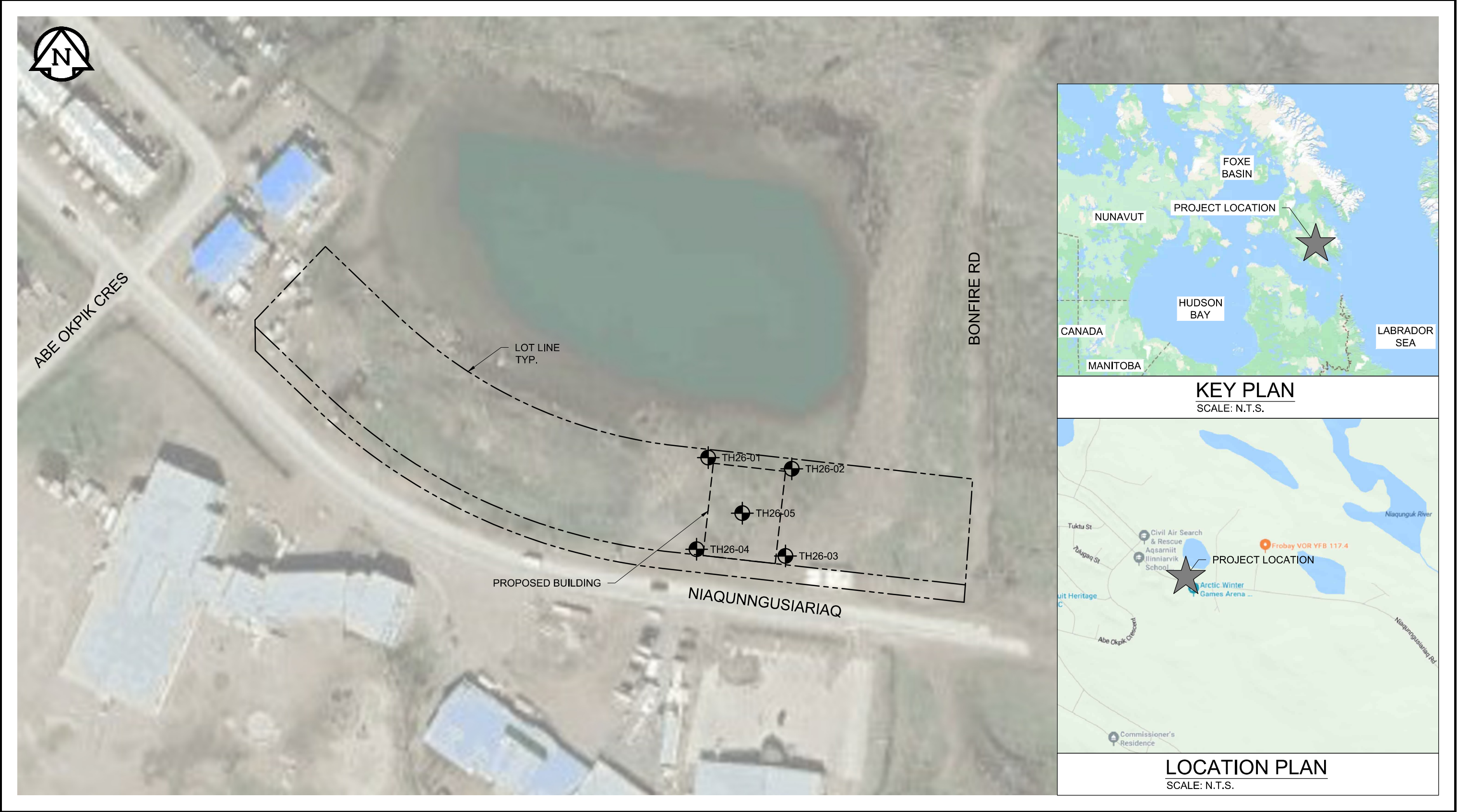


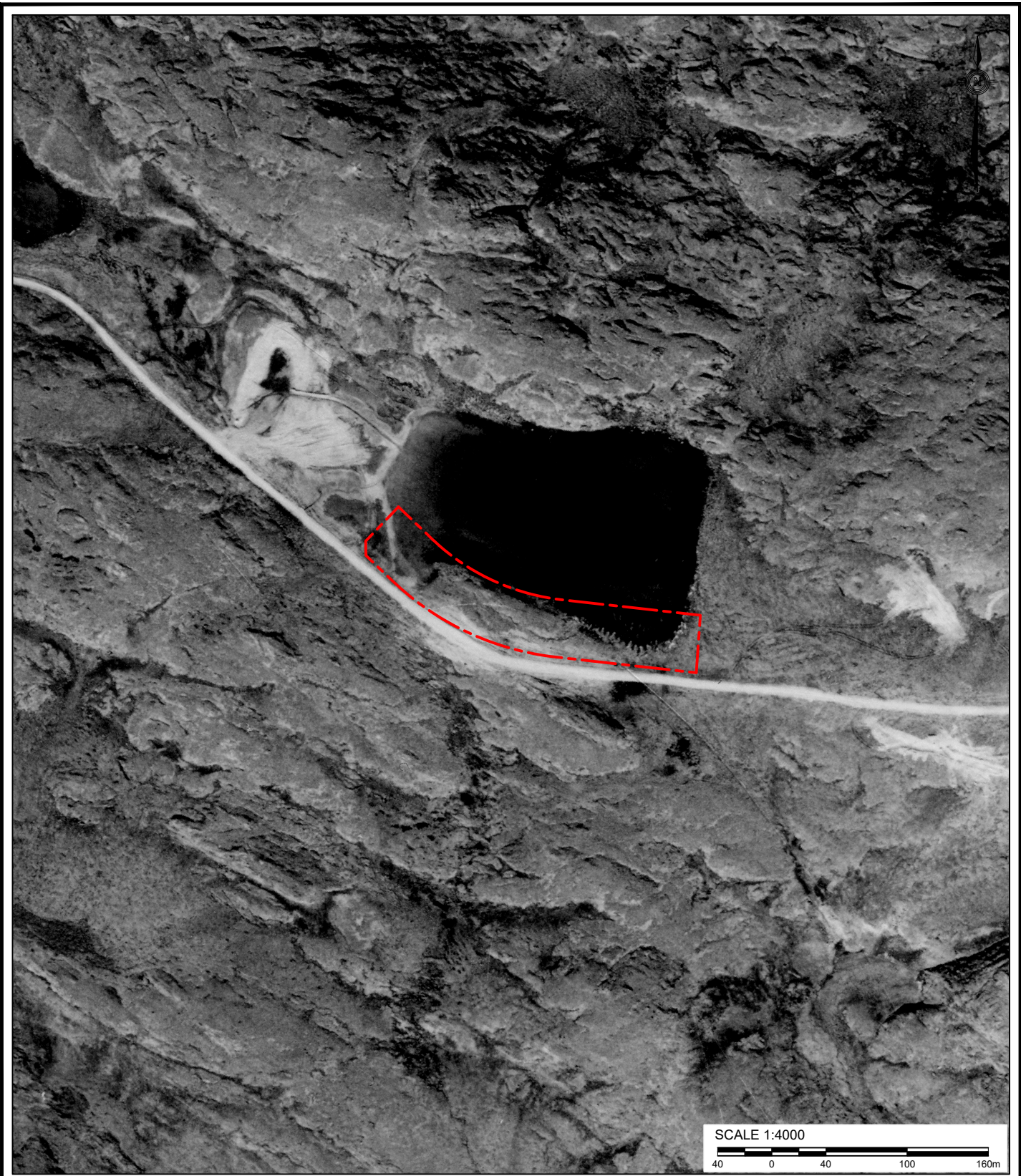
Figure 01
Proposed Test Hole
Location Plan

