



**Water Licence N5L8-1840  
Annual Report**

Mould Bay Causeway Reconstruction

March 20, 2020

Prepared on behalf of licensee:

Environment and Climate Change  
Canada

Prepared for:

Inuvialuit Water Board

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<b>Revision</b>	<b>Description</b>	<b>Author</b>		<b>Quality Check</b>		<b>Independent Review</b>	
0	Draft	OH	RP	AF		EB	
1	Final	OH	RP	AF		EB	



**WATER LICENCE N5L8-1840 ANNUAL REPORT**


This document entitled Water Licence N5L8-1840 Annual Report was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Public Services and Procurement Canada (the "Client").

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## Abbreviations

ECCC	Environment and Climate Change Canada
HAWS	High Arctic Weather Station
IWB	Inuvialuit Water Board
MBCR Project	Mould Bay Causeway Reconstruction Project
N/A	Not Applicable
WL	Water Licence (N5L8-1840)



Introduction

## 1.0 INTRODUCTION

The Mould Bay Causeway Reconstruction (MBCR) Project was developed to re-establish access to the High Arctic Weather Station (HAWS) in Mould Bay, Prince Patrick Island located in the Inuvialuit Settlement Region of the Northwest Territories with coordinates 76° 14' 23.43" North and 119° 21' 17.96" West. Access is required for future remediation work. The weather station and its airstrip are separated by a creek, aptly named Station Creek. Access from the airstrip to the weather station was provided by an engineered fill causeway with six 1200-millimetre (mm) culverts. These culverts had failed causing a washout in the airstrip's western threshold. Following the washout, access to the HAWS was via water crossing only. The purpose of the project was to establish a new culvert system within the washout channel to allow for overland access of remediation equipment and personnel to the former HAWS.

The MBCR Project removed and replaced some of the existing culverts and established a new culvert installation within the washout channel, which has become the creek's primary flow channel. Demobilization from the site was completed on September 30, 2019.

On April 15<sup>th</sup>, 2019 the Inuvialuit Water Board (IWB) issued a Type B Water Licence (N5L8-1840) to Environment and Climate Change Canada (ECCC) for the completion of the MBCR Project. Included within the permit were terms and conditions that must be adhered to during the planning, construction, operation, and closure of the MBCR Project. This report is intended to fulfill the requirements of Part B, Item 1 of the licence pertaining to the submission of an Annual Report by March 31, 2020. The reporting period is April 15 to December 31, 2019.

## 2.0 WATER USE & WASTE DISPOSAL

**The Annual Report shall contain ... (a) the monthly and annual quantities in cubic metres (m<sup>3</sup>) of fresh water obtained from all sources**

**Table 2.1: Monthly camp water use**

Month	Quantity (m <sup>3</sup> )	Source
April	0.0	N/A
May	0.0	N/A
June	0.0	N/A
July	9.7	Drinking Water Lake
August	32.6	Drinking Water Lake
September	26.0	Drinking Water Lake
October	0.00	N/A
November	0.0	N/A
December	0.0	N/A
Total	68.3	



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## Water Use & Waste Disposal

Drinking Water Lake is the informal name of the small lake north of Station Creek to the north and east of the airstrip as described in the Supplemental Information Report Page 2.1, section 2.1 with coordinates 76° 14' 37.10" North and 119° 17' 49.34" West.

**The Annual Report shall contain ... (b) the monthly and annual quantities in cubic metres (m3) of grey water and toilet waste disposed of and associated disposal location.**

**Table 2.2: Monthly camp grey water production**

Month	Quantity Grey Water (m <sup>3</sup> )	Grey water Disposal Location	Quantity Toilet Waste (m <sup>3</sup> )	Toilet Waste Disposal Location
April	0.0	N/A	0.0	N/A
May	0.0	N/A	0.0	N/A
June	0.0	N/A	0.0	N/A
July	9.7	In-ground sump	0.2	KBL Environmental Ltd. Yellowknife, NT
August	32.6	In-ground sump	0.8	KBL Environmental Ltd. Yellowknife, NT
September	26.0	In-ground sump	0.6	KBL Environmental Ltd. Yellowknife, NT
October	0.0	N/A	0.0	N/A
November	0.0	N/A	0.0	N/A
December	0.0	N/A	0.0	N/A
<b>Total</b>	<b>68.3</b>		<b>1.6</b>	

Grey water was filtered and disposed of in an excavated sump with coordinates 76° 14' 31.57" North and 119° 21' 24.55" West.



