Management Plan

Erosion and Sediment Control Plan: Isachsen High Arctic Weather Station (HAWS), Nunavut (Kuukyoak, 2026)

KUUKYOAK

NUNAVUT IMPACT REVIEW BOARD (NIRB)

Erosion and Sediment Control Plan: Isachsen High Arctic Weather Station (HAWS), Nunavut

Prepared on behalf of Environment and Climate Change Canada (ECCC)

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1.0 Introduction

1.1 Key Information

This management plan applies to the operations as part of remediation work being carried out at the Isachsen High Arctic Weather Station (HAWS) Remediation Project (the Project) by Environment and Climate Change Canada (ECCC), and their contractors. This Erosion and Sediment Control Plan (Plan) is being submitted to support the Nunavut Impact Review Board (NIRB) review process. The contracting authority for this project is Public Services and Procurement Canada (PSPC). This current version of the Plan is conceptual in nature, and a more comprehensive plan will be submitted by the successful Remediation Contractor with specific means and methods. This current plan is considered as the minimum standard that submittals will be measured against.

Table 1 provides key information relating to the project.

Table 1. Key Project Information

Project Name and Location	Isachsen High Arctic Weather Station (HAWS) Remediation Project (the Project) 78° 46’ 40” N, 103° 31’ 40” W
Federal Department	Environment and Climate Change Canada
Contact	Owen Wade Tel: 613-981-8652 owen.wade@ec.gc.ca
Project Office Location	351 St. Joseph Boulevard, 18th Floor, Gatineau, QC K1A 0H3
Contractor	TBC
Contractor Contact Information	TBC
Contractor Address	TBC

1.2 Site Description

The Isachsen HAWS property (Site) is within the Directory of Federal Real Property (DFRP) land reserve (DFRP # 075272) which has a total area of approximately 450 hectares (ha). The Site is centered at a latitude of 78 degrees 46 minutes 40 seconds N and longitude of 103 degrees 31 minutes 40 seconds W

facing Louise Bay, on the west-facing side of Ellef Ringnes Island, NU. The Site is occupied by approximately 22 permanent structures with associated infrastructure, equipment, and supplies. Other features previously identified at the Site, in addition to the 22 structures, include a 1,500-metre-long runway, former water and sewage infrastructure, fuel storage and distribution facilities, power generation equipment, two on-site waste disposal areas (WDAs), fuels tanks, thousands of empty/partially empty drums, other abandoned equipment, and debris.

Originally established in 1947 as one of five joint Canadian–American High Arctic Weather Stations, the Site supported meteorological monitoring, including upper-atmosphere observations using weather balloons. Operations transitioned fully to Canada in 1972 and continued until the station was decommissioned in 1978. Since then, the site has operated as an automated weather station and has intermittently supported scientific research and training activities. Due to its extreme remoteness, access has been almost exclusively by air.

1.3 Project Description

The Project is expected to span until 2030. A summary of the Project related activities is provided in the below:

- Mobilization of personnel, equipment, materials and support facilities, including fuel;
- Collection of borrow material (aggregate) to produce airstrip upgrades, road upgrades, construct a new engineered on-site landfill, cap the existing waste disposal areas, construct a camp pad and temporary waste storage area, and general site re-grading.
- Construction of a temporary accommodations camp;
- Construction of a new engineered landfill designed to accommodate the existing waste on site.
- Demolition of structures and buildings including removal and management of hazardous materials;
- Collection, cleaning and crushing of barrels;
- Collection and sorting of debris;
- Segregation, consolidation, packaging and containerization of all equipment, materials and debris (hazardous and non-hazardous);
- Deconstruction of the temporary accommodations camp and packaging for removal;
- Demobilization of unused fuel brough to site for project activities, materials and equipment off-site including transportation of containerized soil and hazardous/non-hazardous waste and debris; and,
- Disposal of waste materials in the on-site engineered landfill or off-site facilities.

1.4 Roles and Responsibilities

Table 2 outlines the roles and responsibilities for personnel working on-site with respect to the management of the potential risks associated with erosion and sediment control.

