

**REGISTRATION PURSUANT TO CHAPTER E-14.2  
OF THE ENVIRONMENTAL PROTECTION ACT,  
SNL 2002**

**ENVIRONMENTAL ASSESSMENT**

**FOR GEOTECHNICAL WORK AT THE DEER  
LAKE TAILRACE BRIDGE  
ROUTE 1**

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## Appendix A: General Project Details

**PROPONENT:**

**i. Name of Corporate Body**

Department of Transportation and Infrastructure  
Government of Newfoundland & Labrador

**ii. Address**

5<sup>th</sup> Floor, Confederation Building (West Block)  
St. John's, NF  
A1B 4J6

**iii. Chief Executive Officer**

Cory Grandy  
Deputy Minister  
(709) 729-3676

**iv. Approval for Environmental Assessment Submission**



Dan Michielsen

Assistant Deputy Minister

Assistant Deputy Minister of Transportation and Infrastructure

(709) 729-3796

09/22/2023  
Date

**v. Principal Contacts for the Purpose of Environmental Assessment**

Clifford Smith  
Director,  
Highway Design and Construction  
(709) 729-6610

Ken Hannaford  
Senior Environmental Planner  
Highway Design and Construction  
(709) 729-5540

## **THE UNDERTAKING:**

### **(i) Name of the Undertaking**

This submission is for geotechnical investigation for the Deer Lake Tailrace bridge on Route 1. Its location falls on the confluence with Deer Lake, scheduled salmon waters at the outlet of the Hydro Powerhouse.

### **(ii) Nature of the Undertaking**

The geotechnical investigation will consist of advancing ten (10) boreholes throughout the site to gain an understanding of the subsurface conditions. Two (2) of the boreholes will be conducted on land and the remaining eight (8) will be conducted within the water.

Land based boreholes will be conducted using a tracked drill rig. Marine-based boreholes will be conducted using a drill rig mounted on a barge. A drill rig, barge, and support boat will be mobilized to the site. A crane will be utilized to lift the equipment into the water. Boreholes will be setup into position using anchors.

Upon completion of the marine drilling, the equipment will be removed from the water using a crane. The land-based boreholes will then be conducted. Soil samples will be obtained using a 50 mm OD split spoon sampler. Casing will be used to advance within the overburden soils. Bedrock will be cored using a diamond core barrel. Water from the lake will be pumped for coring/casing. Recoverable cuttings

from the marine drilling will be discharged back into the boreholes following completion of the drilling operations. Cuttings from the land-based drilling will be prevented from flowing into the lake by digging a ditch and building a soil berm. The ditch will divert cuttings away from the lake and the soil berm will block the cuttings from flowing towards the lake. The cuttings will settle on the land around the land based boreholes, and will be re-used to reinstate the boreholes.

The existing bridge will left opened to traffic during drilling.

### **(iii) Purpose / Rationale / Need for the Undertaking**

The Department of Transportation and Infrastructure (TI) is proposing to replace the existing Deer Lake Tailrace Bridge which crosses the water channel below the hydroelectric power plant that is located on the Trans-Canada Highway in the Town of Deer Lake, NL. A geotechnical investigation is required to determine the subsurface soil and rock conditions at the site in order to provide recommendations for foundation design for the new abutments and spanning piers.

## **Description of the Undertaking**

### **Geographic Location**

The project location is on Route 1 at the tailrace of Deer Lake Hydro Powerplant. The coordinates are Northing: 49.170458, Easting: -57.437125.

### **Physical Features.**

The tailrace is a Scheduled Salmon River where the release of water from the power plant discharges into Deer Lake. The existing environment at the site consists of deep riffle habitat for approximately 120 meters where it enters the lake downstream.

The site of the crossing was previously disturbed with the installation of the original bridge and power plant and encompasses an area of 120 m by 50 m. The site is located within and along the shoreline of Deer Lake. Geologic mapping indicates the area consists of fluvial and marine deposits. The shoreline generally consists of sand, gravel, and boulders. There is moderate water flow coming from the power station heading northwest into the lake. Due to the flow in the vicinity of the site, the material at the river/lake bed is expected to be similar to that along the shoreline.