APPENDIX C

Aerial Photographs



LEGEND Subject Property (Approximate) Roll Number: A11535 Photo Number: 0031 Photo Scale: 1:20,000 Date: 1948-07-22 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1948				
	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C1



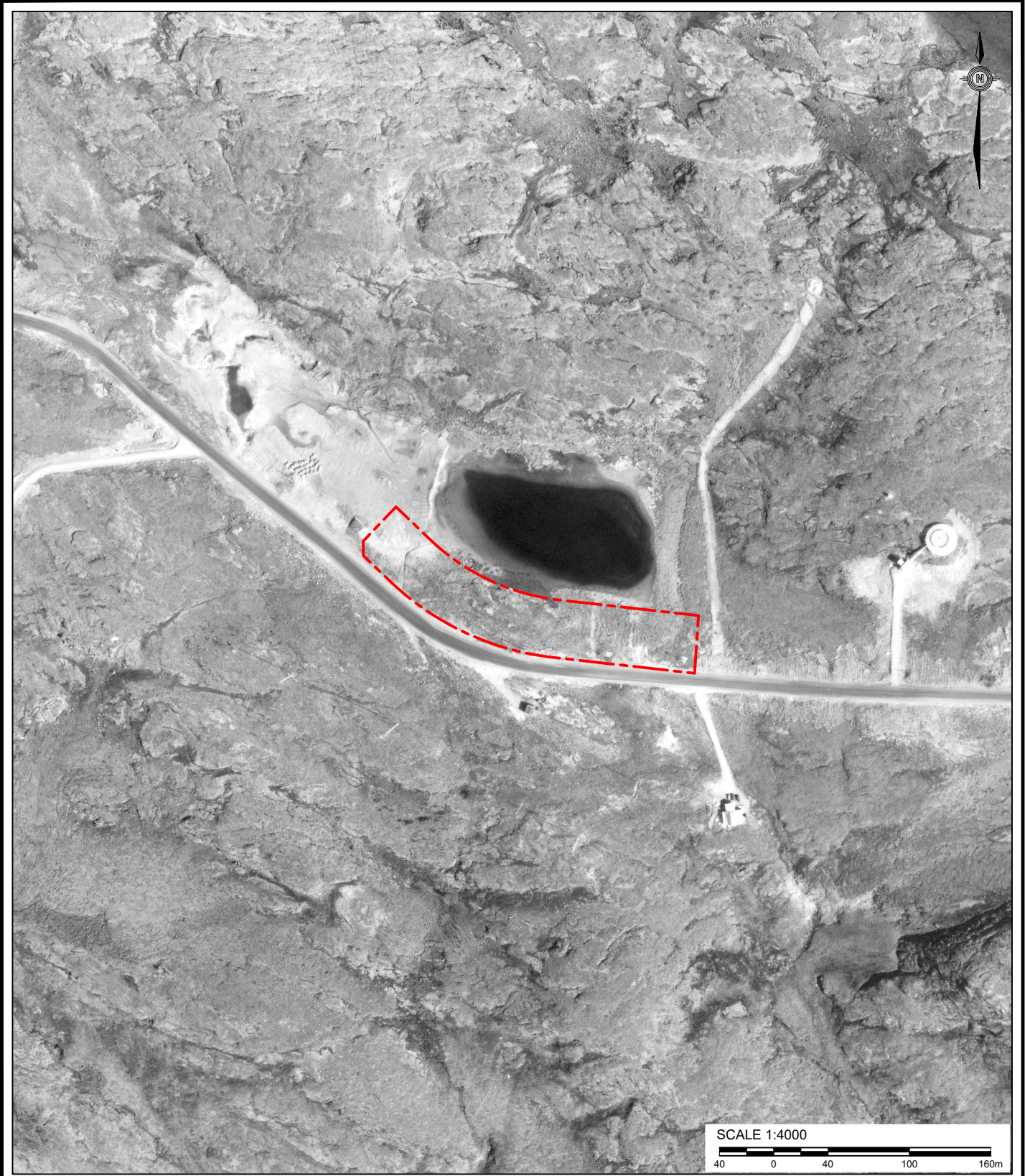
LEGEND Subject Property (Approximate) Roll Number: REA-757 Photo Number: 0012 Photo Scale: 1:20,000 Date: 1957-09-03 NOTE: Scale and property location are approximate	CLIENT	PROJECT					Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU	
		City of Iqaluit	TITLE					HISTORICAL AIR PHOTO - 1957
	 NUNATTA ENVIRONMENTAL SERVICES		PROJECT NO.	DWN	CKD	DATE		FIGURE C2
		26-38	SG	AH	June 28, 2026			



LEGEND Subject Property (Approximate) Roll Number: A21180 Photo Number: 0016 Photo Scale: 1:12,000 Date: 1969-08-13 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1969				
	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C3