Table 2. Roles and Responsibilities

Role	Responsibility
Contractor Project Manager	Design and oversee work methods to control erosion and sediment generation on site and ensure the necessary resources are available to implement this plan.
Site Supervisor	Implement and supervise the work at the site as set out in this plan.
	Ensure that monitoring inspections are conducted throughout the day and at the beginning and end of every workday.
	Consult with Project Manager for mitigation measures in response to potential issues.
	Maintain communications with Project Manager to ensure monitoring and control measures are appropriate.
Employees, sub-contractor, and visitors	Follow the requirements set out in this plan.

1.5 Key Contacts

Table 3 provides contact information for key personnel related to the Project.

Table 3. Key Contacts

Name	Position	Contact #	Organization
Owen Wade	ECCC Project Manager	Tel: 613-981-8652 Owen.wade@ec.gc.ca	ECCC - 351 St. Joseph Boulevard, 18th Floor, Gatineau, QC K1A 0H3
Ryan Breivik	PSPC Project Manager	Tel: 587-443-2699 Ryan.breivik@tpsgc-pwgsc.gc.ca	PSPC - 9700 Jasper Avenue, Edmonton, AB T5J 4C3

Name	Position	Contact #	Organization
TBC	Contractor Project Manager		
TBC	Contractor Environment, Health, and Safety Coordinator		
TBC	Site Supervisors		

1.6 Purpose and Scope

The purpose of this Plan is to outline general measures to minimize soil erosion and sediment transport during remediation activities at the Site. This Plan is intended to reduce the potential for sediment migration to surrounding land and waterbodies during ground disturbance, excavation, material handling, and grading activities.

This Plan is conceptual in nature and is intended to define the minimum standard for erosion and sediment control. Detailed, site-specific erosion and sediment control measures, including locations, materials, and installation methods, will be developed and implemented by the Contractor based on final design and site conditions.

1.7 Training

Employees and subcontractors will be trained on the sediment and erosion control measures outlined in this Plan and will be responsible for installing the measures as required under the direction of the Site Supervisor. Personnel will also be required to be trained on any Safe Work Procedures that are associated with the installation of these sediment and erosion control measures. Visitors to the site will be given an induction on any erosion and sediment control measures relevant to their work.

2.0 Erosion and Sediment Control Measures

2.1 Potential Risk Scenarios

The following scenarios have the potential to cause erosion and sediment migration on this Project:

- Erosion due to wind action on exposed soil
- Erosion due to rainstorm events
- Erosion associated with demolition, access road construction and hauling activities
- Erosion from excavated and stockpiled material

- Work near water
- Erosion due to other reclamation activities

Prior to remediation activities, an assessment of sensitive areas shall be conducted, with follow up recommendations on control measures and monitoring frequency. The various erosion and sediment control measures are discussed in Section 2.4.

2.2 Water Management

To effectively control and manage surface water on the site, particular attention must be given to how water enters, traverses, and leaves the site. Additionally, emphasis must be placed on events that are associated with increased volumes of water such as significant weather events, freshet and intermittent snowmelt. To effectively manage the surface water on site, ECCC and the remediation contractor will adhere to the water management practices set out in this plan. The following high-level mitigations should be implemented during project execution with respect to water management:

- All activities performed around an area of environmental concern (e.g. waterbody) should be scheduled to occur during periods associated with a lower risk of erosion, such as dry periods.
- Materials likely to increase sediment load, such as topsoil and fine-grained material, should not be moved during heavy rain events (if possible).
- Areas with high potential for erosion will be inspected to ensure controls are in place and maintained prior to anticipated rain events.
- Ponding or any other standing water should be controlled and eliminated whenever possible. If standing water is observed on the site, a plan should be developed and implemented by the Site Supervisor for its removal.
- Features located near the shoreline should not be disturbed until adequate erosion controls are in place to prevent the mobilization of sediment. Any work performed near the shoreline should be monitored.
- Work shall be conducted in a manner that limits the alteration of existing water flow paths and avoids installation of non-essential erosion and sediment controls.