It is within part of the Western Newfoundland Forest Ecoregion, Corner Brook subregion. Fish species include Atlantic salmon, brook trout, three-spined stickleback, nine-spined stickleback, black-spotted stickleback, arctic char, rainbow smelt, mummichog, banded killifish and American eel. Banded killifish (at-risk), though unlikely, are possibly in the area. Moose, snowshoe hare, muskrat, otter, mink, black bear, beaver and lynx occur throughout this subregion. Mammals include moose, mink, snowshoe hare, lynx, black bear, red fox, beaver, muskrat, and otter. Little brown bat, eastern chipmunk, masked shrew, meadow vole and red squirrel are also present. Birds include a variety of finches and warblers. The yellow-bellied flycatcher, tree swallow, solitary vireo and thrushes also occur.

Potential receptors include travelers on Route 1 which can include all traffic coming from both the western portion and the eastern portion of the island as well as travelers coming to and from the northern peninsula. The Town of Deer Lake is immediately adjacent to the crossing and this location is very busy with traffic. As this is a very popular salmon angling location, however work will be taking place outside the angling season so there should be no conflicts with anglers during the drilling process.

The reach of the stream is an anomaly in that it is only a resting area for migrating salmon as they can't get past the power plant. It is thought the salmon continue their migration up Humber River. The substrate consists of pebbles, cobble, rubble, and boulders.

The Department of Transportation and Infrastructure will consult with the Water Resources Division of the Department of Environment and Climate Change to ensure that the best available data is utilized to carry out any drilling. The Water Resources Division's Environmental Guidelines for work around watercourses will be used during the project.

The drilling will take place in such a manner as to have minimal impact on fish and fish habitat and in accordance with:

- DFO's Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador (1998);
- DFO's Measures to avoid causing harm to fish and fish habitat (<https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>) and
- fish passage guidelines and other applicable guidelines and Fact Sheets

## **Undertaking**

The width of the existing power house tailrace is approximately 100 m. The location is approximately 18 m downstream of Route 1 in the Town of Deer Lake. The intent of this project is to determine the subsurface soil and rock conditions at the site in order to provide recommendations for foundation design for the new abutments and spanning piers.

The Contractor's geotechnical work plan shall clearly demonstrate that there is compliance with all environmental requirements for the project. The geotechnical investigation will consist of advancing ten (10) boreholes throughout the site to gain an understanding of the subsurface conditions. Two (2) of the boreholes will be conducted on land and the remaining eight (8) will be conducted within the water. Landbased boreholes will be conducted using a tracked drill rig. Marine-based boreholes will be conducted using a drill rig mounted on a barge.

Fording or moving equipment through the river, will be strictly prohibited. Barges, drill rig, and support boat will be used to access the locations. Boreholes will be setup into position using anchors. Upon completion of the marine drilling, the equipment will be removed from the water using a crane. The land-based boreholes will then be conducted.

Soil samples will be obtained using a 50 mm outer diameter (OD) split spoon sampler. Casing will be used to advance within the overburden soils. Bedrock will be cored using a diamond core barrel. Water from the lake will be pumped for

coring/casing. Recoverable cuttings from the marine drilling will be discharged back into the boreholes following completion of the drilling operations. Cuttings from the land-based drilling will be prevented from flowing into the lake.

The drilling is expected to take approximately one (1) week to complete, weather dependent.

The potential sources of pollution during construction would be limited to the possible siltation of the river during drilling operations. The drill rig and crane would be powered with diesel engines and the support boat would be powered with a gasoline engine. Airborne emissions would be those associated with diesel and gasoline engines. In addition, the potential exists for hydrocarbon spillage from temporary fuel storage transfer. Effluents and solid waste are not anticipated. Hydraulic or fuel leaks are possible though. Contractors will be advised of the environmental requirements for stream crossings and for hydrocarbon spill reporting and the necessity of strict compliance.

