ATTACHMENT 25

LTWP Preliminary Design Report – Appendix M – Erosion and Sediment Control Plan

City of Iqaluit

Erosion and Sediment Control Plan

Long Term Water Program – Supply and Storage
Iqaluit, Nunavut

September 2024

Erosion and Sediment Control Plan - DRAFT

Long Term Water Program – Supply and Storage

Iqaluit, Nunavut

September 2024

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Version Control

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By
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Acronyms and Abbreviations

Arcadis	Arcadis Canada Inc.
ATVs	All Terrain Vehicles
BATEA	Best Available Technology Economically Achievable
BMPs	Best Management Practices
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
City	City of Iqaluit
DFO	Department of Fisheries and Oceans
EM	Environmental Monitor
EMP	Environment Management Plans
ESCP	Erosion and Sediment Control Plan
GN	Government of Nunavut
LTWP	Long Term Water Program
NIRB	Nunavut Impact Review Board
NPC	Nunavut Planning Commission
NTEC	NWT Energy Corporation Ltd.
OPSS	Ontario Provincial Standard Specification
RWPS	Raw Water Pumping Station
TAC	Transportation Association of Canada

1 Introduction

Arcadis Canda Inc. (Arcadis) was retained by the City of Iqaluit (City) to prepare an Erosion and Sediment Control Plan (ESCP) as per the Environment Management Plans (EMP) requirements outlined in the Long Term Water Program (LTWP) Request for Proposal 2023-RFP-048. The purpose of the ESCP is to limit the potential for negative impacts on air and water quality associated with the construction and operation of the new infrastructure upgrades associated with the LTWP. This plan is based on current industry standards and implements best management practices (BMPs) and general accordance with Northern Infrastructure Standardization Initiative standard CSA W205 Erosion and sedimentation management for northern community infrastructure.

The ESCP will cover the following materials:

- Identify the project components.
- Identify areas susceptible to erosion and sedimentation.
- Site-specific mitigation measures, and
- Outline the sedimentation monitoring approach.

This document is designed to be a living document that will be updated as the LTWP advances.

1.1 Project Description

The LTWP consists of developing a permanent water conveyance system from Lake Qikiqtalik to the Lake Geraldine Reservoir, as well as an expansion of the capacity of a New Reservoir, and other associated structural requirements. The primary objectives of the project are to:

- Establish a new long-term water source and the necessary infrastructure to address the City's present and future water demands, ensuring that the water supply system supports economic growth and,
- Construct a new reservoir to secure sufficient year-round water storage capacity by adding a minimum 1.5 increase in the over-winter storage capacity and meeting the current and projected needs of the City.

The main project components include:

- Intake at Lake Qikiqtalik.
- Raw Water Pumping Station (RWPS) at Lake Qikiqtalik.
- New water conveyance pipeline.
- Upgrading as required of the existing road and culverts located between Lake Qikiqtalik and the Road to Nowhere.
- Pipeline crossing of the Apex River.
- New access road from the Road to Nowhere to the New Reservoir requiring the dewatering and filling of three existing ponds.
- Laydown areas near the RWPS and shooting range.

- Concrete plant at the RWPS.
- Eight retention structures creating the New Reservoir.
- One spillway to the Apex River.
- Valve access building at the new reservoir.
- Buried conveyance pipeline between the New Reservoir and Lake Geraldine.
- Quarries for rock at the New Reservoir and the construction laydown area.
- Borrows for sand materials.
- Electrical distribution line to the RWPS at Lake Qikiqtalik and the control building at the new reservoir, and
- Backup power generation is needed at these locations to maintain the thermal protection pipes in winter.

See Figure 1 for details. These components are subject to change until the LTWP design is finalized.

1.2 Regulatory Requirements and Guidelines

The erosion and sediment control measures outlined in the ESCP were developed with the Screening Decision Report No.: 23YN040 prepared by the Nunavut Impact Review Board (NIRB). NIRB recommended terms and conditions applicable to the ESCP are listed in **Appendix A**, those being:

- The NIRB Project Terms and Conditions Screening Decision Report: NIRB File No. 23YN040 (Dated November 2, 2023).
- NIRB Online Application Form (Dated August 8, 2023), and
- Conditions of NPC File No. 150099 (Dated June 23, 2023).

As the LTWP progresses in the design and permitting process, more permitting requirements will be added. All mitigation measures should be installed and operated as per the standard specifications found in the applicable guidelines and be with territorial and federal legislation listed in Section 3.3 of the EMP. The following guidelines were consulted for this ESCP:

- Environmental Guideline for Dust Suppression on Unpaved Roads by the Government of Nunavut (GN) Department of Environment revised April 2014.
- Environmental Guideline for Ambient Air Quality by GN Department of Environment revised October 2011.
- Northern Land Use Guidelines (Volume 7) Pits and Quarries by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) published 2009.

1.3 Site Description

The project site consists primarily of tundra and is located northwest of the developed portion of the City, as shown in **Figure 1-1**. The project site is within the City's municipal boundary but outside of the surveyed area and is therefore considered "Untitled Municipal Land". Multiple waterbodies are present across the project site, including Lake Geraldine, an unnamed grouping of two lakes to be flooded to create a new reservoir (Proposed Reservoir), and Lake Qikiqtalik. The Niaqunnguk (Apex) River crosses the project site and flows south to Frobisher Bay. The land beneath water bodies is under federal jurisdiction.

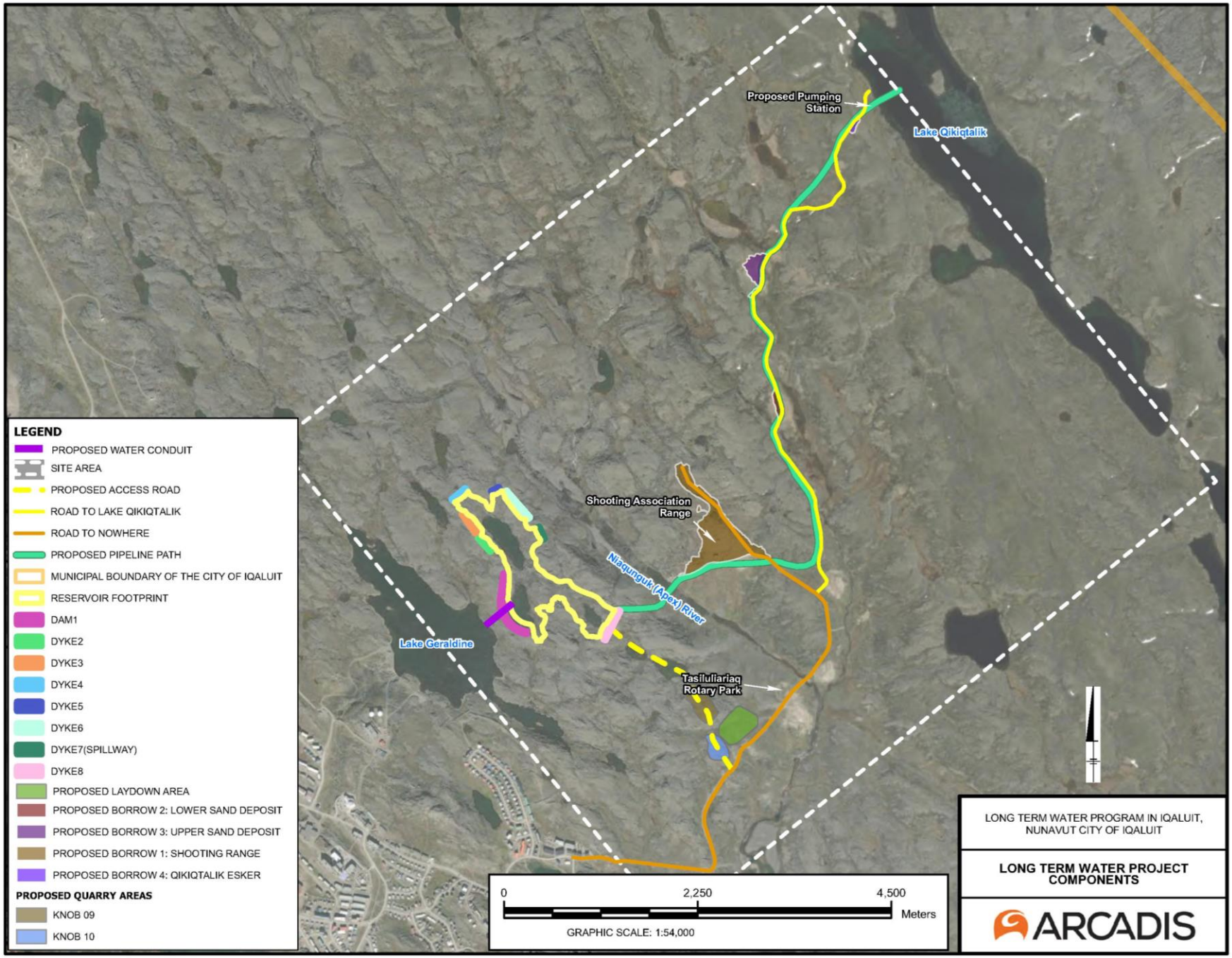

Figure 1-1 Site Plan

1.4 Overview Project Components

For this ESCP, the LTWP has been divided into two phases: Construction and Operation. The Construction phase of the Project is anticipated to consist of the following activities:

1. Staging and borrow area construction.
2. Access road construction.
3. Waterbody dewatering.
4. Rock blasting.
5. Earth dam and dyke construction for the reservoir.
6. Water conveyance and extraction system construction, and,
7. Site decommissioning and demobilization.

Post-construction, the Project will move into the Operation phase. During this phase, the following general activities are anticipated to be conducted on a routine, and needed, basis:

1. Water extraction from Lake Qikiqtalik and conveyance to the new reservoir.
2. System winterization (including drainage of water-conveyance pipeline),
3. Water conveyance to the new reservoir to Lake Geraldine, and,
4. Inspection and maintenance activities associated with the new reservoir and water-conveyance systems.

The activities listed above are not exhaustive and are not meant to represent the actual sequencing of construction or operation activities. Construction specifications and tender documentation should be referenced for detailed project construction requirements. As the design of the LTWP is ongoing at the time of the preparation of this ESCP, not all details of the design and construction are known. A revision of the ESCP will be required prior to the start of construction to include the final design and construction plans as well as any requirements from regulators and stakeholders.

1.5 Scope of Plan

This ESCP was developed to address conditions encountered during the Construction and Operation phases of the Project. The effective use of sediment and erosion controls and mitigation measures during the Project is dependent upon timely intervention by:

1. Anticipating conditions that initiate the response, and
2. Responding to the event.

The mitigative measures in the following sections have been developed and will be employed to meet the following objectives:

- To avoid or minimize the potential for erosion and sedimentation to occur as a result of construction and related operation-related activities.

- To comply with the habitat protection provisions of the Fisheries Act and the principle of no net loss of productive fish habitat of the Department of Fisheries and Oceans (DFO) Policy for the Management of Fish Habitat.
- To ensure preventative measures are implemented where weather events threaten the integrity of erosion and sediment control measures employed on the Project.
- To comply with all regulatory permits and approval conditions, and
- To always employ environmentally and economically responsible construction practices with applicable industry standards.

2 Management of Erosion and Sediment Controls

2.1 Activities with Erosion and Sedimentation Potential

Some of the proposed activities that could potentially cause erosion and/or sedimentation are outlined below. Locations of susceptible work areas and mitigation measures will be outlined in detail in specific site-specific work plans and site drawings.

The proposed activities are assigned a potential risk of low, medium, and high. The potential risk is based upon:

- Proximity to a watercourse or waterbody (i.e., the closer to water the higher the risk).
- Slope of working and downstream areas (i.e., the steeper the slope the higher the risk), and
- Level of disturbance to existing ground (i.e., the more ground disturbance the higher the risk).

The proposed activities, potential impacts, areas susceptible, and risks are presented in the following table.

