AGNICO EAGLE

Project Execution Plan

Meliadine – Pistol Bay Falls

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1 Introduction

Considering harmful impact expected to be caused by the operations of Agnico Eagle's Meliadine project to fish habitats that cannot be completely mitigated, an offsetting plan has been proposed. The selected site to implement this offsetting plan is Pistol Bay Falls, located at the transition between freshwater and marine environment of Hudson Bay, approximately 50 kilometers south of Rankin Inlet, Nunavut, without any existing land access. The objective of that offsetting plan consists in the improvement of an Arctic-Char passageway past natural barriers to facilitate spawning.

2 Scope of work

The project consists in the modification of natural barriers impeding arctic chars to travel upstream of the falls for the purpose of spawning. The work to be accomplished consists of altering the natural ground, which consists mostly of bedrock, to increase the plunge pool depth as well as removing steps in the falls and removing obstructions in the river to improve approach to the Falls.

The work to be carried out regarding this project will be accomplished in a remote area where access is only possible by helicopter or barges. The conditions of the worksite are affected by tides evolution as the area is located at the transition point between freshwater and salt water marine environments. Parts or entirety of the work will have to be accomplished in-water. Out of water environment consists of Tundra that must be protected from damage. For that reason, footprint of the work area and temporary infrastructures should be as limited as possible.

The optimal window for construction activities, including mobilization and demobilization, is from **July 1 to August 31, 2026**. This period provides the most favorable conditions to safely and efficiently complete the work, accounting for logistical setup at the beginning of the window and site restoration and equipment removal at its conclusion. Concentrating activities within this timeframe minimizes weather-related risks, supports schedule certainty, and ensures that all construction-related tasks can be completed in an orderly and coordinated manner.

The construction project aims to remove the existing upper and lower steps by reshaping the face of the falls, reducing the riverbank slopes, and deepening the plunge pool to improve fish passage as seen on Figure 1 and Figure 2.

