

**FISHERIES AND OCEANS  
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012  
NEW MILLS CONTAINMENT CELL  
PROJECT EFFECTS DETERMINATION REPORT**

**GENERAL INFORMATION**

- |  |                                 |
|--|---------------------------------|
| <b>1. Project Title:</b> New Mills Containment Cell  |                                 |
| <b>2. Proponent:</b> Fisheries and Oceans Canada - Small Craft Harbours (DFO-SCH)                                    |                                 |
| <b>3. Other Contacts:</b>  | <b>4. Role of each contact:</b> |
| a) Jay Carr – Environmental Specialist, Public Services and Procurement Canada                                       | a) OGD consultant               |
| <b>5. Source of Project Information (Contact):</b> Jean Girouard, Project Manager, PSPC                              |                                 |
| <b>6. Received Date:</b> February 20, 2018   |                                 |
| <b>7. PATH No.:</b>  | <b>8. DFO File No.:</b>         |
| <b>9. Other relevant file numbers:</b> a) PSPC: R.001679.042<br>b) TC NPA File No. 2015-200080<br>c) TC NEATS #47493 |                                 |

**BACKGROUND**

**10. Background about Proposed Development (including a description of the proposed development):**

The project includes the construction of an approximately 120 meter by 55 meter containment cell with rubble mound walls. The walls will be constructed of core, filter and armour stone and three of the 4 walls will be located below the mean high tide mark. The cell will be located adjacent to the west of the causeway that accesses the harbour. Access to the cell location (for construction and maintenance purposes) will be directly off the causeway road via a short (less than 5 meters) roadway. Total footprint of the cell will be approximately 6600m<sup>2</sup>.

The harbour requires dredging in order to maintain safe passage to and from the wharves. Marine sediment sampling programs (in 2015 and 2010) indicate that the harbour basin material is not suitable for disposal at sea and is very restricted for land disposal options, therefore on-site management of the dredge material is the most viable disposal option (see description of sediment analysis in Section 20). With the chemical characteristics restricting disposal options to a contained facility on DFO property (or a provincial treatment facility which is not feasible), the area in the immediate vicinity of the New Mills SCH property was assessed for potentially suitable areas for the construction of a containment cell.

The surrounding “upland” properties are privately owned with residential (summer cottage) development, therefore an upland containment facility would be met with significant opposition from local property owners. The coast line north of the SCH property is not suitable terrain for a containment facility due to the abrupt elevation changes (high banks and deep water). The shoreline on each side of the causeway (accessing the harbour property) has suitable terrain, therefore these areas were further assessed. Visual monitoring revealed significant eelgrass beds on both sides of the causeway below the Low Normal Tide (LNT) mark. A containment cell constructed on the east side of the causeway would be in front of private residential development and would impact the view scape and property values of the property owners. A containment cell on the west side of the causeway would have no frontage on residential development and therefore would have minimal impact on local property owners.

It was determined that a containment cell constructed on the west side of the causeway below the High Normal Tide (HNT) mark is the most suitable area. The footprint of the cell will be kept to a minimum (built higher to reduce total footprint) in order to minimize the impacts on the eelgrass bed. Furthermore, the project will adhere to all mitigation measures proposed by DFO-Fisheries Protection Program (FPP) in a letter of Advice. If a *Fisheries Act* Authorization is required, measures proposed by DFO-SCH and accepted by DFO-FPP to offset serious harm to fish will be adhered to.

This PED report is being conducted to fulfill the requirements under Section 67 of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). A review of the SCH Project Environmental Risk Assessment Form determined that this project is considered High-risk, and is being assessed as such.

A Notice of Works Application has been submitted to Transport Canada to obtain approval under the Navigation Protection Program. A Request for Review has been submitted to Fisheries & Oceans - Fisheries Protection Program to determine if *Fisheries Act* permitting is required. The project has also been registered for an Environmental Impact Assessment with the New Brunswick Department of Environment and Local Government.