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Water Use & Waste Disposal

The Annual Report shall contain ... (c) the monthly and annual quantities and types of non-hazardous waste removed from the Project and associated disposal locations.

**Table 2.3: Monthly non-hazardous waste production**

Month	Non-combustible Domestic Waste (kg)	Domestic Waste Disposal Location	Empty Fuel Drums (Number of Drums)	Empty Drums Disposal Location
April	0	N/A	0	N/A
May	0	N/A	0	N/A
June	0	N/A	0	N/A
July	211	Yellowknife Municipal Landfill	0	N/A
August	923	Yellowknife Municipal Landfill	0	N/A
September	756	Yellowknife Municipal Landfill	140*	Arctic Petroleum Services Inuvik, NT
October	0	N/A	0	0
November	0	N/A	0	0
December	0	N/A	0	0
<b>Total</b>	<b>1,890</b>		<b>140</b>	

\* Empty fuel drums were returned to the fuel supplier for reuse.





**WATER LICENCE N5L8-1840 ANNUAL REPORT**

Water Use & Waste Disposal

**The Annual Report shall contain ... (d) the monthly and annual quantities and types of hazardous waste removed from the Project and associated disposal locations.**

**Table 2.4: Monthly hazardous waste production**

Month	Hydrocarbon Impacted Soil (m <sup>3</sup> )	Impacted Soil Disposal Location	Hydrocarbon Impacted Water (m <sup>3</sup> )	Impacted Water Disposal Location	Unopened or partially empty fuel drums (Number)	Disposal Location
April	0	N/A	0	N/A	0	N/A
May	0	N/A	0	N/A	0	N/A
June	0	N/A	0	N/A	0	N/A
July	0	N/A	0	N/A	0	N/A
August	0.5	KBL Environmental Yellowknife, NT	0	N/A	0	N/A
September	0.5	KBL Environmental Yellowknife, NT	1*	KBL Environmental Yellowknife, NT	14	Arctic Petroleum Services** Inuvik, NT
October	0	N/A	0	N/A	0	
November	0	N/A	0	N/A	0	
December	0	N/A	0	N/A	0	
<b>Total</b>	<b>1</b>		<b>1</b>		<b>14</b>	

\* Hydrocarbon impacted water is from snow accumulated within the fuel storage area and secondary containment berms.

\*\* Unopened or partially empty fuel drums were returned to the fuel supplier for refund.

**The Annual Report shall contain ... (e) the monthly and annual quantities and types of non-hazardous and hazardous waste temporarily stored on site including disposal plans for each type of waste.**

Inert scrap metal which was excavated from the existing culvert location was stockpiled at the laydown area between the weather station and Borrow 1A, at coordinates 76° 14' 44.82" North and 119° 22' 02.41" West. The approximately 16,000 kg of inert scrap metal will be addressed during future remediation work at the weather station.



### **3.0 SURVEILLANCE NETWORK PROGRAM SUMMARY**

**The Annual Report shall contain ... (f) a summary report which includes all data and information generated under the “Surveillance Network Program (SNP).**

All surface water analyses demonstrated compliance with the parameters set out in Part C Item 21 and 22 as follows:

- Analytical results indicated a change in TSS of less than 100 mg/L between upstream and downstream SNP station locations during construction activities.
- The analytical results from each of the surface water samples collected indicated TPH (collectively BTEX and PHC Fractions F1 and F2) less than analytical detection limits at each SNP station.
- Field and laboratory measured pH values for each sample were indicated to be between 6 and 9 pH units.