### **Owner's Policy (Division 8, General Specifications Book, 2011)**

*To ensure protection of the environment, the work at all times shall be subject to inspection by the staff of relevant municipal, provincial and federal agencies. Normally, all inspections other than by the Engineer will be arranged in advance through the Engineer. Any specific matters relating to environmental protection will be dealt with between the Contractor and the Engineer.*

*Any violations of environmental permits or authorizations or any environmental related incidents which are observed by inspectors representing regulatory agencies are to be reported by them prior to leaving the site to the Engineer. Except in emergency situations, environmental protection measures required by other agencies must be approved by the Engineer prior to implementation by the Contractor.*

It is Owner's policy to protect the environment along the route of the project, in areas adjacent the route, and in associated work areas such as pit or quarry sites. DTI is committed to cost-effective environmental protection measures that will prevent serious or irreversible environmental damage through the planning and



implementation phases of the project.

### **Protection of Vegetation and Wetlands**

The Contractor shall be made aware that the work required in and around water crossings shall be performed with due care and caution so as to prevent undue disturbance to adjacent vegetation and the environment from construction activities and off Right Of Way travel (Section 850). Immediately following and during some construction activities, the Engineer may identify areas requiring seeding/sodding or stabilization by a method to prevent erosion. Damage or disturbance of vegetation and/or wetlands outside the ROW shall be re-vegetated and/or restored to the satisfaction of the Resident Engineer at the Contractor's expense (Section 855).

### **Storage and Handling of Fuels and Other Hazardous, Toxic, or Dangerous Material**

Fuel transfer and hydrocarbon utilization will take place in compliance with Newfoundland Regulation 58/03, The Storage and Handling of Gasoline and Associated Products Regulations, 2003 during operation. The drilling subcontractor will be prepared to handle a spill. Sediment runoff from the land based drilling operations will be prevented from travelling into the watercourse.

### **Prohibitions**

The following are directives for the Owner and Contractor in carrying out this project. Reference is also provided to the Section where this prohibition is located in Division 8.

- Contractors, subcontractors and their personnel shall not harass wildlife or waterfowl or unduly disturb fish (Section 805);
- No pesticides or other products shall be used without prior approval of the Owner and the Department of Environment and Climate Change (Section 810);

- The Contractor shall not wash equipment or containers, nor dump herbicides in or near any fresh or salt water bodies, or at any location where the herbicide may enter a body of water (Section 810);
- No person shall discharge into a body of water any sewage or effluent (Section 815);
- The use of equipment or machinery in a watercourse or water body is not permitted (Section 815);
- The contractor shall not ford a watercourse without prior approval from the Resident Engineer (Section 815);
- Silted or muddy water is not permitted to be released into any watercourse or water body or into any ditch or areas that leads directly to a watercourse or waterbody (Section 815.07);
- Smoking shall be prohibited within 10 m of a fuel storage area or during refueling operations (Section 820.03);
- Fueling or servicing of mobile equipment shall not be allowed within 100 m of a watercourse, water body, or designated wetlands (Section 820.03);
- The Contractor shall ensure that no servicing or washing of heavy equipment occurs adjacent to watercourses and designated wetlands. Fueling, servicing or washing of equipment shall not be allowed within 100 m of a watercourse (Section 820.04);
- No waste material shall be deposited in any watercourse or wetland (Section 825.01);
- There shall be no open burning of waste material, slash or grubbing material onsite. Rubber tires, waste oil, or similar material shall not be used to ignite slash or used to maintain the burning operation (Section 835);
- Unnecessary cutting of trees is to be avoided. Care will be taken during construction to prevent damage to trees and shrubs adjacent to the flagged clearing limits which are to remain after construction (Section 850);
- The Contractor shall not use living trees as survey marks and shall not cut blazes or otherwise mark live trees except with removable surveyor's tape and/or tags (Section 850);
- The Contractor shall limit equipment travel to the surveyed right-of-way and existing municipal and provincial roads. Use of equipment of any type is not permitted outside the clearing limits of the right of way without prior approval (Section 850); and
- Should any archaeological remains be encountered, such as stone, bone or iron tools, concentrations of bone, fireplaces, house pits and/or foundations,

work in the area of the find shall cease immediately in accordance with the Historic Resources Act (RSNL1990 CHAPTER H-4) (Section 860).