Table 2-1 Project Activities and Areas Susceptible to Erosion and Sedimentation

Proposed Works	Potential Impacts	Areas Susceptible	Potential Risk
Construction Phase			
Access Roads	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1,2,3 - Full length of Access Road	1 - Low 2 - Low 3 - Medium
Staging/Laydown Area	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1, 2, 3 - Across Stagging/Laydown Area	1 - Low 2 - Low 3 - Medium

Proposed Works	Potential Impacts	Areas Susceptible	Potential Risk
Borrow Pits and Rock Processing Areas	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1, 2, 3 - Across Borrow Pits and Rock Processing Areas	1 - Medium 2 - Medium 3 - Medium
Reservoir (earth dam and dykes)	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1 - Across all dykes and the earth dam 2 - Across all dykes and the earth dam. Particularly, along the southwest face of the earth dam near Lake Geraldine. 3 – Across the entire reservoir footprint.	1 - Medium 2 - Medium 3 - High
Pipeline Construction including the Niaqunnguk (Apex) River crossing	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1, 2 and 3 - Full length of water conveyance corridor. Particularly, at Niaqunnguk (Apex) River crossing and other watercourse and waterbody crossings.	1 - Medium 2 - Low 3 - Medium
Pumping Station Construction at Qikiqtalik Lake	1 - Sedimentation 2 - Erosion 3 - Alterations to local drainage	1,2,3 – Entire Pumping Station footprint	1 - Medium 2 - Low 3 - Low
Operation Phase			
Access Roads	1 - Sedimentation 2 - Erosion	1 and 2 - Full length of Access Road	1 - Low 2 - Low
Pumping Station Operation and Maintenance at Qikiqtalik Lake	1 - Sedimentation 2 - Erosion	1 and 2 – Entire Pumping Station footprint	1 - Low 2 - Low
Pipeline Operation and Maintenance	1 - Sedimentation of corridor 2 - Erosion of corridor	1 and 2 – Along the entire water conveyance corridor. Particularly, at water drainage points along the pipeline.	1 - Low 2 - Low
Reservoir Operation and Maintenance	1 - Sedimentation of earth structures 2 - Erosion of slopes	1 and 2 - Across all dykes and the earth dam	1 - Medium 2 - Medium

The above table addresses project activities and areas susceptible to erosion and sedimentation anticipated during the development of this ESCP. Revaluation and adaptive mitigation measures may be necessary to address changes to the Project.

2.2 Construction Sequencing of Controls

The implementation of erosion and sediment control measures should be completed in sequencing that mitigates any increased sediment transportation from the area being impacted by the construction or operation activity. Only once the erosion and sediment control measures are in place should major construction or operational work begin. Construction staging and sequencing strategy will be activity specific. Site-specific details will be included on drawings and reviewed with crews as part of their pre-task instructions.

2.3 Contractor and Operator Responsibilities

The contractor and operator will be responsible for ensuring compliance with all erosion and sediment control measures outlined within this document, construction documents, manuals, and any other document outlining controls that relate to the Project. At all times during construction and operation activities, erosion control measures are to be maintained in working order, cleaned, and adjusted as required to achieve the desired objective. When the construction or operational works are completed, any collected sedimentation is to be removed along with any temporary controls.

3 Mitigation Measures and Controls

The erosion and sediment control measures for this Project have been developed based on the BMPs outlined in CSA W205:19 while also considering the unique features of the project's site including climate and material constraints. The following sections outline the erosion and sediment control measures that will be implemented for construction or operational activities. Complete details on the proposed erosion and sediment control measures will be included in the final work plans, manuals, and associated drawings.

3.1 Vehicle Use

Maintaining vegetation cover is important for controlling erosion and sedimentation. The terrestrial vegetation cover in the arctic landscape is fragile to disturbance. The cold temperatures, short growing seasons, and the presence of permafrost result in the slow growth and limited diversity of vegetation making it particularly vulnerable to disturbances. Furthermore, the relatively shallow root systems of Arctic plants cannot withstand the impacts of vehicular traffic on the ground, heightening the susceptibility to potential disruptions. Regeneration following disturbance may take decades or possibly not occur with no vegetation to prevent erosion.

Given this, the erosion and sediment control plan must address the specific vulnerabilities of the terrestrial vegetation. To do this:

- Vehicles must remain on access roads and laydown areas. This includes heavy trucks, light-duty trucks, all-terrain vehicles (ATVs), Side-by-sides and cars.

- Areas where ground disturbance is to occur with be staked in the field before the start of work and the vehicles must remain within the boundaries of this area.
- Where vehicles must travel across on vegetated ground, they will do so in a single file.
- Following the completion of the construction activities, the regeneration potential of any damaged areas will be evaluated by a biologist and a regeneration program proposed.
- No equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles must be suspended if rutting occurs, and
- All disturbed areas are to be restored to a stable or pre-disturbed state using Best Available Technology Economically Achievable (BATEA) upon completion of the work and/or abandonment.

3.2 Grading

The proposed construction activities will require the alteration of the existing ground surface at the project site. Changes to natural conditions and patterns of surface water runoff will lead to changes in the thermal regime of underlying soils and can trigger permafrost degradation and ground stability issues. Thus, when alterations are made to the ground surface, the following best practices will be followed by construction documents:

- Grading will be conducted in a manner to ensure the stability of slopes.
- Cuts into ice-rich permafrost, not anticipated for this project, will be avoided where possible and only done after special provisions are developed by the project geotechnical engineer.
- Grading will be conducted to achieve positive drainage.
- Where possible, grading will be conducted in such a way as to preserve predevelopment drainage routes.

3.3 Silt Fencing

Silt fencing allows surface water into the pond so sediment particles can settle. Silt fences are to be installed where sheet flow run-off is expected or is occurring and are not to be used within drainage channels or ditches. It should be installed in any area where it is determined that sedimentation will be an issue, specifically in any areas that are adjacent to water bodies, rivers, creeks, ditches, or other areas where sedimentation is a potential concern. The exact location of silt fences will be included on construction drawings and appended to this ESCP once the drawings are finalized. Silt fences are anticipated to be needed at borrow pits and potentially at the toe of dykes. Installation of silt fences should be completed by the construction drawing shown in **Appendix B**.

Silt fences should be inspected routinely and after all rain events. Repairs should be made immediately once any deficiencies have been identified. At the discretion of the EM, silt fences should be installed at the base of new fill/cut slopes and at any location where sedimentation is of concern, especially areas directly adjacent to streams, or drainage courses. Should excessive sediment accumulate on a silt fence (i.e., sediment height is ≥ 50 % of the silt fence height), additional erosion measures shall be implemented and/or the maintenance frequency of the fencing shall be increased.

3.4 Ditch and Berms

In locations close to watercourses and/or with steep gradients, roadside ditching or drainage swales will be implemented to collect runoff, trap sediment and avoid sheet flows which may damage roadways or work areas. During construction activities, diversion ditches and berms will be used to prevent water from entering the work area and to direct water to a sump or other approved receiving area. Ditches will incorporate check dams and flow dissipaters as needed.

The exact location of the diversion ditches and berms will be included on construction drawings and appended to this ESCP once the drawings are finalized. Diversion ditches and berms are anticipated to be needed around the proposed reservoir footprint to stop water from entering the work area and at the toe of dykes and the dam (to protect Lake Geraldine). Construction of berms should be done by the design shown in **Appendix B**.

3.5 Rock Check Dams

Rock check dams are used in drainage channels to reduce the velocity of flowing water and prevent scouring; they also allow mobilized sediment to settle out of turbid water. The rock check dams will be constructed from clean fill from one of the borrow locations. Rock check dams will be installed at roadside swales or ditching near water and/or with a steep gradient. As directed by the EM, check dams may be installed in new or existing drainage courses as required. All check dams must be monitored and maintained regularly. Rock check dams should be installed according to the construction drawings shown in **Appendix B**.

3.6 Wind Erosion and Dust Control

Dust may arise during the Construction phase as a result of vehicle traffic, and wind which can mobilize exposed soils and rock blasting activities. The following methods can be implemented to minimize wind erosion and dust generation:

- Reduce vehicle traffic from entering and leaving the site.
- Establish designated travel routes for vehicles.
- Reduce vehicle and equipment speed within the site (e.g., 15 km/h speed limit on-site vehicles).
- Cover stockpiles or other dust sources with tarps.
- Use blasting mats in rock blasting areas.
- Instal silt fences or similar barriers around stockpiles, and
- Apply water daily (or more often) to exposed soils or other dust sources during dry periods.

One or more of the above measures shall be implemented as needed to minimize dust generation and meet the GN ambient air quality standards. All dust suppression activities shall be done by the Environmental Guidelines for Dust Suppression on Unpaved Roads prepared by the GN Department of Environment revised in April 2014.

3.7 Working in and near Waterbodies/Watercourses

When working near waterbodies or watercourses, extra care must be taken when establishing and maintaining erosion and sediment controls. In-water works will be minimized to the greatest extent possible. Machinery operations will, whenever feasible, take place above the high-water mark. Steep-banked or sloped areas will be conscientiously avoided when entering or exiting a water body. Under no circumstances should excavated materials be placed directly into any waterbodies or watercourses. Project activities requiring working in a waterbody or watercourse will be conducted in strict accordance with the permits obtained from DFO, NWB and/or by others to conduct the work.

When possible, work conducted in a waterbody or watercourse during the winter after maximum ice depth is achieved to limit erosion and sedimentation. When work must occur in unfrozen waterbodies or watercourses, silt curtains will be installed to prevent sediment and erosion from construction sites from mixing into the larger body of water.

Temporary dykes will be built for construction of the water intake at Lake Qikiqtalik and the outflow pipe in Lake Geraldine. These will allow for the work area to be dry so that construction can occur. The final design details of the dykes are not known; however, it is likely that interlocking sandbags and fill material will be used to support an impermeable membrane. The temporary dykes will be built to allow for the least amount of disturbance to sediments and the shoreline. During their use, water quality will be monitored to ensure that there is no contamination of the waterbodies either by sediments, fuels and other substances. Care will be taken to ensure that the removal of the temporary dykes does not add sediments into the water bodies nor risk contamination of the water supply. Any water removed from within the construction side of the temporary dykes will be managed and treated as per the requirements outlined in the water licence terms and conditions for the construction phase of the project.

3.8 Water Management

3.8.1 Initial Dewatering of Ponds

Dewatering of the ponds within the proposed reservoir and access road footprints will be conducted during the initial stages of the Construction phase. It is anticipated that the water from these ponds will be discharged into Lake Geraldine or onto the land draining into the Apex River and will follow regulatory requirements once available. In either scenario, a filter or sedimentation process will be utilized to reduce suspended solids in the discharged water to adequate levels for the receiving area as dictated by the EM or associated permit. The flow rate of the discharge water shall be reduced to a level that prevents surface erosion and/or sediment agitation in the receiving area. Should a high flow rate be necessary, the discharged water will be directed to a rock check dam, riprap, or other control device to prevent surface erosion and/or sediment agitation in the receiving area.

3.8.2 Contact Water Management

In this ESCP, “contact water” refers to any water that has entered a construction area or has made contact with construction materials. Grading of work areas and ditches shall direct contact water to a designated sump or other approved receiving area. A filter or sedimentation process will be utilized to reduce suspended solids in the contact water to adequate levels for the receiving area as dictated by the EM or associated permit.

3.9 Snow Management

The following mitigation measures will be implemented to mitigate impacts from permafrost degradation:

- If snow-clearing activities are required, snow cover will be carefully removed to reduce settlement of the fill during future thaw periods.
- In areas where snow accumulation and/or drifting are an issue, mitigation measures such as flattening snow drifts or spreading plowed snow accumulation will be implemented.
- If areas with snow drifting become a re-occurring issue, snow fencing will be installed upwind of road embankments to keep snow drifts off the road surface and away from drainage ditches.

4 Monitoring and Maintenance Requirements

4.1 Construction Phase

During the Construction phase, all erosion and sediment control measures will be inspected on a routine basis as established by the Environmental Monitor (EM) and after significant rainfall events. Deficiencies identified during inspections shall be remediated immediately to prevent sediment mobilization, as directed by the EM.

The inspections completed by the EM will include:

- Observe runoff leaving the site during storms checking for turbid water.
- Inspect ditches, outfall from culverts, and downslope areas surrounding the site for tracking of sediment.
- Inspect silt fences, rock dams, and all other controls for deficiencies.
- Report the results of the inspection and recommended improvements, if any, to the contractor.
- Evaluate the implementation of specified measures and ensure installation is with the drawings and manufacturers' specifications, and
- Evaluate loss of vegetation cover outside of planned disturbed areas and inform the construction contractor of any observed disturbances.

Inspection reports will be completed to summarize the results of all erosion and sediment control measures inspections. Copies of the inspection reports will be available for review upon request.

All erosion and sediment controls will be maintained for the duration of the construction or operational activities. Should any new areas of the Project become subject to erosion, the same best management practices and procedures outlined in this document should be used to stabilize the area and eliminate erosion and sedimentation from recurring. The sediments removed during maintenance should be placed in a designated location that provides adequate containment of the sediments and is away from any watercourses or waterbodies.

4.2 Operation Phase

During the operation phase, monitoring of the reservoir and pipeline system will be conducted according to the requirements established in the applicable system operation manuals.

4.3 Materials and Equipment

Additional materials and equipment required to install, repair, and maintain all erosion and sediment control measures will be held on-site by the contractor during the Construction phase. At a minimum, the contractor will have additional rock, gravel, silt fencing, fencing posts, fasteners, and tarps readily available for repairs and/or emergency response.

The operators of drilling equipment are to ensure that they have available copies of the Appendix A documents while undertaking works and make them available to enforcement officers upon request:

5 References

City of Iqaluit (Iqaluit). 2023. *Request for Proposal, Long Term Water Program Raw Water Supply and Storage Owner's Engineer 2023-RFP-048.* P7201-950302569-68 (1.0).

Canadian Standards Association Group (CSAG). 2019. Erosion and sedimentation management for northern community infrastructure (CSA W205:19). ISBN 978-1-4883-2368-3

Government of Alberta. 2011. *Field Guide for Erosion and Sedimentation Controls*. Version 2. June 2011.