LEGEND Subject Property (Approximate) Roll Number: A24492 Photo Number: 0136 Photo Scale: 1:20,000 Date: 1976-08-18 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1976				
		 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026



LEGEND Subject Property (Approximate) Roll Number: A25553 Photo Number: 0129 Photo Scale: 1:8,000 Date: 1980-08-01 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1980				
	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C5



LEGEND Subject Property (Approximate) Roll Number: A26392 Photo Number: 0137 Photo Scale: 1:5,000 Date: 1983-07-17 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1983				
	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C6



LEGEND Subject Property (Approximate) Roll Number: A27161 Photo Number: 0129 Photo Scale: 1:6,000 Date: 1987-08-20 NOTE: Scale and property location are approximate	CLIENT	PROJECT					Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU	
		City of Iqaluit	TITLE					HISTORICAL AIR PHOTO - 1987
	 NUNATTA ENVIRONMENTAL SERVICES		PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C7	



LEGEND Subject Property (Approximate) Roll Number: A27862 Photo Number: 0055 Photo Scale: 1:6,000 Date: 1992-08-26 NOTE: Scale and property location are approximate	CLIENT City of Iqaluit	PROJECT Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU				
		TITLE HISTORICAL AIR PHOTO - 1992				
	 NUNATTA ENVIRONMENTAL SERVICES	PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C8



LEGEND Subject Property (Approximate) Roll Number: A28353 Photo Number: 0109 Photo Scale: 1:10,000 Date: 1998-08-27 NOTE: Scale and property location are approximate	CLIENT	PROJECT					Phase I Environmental Site Assessment Proposed Garage, Iqaluit, NU	
		City of Iqaluit	TITLE					HISTORICAL AIR PHOTO - 1998
	 NUNATTA ENVIRONMENTAL SERVICES		PROJECT NO. 26-38	DWN SG	CKD AH	DATE June 28, 2026	FIGURE C9	

APPENDIX D

Nunavut Spills Database Records

spill-2005260

Saturday, May 28, 2005 - 18:00

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Sunday, May 29, 2005 - 00:00

Involved Parties Type: Municipal Government

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: On Apex Road House #2736

Geolocation: Geolocation is 63.74199080346914, -68.48220609196846

Land Sea Indicator: Land

Spill Source: Other Transportation

Spill Cause: Pipe Leaks

Product Spilled: Petroleum - lubricating oil (lube, hydraulic)

Spill Quantity: 68.00

Measurement: Liters

Reporter Information



Reporting Date and Time: Saturday, May 28, 2005 - 18:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2010212

Friday, April 30, 2010 - 18:00

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Thursday, June 3, 2010 - 00:00

Involved Parties Type: Territorial Government Department

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit

Spill Location Description: Arctic Winter Games Facility Iqaluit, NU

Land Sea Indicator: Land

Spill Source: Storage tank < 4000 Litre

Spill Cause: Overflow Event

Product Spilled: Petroleum - fuel oil (jet A, diesel, turbo A, heat)

Spill Quantity: 20.00

Measurement: Liters

Reporter Information



Reporting Date and Time: Friday, April 30, 2010 - 18:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2013110

Monday, April 8, 2013 - 18:00

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Tuesday, April 9, 2013 - 00:00

Involved Parties Type: Unknown

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit

Spill Location Description: French School

Land Sea Indicator: Land

Spill Source: Storage tank < 4000 Litre

Spill Cause: Pipe Leaks

Product Spilled: Petroleum - fuel oil (jet A, diesel, turbo A, heat)

Spill Quantity: 50.00

Measurement: Liters

Reporter Information



Reporting Date and Time: Monday, April 8, 2013 - 18:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2015027

Friday, January 23, 2015 - 17:00

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Saturday, December 6, 2014 - 00:00

Involved Parties Type: Other

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit

Spill Location Description: 2719D Plan 3335, B1 213 Lt 9

Land Sea Indicator: Land

Spill Source: Storage tank < 4000 Litre

Spill Cause: Pipe Leaks

Product Spilled: Wastewater/impacted water

Spill Quantity: 0.00

Measurement: Liters

Reporter Information



Reporting Date and Time: Friday, January 23, 2015 - 17:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2019061

Monday, February 18, 2019 - 11:28

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Sunday, February 17, 2019 - 08:45

Received Method: Email

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: AV 356

Geolocation: Geolocation is 63.74669300000001, -68.5169669

Land Sea Indicator: Land

Product Spilled: Wastewater/impacted water

Reporter Information



Reporting Date and Time: Monday, February 18, 2019 - 11:30

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2021356

Thursday, August 19, 2021 - 12:27

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Thursday, August 19, 2021 - 13:45

Received Method: Phone

Involved Parties Type: Other

Potential Spill: No

Spill Information



Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: House #2738, across Aqsarniit Ilinniarvik School

Geolocation: Geolocation is 63.7409195, -68.48258179999999

Land Sea Indicator: Land

Spill Source: Drum or Barrel

Spill Cause: Breakage

Product Spilled: Petroleum - gasoline (aviation, turbo B, jet B)

Spill Quantity: 170.00

Measurement: Liters

Reporter Information



Reporting Date and Time: Thursday, August 19, 2021 - 14:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2022026

Monday, February 7, 2022 - 08:53

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Thursday, February 3, 2022 - 00:00

Received Method: Email

Involved Parties Type: Municipal Government

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: Aqsarniit Middle School Latitude: 63 Degrees 44 Minutes 19 Seconds Longitude: 68 Degrees 28 Minutes 19 Seconds

Geolocation: Geolocation is 63.739853, -68.4768204

Land Sea Indicator: Land

Spill Source: Instrument

Spill Cause: Fitting Leak

Product Spilled: Petroleum - fuel oil (jet A, diesel, turbo A, heat)

Reporter Information



Reporting Date and Time: Monday, February 7, 2022 - 07:15

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2024009

Wednesday, January 10, 2024 - 16:45

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Wednesday, January 10, 2024 - 11:00

Received Method: Email

Involved Parties Type: Other

Potential Spill: No

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: 2804 Niaqunngusiarialaq Iqaluit

