

Government of Canada

Norman Wells Wharf Rehabilitation – Environmental Management Plan

Prepared by:

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Permit and License Conditions

Permit #	Conditions of Permit	How plan meets conditions in permit
S16L8-002	Part D: Waste and Water Management	Outlines the requirements to manage waste and water at the Site

Distribution List

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Revision History

Revision #	Date	Revised By:	Revision Description
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Conformity Table

Date Submitted	Date Approved	Version	Reason for Submission

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Executive Summary

AECOM Canada Ltd. (AECOM) was retained by Public Services and Procurement Canada (PSPC)/Government of Canada (GOC) to complete this Environment Management Plan (EMP) for the rehabilitation and maintenance work for the Canadian Coast Guard (CCG) wharf located in Norman Wells, Northwest Territories (NT) Canada. The EMP outlines the environmental aspects understood to be potentially impacted by the proposed construction activities and provides mitigation measures to reduce the potential for adverse effects to the identified environmental components. There are two primary construction phases to the CCG wharf project: in water dredging to improve vessel access to the wharf and wharf rehabilitation. Construction activities for the dredging work are anticipated to occur during February-March 2018 to make use of ice thickness and minimal water depths for dredging access. Further, the wharf rehabilitation work is anticipated to start and finish in the summer of 2018 when the Mackenzie River levels are low and the upper 2 m of the sheet piling of the wharf are in the dry environment and above the waterline.

Glossary & Acronyms

AECOM	AECOM Canada Ltd.
CCG	Canadian Coast Guard
CEAA	Canadian Environmental Assessment Agency
DFO	Department of Fisheries and Oceans Canada
EA	Environmental Assessment
EMP	Environmental Management Plan
EPS	Environmental Protection Service
GOC	Government of Canada
INAC	Indigenous and Northern Affairs Canada
MSDS	Material Safety Data Sheets
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	Mackenzie Valley Resource Management Act
NT	Northwest Territories
NWTWA	Northwest Territories Waters Acts and Regulations
SCP	Spill Contingency Plan
SECP	Sediment and Erosion Control Plan
WMP	Waste Management Plan

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Appendix A. Site Plan

1. Introduction & Background

This Environmental Management Plan (EMP) has been developed for the rehabilitation and maintenance dredging work for the Canadian Coast Guard (CCG) wharf located in Norman Wells, Northwest Territories (NT) Canada (the Project). This plan has been prepared to validate the “Type B” Water Licence (NO. S16L8-002) currently issued to the Department of Fisheries and Oceans (DFO). Further, this plan has been developed in accordance with the water license application requirements prescribed by the Mackenzie Valley Resource Management Act (MVRMA), The Northwest Territories Waters Acts and Regulations (NWTWA), Indigenous and Northern Affairs Canada (INAC) and the Sahtu Land and Water Board (SLWB).

The CCG Wharf in Norman Wells, originally constructed in the early 1980’s, consists of an earthfill contained within sheet piles driven into the riverbed. Over the years, the top of the sheet pile has suffered substantial ice damage during spring break-up. Some maintenance was carried out to repair ice damage during the first decade. During the past 2 decades, annual maintenance has consisted of clearing the ice of the wharf after breakup and replacing gravel that was washed off the surface. Maintenance dredging has also occurred every few to several years to remove sediments deposited in front of the wharf. The last dredging program was completed in 2015.

The CCG Wharf in Norman Wells is currently owned by the Department of Fisheries and Oceans (DFO). In 2017, DFO initiated a project to rehabilitate the sheet pile and complete maintenance dredging in front of the wharf to improve vessel access at low water.

The project was originally tendered in August 2017, but did not proceed at that time because the single tender received was higher than the budget. The project is now scheduled for completion during 2018. It is anticipated that dredging will occur during February working off the ice cover (see **Appendix A** for a Site Plan for the dredging project). Repair of the sheet pile is scheduled to occur during summer of 2018.

Discussions that occurred earlier on the project confirmed the nature of the activities did not require an Environmental Assessment (EA). The Department of Fisheries and Oceans Canada (DFO) completed a Canadian Environmental Assessment Agency (CEAA) 2012 Project Effects Determination – Self Assessment, and prepared a report of the findings. The DFO Real Property Safety and Security (RPSS) Regional Director approved this self-assessment with described mitigation. Recent discussions with the Fisheries Protection Branch, DFO, confirmed that the change in plans does not warrant further assessment and mitigation is to be the same as before following the DFO Guidance for Projects Near Water.

As the project proceeds for completion in 2018, AECOM Canada, Inc. (AECOM) was retained by the GOC to examine the effects that the conduct of this Project may have on the environment and the social, economic and cultural well-being of the residents and communities in accordance with the Mackenzie Valley Resource Management Act (MVRMA), and the requirements of the Sahtu Land and Water Board (SLWB).