Nunavut Impact Review Board (NIRB). 2023. *Screening Decision Report NIRB File No.: 23YN040*. NPC File No.: 150099. Dated 2 November 2023.

Ontario Provincial Standard Specifications (OPSS.MUNI805), 2018. *Construction Specifications for Temporary and Sediment Control Measures, Ministry of Transportation of Ontario*. November 2021.

Transportation Association of Canada (TAC). 2005. *National Guide to Erosion and Sediment Control of Roadway Projects*. ISBN: 978-1-55187-203-X.

Appendix A

Commitment to NIRB Recommended Terms and Conditions

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Nunavunmi Parnaiyiit
Nunavut Planning Commission
Commission d'Aménagement du Nunavut

April 19, 2024
NPC File No.: 150359

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Dear Caroline Whittle, Mosha Cote, Richard Dwyer, Tracey McCaie, William Patch, Jared Ottenhof, Cassel Kapolak, and Tamilore Adeleke:

RE: NPC File No: 150359 [Long Term Water Project - Geotechnical Investigations]

The following works and activities have been proposed in the above-noted project proposal:

1. Municipal Infrastructure: Geotechnical investigations along with archeological study to establish existing site features and underground conditions for the design of the City of Iqaluit's water supply and distribution infrastructure. The geotechnical investigation will study the surface and subsurface conditions of the future pump station, the conveyance pipe, and the reservoir to determine if the sites are adequate to proceed with design and construction activities. Site study activities include a drilled borehole program at 5m, and 10 m depth to augment the field investigation.

2. Modifications to the original project proposal: Addition of 26 new boreholes and 18 test pits, in the general project study area.
3. Associated NPC File No: 150099; Associated NIRB File No:
4. Location: Qikiqtani Region; [City of Iqaluit; within municipal boundaries]

A complete description of the project proposal reviewed by the NPC can be accessed online using the link below.

The NPC previously reviewed works and activities associated with the current project proposal including a drilled borehole program and a determination was issued on June 23, 2023, that it is outside the area of an applicable regional land use plan.

In addition, works and activities associated with the current proposal were previously screened by the Nunavut Impact Review Board (NIRB FILE NO.: 23YN040).

The above-noted project proposal is exempt from screening by the NIRB because the NPC is of the understanding that the addition of new boreholes and pits does not change the general scope of the original project activities, and the exceptions noted in Section 12.4.3 (a) and (b) of the *Nunavut Agreement* do not apply.

By way of this letter, the NPC is forwarding the project proposal to the regulatory authorities identified by the proponent. Project materials are available at the following address:
https://lupit.nunavut.ca/portal/registry/registry.aspx?appid=150359

This decision applies only to the above noted project proposal as submitted. Proponents may not carry out projects and regulatory authorities may not issue licenses, permits and other authorizations in respect of projects if a review by the NPC is required.

If you have any questions, please do not hesitate to contact me at (867) 979-3444.

Sincerely,

Goump Djalogue, MCIP, RPP
Manager of Planning and Implementation,
Nunavut Planning Commission

NIRB File No.: 23YN040
NPC File No.: 150099

November 2, 2023

To: The Honourable Daniel Qavvik
Minister Responsible for Nunavut Arctic College
P.O. Box 2410
Iqaluit, NU
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Sent via email: dqavvik6@gov.nu.ca, dkaludjak6@gov.nu.ca

Re: Screening Decision for City of Iqaluit's "Long Term Water Project - Geotechnical Investigations" Project Proposal, Qikiqtani Region

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Dear Honourable Minister:

On June 23, 2023, the Nunavut Impact Review Board (NIRB or Board) received the City of Iqaluit's "Long Term Water Project - Geotechnical Investigations" project proposal from the Nunavut Planning Commission (NPC or Commission), which noted that the project proposal is outside the area of an applicable regional land use plan.

Pursuant to Article 12, Sections 12.4.1 and 12.4.4 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (*Nunavut Agreement*) and s. 87 of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (*NuPPAA*), the NIRB commenced screening this project proposal and assigned it file number **23YN040**.

Following the assessment of all material information provided, the NIRB is recommending that a review of City of Iqaluit's "Long Term Water Project - Geotechnical Investigations" project is not required pursuant to paragraph 92(1)(a) of the *NuPPAA*.

Pursuant to its discretion under paragraph 92(2)(a) of the *NuPPAA*, the NIRB has determined that specific terms and conditions are appropriate for this project.

Accordingly, the NIRB is issuing the attached Screening Decision Report dated November 2, 2023 to the responsible Minister. The Screening Decision Report provides, among other things, the regulatory framework, project overview and the NIRB's assessment process, factors relevant for the determining significance of impacts and recommended project-specific terms and conditions.

Please note that the project proposal will not be enclosed due to the size of the electronic document and the limited bandwidth. However, an electronic copy of the project proposal is accessible online from the NIRB's online public registry at www.nirb.ca/project/125845.

Please note that, the Board only directly addresses these notice letters to those individuals considered to be a "responsible Minister with decision-making authority" for the project as set out under the *NuPPAA*. However, regulatory authorities and other authorizing agencies associated with a proposed project (e.g. Regional Inuit Associations, Nunavut Water Board) will continue to be copied on the Notice of Release of the Screening Decision Report. The NIRB is providing these parties with notice and access to the Board's Screening Decision Report as required under s. 200(2) and in support of these parties in the fulfillment of their responsibilities under the *NuPPAA* and the *Nunavut Agreement* to address, and as appropriate, implement, to the fullest extent possible, any relevant NIRB recommendations contained in the Screening Decision Report.

We look forward to receiving a response from the responsible Minister and the NIRB remains available for consultation with the Minister regarding this report as necessary. If you have any questions or require clarification, please do not hesitate to contact the NIRB's Director, Technical Services, Tara Arko at (867) 983-4611 or tarko@nirb.ca.

Sincerely,

Kaviq Kaluraq
Chairperson
Nunavut Impact Review Board

Enclosure (1): Screening Decision Report, NIRB File No.: 23YN040 (November 2, 2023)

cc:
The Honourable Dan Vandal, Minister of Northern Affairs

SCREENING DECISION REPORT
NIRB FILE No.: 23YN040

NPC File No.: 150099

November 2, 2023

Following the Nunavut Impact Review Board's (NIRB or Board) assessment of all materials provided, the NIRB is recommending that a review of City of Iqaluit's (Iqaluit) "Long Term Water Project - Geotechnical Investigations" is not required pursuant to Article 12, Section 12.4.4(a) of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (*Nunavut Agreement*) and s. 92(1)(a) of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (*NuPPAA*).

Subject to the Proponent's compliance with the terms and conditions as set out in below, the NIRB is of the view that the project proposal is not likely to cause significant public concerns, and it is unlikely to result in significant adverse environmental and social impacts. The NIRB therefore recommends that the responsible Minister accepts this Screening Decision Report.

OUTLINE OF SCREENING DECISION REPORT

REGULATORY FRAMEWORK

The primary objectives of the NIRB are set out in Article 12, Section 12.2.5 of the *Nunavut Agreement* and are confirmed by s. 23 of the *NuPPAA*:

> *Nunavut Agreement*, Article 12, Section 12.2.5: In carrying out its functions, the primary objectives of NIRB shall be at all times to protect and promote the existing and future well-being of the residents and communities of the Nunavut Settlement Area, and to protect the ecosystemic integrity of the Nunavut Settlement Area. NIRB shall take into account the well-being of the residents of Canada outside the Nunavut Settlement Area.

The purpose of screening is provided for under Article 12, Section 12.4.1 of the *Nunavut Agreement* and s. 88 of the *NuPPAA* which states:

> *NuPPAA*, s. 88: The purpose of screening a project is to determine whether the project has the potential to result in significant ecosystemic or socio-economic impacts and, accordingly, whether it requires a review by the Board…

To determine whether a review of a project is required, the NIRB is guided by the considerations as set out under Article 12, Section12.4.2(a) and (b) of the *Nunavut Agreement* and s. 89(1) of *NuPPAA* which states:

> *NuPPAA*, s. 89(1): The Board must be guided by the following considerations when it is called on to determine, on the completion of a screening, whether a review of the project is required:
>
> (a) a review is required if, in the Board's opinion,
>
> i. the project may have significant adverse ecosystemic or socio-economic impacts or significant adverse impacts on wildlife habitat or Inuit harvest activities,
> ii. the project will cause significant public concern, or
> iii. the project involves technological innovations, the effects of which are unknown; and
>
> (b) a review is not required if, in the Board's opinion,
>
> i. the project is unlikely to cause significant public concern, and
> ii. its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.

It is noted that under Article 12, Section 12.4.2(c) and s. 89(2) of the *NuPPAA* provides that the considerations set out in s.89(1)(a) prevail over the considerations set out in s. 89(1)(b) of the *NuPPAA*.

As set out under Article 12, Section 12.4.4 of the *Nunavut Agreement* and s. 92(1) of the *NuPPAA*, upon conclusion of the screening process, the Board must provide its written report the Minister. The contents of the NIRB's report are specified under *NuPPAA*:

NuPPAA, s. 92(1): The Board must submit a written report to the responsible Minister containing a description of the project that specifies its scope and indicating that:

(a) a review of the project is not required;

(b) a review of the project is required; or

(c) the project should be modified or abandoned.

Where the NIRB determines that a project may be carried out without a review, the NIRB has the discretion to recommend specific terms and conditions to be attached to any approval of the project proposal pursuant to paragraph 92(2)(a) of *NuPPAA* as follows:

NuPPAA, s. 92(2) In its report, the Board may also

(a) recommend specific terms and conditions to apply in respect of a project that it determines may be carried out without a review.

PROJECT REFERRAL

On June 23, 2023, the NIRB received a referral to screen City of Iqaluit's (Iqaluit) "Long Term Water Project - Geotechnical Investigations" project proposal from the Nunavut Planning Commission (Commission), which noted that the project proposal is outside the area of an applicable regional land use plan.

Pursuant to Article 12, Sections 12.4.1 and 12.4.4 of the *Nunavut Agreemen*t and s. 87 of the *NuPPAA*, the NIRB commenced screening this project proposal and assigned it file number **23YN040**.

PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

1. Screening Process Timelines

The following key stages were completed for the screening process:

Date	Stage
June 23, 2023	Receipt of project proposal and referral from the Commission.
June 23, 2023	Request to complete public registry online and provide information pursuant to s. 144(1) of the *NuPPAA*
August 8, 2023	Receipt of online application from Proponent
August 28, 2023	Scoping pursuant to s. 86(1) of the *NuPPAA*
August 29, 2023	Public engagement and comment request
August 30, 2023	Ministerial extension requested from the Minister Responsible for Nunavut Arctic College
September 19, 2023	Receipt of public comments
October 4, 2023	Proponent responded to comments/concerns raised by public
November 2, 2023	Issuance of Screening Decision Report

2. Project Scope

All documents received and pertaining to this project proposal can be accessed from the NIRB's online public registry at www.nirb.ca/project/125845.

Project:	Long Term Water Project - Geotechnical Investigations
Region:	Qikiqtani
Closest Community:	Iqaluit
Summary of Project Description:	The Proponent intends to conduct geotechnical drilling to determine the best route for a water pipeline.
Project Proposed Timeline:	2023 to 2024

As required under s. 86(1) of the *NuPPAA*, the Board accepts the scope of the project as set out by City of Iqaluit in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Drilling of up to 24 boreholes;
- Use of
  - Borehole Drilling Machine;
  - Flatbed Truck;
  - Support Vehicle;
  - Diesel and gasoline, and
  - Anti-Freeze.

3. Inclusion or Exclusion to Scoping List

The NIRB has identified no additional works or activities in relation to the project proposal. As a result, the NIRB proceeded with screening the project based on the scope as described above.

4. Public Comments and Concerns

Notice regarding the NIRB's screening of this project proposal was distributed on August 29, 2023 to community organizations in Iqaluit, as well as to relevant federal and territorial government agencies, Inuit organizations and other parties. The NIRB requested that interested parties review the proposal and provide the Board with any comments or concerns by September 19, 2023 regarding:

- Whether the project proposal is likely to arouse significant public concern; and if so, why;
- Whether the project proposal is likely to cause significant adverse eco-systemic or socio-economic effects; and if so, why;
- Whether the project proposal is likely to cause significant adverse impacts on wildlife habitat or Inuit harvest activities; and if so, why;
- Whether the project proposal is of a type where the potential adverse effects are highly predictable and mitigable with known technology, (and providing any recommended mitigation measures); and
- Any matter of importance to the Party related to the project proposal.

On or before September 19, 2023, the NIRB received comments from the following interested parties:

- **Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)**

a. Summary of Public Comments and Concerns Received during the Public comment period of this file.