Water that originates from within the site boundaries through precipitation or groundwater discharge shall be regularly assessed for turbidity. Any sediment laden water in exceedance of the discharge criteria will be contained or filtered to prevent the release of sediments off-site. Any methods for containment or retention of sediment laden water shall be implemented under the direction of the Site Supervisor, and may include the following:

- Diverting surface run-off via diversion berms or ditches to sediment traps or sumps
- Pumping of sediment laden water in small quantities to a vegetated surface which has been prepared with filtration measures, such as dewatering bags, to allow for natural infiltration
- Installation of silt fencing or wattles to prevent surface flow from leaving the Project footprint without interception

2.3 Stockpile Management

Based on the volume of aggregate required as part of the overall remediation, stockpiles will likely be required to temporarily store aggregate produced from the on-site borrow source. As stockpiles are generally composed of uncompacted material that sits above grade, there is an increased risk of erosion, particularly if the aggregate is composed of fine-grained material. To mitigate risk associated with stockpiles, the following measures will be implemented under the direction of the Site Supervisor:

- Material will be stockpiled and placed in a suitable designated location where erosion potential is minimized through the addition of erosion and sediment control measures to prevent the mobilization and transport of the stored material.
- If stockpiles are utilized for extended periods and the potential for soil transport exists, erosion and sediment control measures will be installed around the toe of the stockpile to prevent soil transport.
- Where soil is stored in a berm or large stockpile, gaps in the berm should be installed to facilitate seepage and runoff. Erosion and sediment control measures should be installed to control this runoff.

2.4 Site-Specific Control Measures

The Site is located in a High Arctic environment characterized by limited vegetation cover, exposed soils, permafrost conditions, and short active seasons. Natural drainage patterns may be poorly defined, and erosion risk is typically associated with localized disturbance, snowmelt, precipitation events, and wind.

Due to these conditions, erosion and sediment control measures will focus on minimizing disturbance, protecting permafrost, managing surface runoff, and stabilizing exposed materials. Table 4 presents a list of the general measures to be implemented.

Table 4. General Erosion and Sediment Control Measures

Measure	Details
Minimization of Disturbance	Disturbance of soils will be limited to areas required for remediation activities. Previously disturbed areas will be used where practicable.
Material Stockpiling	Where excavation is required, soils will be temporarily stockpiled in stable areas located outside of natural drainage pathways and away from waterbodies to reduce the potential for erosion and sediment transport.
Waterbody Setbacks	A minimum setback distance of 100 m will be maintained from waterbodies for soil disturbance, stockpiling, and material handling activities, where feasible. Direct discharge of sediment-laden water to waterbodies will not be permitted.

Measure	Details
Sediment Control	Where required, temporary controls such as silt fencing, berms, snow or soil windrows, or other suitable barriers will be installed downgradient of disturbed areas to intercept and contain sediment.
Snow Management	Snow will not be stockpiled in locations where meltwater may mobilize sediment into surrounding areas or waterbodies. Snow management will consider anticipated meltwater flow paths.

In addition to the high-level erosion and sediment control measures listed in Table 4, the following sections describe specific control measures in more detail, including considerations for selection and installation.

2.4.1 Silt Fencing

Silt fencing is a class of products comprised of woven geotextile mounted vertically with rods or stakes, which acts to intercept surface water runoff and prevents the passage of sediments while allowing water to pass. This type of fencing is suitable for areas which see sediment laden water in non-concentrated surface flows. The type of fencing installed should be based on the amount of surface runoff expected at each location based on the manufacturers' instructions. Sediment accumulating at the base of a silt fence should be removed on a regular basis to maintain function.

2.4.2 Sediment Traps

Sediment traps may be used to retain sediment laden water on-site to allow sediment to drop out of suspension. Sediment traps are typically located at the end of ditch lines or diversion berms, and prior to water leaving the site. Sediment traps may require armouring at the inlet and should involved either a rock apron or filtration measure such as wattles or spring berms at the outlet point. Accumulated sediments should be removed on a regular basis to ensure the sediment trap maintains capacity.

2.4.3 Fibre Logs (Wattles)

Fibre logs (wattles) may be used similarly to silt fencing to intercept non-concentrated sheet flows and should be installed as directed by the manufacturers' instructions. Wattles are typically made from straw or wood fibres. Small sections of wattles may be used as temporary check dams in ditches, or as filters at the outlet of sediment traps. Wattles and logs may also be used to divert small amount of surface flow to sediment traps.

2.4.4 Spring Berms

Spring berms are a fabric around a tubular frame with skirts extending from both the upstream and downstream sides of the tube. Spring berms may be used as check dams, energy dissipators, and

filtration devices (similarly to wattles) on the site. Spring berms should be installed in accordance with the manufacturers' instructions.