During the construction phases of the Project the following activities are planned:

Dredging (February – March 2018)

- Mobilization of equipment and materials,
- Thickening the ice by flooding, starting 2 to 3 weeks prior to dredging;
- Dredging 15 m out beyond the existing footprint of the wharf to a depth of approximately 1-2 m,
- Transportation of dredging spoils off site to the town landfill

Wharf Repairs (Summer 2018)

- Mobilization of equipment and materials,
- Staging of equipment and materials,
- Excavation of materials from the dry environment of the existing wharf,
- Removal of the upper 2 m of sheet-piling of the wharf,
- Welding new sheet-piling,
- Concrete pouring within the wharf, and
- Backfilling the wharf.

1.1 Objectives & Project Scope

This Environmental Management Plan (EMP) describes the Project construction activities, the potential impacts to environmental components and the recommended mitigation measures to reduce adverse effects on environmental components. The potential impacts of the Project are assessed for the following environmental components:

- Soils and Terrain,
- Wildlife and Wildlife Habitat,
- Water Resources,
- Vegetation,
- Fish and Fish Habitat,
- Air Quality and Noise, and;
- Accidents and Malfunctions.

1.2 Related Documents

The following documents are associated to the environmental management and protection for the Project:

- Waste Management Plan (WMP),
- Spill Contingency Plan (SCP),
- Sediment and Erosion Control Plan (SECP), and;
- Written permission for disposal of excavated materials.

2. Overview

The EMP is intended to provide all parties involved in the construction with an understanding of the general environmental setting of the Project, specific requirements pertaining to the EMP, and the general best management practices that are advised to minimize environmental impacts over the course of construction.

Operations will consist of dredging during the winter to improve vessel access followed by wharf repair in the summer as shown in **Table 1**.

Table 1. Proposed Project Schedule

Task	Time Required	Estimated Commencement	Estimated Completion
Dredging Work	TBD	February/March 2018	March 2018
Wharf Rehabilitation	TBD	Summer 2018	Fall 2018

2.1 Dredging

The dredging program is currently scheduled to occur in January with construction of an access on the ice cover, followed by dredging to be completed in February-March 2018, working off the ice cover. The dredging project will include the following activities:

- Starting about 20 to 30 days prior to dredging, the contractor will remove the snow off the ice cover and flood a work area 2-3x the width of the impacted area. Access to shore will be at the downstream edge of the wharf.
- When there is sufficient ice thickness to support the weight of the construction equipment, the backhoe will walk out along the access up to the upstream most part of the face of the wharf and work his way downstream. The procedure will involve breaking the ice cover and placing the broken ice blocks along the offshore part of the dredged area.
- The backhoe will then excavate the riverbed to a target elevation of 37.0 m. Excavated material will be placed into trucks that will back in behind the backhoe, and taken downstream along the access and stockpiled at the Town's landfill for use as cover.
- As the backhoe completes dredging in an area, he will move downstream to the next area and proceed as described above until the entire area has been dredged. The ice cover will be allowed to form naturally as the backhoe moves on to the next area.

2.2 Wharf Rehabilitation

The wharf rehabilitation is scheduled for construction during the summer of 2018 when water levels are low. As this work is to be tendered in 2018, the specifics of the construction activities have yet to be finalized; however it is anticipated that no work will occur in the water. Wharf rehabilitation will include the following:

- Excavation of the top 2.5 m of gravel around the inner edge of the sheet-pile,
- Cutting and removal of the top 2m of existing damaged sheet-pile,
- Welding of the sheet-pile,
- Repairing tie-backs,
- Backfilling the excavation,
- Casting a concrete collar around the inner edge of the sheet-pile,
- Welding ladder rungs between sheet pile corrugations at 4 locations, and;
- Placing 20 mm minus gravel on the upper deck of the wharf.

Through the implementation of this EMP it is anticipated that adverse effects to environmental factors (such as land, water, air, wildlife, fish and vegetation) will be negligible and that site aesthetics will not be compromised.

3. Environmental Components and Mitigation Measures

3.1 Soils and Terrain

Construction activities associated with the project components such as moving equipment, dredging grading and stockpiling may cause increased levels of sedimentation to be washed into the river, dust generation, and soil compaction. These increases have the potential to alter drainage patterns, reduce water retention and filtration, with consequential effects on the density of local vegetation.

Through the implementation of the following mitigation measures it is anticipated that effects on soils and terrain will be negligible:

- Stockpile soil such that it maintains existing surface water drainage patterns to the extent possible.
- Limit the height of stockpiled materials.
- Keep stockpiles and equipment within the immediate work areas to avoid compaction of soils outside of the project footprint.
- Re-grade affected areas following construction to maintain/restore drainage patterns, as required.
- Separate stockpiled materials based on soil types and horizons to reduce soil mixing.
- Implement sediment and erosion management to on land activities to prevent the migration of soils outside the Project Site.