Geolocation: Geolocation is 63.740348964505, -68.479030002059

Spill Source: Fuel Tank

Spill Cause: Overflow Event

Product Spilled: Petroleum - fuel oil (jet A, diesel, turbo A, heat)

Spill Quantity: 30.00

Measurement: Liters

Area of Contamination: 3.00 sq m

Supporting Information



Land Use Permit Number: NA

Water User Permit Number: NA

U.N. Number: 1202

Reporter Information



Reporting Date and Time: Wednesday, January 10, 2024 - 13:45

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2024229

Monday, June 17, 2024 - 09:04

Spill Status



Lead Agency: GN - Government of Nunavut

Occurance Date/Time: Monday, June 17, 2024 - 11:45

Received Method: Phone

Involved Parties Type: Other

Potential Spill: No

Spill Information



Spill Region: Baffin
Territory: Nunavut
Spill Location: Iqaluit, Community, Nunavut
Spill Location Description: 2719 Tasilik Street Iqaluit
Geolocation: Geolocation is 63.742698268998, -68.483671628835
Spill Source: Storage tank < 4000 Litre
Spill Cause: Tank Leak
Product Spilled: Petroleum - fuel oil (jet A, diesel, turbo A, heat)

Reporter Information



Reporting Date and Time: Monday, June 17, 2024 - 09:00

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

spill-2025201

Friday, May 2, 2025 - 16:00

Spill Status



Lead Agency: GN - Government of Nunavut
Occurance Date/Time: Friday, May 2, 2025 - 12:00
Received Method: Email
Involved Parties Type: Other

Spill Information



Spill Region: Baffin

Territory: Nunavut

Spill Location: Iqaluit, Community, Nunavut

Spill Location Description: 2721 Tasilik Street

Geolocation: Geolocation is 63.742410532597, -68.483258228836

Spill Source: Pipe or Line

Spill Cause: Pipe Leaks

Product Spilled: Sewage

Area of Contamination: 350.00 sq m

Reporter Information



Reporting Date and Time: Friday, May 2, 2025 - 14:30

For further information about this specific spill file, please email spills@gov.nt.ca (<mailto:spills@gov.nt.ca>). Please include the spill number in your inquiry

APPENDIX E

Site Visit Photos



Photo ID: 1
Date: June 10, 2026
Description: Site, looking east from centre



Photo ID: 2
Date: June 10, 2026
Description: Site, looking north from the centre



Photo ID: 3
Date: June 10, 2026
Description: Site, looking west from the centre



Photo ID: 4
Date: June 10, 2026
Description: Outcrop in the centre of site



Photo ID: 5
Date: June 10, 2026
Description: Outcrop



Photo ID: 6
Date: June 10, 2026
Description: View east from centre of site



Photo ID: 7
 Date: June 10, 2026
 Description: View south from centre of site



Photo ID: 8
 Date: June 10, 2026
 Description: Residual snow, debris (foreground) and equipment storage (background)

APPENDIX F

Laboratory Analytical Results

Your Project #: 26-38
 Site Location: NEW NUNI GARAGE
 Your C.O.C. #: C#1058187-01-01

Attention: James Wilson

Nunatta Environmental Services Inc
 1575 Sivumugiaq St
 Iqaluit, NU
 CANADA X0A 3H0

Report Date: 2026/06/23
 Report #: R8765627
 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C669610

Received: 2026/06/15, 09:55

Sample Matrix: Soil
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	2	2026/06/18	2026/06/19	CAM SOP-00316	CCME CWS m
Acid Extractable Metals by ICPMS (1)	1	2026/06/18	2026/06/18	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	1	2026/06/19	2026/06/19	CAM SOP-00447	EPA 6020B m
Moisture (Subcontracted) (2, 4)	2	N/A	2026/06/23	AB SOP-00002	CCME PHC-CWS m
CCME Index of Additive Cancer Risk (2)	2	2026/06/16	2026/06/23		Auto Calc
B[a]P Total Potency Equivalent (2)	2	N/A	2026/06/23		Auto Calc
PAH in Soil by GC/MS (2)	2	2026/06/22	2026/06/23	AB SOP-00036 / AB SOP-00003	EPA 3540C/8270E m
Moisture (1)	2	N/A	2026/06/17	CAM SOP-00445	Carter 2nd ed 70.2 m
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2026/06/18	CAM SOP-00230	EPA 8260D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(2) This test was performed by Bureau Veritas Calgary (19th), 4000 19th Street NE , Calgary, AB, T2E 6P8



Your Project #: 26-38
Site Location: NEW NUNI GARAGE
Your C.O.C. #: C#1058187-01-01

Attention: James Wilson

Nunatta Environmental Services Inc
1575 Sivumugiaq St
Iqaluit, NU
CANADA X0A 3H0

Report Date: 2026/06/23
Report #: R8765627
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C669610

Received: 2026/06/15, 09:55

(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(4) Offsite analysis requires that subcontracted moisture be reported.

Encryption Key



**AUTHORIZED REPORT
RAPPORT AUTORISÉ**

Bureau Veritas
23 Jun 2026 16:49:46

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		BDZY94	BDZY95		
Sampling Date		2026/06/12 13:30	2026/06/12 13:30		
COC Number		C#1058187-01-01	C#1058187-01-01		
	UNITS	S-GAR-01	S-GAR-02	RDL	QC Batch
Inorganics					
Moisture	%	16	9.5	1.0	A175813
Physical Testing					
Moisture-Subcontracted	%	11	9.6	0.30	A180409
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



BUREAU
VERITAS

Bureau Veritas Job #: C669610
Report Date: 2026/06/23

Nunatta Environmental Services Inc
Client Project #: 26-38
Site Location: NEW NUNI GARAGE
Sampler Initials: AH