The following provides a summary of the comments and concerns received by the NIRB:

CIRNAC

- Recommends that the Proponent provide specific details of its fuel, waste, and erosion and sediment control management plans and encourages it to consider practices when implementing its project activities;
- Recommends that the Proponent provides descriptions of its drilling fluids, how gasoline will be used to support project activities, and measures it intends to implement in order to minimize chances of contamination of nearby waterbodies;
- Recommends that the Proponent clarifies which analyses will be preformed on the rock samples, and whether it intends to characterize the PAG material of underlying bedrock in the study area; and
- Recommends that the Proponent continue to consult with interested parties and any other relevant interested Inuit, community members, and community organizations in Iqaluit who demonstrate an interest in the project.

b. Comments and Concerns with respect to Inuit Qaujimaningit, Traditional, and Community Knowledge

No concerns or comments were received with respect to Inuit Qaujimaningit or traditional and community knowledge in relation to the proposed project. However, Inuit Qaujimaningit and traditional and community knowledge is incorporated into the terms and conditions recommended below based on information collected from prior and similar projects, data collected and mapped by the Commission, and other available sources.

5. Proponent's Response to Public Comments and Concerns

The following is a summary of the Proponent's response to concerns:

- A refueling plan will address how refueling will be done and ensure the concerns regarding distances from waterbodies;
- No fuel storage areas on site, the use of drip pans will be addressed in the refueling plan;
- There will be no sewage water generated, however some recirculation water may be used and will ensure any discharge of water to the land will be done in a manner that will not impact the local freshwater environment;
- As a general note this project will be covering the land as opposed to exposing bedrock except at the quarry and borrow locations. If during the course of the program it is identified the local bedrock beneath the proposed borrow pits is identified as being

materially different from the rock at the quarry site then samples of the bedrock could be recovered and submitted for analysis to confirm if PAG bedrock is being exposed, however, there are no plans to do this work at this time.

6. Time of Report Extension

As a result of the time required to allow due to the workload before the Board including several Reviews and Project Certificate reconsiderations associated with major development projects currently in progress, the NIRB was not able to provide its screening decision report to the responsible Minister within 45 days as required by Article 12, Section 12.4.5 of the *Nunavut Agreement* and s. 92(3) of the *NuPPAA*. Therefore, on August 30, 2023, the NIRB wrote to the Minister Responsible for Nunavut Arctic College, Government of Nunavut, seeking an extension to the 45-day timeline for the provision of the Board's Report.

ASSESSMENT OF THE PROJECT PROPOSAL IN ACCORDANCE WITH PART 3 OF *NUPPAA*

In determining whether a review of the project is required, the Board considered whether the project proposal had potential to result in significant ecosystemic or socio-economic impacts.

Accordingly, the assessment of impact significance was based on the analysis of those factors that are set out under s. 90 of the *NuPPAA*. The Board took particular care to take into account Inuit Qaujimaningit, traditional and community knowledge in carrying out its assessment and determination of the significance of impacts.

The following is a summary of the Board's assessment of the factors that are relevant to the determination of significant impacts with respect of this project proposal:

Factor	Comment
The size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts.	▪ The physical footprint of the proposed project components is within municipal boundaries of Iqaluit. ▪ The proposed project would take place within habitats of far-ranging wildlife species such as migratory and non-migratory birds, arctic fox, arctic hare and Species at Risk such as Polar Bears.
The ecosystemic sensitivity of that area.	▪ No specific areas of ecosystemic sensitivity have been identified by the Proponent within the physical footprint of the proposed project.
The historical, cultural and archaeological significance of that area.	▪ No specific areas of historical, cultural and archaeological significance have been identified by the Proponent within the physical footprint of the proposed project.
The size of the human and the animal populations likely to be affected by the impacts.	▪ The proposed project is unlikely to result in impacts to local human and animal populations.

Factor	Comment
The nature, magnitude and complexity of the impacts; the probability of the impacts occurring; the frequency and duration of the impacts; and the reversibility or irreversibility of the impacts.	▪ A zone of influence of up to 20 km from the most potentially-disruptive project activities was selected for the NIRB's assessment. ▪ With adherence to the relevant regulatory requirements and application of the mitigation measures recommended by the NIRB, no significant residual effects are expected to occur.
The cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out.	▪ The mitigation measures recommended by the NIRB have been designed with consideration for the potential for cumulative effects to result from the impacts of the project combined with other past, present and reasonably foreseeable projects.
Any other factor that the Board considers relevant to the assessment of the significance of impacts.	▪ No other relevant factors were identified.

Other past, present and reasonably foreseeable projects considered in this assessment:

NIRB Project Number	Project Title	Project Type
Proposed Developments – undergoing assessment		
22MN025	Chidliak Diamond Mine	Mine Development
Present Projects – approved or in operation		
23YN010	Renewable Energy Microgrid Integration for Remote, Off-grid Cabins in Nunavut	Research

VIEWS OF THE BOARD

In considering the factors as set out above in the screening of the project proposal, the NIRB has identified a number of issues below and respectfully provide the following views regarding whether or not the proposed project has the potential to result in significant impacts. In addition, the NIRB has proposed terms and conditions that would mitigate the potential adverse impacts identified.

The NIRB has listed specific Acts and Regulations below that may be applicable to the project proposal but this list should not be considered as a complete list and the Proponent is responsible to ensure that it follows all Acts and Regulations that may be applicable to the project proposal.

Ecosystem, wildlife habitat and Inuit harvesting activities:

Valued Component	Migratory and non-migratory birds, terrestrial and Species at Risk

Potential effects:	Potential adverse effects to and non-migratory birds, and their migratory routes and Species at Risk such as Ivory Gull from noise and visual disturbance generated from the transportation of personnel and equipment.
Nature of Impacts:	The potential for impacts is considered to be limited due to infrequent and temporary activities and any resulting impacts would be expected to be reversible
Mitigating Factors:	Proponent proposes to ensure camp is established with minimal impact to wildlife.
Proposed Terms and Conditions:	Water courses/Water bodies(including fresh and marine waters) – 6 through 8 Waste Management – 9 Fuel and Chemical Storage – 10 through 16 Wildlife – General – 17 Migratory Birds and Raptors disturbance – 18 and 19
Related Acts and/or Regulations:	1. The *Migratory Birds Convention Act* and *Migratory Birds Regulations* (http://laws-lois.justice.gc.ca/eng/acts/M-7.01/). 2. The *Species at Risk Act* (http://laws-lois.justice.gc.ca/eng/acts/S-15.3/index.html). Attached in **Appendix A** is a list of Species at Risk in Nunavut. 3. The *Wildlife Act (Nunavut)* and its corresponding regulations (http://www.canlii.org/en/nu/laws/stat/snu-2003-c-26/latest/snu-2003-c-26.html).

Valued Component	Land, terrestrial vegetation, and ground stability
Potential effects:	The potential for impacts is considered to be minimal due to the nature of the activities.
Nature of Impacts:	The potential for impacts is considered to be limited if regulations and best practices followed. The potential for disturbance due to other activities is considered to be minimal due to the localized and temporary nature of the activities.
Mitigating Factors:	Adhering to the NIRB's terms and conditions as well as regulations and the respective authorizations for the operation of drilling activities.
Proposed Terms and Conditions:	Road and Ground disturbance – 20 and 21 Drilling – General – 22 through 24 Drilling on Land – 25 through 29 Land use and Restoration of Disturbed Areas – 30 through 33
Related Acts and/or Regulations:	1. *Canadian Environmental Protection Act* (http://laws-lois.justice.gc.ca/eng/acts/C-15.31/).

Valued Component	Public and Traditional land use
Potential effects:	No specific concerns or impacts to public and traditional land use activities in the area have been identified, however, the Board is recommending terms and conditions to ensure project activities are

	informed by available Inuit Qaujimaningit and that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.
Nature of Impacts:	The potential for impacts is considered to be minimal due to the nature of the activities and due care of the Proponent to avoid disturbance of Public and traditional land use.
Mitigating Factors:	The NIRB recommends below terms and conditions to mitigate any potential impacts to the public and traditional land use.
Proposed Terms and Conditions:	Heritage sites – 34 through 36 Other – 37 and 38
Related Acts and/or Regulations:	1. The *Nunavut Act* (http://laws-lois.justice.gc.ca/eng/acts/N-28.6/).

Socio-economic effects on northerners:

Valued Component	Local hiring, contracting and economic impacts.
Potential effects:	Potential positive impacts due to potential local hiring by the contracted companies and local purchasing. However, the NIRB suggests below term and condition to emphasize local hiring practices.
Nature of Impacts:	Positive potential impacts to the community.
Proposed Terms and Conditions:	Other – 39
Related Acts and/or Regulations:	n/a

Significant public concern:

Valued Component	Public concern.
Potential effects:	No significant public concern was expressed during the public commenting period for this file.
Nature of Impacts:	The potential for impacts is considered to be minimal as long as the Proponent follows the recommended terms and conditions.
Mitigating Factors:	The Board is recommending terms and conditions to ensure project activities do not interfere with Inuit wildlife harvesting or traditional land use activities, to the extent possible hire local people and access local services where possible, and to ensure planned activities in the area utilize available Inuit Qaujimaningit.
Proposed Terms and Conditions:	Other – 37 and 38
Related Acts and/or Regulations:	n/a

Technological innovations for which the effects are unknown:

No specific issues have been identified associated with this project proposal.

Administrative Conditions:

Responsible authorities or Proponent shall notify the Nunavut Planning Commission and/or Parks Canada as appropriate, and the NIRB of any changes in operating plans or conditions, including phase advancement, associated with this project prior to any such change.

To encourage compliance with applicable regulatory requirements and assist the Board and responsible authorities with compliance and effects monitoring for project activities, the following project-specific terms and conditions have been recommended: 1-5.

In considering the above factors and subject to the Proponent's compliance with the terms and conditions necessary to mitigate against the potential adverse environmental and social effects, the Board is of the view that the proposed project is unlikely to cause significant public concern and its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.

RECOMMENDED PROJECT-SPECIFIC TERMS AND CONDITIONS

The Board is recommending the following specific terms and conditions to apply in respect of the project:

General

1. City of Iqaluit (the Proponent) shall maintain a copy of the Project Terms and Conditions at the site of operation at all times and make it accessible to enforcement officers upon request.
2. The Proponent shall operate in accordance with all commitments stated in correspondence provided to the Nunavut Planning Commission (NPC File No.:150099) and the NIRB (Online Application Form, August 8, 2023). This information should be accessible to enforcement officers upon request.
3. The Proponent shall operate the site in accordance with all applicable Acts, Regulations and Guidelines.
4. The Proponent shall ensure that it meets the standards and/or limits as set out in the authorizing agencies' permits or licences as required for this project.
5. The Proponent shall ensure that all personnel, staff and contractors are adequately trained prior to commencement of all project activities, and shall be made aware of all operational plans, management plans, guidelines and Proponent commitments relating to the project.

Water courses/Water bodies (including fresh and marine waters)

6. The Proponent shall ensure that no disturbance of the stream bed, lakebed or the banks of any definable watercourse be permitted, except where deemed necessary for maintaining project-specific operational commitments or approved by a responsible authority in cases of spill management.
7. The Proponent shall implement erosion and sediment suppression measures on all areas during all project activities in order to prevent sediment or fugitive dust from entering any water body or surrounding environment. Erosion prevention measures may include berms or silt fences.

8. The Proponent shall not deposit, nor permit the deposit of any fuel, chemicals, wastes (including wastewater) or sediment into any water body. The Proponent should have in place an Emergency Spill Response Plan that is approved by the appropriate authorizing agency(ies).

Waste Management

9. The Proponent shall manage all hazardous and non-hazardous waste including food, domestic wastes, debris and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) in such a manner to avoid release into the environment and access to wildlife at all times until disposed of appropriately or at an approved facility.

Fuel and Chemical Storage

10. The Proponent shall locate all fuel and other hazardous materials a minimum distance away from the high-water mark of any water body and environmentally sensitive areas as required by the appropriate authorizing agencies. The materials shall be stored in such a manner as to prevent their release into the environment.
11. The Proponent shall use adequate secondary containment or a surface liner (e.g., self-supporting insta-berms and fold-a-tanks) when storing barreled fuel and chemicals at all locations.
12. The Proponent shall ensure that re-fuelling of all equipment occurs a minimum distance away from the high-water mark of any water body as required by the appropriate authorizing agencies.
13. The Proponent shall have a Spill Contingency Plan in place at all fuel storage or transfer locations and shall ensure that appropriate spill response equipment and clean-up materials (e.g., shovels, pumps, barrels, drip pans, and absorbents) are readily available.
14. The Proponent shall follow the authorizing agencies' direction for management and removal of hazardous materials and wastes (e.g., contaminated soils, sediment and waste oil).
15. The Proponent shall ensure that wildlife deterrent systems are utilized at the time of a spill incident in order to avoid wildlife (terrestrial or marine) and migratory birds from being contaminated.
16. The Proponent shall ensure that all spills of fuel or other deleterious materials of 100 litres or more must be reported immediately to the 24-hour Spill Line at (867) 920-8130.

Wildlife – General

17. The Proponent shall not substantially alter or damage or destroy any wildlife habitat in conducting this operation unless otherwise authorized by the appropriate authorizing agencies.