Two changes were made to the SNP Program. The SNP station proposed to be located at borrow source 1A/2 (SNP station 1840-3) was not established as the drainage channel was observed to be dry before, during and following the construction period. An additional sampling station was added to the program, 1840-1c, to improve monitoring downstream of station creek during different phases of the work while flow was diverted to one side of an island, and then the other.

The complete SNP report can be found in Appendix A. Tabular and graphic summaries of all data and information of compliance can be found in the main body of the report. Raw data can be found in Appendix B and C of the SNP report.

### **4.0 SUMMARY OF RECONSTRUCTION WORK**

**The Annual Report shall contain ... (g) a summary of the culvert installation and replacement and causeway repair activities completed.**

One 600 mm corrugated metal pipe (CMP) culvert was replaced on the haul road between the weather station and the project borrow to accommodate the upgraded road. The haul road was widened, regraded and reshaped.

Three existing 1200 mm CMP culverts were removed from the existing causeway and an additional three 1200 mm CMP culverts were replaced. The work area was isolated from flow using two water filled cofferdams, one upstream and one downstream of the work area. This diverted all flow through the creek washout during this portion of the work. Downstream isolation was required due to ocean tides.

A new causeway was constructed across the creek washout which consisted of six culverts. Three 1800 mm and three 1600 mm were installed. This section necessitated two water filled cofferdams to be installed at each end of the isolation area, two upstream and two downstream. This isolation diverted all flow through the three new 1200 mm culverts installed the week prior.



Summary of Closure and Reclamation Activities

The existing causeway was reshaped and regraded with granular material imported from Borrow 1. The new causeway was constructed with the same imported granular material. Material excavated for the culvert installation was deposited at Borrow 1A for potential use during future site remediation work.

Erosion and sedimentation control silt fencing was installed downstream of each culvert installation as well as along portions of the haul and adjacent to Borrow 1A.

## **5.0 SUMMARY OF CLOSURE AND RECLAMATION ACTIVITIES**

**The Annual Report shall contain ... (h) a summary of closure and reclamation activities completed and an updated closure and reclamation schedule.**

Cofferdams were removed as soon as possible after in-stream construction to minimize diversions of Station Creek. All in-water works were completed on September 15<sup>th</sup>, 2019, complying with Fisheries and Oceans Canada fish timing windows. A temporary modular bridge, installed to support mobilization and resupply, was dismantled once the new causeway was constructed allowing vehicle access between the airstrip and the weather station. The bridge components were staged at the airstrip until they were demobilized from site.

The camp was downsized and dismantled as personnel requirements allowed. The camp has been completely removed from site except for some miscellaneous wood components, such as tent pads. Approval has been granted by the Inspector to retain these wood components on site for re-use during future remediation work to reduce the amount of material needed to bring in for the next scopes of work. The sump was backfilled and contoured with material in accordance with Part C Item 12 of the licence.

The borrow was closed as outlined in the approved Pit Development Plan. Disturbed ground was sloped to direct runoff away from the impounded lake and to make the area safe for animal and human activity. Full reclamation will occur after remediation of the weather station as the intention is to extract more material during that work.



Unauthorized discharges

## 6.0 UNAUTHORIZED DISCHARGES

The Annual Report shall contain ... (i) a list and description including location and volumes of all unauthorized discharges, spills and summaries of all associated remediation activities and follow-up action items.