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		BDZY94		BDZY95		
Sampling Date		2026/06/12 13:30		2026/06/12 13:30		
COC Number		C#1058187-01-01		C#1058187-01-01		
	UNITS	S-GAR-01	QC Batch	S-GAR-02	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	<0.20	A176957	<0.20	0.20	A177779
Acid Extractable Arsenic (As)	ug/g	<1.0	A176957	<1.0	1.0	A177779
Acid Extractable Barium (Ba)	ug/g	31	A176957	13	0.50	A177779
Acid Extractable Beryllium (Be)	ug/g	0.21	A176957	<0.20	0.20	A177779
Acid Extractable Boron (B)	ug/g	<5.0	A176957	<5.0	5.0	A177779
Acid Extractable Cadmium (Cd)	ug/g	<0.10	A176957	<0.10	0.10	A177779
Acid Extractable Chromium (Cr)	ug/g	24	A176957	20	1.0	A177779
Acid Extractable Cobalt (Co)	ug/g	6.0	A176957	3.6	0.10	A177779
Acid Extractable Copper (Cu)	ug/g	11	A176957	7.5	0.50	A177779
Acid Extractable Lead (Pb)	ug/g	4.8	A176957	4.1	1.0	A177779
Acid Extractable Molybdenum (Mo)	ug/g	0.89	A176957	0.53	0.50	A177779
Acid Extractable Nickel (Ni)	ug/g	9.1	A176957	5.7	0.50	A177779
Acid Extractable Selenium (Se)	ug/g	<0.50	A176957	<0.50	0.50	A177779
Acid Extractable Silver (Ag)	ug/g	<0.20	A176957	<0.20	0.20	A177779
Acid Extractable Thallium (Tl)	ug/g	<0.050	A176957	<0.050	0.050	A177779
Acid Extractable Tin (Sn)	ug/g	<1.0	A176957	<1.0	1.0	A177779
Acid Extractable Uranium (U)	ug/g	0.47	A176957	0.33	0.050	A177779
Acid Extractable Vanadium (V)	ug/g	44	A176957	44	5.0	A177779
Acid Extractable Zinc (Zn)	ug/g	45	A176957	23	5.0	A177779
Acid Extractable Mercury (Hg)	ug/g	<0.050	A176957	<0.050	0.050	A177779
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C669610
Report Date: 2026/06/23

Nunatta Environmental Services Inc
Client Project #: 26-38
Site Location: NEW NUNI GARAGE
Sampler Initials: AH

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Bureau Veritas ID		BDZY94	BDZY95		
Sampling Date		2026/06/12 13:30	2026/06/12 13:30		
COC Number		C#1058187-01-01	C#1058187-01-01		
	UNITS	S-GAR-01	S-GAR-02	RDL	QC Batch
Calculated Parameters					
Index of Additive Cancer Risk -IACR	N/A	<0.060	<0.060	0.060	A180407
Polyaromatic Hydrocarbons					
Acenaphthene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(a)pyrene Total Potency Equiv.	mg/kg	<0.0071	<0.0071	0.0071	A180408
Acenaphthylene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Acridine	mg/kg	<0.010	<0.010	0.010	A180411
Anthracene	mg/kg	<0.0040	<0.0040	0.0040	A180411
Benzo(a)anthracene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(b/j)fluoranthene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(k)fluoranthene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(g,h,i)perylene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(c)phenanthrene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(a)pyrene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Benzo(e)pyrene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Chrysene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Dibenzo(a,h)anthracene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Fluoranthene	mg/kg	<0.0050	0.010	0.0050	A180411
Fluorene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Indeno(1,2,3-cd)pyrene	mg/kg	<0.0050	<0.0050	0.0050	A180411
1-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.0050	A180411
2-Methylnaphthalene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Naphthalene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Phenanthrene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Perylene	mg/kg	<0.0050	<0.0050	0.0050	A180411
Pyrene	mg/kg	<0.0050	0.0062	0.0050	A180411
Quinoline	mg/kg	<0.010	<0.010	0.010	A180411
Surrogate Recovery (%)					
D10-Anthracene	%	76	72		A180411
D14-Terphenyl	%	63	64		A180411
D8-Acenaphthylene	%	75	68		A180411
D8-Naphthalene	%	70	67		A180411
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



VOLATILE ORGANICS BY GC/MS (SOIL)

Bureau Veritas ID		BDZY94	BDZY95		
Sampling Date		2026/06/12 13:30	2026/06/12 13:30		
COC Number		C#1058187-01-01	C#1058187-01-01		
	UNITS	S-GAR-01	S-GAR-02	RDL	QC Batch
Volatile Organics					
Benzene	ug/g	<0.0060	<0.0060	0.0060	A175993
Ethylbenzene	ug/g	<0.010	<0.010	0.010	A175993
Toluene	ug/g	<0.020	<0.020	0.020	A175993
p+m-Xylene	ug/g	<0.020	<0.020	0.020	A175993
o-Xylene	ug/g	<0.020	<0.020	0.020	A175993
Total Xylenes	ug/g	<0.020	<0.020	0.020	A175993
F1 (C6-C10)	ug/g	<10	<10	10	A175993
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	A175993
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	101	101		A175993
D10-o-Xylene	%	120	120		A175993
D4-1,2-Dichloroethane	%	107	107		A175993
D8-Toluene	%	107	107		A175993
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



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Bureau Veritas Job #: C669610

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Nunatta Environmental Services Inc

Client Project #: 26-38

Site Location: NEW NUNI GARAGE

Sampler Initials: AH

PETROLEUM HYDROCARBONS (CCME)

Bureau Veritas ID		BDZY94	BDZY95		
Sampling Date		2026/06/12 13:30	2026/06/12 13:30		
COC Number		C#1058187-01-01	C#1058187-01-01		
	UNITS	S-GAR-01	S-GAR-02	RDL	QC Batch
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/g	<7.0	<7.0	7.0	A177202
F3 (C16-C34 Hydrocarbons)	ug/g	140	58	50	A177202
F4 (C34-C50 Hydrocarbons)	ug/g	66	<50	50	A177202
Reached Baseline at C50	ug/g	Yes	Yes		A177202
Surrogate Recovery (%)					
o-Terphenyl	%	96	95		A177202
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.3°C
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Results relate only to the items tested.