## PROJECT REVIEW

### 11. DFO's rationale for the project review:

Project is on federal land  and;

- DFO is the proponent
- DFO to issue *Fisheries Act* Authorization, *Species at Risk Act* Permit or other regulatory permit
- DFO to provide financial assistance to another party to enable the project to proceed
- DFO to lease or sell federal land to enable the project to proceed
- Other

12. a) *Fisheries Act* Section(s) (if applicable): 35(1)

b) *Species at Risk Act* Section(s) (if applicable): n/a

13. Primary Authority: DFO-SCH

### 14. Primary Authority's rationale for involvement:

- Primary Authority is the proponent.
- Primary Authority to provide financial assistance to enable the project to proceed.
- Primary Authority to provide a licence or an interest in land.
- Primary Authority to issue a regulatory permit, approval or authorization.

### 15. Other Authorities involved in review:

- a) DFO-Fisheries Protection Program
- b) Transport Canada – Navigation Protection Program and Environmental Affairs and Aboriginal Consultation Unit

### 16. Other Authority's rationale for involvement:

- a) *Fisheries Act*
- b) *Navigation Protection Act*

## **17. Other Contacts and Responses (Government Agencies, Other Organizations, Harbour Authority, etc.):**

- a. New Brunswick Department of Environment and Local Government – Environmental Impact Assessment

### **Aboriginal Consultation**

PSPC, on behalf of DFO-SCH, carried out an Aboriginal Assessment at New Mill Harbour in accordance with DFO-SCH's Preliminary Duty to Consult Assessment Guide. This Guide is intended to provide basic information to DFO-SCH in the Maritimes and Gulf Regions and to assist its Program Managers in making informed, prudent decisions that take into account statutory and other legal obligations, as well as policy objectives, related to Aboriginal and treaty rights. The Supreme Court of Canada has held that the Crown has a duty to consult and, where appropriate, accommodate when the Crown contemplates conduct that might adversely impact potential or established Aboriginal or treaty rights. While there may be other reasons to undertake consultations (e.g., good governance, policy-based, etc.), three elements are required for a legal duty to consult to arise:

1. There is contemplated or proposed Crown conduct.
2. The Crown has knowledge of potential or established Aboriginal or treaty rights.
3. The potential or established Aboriginal or treaty rights may be adversely impacted by the Crown.

Through the Duty to Consult (DTC) process, the DFO Area Aboriginal Program Coordinators advised that there are 11 Aboriginal vessels that fish commercially from the New Mills wharf. The proposed project site was also reviewed for archaeological potential with known archeological sites (pre-contact, historic, burial) in the area. As a result of the DTC assessment, aboriginal consultation was pursued further for this project as there may be impacts on potential or established Aboriginal or Treaty Rights. Notification letters will be delivered to the Mi'kmaq First Nations of New Brunswick, along with the Elsipogtog First Nation, Mi'gmawe'l Tplu'taqnn Incorporated (MTI), and the New Brunswick Aboriginal Peoples Council (NBAPC) to initiate consultation on this project. The project does not fall within the Wolastoqey Nation or Passamaquoddy traditional territory in New Brunswick, therefore they were not consulted on this project.

### **Public Consultation**

Project information will be advertised in the local newspaper(s) upon the EIA registration with the New Brunswick Department of Environment and Local Government. Residents adjacent to the project site will also be individually notified of the project details and provided an opportunity to comment.

## **18. Scope of Project (details of the project subject to review):**

### **Project Description**

The project includes the construction of an approximately 120 meter by 55 meter containment cell with rubble mound walls. The walls will be constructed of core, filter and armour stone and three of the 4 walls will be located below the mean high tide mark. The cell will be located adjacent to the west of the causeway that accesses the harbour. A short access road (less than 5 meters) will connect the causeway road to the containment cell. Excavators will construct the base of the cell walls out from the shoreline, operating in the dry, and continue to build the walls up until the desired elevation is achieved. The construction material (rock) will be transported to the site via dump truck and dumped in place before being reworked to the desired position by the excavator. Total footprint of the cell will be approximately 6600m<sup>2</sup>.