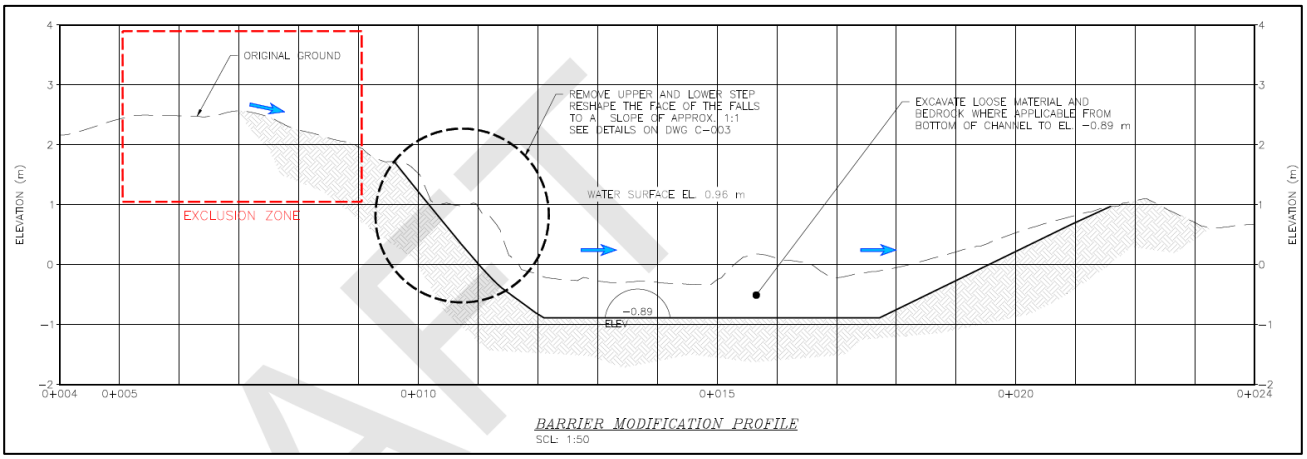

Figure 1 Barrier Modification Profile

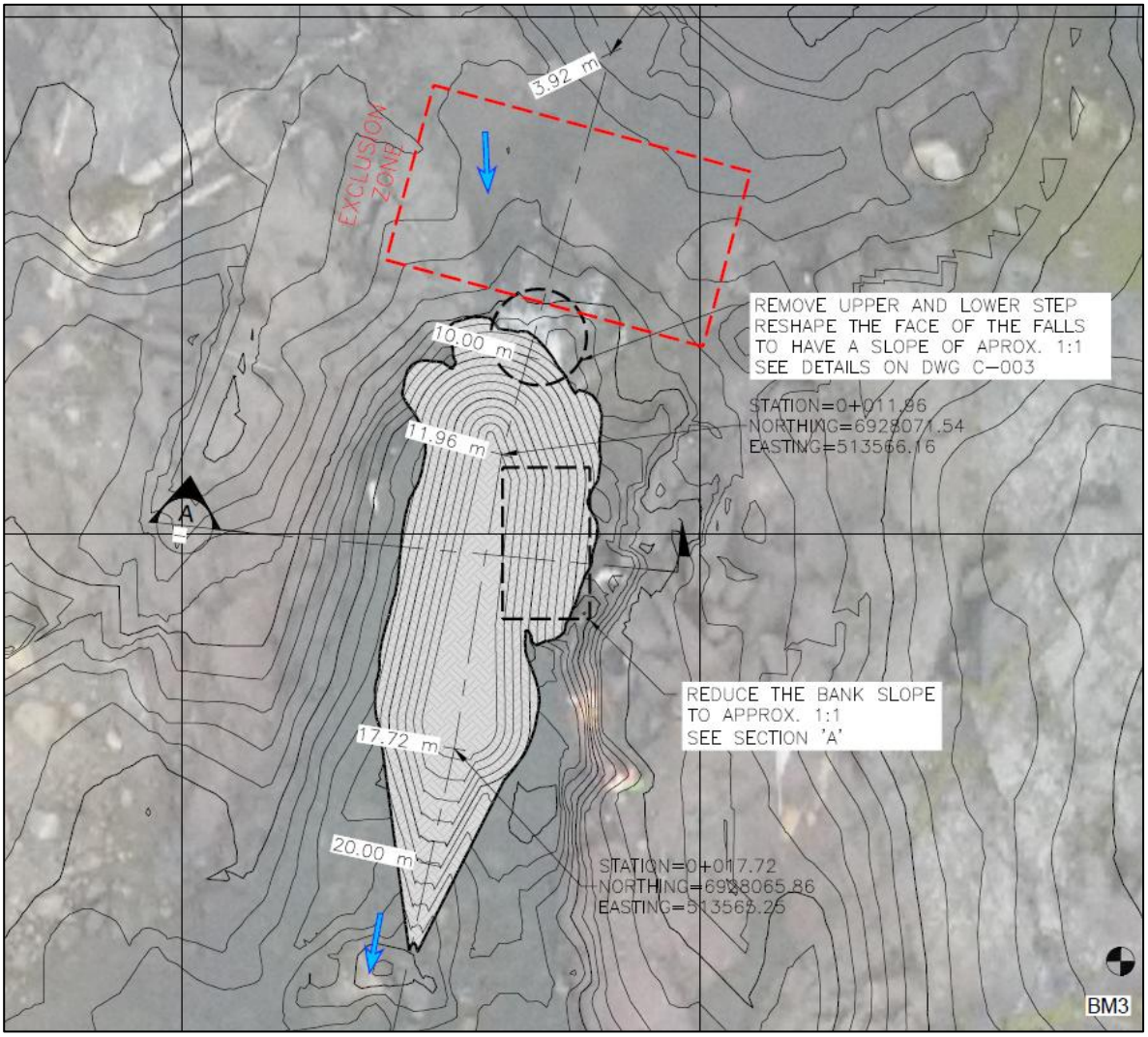

Figure 2 Construction work area

To achieve this objective in a safe, controlled, and efficient manner, the work is divided into three main construction phases, each addressing a critical component of the overall scope:

a) Water management;
b) Rock fragmentation;
c) Excavation and rock removal;

2.1 Water Management

The first step of the construction work will be to manage and control surrounding water entering the worksite from two directions: river flow and runoff on one side, and tidal movements on the other. This step is primordial and essential to allow the construction work to be accomplished, as all subsequent construction activities depend on having a controlled and stable environment. The primary objective is to establish a dry work zone (as dry as practicable given the conditions) to ensure safety, efficiency and productivity. This will be achieved through the installation of water control gates and temporary canalization systems to block, divert, and regulate incoming water. Diesel-powered pumps will be used to continuously remove water accumulating within the work area and redirect it away from the worksite. Water management will be an ongoing operation throughout the project, maintained by dedicated day and night shifts to ensure uninterrupted control.