Migratory Birds and Raptors Disturbance

18. The Proponent shall carry out all phases of the project in a manner that protects migratory birds and avoids harming, killing or disturbing migratory birds or destroying, disturbing or taking their nests or eggs. In this regard, the Proponent shall take into account Environment and Climate Change Canada's *Avoidance Guidelines*. The Proponent's actions in applying the *Avoidance Guidelines* shall be in compliance with the *Migratory Birds Convention Act, 1994* and with the *Species at Risk Act*.

19. The Proponent shall not disturb or destroy the nests or eggs of any birds. If active nests of any birds are discovered or located (i.e., with eggs or young), the Proponent shall avoid these areas until nesting is complete and the young have naturally left the vicinity of the nest by establishing a protection buffer zone[1] appropriate for the species and the surrounding habitat.

Road and Ground Disturbance

20. The Proponent shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles must be suspended if rutting occurs.

21. The Proponent shall select a winter route that maximizes the use of frozen water bodies.

Drilling – General

22. The Proponent shall not allow any drilling wastes to spread to the surrounding lands or water bodies.

23. The Proponent shall ensure that that any deleterious substances (as defined in the *Fisheries Act*) resulting from its activities do not enter into any water bodies frequented by fish.

24. The Proponent shall ensure that all drill areas are constructed to facilitate minimizing the environmental footprint of the project area.

Drilling on Land

25. The Proponent shall not conduct any land-based drilling or mechanized clearing activities a minimum distance of the normal high-water mark of any water body as required by an authorizing agency.

26. If an artesian flow is encountered, the Proponent shall ensure the drill hole is immediately plugged and permanently sealed.

27. The Proponent shall ensure that all sump/depression capacities are sufficient to accommodate the volume of wastewater and any fines that are produced. The sumps shall only be used for inert drilling fluids, and not any other materials or substances.

28. The Proponent shall not locate any sumps within a minimum distance of the normal high-water mark of any water body as required by an authorizing agency.

29. The Proponent shall ensure all drill holes are backfilled or capped prior to the end of each field season. All sumps must be backfilled and restored to original or stable profile prior to the end of each field season.

Land Use and Restoration of Disturbed Areas

30. The Proponent shall use existing trails where possible during project activities on the land.

31. The Proponent shall ensure that the land use area is kept clean and tidy at all times.

32. The Proponent shall remove all garbage, fuel and equipment at the end of each field season and/or upon completion of work and/or upon abandonment.

1 Recommended setback distances to define buffer zones have been established by Environment and Climate Change Canada for different bird groups nesting in tundra habitat and can be found at www.ec.gc.ca/paom-itmb.

33. The Proponent shall ensure that all disturbed areas are restored to a stable or pre-disturbed state using Best Available Technology Economically Achievable (BATEA) upon completion of work and/or abandonment.

Heritage Sites

34. The Proponent shall ensure that archaeological and paleontological sites are not purposely or inadvertently disturbed by clients or staff as a result of project activities.

35. The Proponent shall ensure that all clients and staff are aware of the Proponent's responsibilities and requirements regarding archaeological or palaeontological sites that are encountered during land-based activities. This should include briefings explaining the prohibitions regarding removal of artifacts, and defacing or writing on rocks and infrastructure.

36. No activities shall be conducted in the vicinity (50 metres buffer zone) of any archaeological/historical sites. If archaeological sites or features are encountered, activities shall immediately be interrupted and moved away from this location. Each site encountered needs to be recorded and reported to the Government of Nunavut-Department of Culture and Heritage.

Other

37. The Proponent should engage with local residents regarding planned activities in the area and should solicit available Inuit Qaujimaningit and information regarding current recreational and traditional usage of the project area which may inform project activities. Posting of translated public notices and direct engagement with potentially interested groups and individuals prior to undertaking project activities is strongly encouraged.

38. The Proponent shall ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.

39. The Proponent should, to the extent possible, hire local people and access local services where possible.

OTHER NIRB CONCERNS AND RECOMMENDATIONS

In addition to the project-specific terms and conditions, the Board is recommending the following:

Copy of licences, etc. to the Board and Commission

1. The NIRB respectfully requests that responsible authorities submit a copy of each licence, permit or other authorization issued for the Project to the NIRB to assist in enabling possible project monitoring that may be required. Please forward a copy of the licences, permits and/or other authorizations to the NIRB directly at info@nirb.ca or upload a copy to the NIRB's online registry at www.nirb.ca.

Use of Inuit Qaujimaningit

2. The Proponent is encouraged to work with local communities and knowledge holders to inform project design, to carry out the project, and to confirm or validate the perspectives represented in publications, reports produced as part of the project. Care should be taken to ensure that

Inuit Qaujimaningit and local knowledge collected for the project is used with permission and is accurately represented.

CONCLUSION

The foregoing constitutes the Board's screening decision with respect to the City of Iqaluit's (Iqaluit) "Long Term Water Project - Geotechnical Investigations". The NIRB remains available for consultation with the Minister regarding this report as necessary.

Dated November 2, 2023, at Baker Lake, NU.

Kaviq Kaluraq, Chairperson

Attachments: Appendix A: Species at Risk in Nunavut
Appendix B: Archaeological and Palaeontological Resources Terms and Conditions for Land Use Permit Holders

APPENDIX A: SPECIES AT RISK IN NUNAVUT

Due to the requirements of Section 79(2) of the Species at Risk Act (SARA), and the potential for project-specific adverse effects on listed wildlife species and its critical habitat, measures should be taken as appropriate to avoid or lessen those effects, and the effects need to be monitored. Project effects could include species disturbance, attraction to operations and destruction of habitat. This section applies to all species listed on Schedule 1 of SARA, as listed in the table below, or have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which may be encountered in the project area. This list may not include all species identified as at risk by the Territorial Government. The following points provide clarification on the applicability of the species outlined in the table.

- Schedule 1 is the official legal list of Species at Risk for SARA. SARA applies to all species on Schedule 1. The term "listed" species refers to species on Schedule 1.
- Schedule 2 and 3 of SARA identify species that were designated at risk by the COSEWIC prior to October 1999 and must be reassessed using revised criteria before they can be considered for addition to Schedule 1.
- Some species identified at risk by COSEWIC are "pending" addition to Schedule 1 of SARA. These species are under consideration for addition to Schedule 1, subject to further consultation or assessment.

If species at risk are encountered or affected, the primary mitigation measure should be avoidance. The Proponent should avoid contact with or disturbance to each species, its habitat and/or its residence. All direct, indirect, and cumulative effects should be considered. Refer to species status reports and other information on the species at risk Registry at http://www.sararegistry.gc.ca for information on specific species.

Monitoring should be undertaken by the Proponent to determine the effectiveness of mitigation and/or identify where further mitigation is required. As a minimum, this monitoring should include recording the locations and dates of any observations of species at risk, behaviour or actions taken by the animals when project activities were encountered, and any actions taken by the proponent to avoid contact or disturbance to the species, its habitat, and/or its residence. This information should be submitted to the appropriate regulators and organizations with management responsibility for that species, as requested.

For species primarily managed by the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.

Mitigation and monitoring measures must be undertaken in a way that is consistent with applicable recovery strategies and action/management plans.

Schedules of SARA are amended on a regular basis, so it is important to check the SARA registry (www.sararegistry.gc.ca) to get the current status of a species.

Updated: September 2019

Terrestrial Species at Risk[2]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility[3]
Migratory Birds			
Buff-breasted Sandpiper	Special Concern	Schedule 1	Environment and Climate Change Canada (ECCC)
Common Nighthawk	Threatened	Schedule 1	ECCC
Eskimo Curlew	Endangered	Schedule 1	ECCC
Harlequin Duck	Special Concern	Schedule 1	ECCC
Harris's Sparrow	Special Concern	Schedule 1	ECCC
Horned Grebe	Special Concern	Schedule 1	ECCC
Ivory Gull	Endangered	Schedule 1	ECCC
Olive-sided Flycatcher	Threatened	Schedule 1	ECCC
Peregrine Falcon	Special Concern	Schedule 1	ECCC
Red Knot Islandica Subspecies	Special Concern	Schedule 1	ECCC
Red-necked Phalarope	Special Concern	Schedule 1	ECCC
Ross's Gull	Threatened	Schedule 1	ECCC
Rusty Blackbird	Special Concern	Schedule 1	ECCC
Short-eared Owl	Special Concern	Schedule 1	ECCC
Vegetation			
Porsild's Bryum	Threatened	Schedule 1	Government of Nunavut (GN)
Arthropods			
Transverse Lady Beetle	Special Concern	No Schedule	GN
Terrestrial Wildlife			
Caribou (Dolphin and Union Population)	Endangered	Schedule 1	GN
Caribou (Barren-ground Population)	Threatened	No Schedule	GN
Caribou (Torngat Mountains Population)	Endangered	No Schedule	GN
Grizzly Bear (Western Population)	Special Concern	Schedule 1	ECCC
Peary Caribou	Endangered	Schedule 1	GN
Polar Bear	Special Concern	Schedule 1	ECCC
Wolverine	Special Concern	Schedule 1	GN
Marine Wildlife			
Atlantic Walrus (High Arctic Population)	Special Concern	No Schedule	Fisheries and Oceans Canada (DFO)
Atlantic Walrus (Central/Low Arctic Population)	Special Concern	No Schedule	DFO
Beluga Whale (Cumberland Sound Population)	Threatened	Schedule 1	DFO
Beluga Whale (Eastern Hudson Bay Population)	Endangered	No Schedule	DFO

2 The Department of Fisheries and Oceans has responsibility for aquatic species.

3 Environment and Climate Change Canada (ECCC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the Migratory Birds Convention Act (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.

Terrestrial Species at Risk[2]	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility[3]
Beluga Whale (Eastern High Arctic-Baffin Bay Population)	Special Concern	No Schedule	DFO
Beluga Whale (Western Hudson Bay Population)	Special Concern	No Schedule	DFO
Fish			
Atlantic Cod (Arctic Lakes Population)	Special Concern	No Schedule	DFO
Fourhorn Sculpin (Freshwater Form)	Data Deficient	Schedule 3	DFO
Lumpfish	Threatened	No Schedule	DFO
Thorny Skate	Special Concern	No Schedule	DFO

APPENDIX B: ARCHAEOLOGICAL AND PALAEONTOLOGICAL RESOURCES TERMS AND CONDITIONS FOR LAND USE PERMIT HOLDERS

INTRODUCTION

The Department of Culture and Heritage (CH) routinely reviews land use applications sent to the Nunavut Water Board, Nunavut Impact Review Board and the Indigenous and Northern Affairs Canada. These terms and conditions provide general direction to the permittee/proponent regarding the appropriate actions to be taken to ensure the permittee/proponent carries out its role in the protection of Nunavut's archaeological and palaeontological resources.

TERMS AND CONDITIONS

1) The permittee/proponent shall have a professional archaeologist and/or palaeontologist perform the following **Functions** associated with the **Types of Development** listed below or similar development activities:

	Types of Development (See Guidelines below)	**Function** (See Guidelines below)
a)	Large scale prospecting	Archaeological/Palaeontological Overview Assessment
b)	Diamond drilling for exploration or geotechnical purpose or planning of linear disturbances	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/or Mitigation
c)	Construction of linear disturbances, Extractive disturbances, Impounding disturbances and other land disturbance activities	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/or Mitigation

Note that the above-mentioned functions require either a Nunavut Archaeologist Permit or a Nunavut Palaeontologist Permit. CH is authorized by way of the *Nunavut and Archaeological and Palaeontological Site Regulations*[4] to issue such permits.

[4] P.C. 2001-1111 14 June, 2001

2) The permittee/proponent shall not operate any vehicle over a known or suspected archaeological or palaeontological site.

3) The permittee/proponent shall not remove, disturb, or displace any archaeological artifact or site, or any fossil or palaeontological site.

4) The permittee/proponent shall immediately contact CH at (867) 934-2046 or (867) 975-5500 should an archaeological site or specimen, or a palaeontological site or fossil, be encountered or disturbed by any land use activity.

5) The permittee/proponent shall immediately cease any activity that disturbs an archaeological or palaeontological site encountered during the course of a land use operation until permitted to proceed with the authorization of CH.

6) The permittee/proponent shall follow the direction of CH in restoring disturbed archaeological or palaeontological sites to an acceptable condition. If these conditions are attached to either a Class A or B Permit under the Territorial Lands Act Indigenous and Northern Affairs Canada directions will also be followed.

7) The permittee/proponent shall provide all information requested by CH concerning all archaeological sites or artifacts and all palaeontological sites and fossils encountered in the course of any land use activity.

8) The permittee/proponent shall make best efforts to ensure that all persons working under its authority are aware of these conditions concerning archaeological sites and artifacts and palaeontological sites and fossils.

9) If a list of recorded archaeological and/or palaeontological sites is provided to the permittee/proponent by CH as part of the review of the land use application the permittee/proponent shall avoid the archaeological and/or palaeontological sites listed.