### **Operation**

The Environmental Management System (EMS) with an integrated Environmental Management Plan (EMP) for the Harbour Authority of New Mills covers operational aspects of environmental management and is the mitigation measure for the environmentally responsible aspects of harbour operation (fuelling, waste disposal, activities on the property and water). As such, environmental effects resulting from the SCH operations are not considered further in this project effects determination. The proposed project will not affect continued operations at New Mills Harbour.

### **Decommissioning**

This facility is not presently planned to be decommissioned. At the time of decommissioning, DFO-SCH will develop a site specific re-use or reclamation plan that is appropriate for the applicable environmental legislation and Fisheries and Oceans Canada policies.

### **Scheduling**

The project is proposed to commence in fall of 2018 with a completion date anticipated for March 31, 2020.

## **19. Location of Project:**

The New Mills DFO-SCH (Harbour Code 2601) is located within the Heron Channel of Chaleur Bay along the northern shore of New Brunswick in Restigouche County. The approximate coordinates of the project area are Latitude 47°58'29"N and Longitude -66°11'18"W. Refer to **Figures 1 to 3 in Appendix A** for maps and an aerial photo showing the proposed project location and surrounding area.

## **20. Environment Description:**

### **Physical Environment**

The New Mills DFO-SCH is located within the Heron Channel of Chaleur Bay along the northern shore of New Brunswick in Restigouche County, on West Point Island. The coastal environment at New Mills consists of seabed and shoreline areas. The coastline in the area consists of low shoreline, interspersed with sandy and muddy beaches. The vegetation on site is limited with some grass. The upland area on West Point Island and before the causeway contain some low shrubs, trees, and grass, but is primarily developed with harbour infrastructure and residential properties with some commercial developments. The tides in the area generally range from less than 0.5 m to 2.6 m in height. The New Mills DFO-SCH is situated approximately 3 km across the Heron Channel from Heron Island.

Based on available surficial geology maps, the native surficial soils likely consist of units of sand, silt, and some gravel and clay, generally 0.5 to 3 m in thickness (Rampton et. al., 1984). Geological mapping of the area indicates that the site is underlain with Silurian andesitic and basaltic flows, tuffs and related intrusive rocks (New Brunswick Department of Natural Resources and Energy, 2000).

A marine sediment sampling program completed at the harbour in 2015 shows the sediment at the site to be predominantly gravel (42%) and sand (32.7%) with lesser amounts of silt (18%) and clay (7.3%) (Amec Foster Wheeler Americas Ltd., 2015). Analysis indicated that 2 of the 3 samples collected exceeded the *Canadian Environmental Protection Act* (CEPA) Disposal at Sea Lower Level Screening Criteria for metals and therefore is not suitable for Disposal at Sea. Two of the three samples collected also had various exceedances of the Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines (SQGs) for metals. These two samples were submitted for Synthetic Precipitation Leachate Procedures (SPLP) metals leachate analysis. Both samples had levels of 3 elements (aluminum, selenium, and zinc) in the leachate that exceeded CCME Water Quality Guidelines (WQG) for the protection of Aquatic Life (Freshwater). In addition, one of the samples exceeded the CCME WQGs for the protection of Aquatic Life (Freshwater) for arsenic, copper, and molybdenum (Amec Foster Wheeler Americas Ltd., 2015).

Samples collected in 2010 indicated the sediment at the site to be predominantly sand (28-53%) and silt (15-30%) with lesser amounts of gravel (9.9-45%) and clay (4.8-18%) (Stantec Consulting Ltd., 2010). One of the four samples collected had Polycyclic Aromatic Hydrocarbon (PAH) exceedances (Naphthalene) for agricultural, residential, and commercial/industrial land uses. Two of the four samples had PAH exceedances (Pyrene) for agricultural land use. One sample had metals (Nickel) exceeding the CCME SQGs for agricultural, residential, and commercial/industrial land use, and another sample had exceedances of Molybdenum for agricultural land use. It should also be noted that one sample has cadmium concentrations equal to the CEPA Disposal at Sea Guideline.