3.2 Wildlife and Wildlife Habitat

An increase in noise levels resulting from construction related activities could adversely affect wildlife and how they utilize the area.

Through the implementation of the following mitigation measures it is anticipated that effects on wildlife and wildlife habitat will be negligible:

- Noise generating construction works will be avoided at night when possible.
- Machinery will be maintained and in good working order with mufflers installed on equipment that is gas-powered.

3.3 Vegetation

The location of the proposed works is currently disturbed, therefore, it is anticipated that effects to terrestrial vegetation will be minimal and will be limited to the immediate area.

Through the implementation of the following mitigation measures it is anticipated that effects on vegetation will be negligible:

- Limit the extent of vegetation removal.

- Vegetate exposed soils with native seed mixes when construction activities are complete and as soon as weather permits.

3.4 Fish and Fish Habitat

The proposed works at the CCG wharf will include construction activities that have the potential to impact fish and fish habitat through direct loss of life, loss or disturbance of habitat.

Implementation of the following mitigation measures it is anticipated that effects on fish and fish habitat:

- Avoid removal of aquatic vegetation when possible.
- Minimize the area of disturbance to the bed or banks of the Mackenzie River, to the extent practicable.
- Follow agreed upon practices for working in or near water, such as those developed by DFO.

3.5 Air Quality and Noise

Construction activities including using equipment on site, transporting materials to and from the site, excavations and backfilling will produce dust and exhaust emissions that could lead to a decline in the air quality at the location of the proposed work:

Through the implementation of the following mitigation measures it is anticipated that effects on Air Quality and Noise will be negligible:

- Vehicles and equipment will be properly maintained.
- Construction vehicles and equipment will be maintained in good working condition and inspected regularly.
- Vehicle idling will be kept to a minimum.
- Implement sediment and erosion management measures to prevent the migration of soils outside of the immediate work area.
- Limit material stockpile heights.
- Keep disturbed/exposed areas to a minimum.

3.6 Accidents and Malfunctions

All phases of the proposed works will be conducted in accordance with applicable regulatory requirements to prevent accidents and malfunctions. Additional precautionary measures that will be implemented to further minimize the potential for accidents and malfunctions to occur are described in the following sections.

3.6.1 Worker Safety and Health

All workers associated with this project and while on site, will be required to wear Personal Protection Equipment (PPE) at all times including hard hat, protective eyewear, gloves, steel-toed boots and protective clothing suitable for the weather.

3.6.2 Spills

Environmental effects from spills of deleterious substances, such as diesel fuel, lubricants, oils and hydraulic fluids, improper storage and handling procedures can increase the likelihood of accidental releases of hazardous materials. Accidental releases can affect air, surface water, groundwater, and soils with consequential effects on terrestrial and aquatic flora and fauna as well as human health and safety.

To reduce the adverse effects of spills on the natural areas during construction, the following mitigation measures will be implemented:

- Implement a Spill Contingency Plan and ensure that all onsite personnel understand its contents.
- Clearly identify spill kits on site and ensure they are stocked with materials sufficient to manage spills in both the aquatic and terrestrial environments.
- Fuels, oils, or other hazardous materials will be stored only in designated areas.
- Vehicles and equipment will be maintained to minimize leaks. Regular inspections of hydraulic fuel systems on machinery will be completed on a routine basis; when detected, leaks will be repaired immediately.
- Storage and disposal of liquid wastes and filters from equipment maintenance, and any residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with any existing regulations.
- Waste oils, fuels, and hazardous wastes (if any) will be handled in a safe manner. Staff will be required to transport, store, and handle all such substances as recommended by the suppliers and/or manufacturers and in compliance with applicable Federal, Provincial, and Municipal regulations.