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Bureau Veritas Job #: C669610

Report Date: 2026/06/23

QUALITY ASSURANCE REPORT

Nunatta Environmental Services Inc

Client Project #: 26-38

Site Location: NEW NUNI GARAGE

Sampler Initials: AH

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A175993	4-Bromofluorobenzene	2026/06/18	101	60 - 140	118	60 - 140	104	%		
A175993	D10-o-Xylene	2026/06/18	119	60 - 130	116	60 - 130	105	%		
A175993	D4-1,2-Dichloroethane	2026/06/18	103	60 - 140	92	60 - 140	93	%		
A175993	D8-Toluene	2026/06/18	107	60 - 140	114	60 - 140	105	%		
A177202	o-Terphenyl	2026/06/19	98	60 - 140	97	60 - 140	98	%		
A180411	D10-Anthracene	2026/06/23	70	50 - 130	84	50 - 130	93	%		
A180411	D14-Terphenyl	2026/06/23	61	50 - 130	83	50 - 130	90	%		
A180411	D8-Acenaphthylene	2026/06/23	68	50 - 130	81	50 - 130	85	%		
A180411	D8-Naphthalene	2026/06/23	66	50 - 130	81	50 - 130	87	%		
A175813	Moisture	2026/06/17							4.7	20
A175993	Benzene	2026/06/18	104	60 - 140	99	60 - 130	<0.0060	ug/g	NC	50
A175993	Ethylbenzene	2026/06/18	102	60 - 140	104	60 - 130	<0.010	ug/g	NC	50
A175993	F1 (C6-C10) - BTEX	2026/06/18					<10	ug/g	NC	30
A175993	F1 (C6-C10)	2026/06/18	96	60 - 140	86	80 - 120	<10	ug/g	NC	30
A175993	o-Xylene	2026/06/18	114	60 - 140	118	60 - 130	<0.020	ug/g	NC	50
A175993	p+m-Xylene	2026/06/18	100	60 - 140	102	60 - 130	<0.020	ug/g	NC	50
A175993	Toluene	2026/06/18	102	60 - 140	115	60 - 130	<0.020	ug/g	NC	50
A175993	Total Xylenes	2026/06/18					<0.020	ug/g	NC	50
A176957	Acid Extractable Antimony (Sb)	2026/06/18	72 (1)	75 - 125	99	80 - 120	<0.20	ug/g	9.6	30
A176957	Acid Extractable Arsenic (As)	2026/06/18	98	75 - 125	101	80 - 120	<1.0	ug/g	2.6	30
A176957	Acid Extractable Barium (Ba)	2026/06/18	NC	75 - 125	94	80 - 120	<0.50	ug/g	0.76	30
A176957	Acid Extractable Beryllium (Be)	2026/06/18	95	75 - 125	95	80 - 120	<0.20	ug/g	4.3	30
A176957	Acid Extractable Boron (B)	2026/06/18	72 (1)	75 - 125	90	80 - 120	<5.0	ug/g	2.8	30
A176957	Acid Extractable Cadmium (Cd)	2026/06/18	92	75 - 125	95	80 - 120	<0.10	ug/g	0.63	30
A176957	Acid Extractable Chromium (Cr)	2026/06/18	91	75 - 125	96	80 - 120	<1.0	ug/g	2.6	30
A176957	Acid Extractable Cobalt (Co)	2026/06/18	94	75 - 125	98	80 - 120	<0.10	ug/g	1.5	30
A176957	Acid Extractable Copper (Cu)	2026/06/18	NC	75 - 125	96	80 - 120	<0.50	ug/g	0.0044	30
A176957	Acid Extractable Lead (Pb)	2026/06/18	96	75 - 125	100	80 - 120	<1.0	ug/g	0.72	30
A176957	Acid Extractable Mercury (Hg)	2026/06/18	97	75 - 125	102	80 - 120	<0.050	ug/g	NC	30
A176957	Acid Extractable Molybdenum (Mo)	2026/06/18	92	75 - 125	98	80 - 120	<0.50	ug/g	5.3	30
A176957	Acid Extractable Nickel (Ni)	2026/06/18	NC	75 - 125	101	80 - 120	<0.50	ug/g	0.99	30
A176957	Acid Extractable Selenium (Se)	2026/06/18	95	75 - 125	101	80 - 120	<0.50	ug/g	NC	30

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Bureau Veritas Job #: C669610

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QUALITY ASSURANCE REPORT(CONT'D)

Nunatta Environmental Services Inc

Client Project #: 26-38

Site Location: NEW NUNI GARAGE

Sampler Initials: AH

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A176957	Acid Extractable Silver (Ag)	2026/06/18	99	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
A176957	Acid Extractable Thallium (Tl)	2026/06/18	97	75 - 125	101	80 - 120	<0.050	ug/g	6.8	30
A176957	Acid Extractable Tin (Sn)	2026/06/18	92	75 - 125	96	80 - 120	<1.0	ug/g		
A176957	Acid Extractable Uranium (U)	2026/06/18	102	75 - 125	105	80 - 120	<0.050	ug/g	2.5	30
A176957	Acid Extractable Vanadium (V)	2026/06/18	NC	75 - 125	97	80 - 120	<5.0	ug/g	2.3	30
A176957	Acid Extractable Zinc (Zn)	2026/06/18	NC	75 - 125	98	80 - 120	<5.0	ug/g	0.81	30
A177202	F2 (C10-C16 Hydrocarbons)	2026/06/19	103	60 - 140	101	80 - 120	<7.0	ug/g	NC	30
A177202	F3 (C16-C34 Hydrocarbons)	2026/06/19	108	60 - 140	106	80 - 120	<50	ug/g	19	30
A177202	F4 (C34-C50 Hydrocarbons)	2026/06/19	115	60 - 140	102	80 - 120	<50	ug/g	26	30
A177779	Acid Extractable Antimony (Sb)	2026/06/19	96	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
A177779	Acid Extractable Arsenic (As)	2026/06/19	106	75 - 125	101	80 - 120	<1.0	ug/g	6.9	30
A177779	Acid Extractable Barium (Ba)	2026/06/19	NC	75 - 125	97	80 - 120	<0.50	ug/g	4.2	30
A177779	Acid Extractable Beryllium (Be)	2026/06/19	100	75 - 125	96	80 - 120	<0.20	ug/g	4.4	30
A177779	Acid Extractable Boron (B)	2026/06/19	93	75 - 125	90	80 - 120	<5.0	ug/g	9.1	30
A177779	Acid Extractable Cadmium (Cd)	2026/06/19	102	75 - 125	97	80 - 120	<0.10	ug/g	3.0	30
A177779	Acid Extractable Chromium (Cr)	2026/06/19	NC	75 - 125	97	80 - 120	<1.0	ug/g	4.6	30
A177779	Acid Extractable Cobalt (Co)	2026/06/19	102	75 - 125	99	80 - 120	<0.10	ug/g	4.1	30
A177779	Acid Extractable Copper (Cu)	2026/06/19	99	75 - 125	97	80 - 120	<0.50	ug/g	2.4	30
A177779	Acid Extractable Lead (Pb)	2026/06/19	99	75 - 125	97	80 - 120	<1.0	ug/g	4.5	30
A177779	Acid Extractable Mercury (Hg)	2026/06/19	97	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
A177779	Acid Extractable Molybdenum (Mo)	2026/06/19	105	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
A177779	Acid Extractable Nickel (Ni)	2026/06/19	108	75 - 125	100	80 - 120	<0.50	ug/g	4.5	30
A177779	Acid Extractable Selenium (Se)	2026/06/19	103	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
A177779	Acid Extractable Silver (Ag)	2026/06/19	109	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
A177779	Acid Extractable Thallium (Tl)	2026/06/19	101	75 - 125	98	80 - 120	<0.050	ug/g	7.6	30
A177779	Acid Extractable Tin (Sn)	2026/06/19	104	75 - 125	98	80 - 120	<1.0	ug/g		
A177779	Acid Extractable Uranium (U)	2026/06/19	100	75 - 125	98	80 - 120	<0.050	ug/g	7.2	30
A177779	Acid Extractable Vanadium (V)	2026/06/19	NC	75 - 125	100	80 - 120	<5.0	ug/g	5.4	30
A177779	Acid Extractable Zinc (Zn)	2026/06/19	NC	75 - 125	100	80 - 120	<5.0	ug/g	4.5	30
A180409	Moisture-Subcontracted	2026/06/23					<0.30	%	14	20
A180411	1-Methylnaphthalene	2026/06/23	57	50 - 130	75	50 - 130	<0.0050	mg/kg	NC	50
A180411	2-Methylnaphthalene	2026/06/23	68	50 - 130	87	50 - 130	<0.0050	mg/kg	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