## **Operation**

The drilling is a temporary operation only expected to last a week or two. The types of occupations anticipated for this work include:

- (a) Civil Engineers; 2130
- (b) Structural Engineers; 2231
- (c) Drillers; 7372
- (d) Senior Environmental Planner 2121

## **Project-related Documents**

- The project scope is in a Request for Quotation document created by the Department of Transportation and Infrastructure.
- At the moment, the Water Resources Act Section 48 Permit to Alter a Body of Water application and A DFO permit application are being prepared by the project's consultant, CBCL Limited.

## **APPROVAL OF THE UNDERTAKING**

The following is a list of the permits, licences, approvals that may be necessary for this project:

## **MAJOR REGULATORY APPROVALS BY TYPE AND AGENCY**

Type of Permit	Agency
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Stream crossing approvals	Dept. of Fisheries & Oceans
Permit to alter body of water	Water Resources Division
Clearance	Town of Deer Lake
Clearance	Deer Lake Power

## **SCHEDULE**

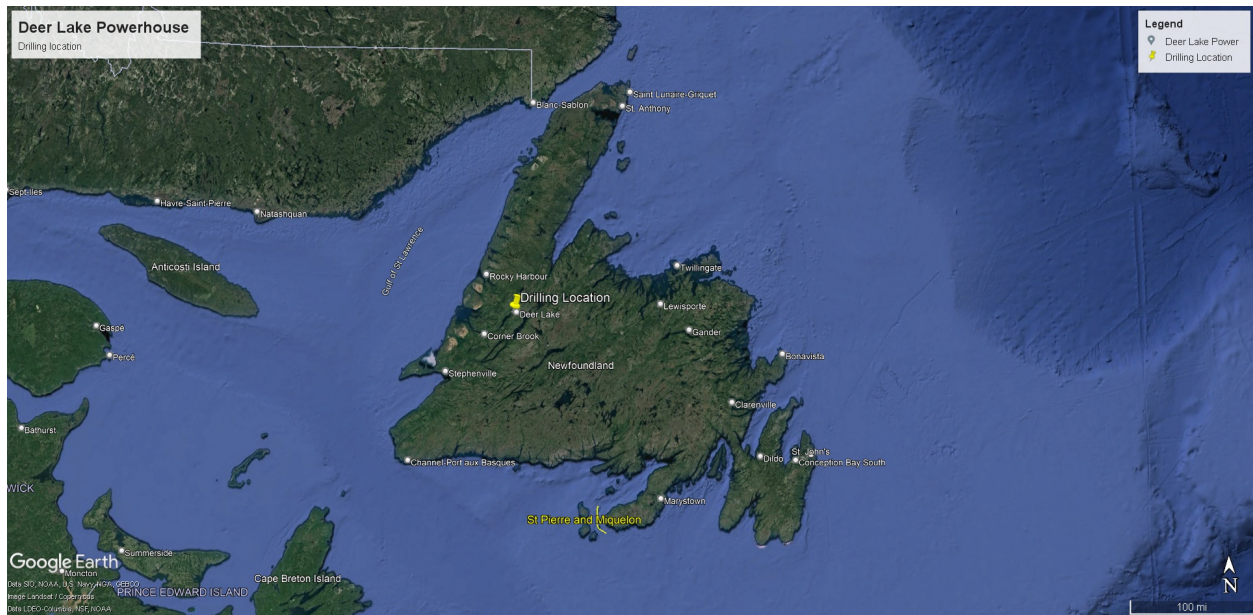
The Department of Transportation and Infrastructure would like to complete the requirements of the Environmental Assessment Act and seek approval for the project by 2023 11 09. The drilling could start soon after or early 2024 depending on weather.

## **FUNDING**

The capital cost of the undertaking is estimated at \$158,800+HST. The undertaking is funded by the department's capital projects funding.

# **Appendix A**

## **General Project Details**



**Map 1: Location on Island**



**Map 2: Broad view of site**





**Map 3: Close-up of Bridge Site**



**Photo 1: Upstream**



**Photo 2: Downstream**