10) Should a list of recorded sites be provided to the permittee/proponent, the information is provided solely for the purpose of the proponent's land use activities as described in the land use application, and must otherwise be treated confidentially by the proponent.

Legal Framework

As stated in Article 33 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (*Nunavut Agreement*):

Where an application is made for a land use permit in the Nunavut Settlement Area, and there are reasonable grounds to believe that there could be sites of archaeological importance on the lands affected, no land use permit shall be issued without written consent of the Designated Agency. Such consent shall not be unreasonably withheld. [33.5.12]

Each land use permit referred to in Section 33.5.12 shall specify the plans and methods of archeological site protection and restoration to be followed by the permit holder, and any other conditions the Designated Agency may deem fit. [33.5.13]

Palaeontology and Archaeology

Under the *Nunavut Act*[5], the federal government can make regulations for the protection, care and preservation of palaeontological and archaeological sites and specimens in Nunavut. Under the *Nunavut Archaeological and Palaeontological Sites Regulations*[6], it is illegal to alter or disturb any palaeontological or archaeological site in Nunavut unless permission is first granted through the permitting process.

Definitions
As defined in the *Nunavut Archaeological and Palaeontological Sites Regulations*, the following definitions apply:

> *"archaeological site" means a place where an archaeological artifact is found.*
>
> *"archaeological artifact" means any tangible evidence of human activity that is more than 50 years old and in respect of which an unbroken chain of possession or regular pattern of usage cannot be demonstrated, and includes a Denesuline archaeological specimen referred to in section 40.4.9 of the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement).*
>
> *"palaeontological site" means a site where a fossil is found.*
>
> *"fossil" includes:*
> *Fossil means the hardened or preserved remains or impression of previously living organisms or vegetation and includes:*
> *(a) natural casts;*
> *(b) preserved tracks, coprolites and plant remains; and*
> *(c) the preserved shells and exoskeletons of invertebrates and the preserved eggs, teeth and bones of vertebrates.*

Guidelines for Developers for the Protection of Archaeological Resources in the Nunavut Territory

(**Note:** Partial document only, complete document at: www.ch.gov.nu.ca/en/Archaeology.aspx)

Introduction
The following guidelines have been formulated to ensure that the impacts of proposed developments upon heritage resources are assessed and mitigated before ground surface altering activities occur. Heritage resources are defined as, but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historic buildings and cairns Effective collaboration between the developer, the Department of Culture, and Heritage (CH), and the contract archaeologist(s) will ensure proper preservation of heritage resources in the Nunavut Territory. The roles of each are briefly described.

CH is the Nunavut Government agency which oversees the protection and management of heritage resources in Nunavut, in partnership with land claim authorities, regulatory agencies, and

[5] s. 51(1)
[6] P.C. 2001-1111 14 June, 2001

the federal government. Its role in mitigating impacts of developments on heritage resources is as follows: to identify the need for an impact assessment and make recommendations to the appropriate regulatory agency; set the terms of reference for the study depending upon the scope of the development; suggest the names of qualified individuals prepared to undertake the study to the developer; issue an archaeologist or palaeontologist permit authorizing field work; assess the completeness of the study and its recommendations; and ensure that the developer complies with the recommendations.

The primary regulatory agencies that CH provides information and assistance to are the Nunavut Impact Review Board, for development activities proposed for Inuit Owned Lands (as defined in Section 1.1.1 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (*Nunavut Agreement*)), and the Indigenous and Northern Affairs Canada, for development activities proposed for federal Crown Lands.

A developer is the initiator of a land use activity. It is the obligation of the developer to ensure that a qualified archaeologist or palaeontologist is hired to perform the required study and that provisions of the contract with the archaeologist or palaeontologist allow permit requirements to be met; i.e. fieldwork, collections management, artifact and specimen conservation, and report preparation. On the recommendation of the contract archaeologist or palaeontologist in the field and the Government of Nunavut, the developer shall implement avoidance or mitigative measures to protect heritage resources or to salvage the information they contain through excavation, analysis, and report writing. The developer assumes all costs associated with the study in its entirety.

Through his or her active participation and supervision of the study, the contract archaeologist or palaeontologist is accountable for the quality of work undertaken and the quality of the report produced. Facilities to conduct fieldwork, analysis, and report preparation should be available to this individual through institutional, agency, or company affiliations. Responsibility for the curation of objects recovered during field work while under study and for documents generated in the course of the study as well as remittance of artifacts, specimens and documents to the repository specified on the permit accrue to the contract archaeologist or palaeontologist. This individual is also bound by the legal requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations*.

Types of Development

In general, those developments that cause concern for the safety of heritage resources will include one or more of the following kinds of surface disturbances. These categories, in combination, are comprehensive of the major kinds of developments commonly proposed in Nunavut. For any single development proposal, several kinds of these disturbances may be involved.

- *Linear disturbances: including the construction of highways, roads, winter roads, transmission lines, and pipelines;*
- *Extractive disturbances: including mining, gravel removal, quarrying, and land filling;*
- *Impoundment disturbances: including dams, reservoirs, and tailings ponds;*

- *Intensive land use disturbances: including industrial, residential, commercial, recreational, and land reclamation work, and use of heritage resources as tourist developments.*

- *Mineral, oil and gas exploration: establishment of camps, temporary airstrips, access routes, well sites, or quarries all have potential for impacting heritage resources*.

Types of Studies Undertaken to Preserve Heritage Resources

Overview: An overview study of heritage resources should be conducted at the same time as the development project is being designed or its feasibility addressed. They usually lack specificity with regard to the exact location(s) and form(s) of impact and involve limited, if any, field surveys. Their main aim is to accumulate, evaluate, and synthesize the existing knowledge of the heritage of the known area of impact. The overview study provides managers with baseline data from which recommendations for future research and forecasts of potential impacts can be made. A Class I Permit is required for this type of study if field surveys are undertaken.

Reconnaissance: This is done to provide a judgmental appraisal of a region sufficient to provide the developer, the consultant, and government managers with recommendations for further development planning. This study may be implemented as a preliminary step to inventory and assessment investigations except in cases where a reconnaissance may indicate a very low or negligible heritage resource potential. Alternately, in the case of small-scale or linear developments, an inventory study may be recommended and obviate the need for a reconnaissance.

The main goal of a reconnaissance study is to provide baseline data for the verification of the presence of potential heritage resources, the determination of impacts to these resources, the generation of terms of reference for further studies and, if required, the advancement of preliminary mitigative and compensatory plans. The results of reconnaissance studies are primarily useful for the selection of alternatives and secondarily as a means of identifying impacts that must be mitigated after the final siting and design of the development project. Depending on the scope of the study, a Class 1 or Class 2 Permit is required for this type of investigation.

Inventory: A resource inventory is generally conducted at that stage in a project's development at which the geographical area(s) likely to sustain direct, indirect, and perceived impacts can be well defined. This requires systematic and intensive fieldwork to ascertain the effects of all possible and alternate construction components on heritage resources. All heritage sites must be recorded on Government of Nunavut Site Survey forms. Sufficient information must be amassed from field, library and archival components of the study to generate a predictive model of the heritage resource base that will:

- allow the identification of research and conservation opportunities;
- enable the developer to make planning decisions and recognize their likely effects on the known or predicted resources; and
- make the developer aware of the expenditures, which may be required for subsequent studies and mitigation. A Class 1 or 2 permit is required.

Assessment: At this stage, sufficient information concerning the numbers and locations of heritage resources will be available, as well as data to predict the forms and magnitude of impacts. Assessments provide information on the size, volume, complexity and content of a heritage resource, which is used to rank the values of different sites or site types given current archaeological knowledge. As this information will shape subsequent mitigation program(s), great care is necessary during this phase.

Mitigation: This refers to the amelioration of adverse impacts to heritage resources and involves the avoidance of impact through the redesign or relocation of a development or its components; the protection of the resource by constructing physical facilities; or the scientific investigation and recovery of information from the resource by excavation or other method. The type(s) of appropriate mitigative measures are dictated by their viability in the context of the development project. Mitigation strategies must be developed in consultation with, and approved by, the Department of Culture and Heritage. It is important to note that mitigation activities should be initiated as far in advance of the construction of the development as possible.

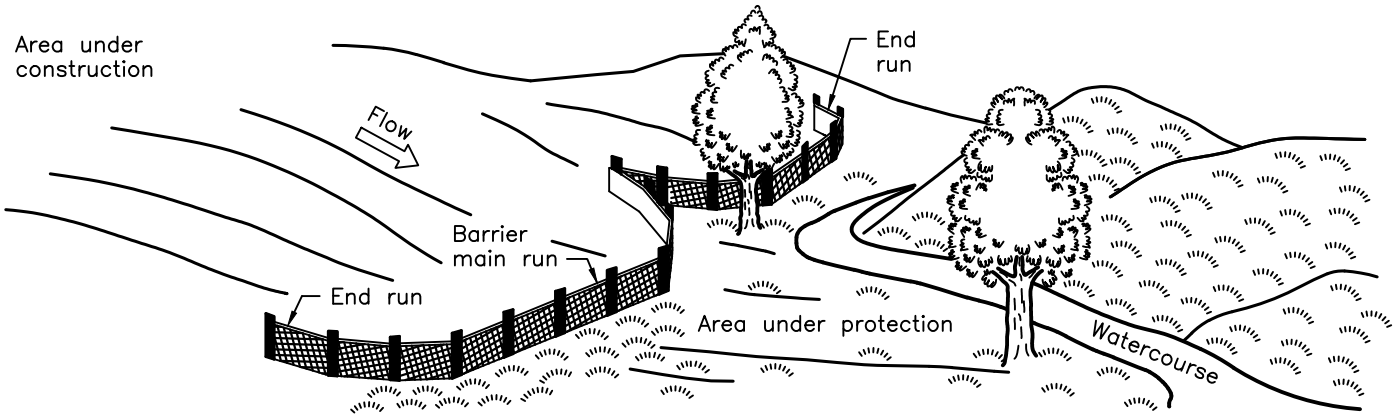
Surveillance and monitoring: These may be required as part of the mitigation program.

Surveillance may be conducted during the construction phase of a project to ensure that the developer has complied with the recommendations.

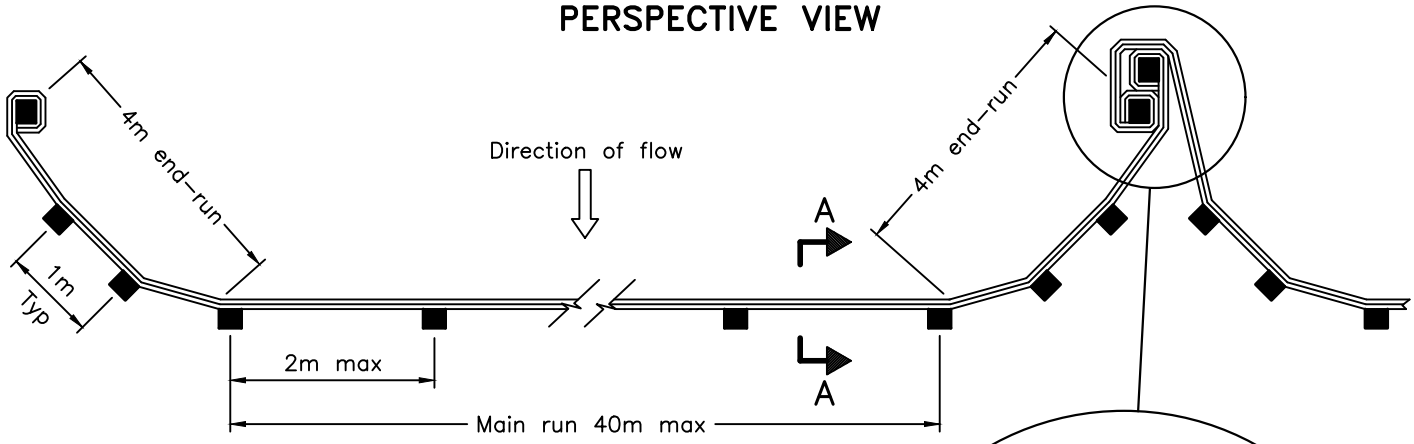
Monitoring involves identification and inspection of residual and long-term impacts of a development (i.e. shoreline stability of a reservoir); or the use of impacts to disclose the presence of heritage resources, for example, the uncovering of buried sites during the construction of a pipeline.