2.2 Rock fragmentation

The second and main construction step of the project is rock fragmentation and breaking, which will directly impact both the riverbed and the face of the falls. This phase is essential to achieve the required excavation geometry and execute the required work to achieve the intended design. Rock breaking will be carried out using a combination of manual and mechanized equipment, including drills and rock splitters powered by pneumatic or hydraulic sources, allowing for controlled and precise fragmentation. A remote-controlled demolition robot will be used to safely perform work in difficult or hazardous areas, minimizing exposure to personnel. In addition, a mini excavator equipped with various attachments—such as a rock splitter, drill, and rock hammer—will be utilized to increase efficiency and adaptability in varying rock conditions. As backup and contingency measures, alternative rock-breaking methods will be available, including the use of expanding grout (such as Dexpan), should conventional methods prove insufficient in localized or particularly resistant areas.

2.3 Excavation and rock removal

The third and final step of the construction project is the rock hauling and extraction phase. This step consists of removing the fractured and broken rock material from the riverbed and the work area once fragmentation is complete. The material will be carefully loaded and transported away from the active construction zone to maintain safe and unobstructed working conditions. All extracted rock will be stockpiled at a designated location situated at a minimum of 31 m outside the high-water mark, ensuring compliance with environmental and watercourse protection requirements while preventing re-entry of material into the river system.

3 Health and Safety Program

Ensuring the health and safety of all personnel is a primary project priority, particularly given the risks associated with working in a remote environment. A structured approach will be applied to hazard identification, risk mitigation, and emergency response throughout all project phases. This section outlines the key health and safety measures in place, including Personal Protective Equipment requirements, Risk Analysis procedures, the establishment of a dedicated Rescue Team and Wildlife Monitoring protocols.

3.1 Risk Analysis and JHA

Prior to the start of construction activities, a risk assessment will be conducted with the H&S department and the selected contractor to identify hazards associated with the planned work and site conditions. This assessment will be used to develop a Job Hazard Analysis (JHA), plan work tasks in a safe and logical sequence, and establish appropriate controls. The process will also be used to confirm task-specific Personal Protective Equipment requirements before work begins.

3.2 Rescue team

Given the remote location of the project and limited access to external emergency services, an Advanced First Responder will be present on site at all times while work is underway. This individual will provide immediate medical response and coordinate initial care in the event of an incident. Additional emergency support will be available through AEM Meliadine ERT, which can be mobilized as required to provide further medical assistance, rescue capability, and evacuation support.

3.3 Bear and wildlife monitoring

Due to the potential presence of wildlife, including polar bears, a wildlife monitoring program will be instituted while work is underway. A designated trained bear monitor will be on site to actively observe surrounding areas and provide early warning of wildlife activity. Bear deterrents will be carried out and available for immediate use, and bear fencing will be installed around designated work and staging areas as required. These measures are intended to prevent wildlife interactions, protect personnel, and work will be suspended safely should wildlife pose a risk to site operations.

4 Environment

Considering the project is situated in a remote and environmentally sensitive area, where natural ecosystems remain largely undisturbed and resilient only within narrow limits, it is required that environmental considerations be fully integrated into all phases of planning and execution. Limited access, harsh climatic conditions, and the presence of sensitive habitats mean that even minor disturbances can have lasting effects. As such, the construction team places strong emphasis on minimizing its footprint, protecting local wildlife and vegetation, managing waste and emissions responsibly, and respecting the ecological balance of the area while ensuring safe and sustainable operations.

4.1 Environmental monitoring

Throughout the entire execution of the project, an independent, qualified environmental firm will be retained to ensure full respect and compliance with all applicable environmental regulations, permit conditions, and industry best practices, particularly given the in-water work and the sensitive nature of the project area. Prior to the start of construction activities, especially before any in-water work or dewatering occurs, a fish salvage operation will be conducted by qualified environmental professionals to capture and safely relocate fish from the work area to suitable habitat. In addition, a professional environmental monitor will be present on site for the entire duration of construction to provide continuous monitoring and technical support to the construction team. This role will include overseeing the installation, monitoring, and ongoing maintenance of sediment and erosion control measures, as well as ensuring adaptive management if site conditions change. This combined approach will help minimize environmental impacts and protect aquatic resources throughout the project.