Nunatta Environmental Services Inc

Client Project #: 26-38

Site Location: NEW NUNI GARAGE

Sampler Initials: AH

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A180411	Acenaphthene	2026/06/23	69	50 - 130	88	50 - 130	<0.0050	mg/kg	NC	50
A180411	Acenaphthylene	2026/06/23	66	50 - 130	81	50 - 130	<0.0050	mg/kg	NC	50
A180411	Acridine	2026/06/23	51	50 - 130	59	50 - 130	<0.010	mg/kg	NC	50
A180411	Anthracene	2026/06/23	62	50 - 130	77	50 - 130	<0.0040	mg/kg	NC	50
A180411	Benzo(a)anthracene	2026/06/23	69	50 - 130	93	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(a)pyrene	2026/06/23	68	50 - 130	87	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(b/j)fluoranthene	2026/06/23	69	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(c)phenanthrene	2026/06/23	67	50 - 130	94	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(e)pyrene	2026/06/23	60	50 - 130	81	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(g,h,i)perylene	2026/06/23	65	50 - 130	85	50 - 130	<0.0050	mg/kg	NC	50
A180411	Benzo(k)fluoranthene	2026/06/23	64	50 - 130	93	50 - 130	<0.0050	mg/kg	NC	50
A180411	Chrysene	2026/06/23	60	50 - 130	85	50 - 130	<0.0050	mg/kg	NC	50
A180411	Dibenzo(a,h)anthracene	2026/06/23	68	50 - 130	88	50 - 130	<0.0050	mg/kg	NC	50
A180411	Fluoranthene	2026/06/23	72	50 - 130	91	50 - 130	<0.0050	mg/kg	21	50
A180411	Fluorene	2026/06/23	71	50 - 130	90	50 - 130	<0.0050	mg/kg	NC	50
A180411	Indeno(1,2,3-cd)pyrene	2026/06/23	75	50 - 130	95	50 - 130	<0.0050	mg/kg	NC	50
A180411	Naphthalene	2026/06/23	63	50 - 130	82	50 - 130	<0.0050	mg/kg	NC	50
A180411	Perylene	2026/06/23	63	50 - 130	81	50 - 130	<0.0050	mg/kg	NC	50
A180411	Phenanthrene	2026/06/23	66	50 - 130	83	50 - 130	<0.0050	mg/kg	30	50
A180411	Pyrene	2026/06/23	71	50 - 130	90	50 - 130	<0.0050	mg/kg	13	50
A180411	Quinoline	2026/06/23	101	50 - 130	107	50 - 130	<0.010	mg/kg	NC	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times \text{RDL}$).