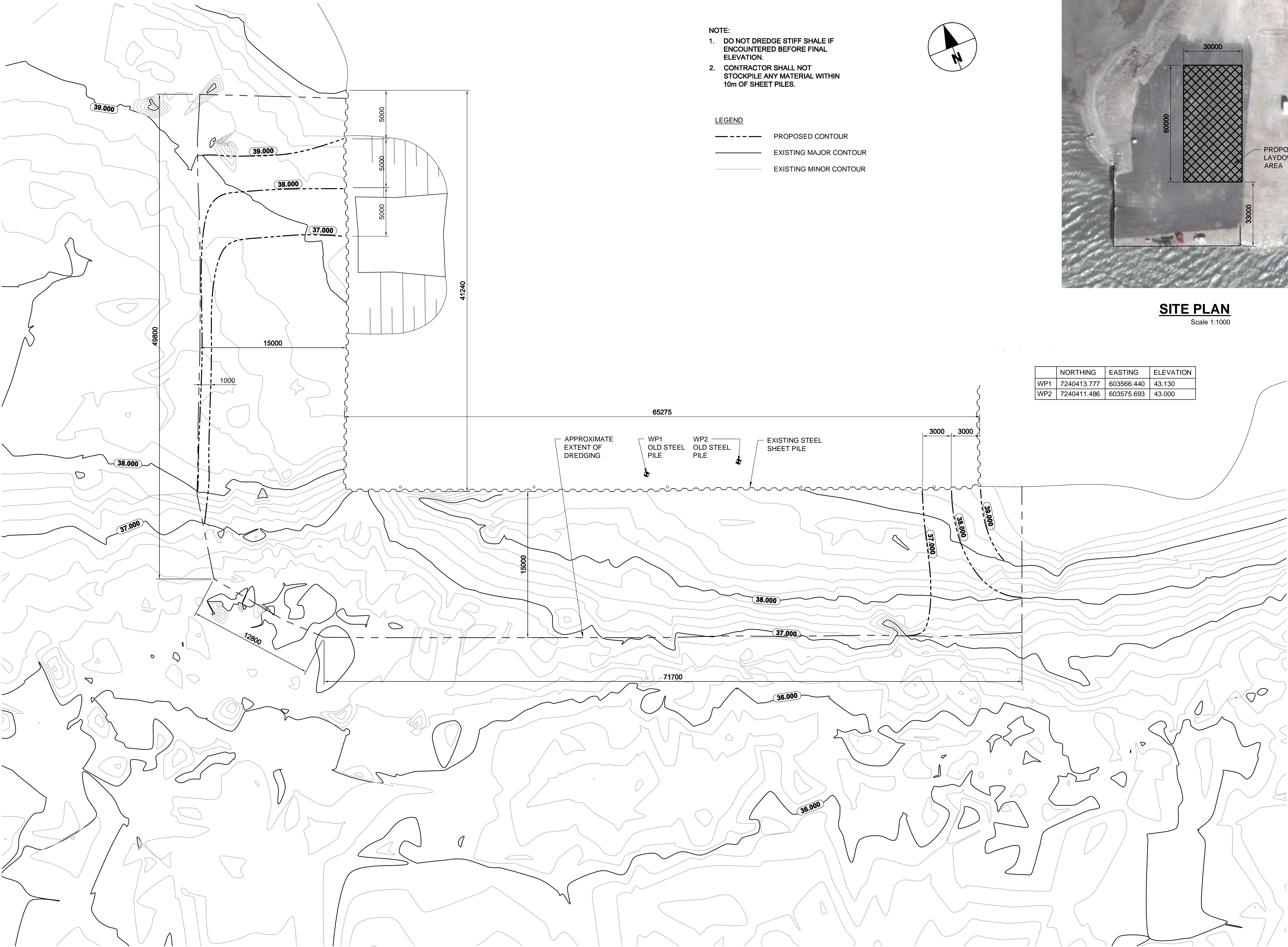
4. Monitoring

4.1 Monitoring

The plan will be monitored by the site supervisor and/or an INAC inspector and communicated on a regular basis to management and regulators

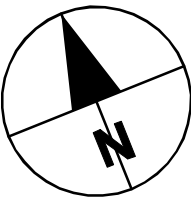
5. Appendices

Appendix A – Site Plan



- NOTE:
- DO NOT DREDGE STIFF SHALE IF ENCOUNTERED BEFORE FINAL ELEVATION.
 - CONTRACTOR SHALL NOT STOCKPILE ANY MATERIAL WITHIN 10m OF SHEET PILES.

- LEGEND
- PROPOSED CONTOUR
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR



SITE PLAN
Scale 1:1000

	NORTHING	EASTING	ELEVATION
WP1	7240413.777	603566.440	43.130
WP2	7240411.486	603575.693	43.000

PLAN
Scale 1:200

AECOM

5		
4		
3		
2		
1		
0	ISSUED FOR REGULATORY PERMIT APPLICATION	2017/12/04
Revision	Description	Date
Client		client

**PUBLIC WORKS AND
GOVERNMENT SERVICES
CANADA**

Project titleProjet

**NORMAN WELLS CCG
WHARF REPAIRS**

Designed byConçu par
AJP

Drawn byDessiné par
KC

Approved byApprouvé par
EBL

PWGSC Project ManagerAdministrateur de Projets TPSCG
ML

Drawing titleTitre du dessin

**SURVEY PLAN
FOR DREDGING
REGULATORY APPLICATION**

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
R.084190.001	S01 OF 1	0