Table 6.1: List of spills

Date	Location	Details	Product	Volume	Recordable or Reportable All spills are Recordable. Thresholds exist for Reportable to Spill Line.	Reported to Spill Line
2019/07/26	Camp	Surface staining was observed next to a secondary containment berm where fuel was being transferred to jerry cans.	Diesel	<2L	Recordable	Reported to Inspector only.
2019/08/17	Causeway	Hydraulic leak on excavator identified during morning inspection.	Hydraulic oil	<0.1L	Reportable due to proximity of water body.	Yes
2019/08/31	Camp	Staining of snow next to jerry can fuel transfer location.	Diesel	<0.1L	Recordable	Yes
2019/09/02	Causeway	Refueling without drip tray under fill location.	Diesel	<0.1L	Reportable due to proximity of water body.	Yes
2019/09/03	Causeway	Accidental spill outside of the drip tray during maintenance of water pump.	Motor oil	<0.25L	Reportable due to proximity of water body.	Yes
2019/09/11	Borrow	Engine oil leak on dozer.	Motor oil	<0.1L	Reportable due to proximity of water body.	Yes
2019/09/12	Camp	Spill from fuel line during servicing of the incinerator.	Diesel	<1L	Recordable	Yes
2019/09/13	Causeway	Drips from water pump fuel tank when it was knocked over, out of its drip tray.	Gasoline	<0.05L	Reportable due to proximity of water body.	Yes
2019/09/27	Airstrip	Bottle of antifreeze coolant fell off a pallet during transport and was run over by loader.	Antifreeze coolant	3.78L	Recordable	No



Additional Studies

**The Annual Report shall contain ... (j) a description of any spill training and communications exercises carried out.**

The Contractor had in place a Spill Contingency Plan approved by the IWB. This plan stated that all personnel would receive training relating to handling of petroleum products and refueling equipment, preventative measures, monitoring and response procedures.

The Contractor's Worker Orientation Seminar was mandatory for all persons attending the site. It included a section on Spill Response Procedures which included locations of spill kits, and steps to follow should anyone encounter a spill.

One of the corrective actions taken after some of the spills (depending on cause) included a review of the Spill Contingency Plan and fuel handling procedures with personnel involved in each incident. Additionally, after a string of small releases, fuel handling procedures were reviewed with all personnel at the morning toolbox meetings.

The following procedures were enacted by the contractor, in addition the Spill Contingency Plan:

- Refueling of small engines shall be done in pairs.
- Jerry cans shall not be filled more than 75% of their capacity to make the initial pour easier.
- Stop & Think risk assessments must be conducted prior to every instance of handling fuel.

## **7.0 ADDITIONAL STUDIES**

**The Annual Report shall contain ... (k) a report on any studies required by the Board and a brief description of any future studies planned by the Licensee.**

No studies are required for this licence. The licensee is planning to conduct other environmental assessment work on this site to support future remediation activities at the weather station.

## **8.0 MODIFICATIONS AND MAINTENANCE**

**The Annual Report shall contain ... (l) a summary of modifications and/or major maintenance work as related to the Project completed.**

The Project Mobilization Plan was to mobilize to site and cross Station Creek prior to spring freshet, while the creek was still frozen, and return in the summer to complete the work. Mobilization was not able to be completed during frozen conditions. Instead, a temporary modular bridge was flown to site and launched across the creek washout to allow equipment to cross without impacting the creek. At the end of the project, the bridge was disassembled and demobilized from site.

Schedule delays during construction work prevented 130 m of roadway from Sta. 0+020 to 0+150 from being constructed before demobilization. This section, on the existing airstrip, was left in its original condition.



Updates to Approved plans

## **9.0 UPDATES TO APPROVED PLANS**

**The Annual Report shall contain ... (m) a description of any updates and/or revisions to any of the following plans:**

- i. Spill Contingency Plan;**
- ii. Waste Management Plan;**
- iii. Erosion and Sediment Control Plan;**
- iv. Closure and Reclamation Plan; and**
- v. Pit Development Plan.**

**Table 9.1: Summary of plan revisions**

<b>Plan</b>	<b>Description of Updates and/or Revisions</b>
Spill Contingency Plan	None
Water Management Plan	None
Erosion and Sediment Control Plan	None
Closure and Reclamation Plan	None
Pit Development Plan	None



# **APPENDIX A**

## **Surveillance Network Program Report**

### **Separate Digital File**