4.2 Spill prevention and response

To prevent spills and ensure rapid response in the event of an environmental incident, a series of proactive measures will be implemented throughout the project. All machinery and equipment will use bio-oil and environmentally preferred fluids where feasible to reduce potential environmental impacts. Fuel, oils, and other hazardous substances will be temporarily stored in designated containment areas equipped with secondary containment systems to prevent leakage into the surrounding environment. Refueling procedures will be strictly controlled, including the use of spill trays, and trained personnel, to limit the risk of accidental releases. Refueling and storage activities will be conducted at safe setback distances from the high-water mark of nearby water bodies to protect aquatic environments. In addition, spill kits and appropriate spill-cleaning supplies will be readily available at all work areas, and personnel will be trained to respond immediately and effectively should a spill occur, ensuring prompt containment, cleanup, and reporting.

4.3 Dexpan expanding grout

Dexpan is proposed as a contingency rock breaking method to be employed, if required, during the project where conventional methods are not feasible or may result in increased environmental effects. Its use will be limited to specific situations requiring a controlled, low-impact approach to safely advance construction activities while minimizing disturbance to the surrounding environment.

Dexpan is a non-explosive demolition agent that provides clear environmental advantages over traditional blasting methods. By relying on controlled expansive pressure rather than detonation, it eliminates vibration, fly rock, air overpressure, and shock waves, thereby reducing the potential for disturbance to fish habitat, wildlife, nearby structures, and local communities. The absence of blasting also reduces noise levels and prevents the release of combustion-related gases. The controlled and precise nature of the process minimizes overbreak and limits the generation of excess material. All rock fractured using Dexpan will be fully excavated and removed from the work area to ensure no residual material or unmanaged debris remains in place.

Dexpan is primarily composed of calcium dihydroxide ($Ca(OH)_2$). During its expansive reaction, the material undergoes controlled hydration and crystallization, generating pressure through volume increase. The resulting products are predominantly calcium hydroxide (Ca(OH)) and hydrated calcium silicates, along with minor amounts of naturally occurring mineral compounds such as calcium carbonate ($CaCO_3$), aluminum oxide, silica, magnesium compounds, and iron oxides. These constituents are similar to materials commonly found in cementitious products and natural soils, contributing to the relatively low environmental risk when appropriate containment and handling measures are implemented.

Dexpan has been successfully implemented in comparable projects in Canada and internationally under stringent environmental oversight. Canadian examples include the *Quinsam Fish Habitat Restoration*[1], *Shebeshekong River Fish Habitat Restoration*[2][3], and the *Fraser River rock slide blockage*[4], where its application was accepted, including under Fisheries and Oceans Canada (DFO) review and oversight. Internationally, Dexpan was utilized on the *Davington Burn project in Scotland*[5], where strict environmental protection requirements necessitated low-impact construction methods. These examples demonstrate that Dexpan is a proven and accepted alternative to conventional rock breaking techniques in environmentally sensitive settings and in projects requiring regulatory compliance.

5 Logisitics

5.1 Transportation of equipment and material

The project construction site being in a remote area with no land-based access, all logistical support will be required to be conducted by air. Transportation of all materials, equipment, tools, fuel, and personnel will be carried out exclusively by helicopter. All flights will operate on a round-trip basis from Rankin Inlet, which will serve as the primary staging and mobilization hub. Careful planning and coordination will be required to optimize helicopter loads, minimize flight frequency, and ensure safe and efficient delivery of construction resources while reducing environmental disturbance in the project area.

5.2 Site infrastructures

Only limited and temporary infrastructure will be installed at the project site to minimize disturbance. Facilities will be restricted to an exploration tent that will serve as a weather shelter, small office workspace, and lunchroom for personnel. Essential support infrastructure will include temporary fuel reserves, portable generators for power supply, and a designated helicopter landing pad to support aerial access. No permanent or heavy civil work is planned as ground disturbance will be limited to minor boulder removal where necessary to clear landing pad, work area and safety zones. No camp or sleeping facilities will be established, and no overnight stays will occur on site, with all personnel returning to Rankin Inlet daily. Communications will be maintained exclusively via satellite systems to ensure reliable contact given the remote location.

[1] Quinsam-Fish-Passage-Construction-Report-Final.pdf
[2] 'Channelling' hope — Restoring fish passage in the Shebeshekong River
[3] Shebeshekong River Fish Habitat Restoration Using Dexpan — Dexpan
[4] 'Limited' natural salmon passage established at Fraser River rockslide: officials | Globalnews.ca
[5] Removing the Davington Weir on the Border Esk - YouTube

6 Barrier modification sequence

6.1 Step 1: Site mobilization

The first step of the project will be mobilization, which will be carried out entirely by helicopter due to the remote location of the site. This phase will include flying in all required materials, equipment, and tools from Rankin Inlet, as well as installing temporary infrastructure such as shelters, workspaces, and essential support facilities. Mobilization by helicopter will ensure the site is safely and efficiently prepared before construction activities begin.