(1) Matrix Spike exceeds acceptance limits, probable matrix interference



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VALIDATION SIGNATURE PAGE

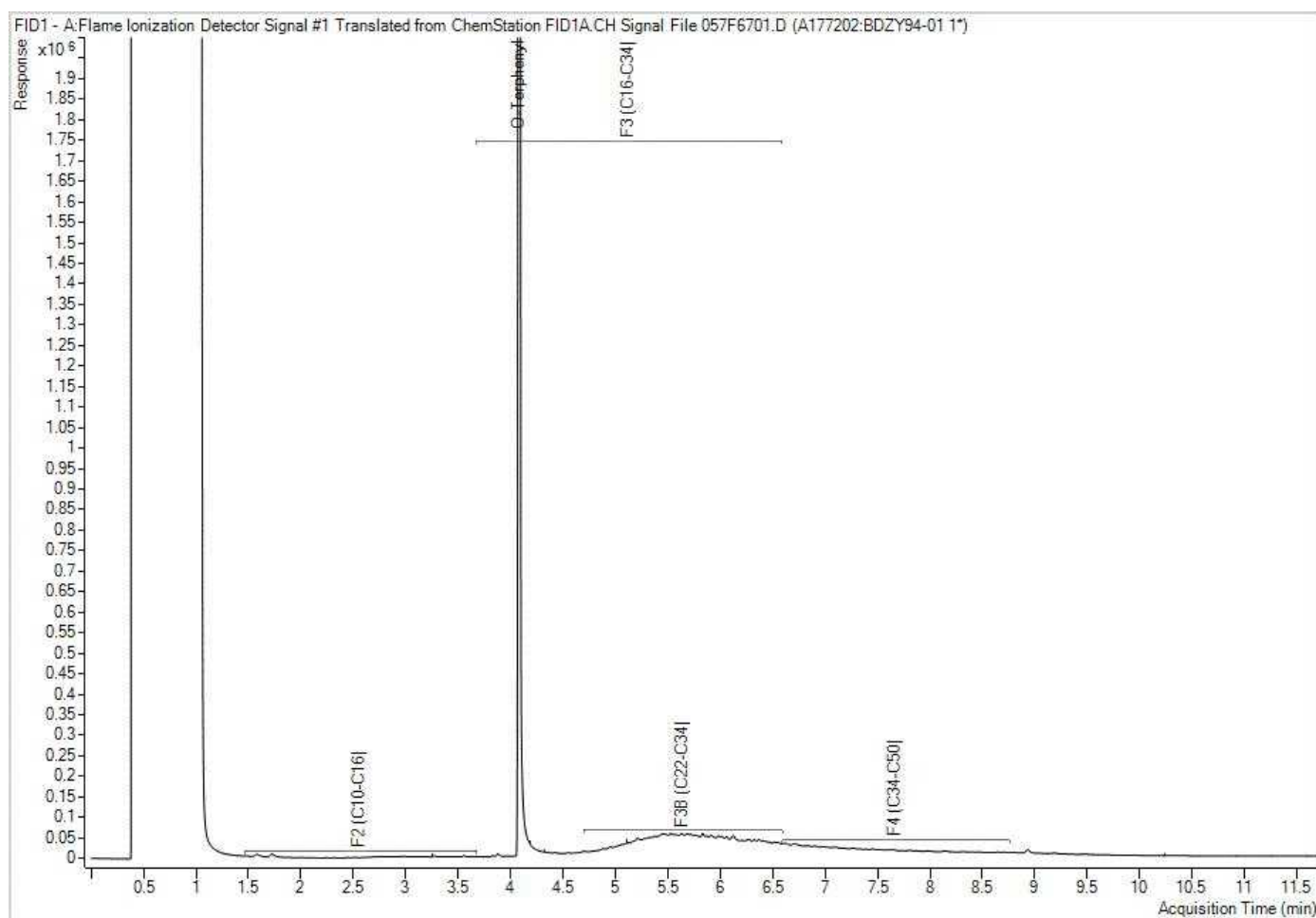
The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere, Senior Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

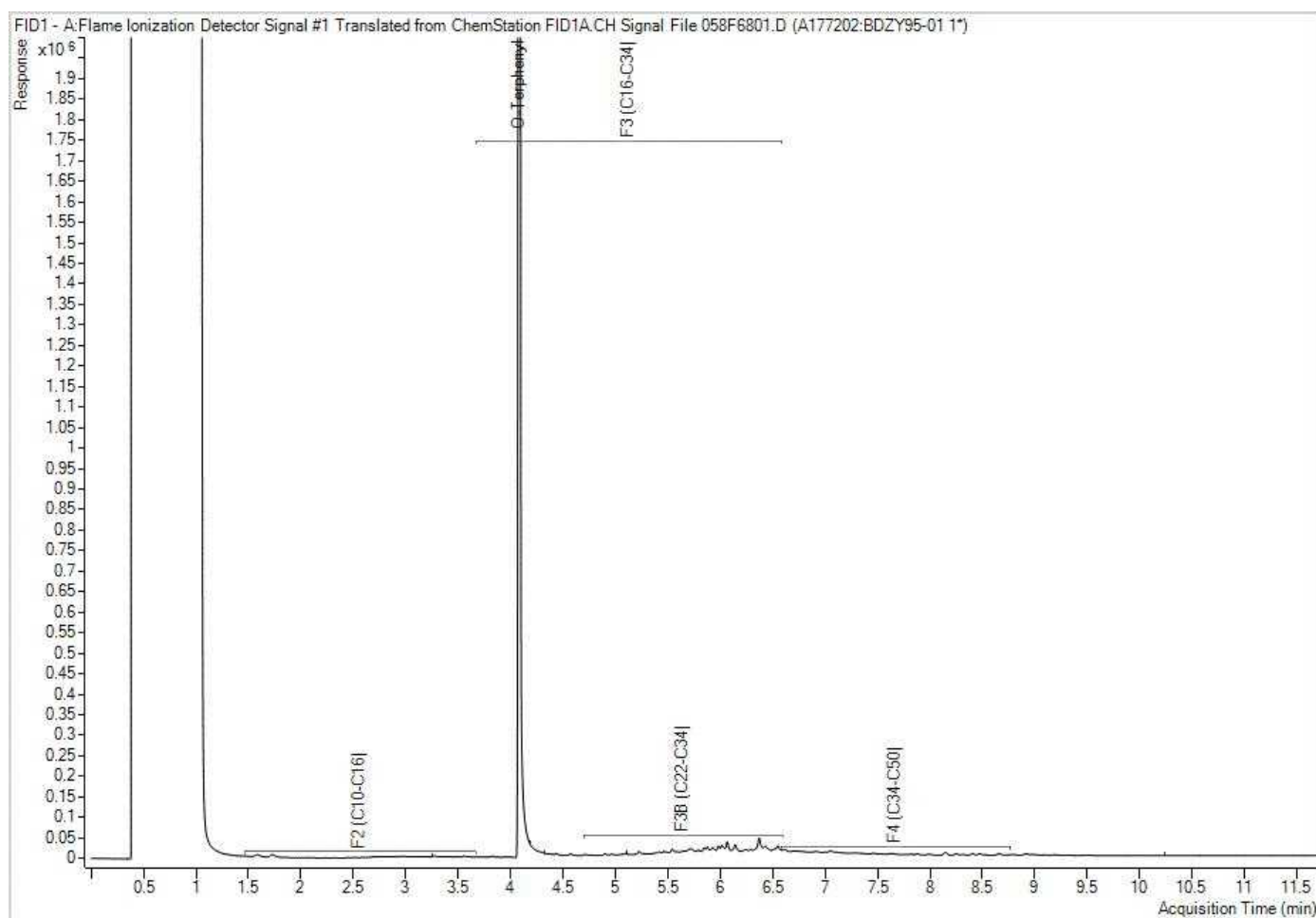
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Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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