Appendix B

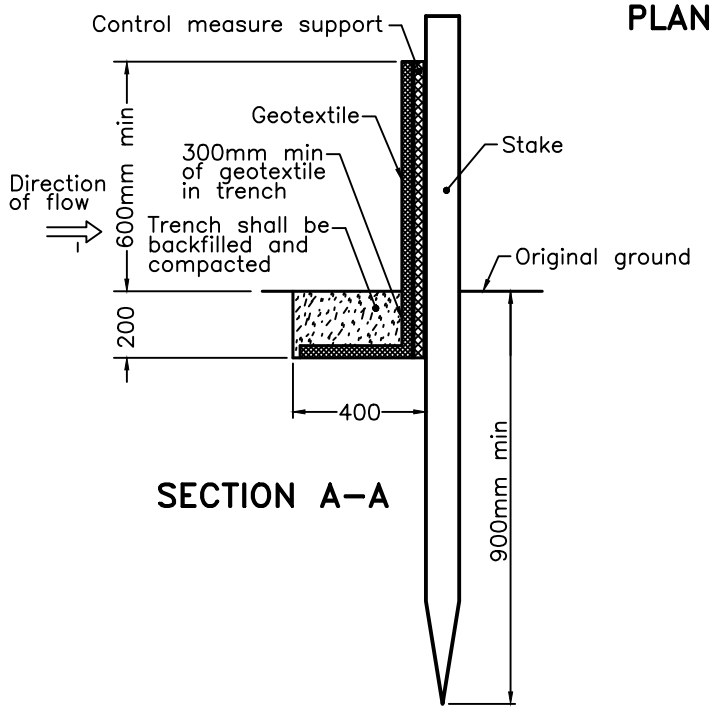
ESCP Standard Drawings



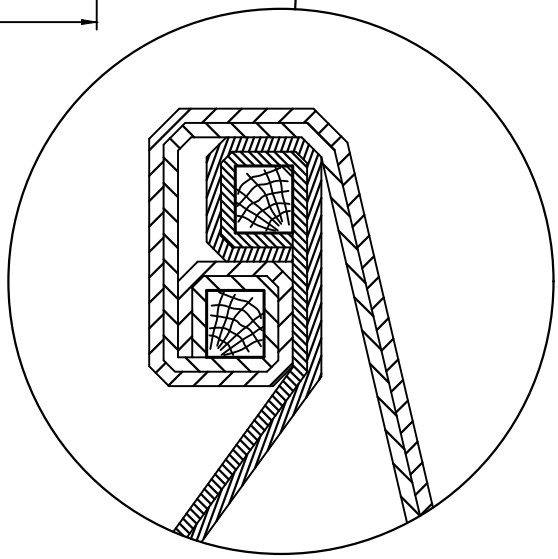
PERSPECTIVE VIEW



PLAN



SECTION A–A

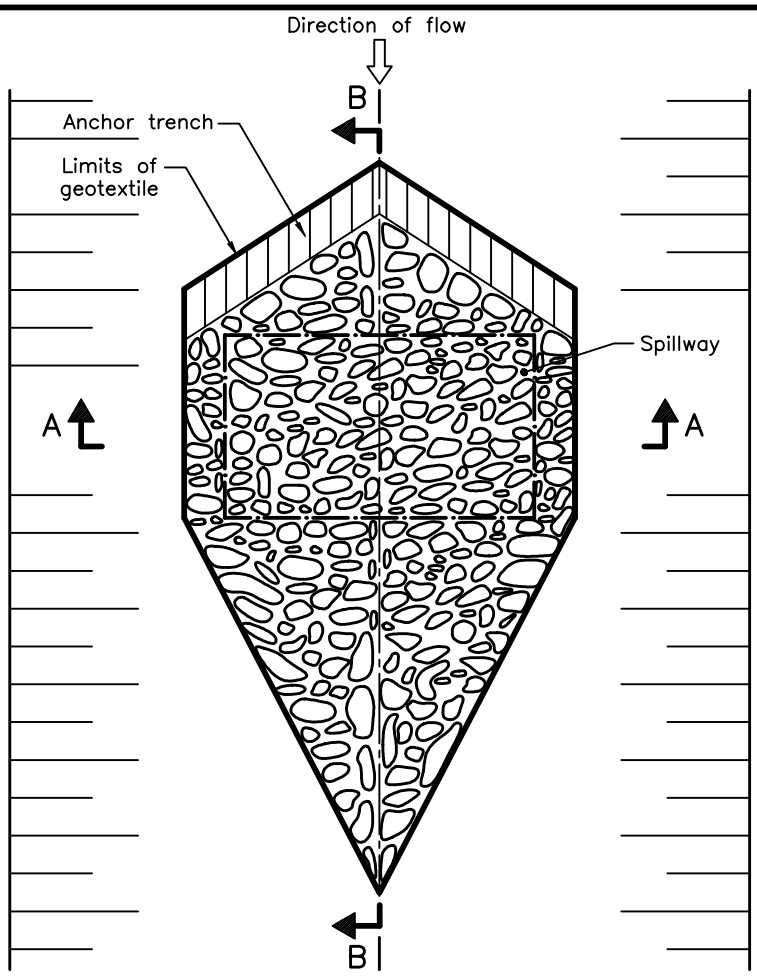


JOINT DETAIL

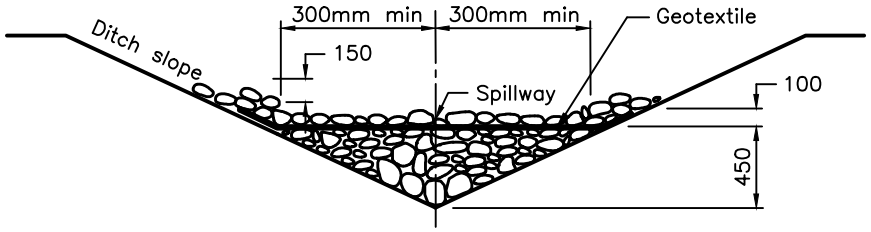
NOTE:

A All dimensions are in millimetres unless otherwise shown.

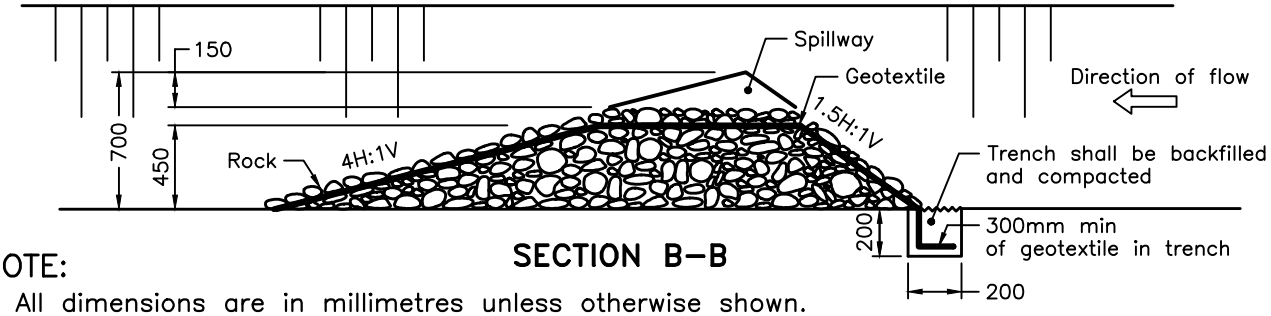
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev	3
HEAVY–DUTY SILT FENCE BARRIER			
	OPSD 219.130		



PLAN
SPILLWAY



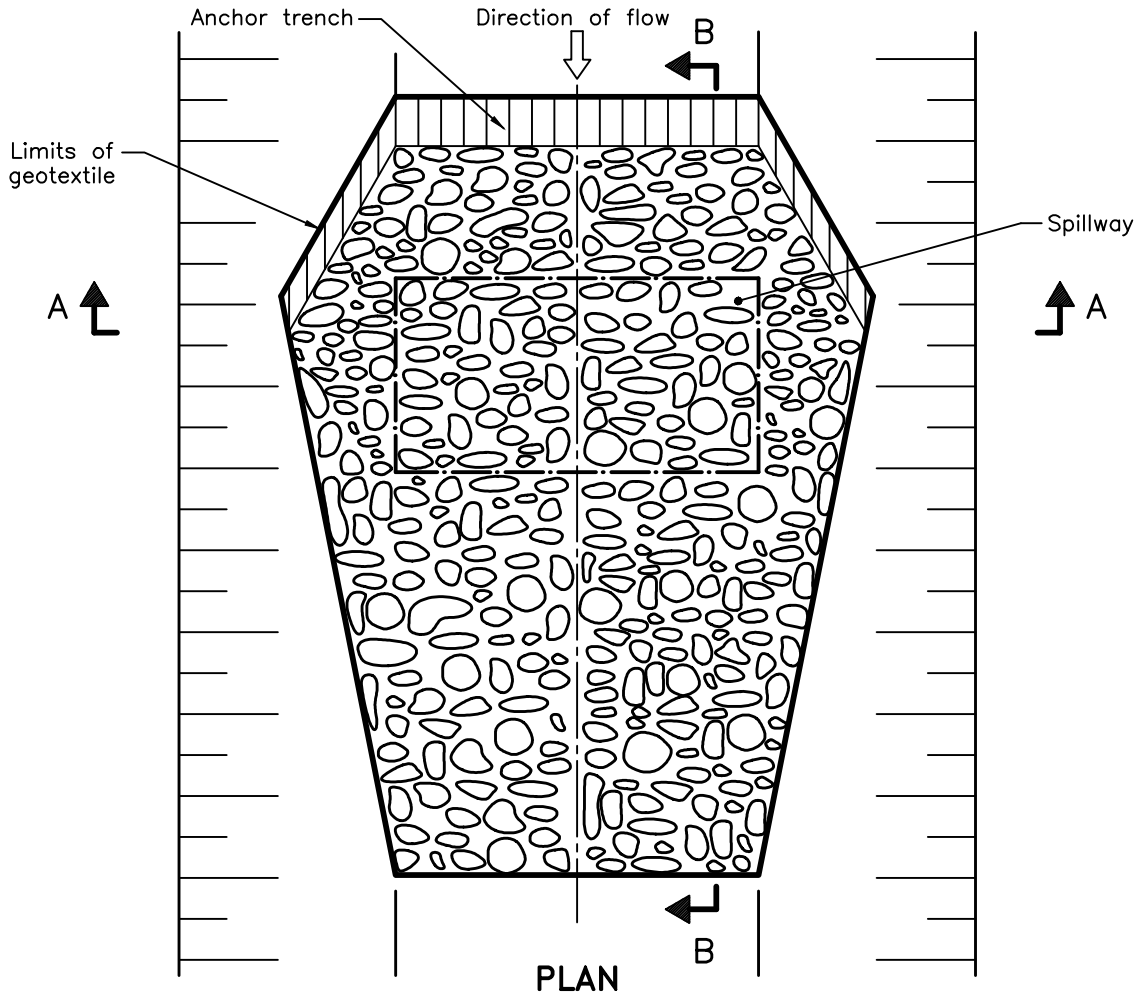
SECTION A–A



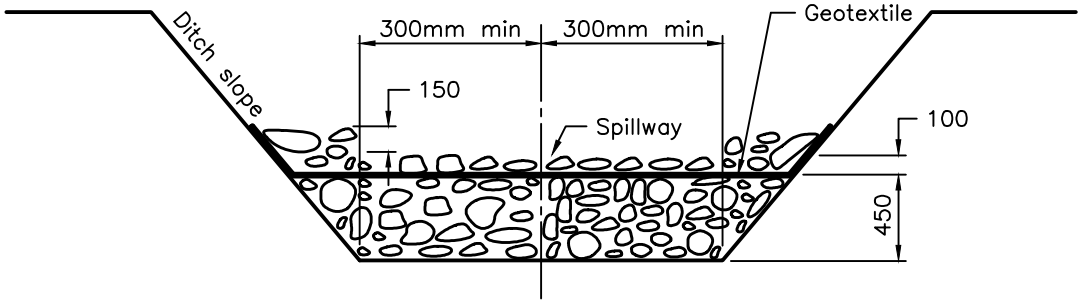
SECTION B–B

NOTE:
A All dimensions are in millimetres unless otherwise shown.