2.4.5 Rolled Erosion Control Products (RECPs)

RECPs include products that are made of either natural fibres or synthetic materials formed into a blanket or mat. RECPs may be placed on slopes or edges of features or in ditches to prevent sediment mobilization. RECPs should be installed in accordance with the manufacturers' instructions. When used in ditches or in areas encountering higher flows, check slots should be incorporated into the installation.

2.4.6 Drainage Ditches

Ditches may be used on-site to transport larger quantities of water to a sump or sediment trap. Ditches are best utilized to intercept the flow of water and redirect it to a location where it may be retained and released gradually. Drainage ditches should consist of a channel and an appropriately sized berm on the downslope side. Ditches should be designed to include a stable outlet into a sediment trap or sump and should not concentrate surface flows beyond the capacity of the receiving erosion and sediment control measure. Check dams may be required within ditches to control water velocity and erosion potential. Temporary drainage ditches should be of a sufficient size to accommodate a 10-year rain event.

2.4.7 Berms

Berms may be utilized to prevent the passage of water to a feature, or to redirect water to an erosion and sediment control structure. Berms may be constructed at the crest of a slope to prevent excess water from passing over the slope, reducing the risk of erosion. Berms should be installed along with a sediment trap or sump.

2.4.8 Check Dams

Check dams may be constructed out of sandbags, rocks, poly ridges or other devices such as spring berms. Check dams are installed in ditches and drainage channels to reduce the velocity of water and prevent scouring and erosion of the ditch. Clean non-acid generating aggregate that has been approved by the Owner's Representative may also be used for check dam construction. Check dams should be inspected regularly and cleaned as needed by a trained crew.

2.4.9 Dust Control

Dust production on all access trails and stockpiles should be kept to a minimum throughout project execution. During dry periods with excessive dust generation potential, water should be sprayed onto travel surfaces to reduce the risk of airborne particulates.

2.4.10 Winterization

Project work is expected to occur over a multi-year period, therefore the impact of winter climate conditions needs to be considered with respect to erosion and sediment control measures. Erosion and sediment control measures should address the possibility of periods of melting and frost heave. Snow accumulation on the site may also be managed to reduce the amount of potential melt, as this may help reduce the erosion risk during freshet. Prior to melt, particular notice should be taken of any installed erosion and sediment control measures that may have been damaged by snow loading over the winter.

2.4.11 Freshet

Prior to the onset of freshet each year, erosion and sediment control measures must be installed to manage the increased surface runoff associated with this period. It is typically during this melt period when the ground softens and the potential for erosion on the site is greater. Additional site inspections during freshet should be performed as required to verify the function of erosion and sediment control measures.

3.0 Inspection and Maintenance

Disturbed areas and erosion and sediment control measures will be inspected on a regular basis during active work and following significant precipitation or snowmelt events. Inspections will focus on identifying evidence of erosion, sediment migration, and effectiveness of installed controls. Any deficiencies or failures in control measures will be addressed promptly through repair, replacement, or implementation of additional measures as required. Accumulated sediment will be removed from control features as necessary to maintain effectiveness.

A monitoring program will be put in place to ensure the effectiveness of all erosion and sediment control measures. An erosion assessment will first be performed prior to commencement of work to determine the risk of erosion, determine control measures to put in place, type of monitoring and frequency of monitoring required during the work. The assessment includes an evaluation of the likelihood of erosion and then recommends erosion and sediment control measures including the type of controls to install, type of monitoring required and the frequency of the monitoring required.

Copies of documentation related to erosion and sediment control will be maintained on-site for the duration of the Project. A close-out assessment will be conducted to evaluate the stabilization of work areas following the remediation to determine if further monitoring and/or erosion protection will be required. The close-out assessment will be conducted by a team composed of the Site Supervisor and Owner's Representative. If the assessment concludes that all work areas have been adequately stabilized, erosion and sediment controls can be removed. If the assessment concludes that further monitoring is required to verify stability of the area, a monitoring plan will be developed and incorporated into the overall Long-Term Monitoring for the Site.

4.0 Adaptive Management

Erosion and sediment control measures will be adapted as required based on observed site conditions, weather events, and the effectiveness of implemented controls. The Contractor will be responsible for refining and implementing site-specific measures to ensure effective erosion and sediment control throughout the Project.

The remediation contractor will keep contingency supplies readily available on-site. The Site Supervisor will determine the type and quantity of supplies based on the type of work and the extent of disturbed areas.