6.2 Step 2: Fish salvage

The second step of the project will involve isolating the work area and conducting a fish salvage operation in coordination with a contracted, qualified environmental firm. The work area will be isolated prior to construction using appropriate measures, and fish will be captured using fish nets and safely relocated outside the work zone in accordance with regulatory requirements and best practices. At the same time, sediment control measures will be installed, including turbidity curtains, to prevent the migration of suspended sediments and protect downstream aquatic habitat before any in-water activities begin.

6.3 Step 3: Water management

The third step of the project will focus on water management within the isolated work area. This will involve removing water from the enclosed zone to create dry and stable working conditions. River flow will be temporarily blocked and diverted around the work area using water gates, and tidal return will be prevented as required, using a combination of water control gates and pumps. These measures will allow construction activities to proceed safely while maintaining control of water movement and minimizing impacts outside the isolated zone.

As illustrated in Figure 3, watergates (shown in red) will be installed both upstream—at the crest of the falls—and downstream to regulate, respectively, river inflows and tidal influences. These structures will provide effective control of water levels and enable isolation of the designated work area. To facilitate river diversion, flow will be redirected through large-diameter HDPE pipes (indicated in blue), conveying water from the top of the falls to the downstream reach. All locations of water management infrastructure are approximate and subject to field verification as final installation shall be field fit as required.

Figure 3 Water Management and Flow Control Layout

6.4 Step 4: Rock fragmentation

The fourth step of the project will involve rock breaking and fragmentation within the isolated work area. Mechanical methods will be used primarily, relying on a combination of manual techniques such as rock splitters and drills, as well as small, low-impact machinery including a remote demolition robot and a mini excavator. If required, contingency methods may be implemented, including the use of Dexpan expansive grout, to safely and effectively fracture rock while avoiding vibration and minimizing environmental disturbance.

In conjunction with the use of Dexpan, specific measures will be implemented to prevent any release of material into the surrounding environment and to ensure proper management of contact water. Dexpan will be **encapsulated within poly-sleeves** (plastic liners), which prevent direct contact between the product and the surrounding environment and significantly reduce the risk of contaminant release. All work areas will be controlled and monitored to contain any slurry and residue generated during the process. Contact water will be collected and pumped out of the excavation area, then transported back to site for appropriate treatment and disposal in accordance with applicable environmental regulations. Additionally, rock broken using Dexpan will be fully excavated and removed from the site to avoid any residual material or uncontrolled debris remaining in place.

These measures will ensure that all by-products are properly managed, preventing contamination of soil and watercourses while maintaining compliance with environmental protection standards.

6.5 Step 5: Excavation and rock removal

The fifth step of the project will involve excavation and rock removal from the riverbed. Broken rock generated during the fragmentation phase, as well as any existing loose material, will be excavated to achieve the required design geometry. Removed rock will be placed into large containment bags (supersacks) on site for temporary storage and future hauling, allowing for efficient material management while keeping the work area organized and controlled.

6.6 Step 6: Rock hauling and stockpiling

The sixth step of the project will involve rock hauling and stockpiling. Bagged rock material will be lifted from the riverbed by helicopter and transported to a selected stockpile location nearby. The stockpile area will be situated outside the 31-metre high-water mark setback to protect the watercourse. Rock will be placed and shaped in an appropriate geometry to ensure stability and to allow the stockpile to blend as naturally as possible with the surrounding environment.

7 Equipment Requirements

The following list identifies the equipment required to support site preparation, construction activities, material handling, worker accommodation, and ongoing operations. All equipment has been selected based on project scope, site access constraints, climatic conditions, logistical limitations, safety requirements and the need for self-sufficiency throughout the duration of the project.

All equipment utilized throughout the construction project will operate using environmentally friendly fluids where feasible, including biodegradable hydraulic oils and low-toxicity lubricants. Equipment will be subject to strict inspection and maintenance protocols to ensure optimal performance and to minimize the risk of mechanical failures. Preventative maintenance measures will be rigorously applied to reduce the likelihood of leaks, spills, or releases of contaminants.

7.1 Construction equipment

- Helicopter;
- Mini excavator;
- Demolition robot;
- Air compressors;
- Generators;
- Hydraulics power packs;
- Water pumps;
- Watergates;
- Jack leg drills;
- Hydraulic rock splitters;