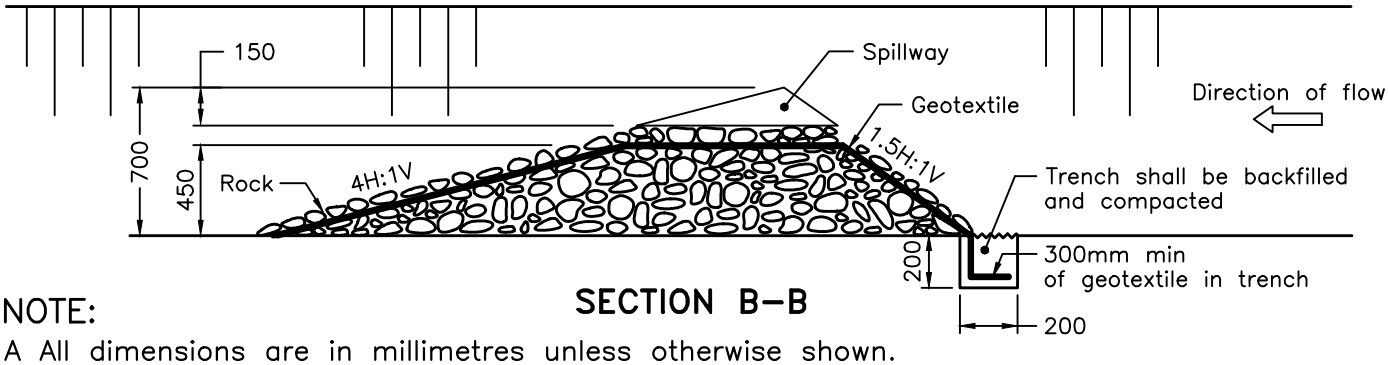
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2022	Rev	3
TEMPORARY ROCK FLOW CHECK DAM V–DITCH			
	OPSD 219.210		



PLAN
SPILLWAY



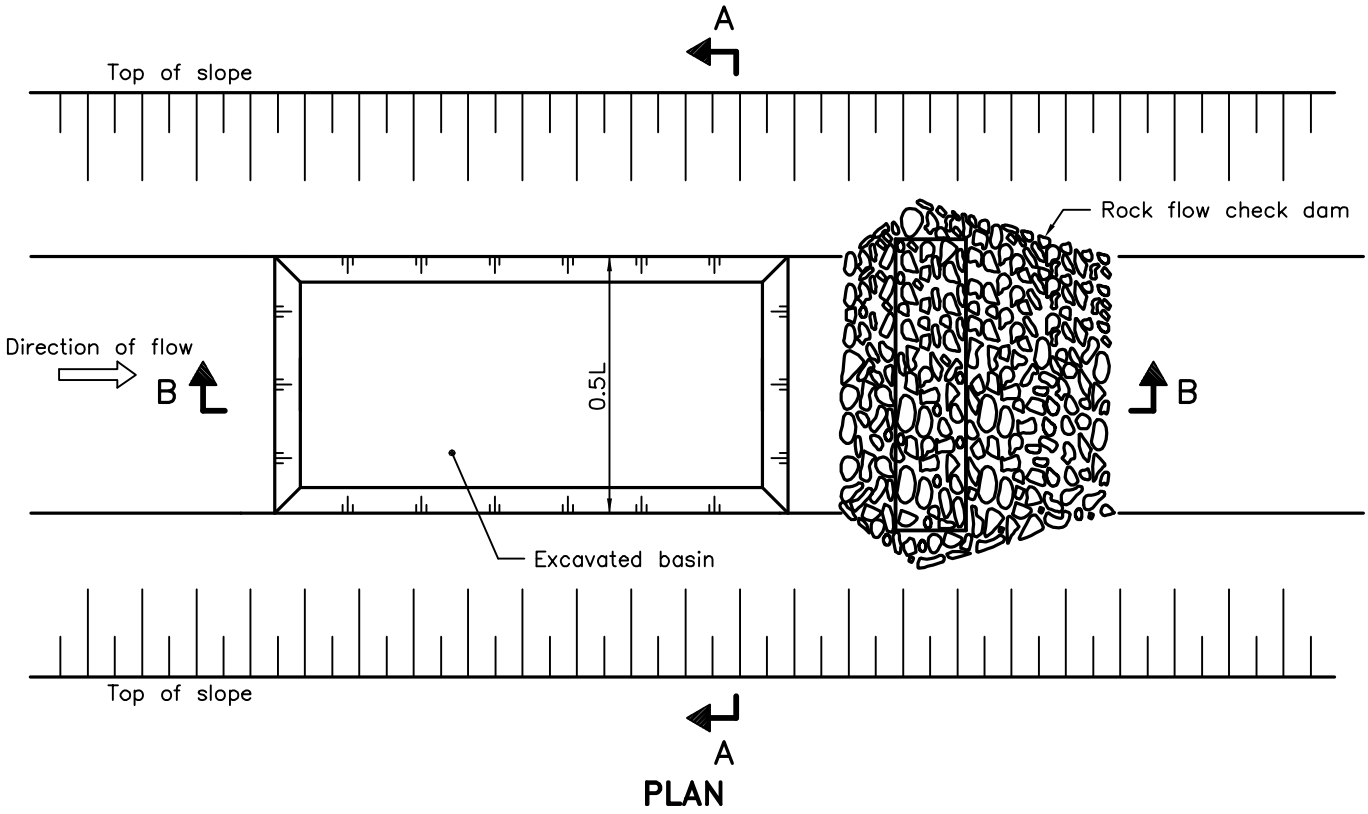
SECTION A–A



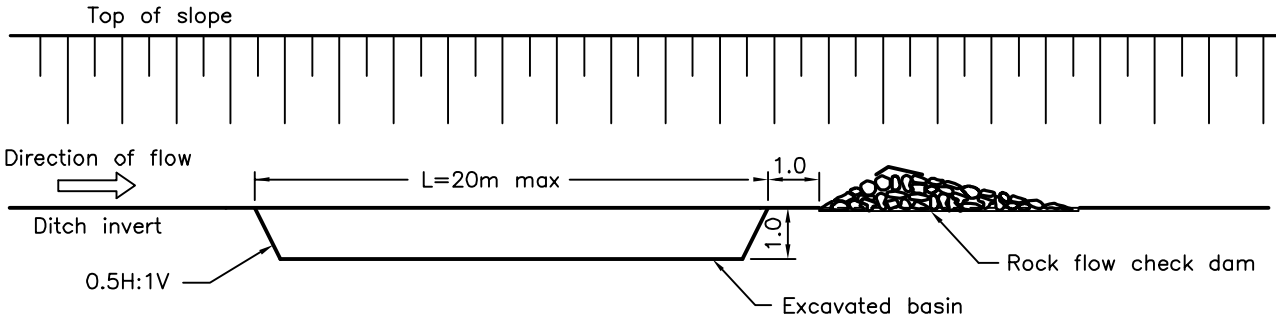
SECTION B–B

NOTE:
A All dimensions are in millimetres unless otherwise shown.

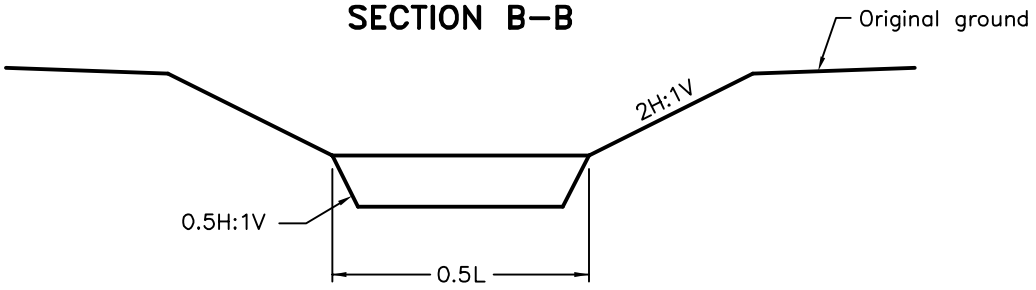
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev	3
TEMPORARY ROCK FLOW CHECK DAM FLAT BOTTOM DITCH			
	OPSD 219.211		



PLAN



SECTION B–B



SECTION A–A

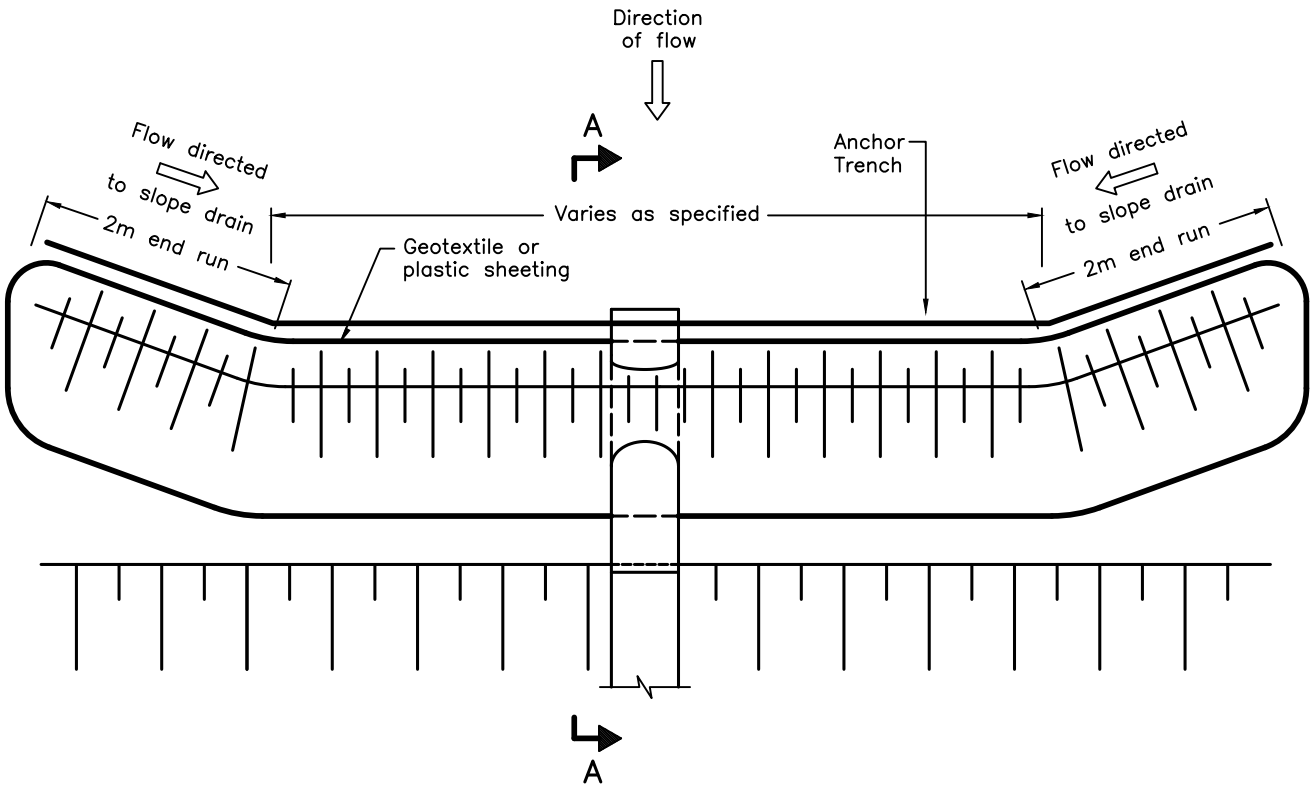
NOTES:

A Ditch cross–section upstream or downstream of sediment trap may be flat bottom or V–shaped. Flat bottom shown.

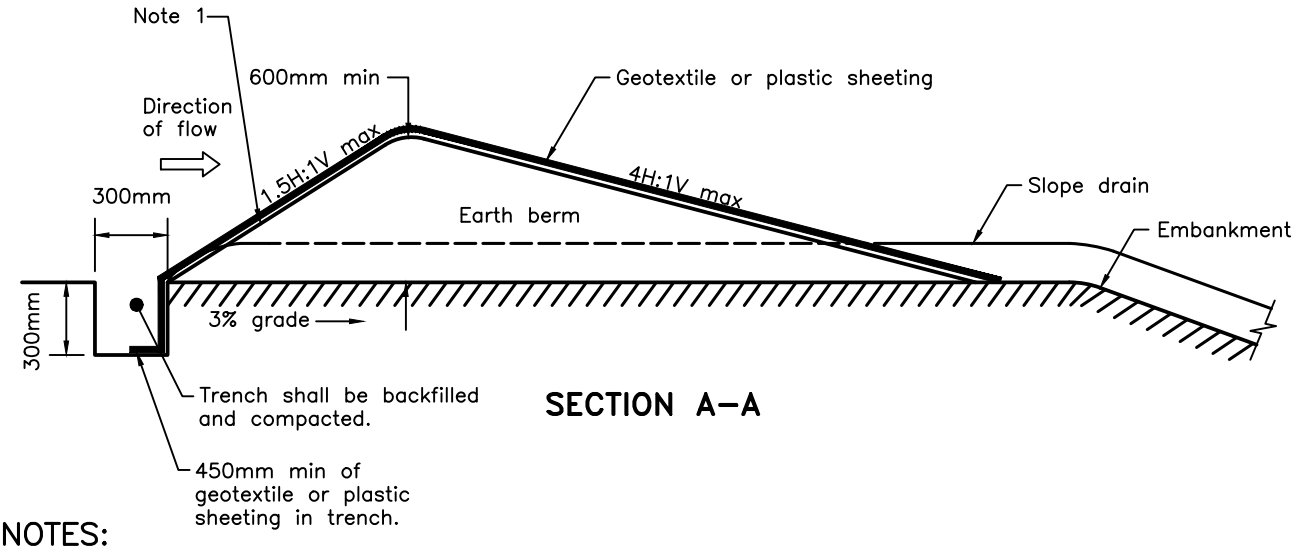
B This OPSD shall be read in conjuction with OPSD 219.210 or 219.211.

C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	2
SEDIMENT TRAP IN DITCH			
	OPSD 219.220		



PLAN



SECTION A–A

NOTES:

1 Scour protection according to OPSD 810.010.

A This OPSD shall be read in conjunction with OPSD 219.230.

B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2022	Rev	2
TEMPORARY BERM BARRIER FOR SLOPE DRAIN			
	OPSD 219.231		

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