Regional surface drainage (apparent groundwater flow direction) appears to be to the north towards Chaleur Bay. Surface drainage at the site, which is flat, discharges into the adjacent harbour waters on all sides. The nearest mapped provincially significant wetland is located approximately 40 m south of the proposed containment cell footprint, on the left side of the West Point Road prior to the causeway to West Point Island (Government of New Brunswick, nd). The nearest regulated wetland is located approximately 700 m southwest of the New Mills DFO-SCH (Government of New Brunswick, nd).

Canadian Climate Normals (1981-2010) for the Charlo A climate station (47° 59' 00" N and 66° 20' 00" W), the station located closest to the project, indicate a mean annual temperature of 3.4°C with extremes ranging from -36.5°C to 35.2°C. Measurable precipitation per year is approximately 997.6 mm. Extreme daily precipitation of up to 113.2 mm has been recorded (Environment Canada, 2018a).

### **Biological Environment**

Chaleur Bay is considered highly productive, supporting numerous pelagic fish species such as Atlantic herring (*Clupea harengus harengus*), capelin (*Mallotus villosus*), Atlantic mackerel (*Scomber scombrus*), and American smelt (*Osmerus mordax*); groundfish species such as Atlantic cod (*Gadus morhua*), American plaice (*Hippoglossoides platessoides*), and yellowtail flounder (*Pleuronectes ferruginea*); as well as crustacean species such as lobster (*Homarus americanus*) and shellfish species such as scallop (*Placopectin magellanicus*), soft-shell clam (*Mya arenaria*), bar clam (*Spisula solidissima*), bay quahog (*Mercenaria mercenaria*), and razor clam (*Ensis patula*).

An Underwater Benthic Habitat Survey (UBHS) was completed by Dillon Consulting in April 2018. Results of the survey indicate that the dominant substrate type is sand, excluding a rocky outcrop in the southeast corner of the project site. There was a low abundance of macrofaunal life within the study area. Organisms, which included periwinkles (*Littorina* sp.), juvenile unidentifiable fish (~5 cm), and clams (*Mya arenaria*) were encountered intermittently, although uncommonly throughout the project site. Siphon holes, indicating the presence of shellfish, were identified more commonly on the project site, albeit in localized patches. Macrofloral life was encountered intermittently throughout the project site and included Rock weed (*Ascophyllum nodosum*), Bladderwrack (*Fucus* sp.), Kelp (*Laminaria saccharina*), Brown algae (*Desmarestia* sp.), Irish moss (*Chondrus crispus*), and eelgrass (*Zostera marina*). Macrofloral debris was also noted along all transects.

During the UBHS, it was identified that a live eelgrass bed occurs along the western portion of the study area and extends the full length of the area, from north to south. A thick, well established eelgrass bed was observed around the 30-40m mark in each of the 5 x 60m transects and became thicker as the divers moved north ward, and expanded beyond each of the transects. Live eel grass was also observed intermittently along Transect 1. The full UBHS is attached. (Dillon, 2018).

A search of the Atlantic Canada Conservation Data Centre (ACDC) database was conducted via the PSPC Species at Risk Information System (SARIS). SARIS provides a list of rare/unique species (i.e. plants and animals) within a 5 km buffer zone of the site of the proposed work. All species were cross-referenced with Schedule 1 of the *Species at Risk Act* (SARA) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Species at risk or of concern are listed below:

- The **Harlequin duck** (eastern population) (*Histrionicus histrionicus*) is listed under Schedule 1 of SARA and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a species of Special Concern. Harlequin ducks of the eastern population mostly breed throughout much of Labrador, along eastern Hudson Bay, and the Great Northern Peninsula of Newfoundland, however there are also known breeding populations along the north shore of the Gulf of St. Lawrence, the Gaspé Peninsula, northern New Brunswick, and southeastern Baffin Island in Nunavut. Harlequin ducks spend most of the year in coastal marine environments, but move inland each spring to breed along fast-flowing turbulent rivers. During the winter, the duck is often associated with offshore islands, headlands, and rocky coastlines where the surf breaks against rocks and ice buildup is minimal. These ducks also feed close to rocky shorelines or rock skerries. Harlequin ducks typically dive for food and generally feed on larvae and pupae often found under rocks, as well as aquatic animals, plant material, seeds, small fish, snails, and crabs (Environment Canada, 2018b).
- The **Eastern Wood-Pewee** (*Contopus virens*) is designated as a species of special concern on Schedule 1 of SARA and by COSEWIC. The Eastern Wood-Pewee breeds from southeastern Saskatchewan to the Maritime provinces, south to southeastern Texas and east to the U.S. Atlantic coast. It winters primarily in northern South America. In Canada, the Eastern Wood-pewee is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in forest stands of intermediate age and in mature stands with little understory vegetation. During migration, a variety of habitats are used, including forest edges, early successional clearings, and primary and secondary lowland tropical forest, as well as cloud forest (Environment Canada, 2018b).
- The **Bank Swallow** (*Riparia riparia*) is listed under Schedule 1 of SARA and COSEWIC as Threatened. The Bank swallow breeds in all Canadian provinces and winters primarily in South America. It nests in a wide variety of natural and artificial sites with vertical banks, including riverbanks, lake and ocean bluffs, aggregate pits, road cuts, and stock piles of soil. Sand-silt substrates are preferred for excavating nest burrows. Breeding sites tend to be somewhat ephemeral due to the dynamic nature of bank erosion. Breeding sites are often situated near open terrestrial habitat used for aerial foraging (e.g., grasslands, meadows, pastures, and agricultural cropland) (Environment Canada, 2018b).
- The **Wood Thrush** (*Hylocichla mustelina*) is listed on Schedule 1 of SARA and by COSEWIC as Threatened. It breeds in southeastern Canada from southern Ontario east to Nova Scotia. It also nests across the eastern United States, south to northern Florida and the Gulf Coast. Wood Thrushes winter in Central America mainly in lowland and tropical forests along the Atlantic and the Pacific slopes from southern Mexico south to Panama. In Canada, the Wood Thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. This species prefers large forest mosaics, but may also nest in small forest fragments (Environment Canada, 2018b).

- The **Wood Turtle** (*Glyptemys insculpta*) is listed on Schedule 1 of SARA and by COSEWIC as Threatened. It is associated with rivers and streams with sandy or gravely-sandy bottoms and prefers clear meandering watercourses with a moderate current. The Wood Turtle's natural nesting sites are found on sand or gravel-sand beaches and banks. They prefer riparian areas with diverse, patchy cover (Environment Canada, 2018b).
- The **Bobolink** (*Dolichonyx oryzivorus*) is listed on Schedule 1 of SARA and by COSEWIC as Threatened. The Bobolink breeds in all Canadian provinces (no territories) and winters in southern South America. It nests mainly in forage crops (e.g., hayfields and pastures dominated by a variety of species, such as clover, Timothy, Kentucky Bluegrass, and broadleaved plants). The Bobolink also occurs in various grassland habitats including wet prairie, graminoid peatlands and abandoned fields. It is generally not abundant in short-grass prairie, Alfalfa fields, or in row crop monocultures (e.g., corn, soybean, wheat) (Environment Canada, 2018b).
- The **Canada warbler** (*Cardellina Canadensis*) is listed on Schedule 1 of SARA and by COSEWIC as Threatened. The Canada warbler breeds primarily across much of southeastern Canada, the northeastern United States, and the Great Lakes region. The Canada warbler is found in a variety of forest types, but mostly in wet, mixed deciduous-coniferous forest with a well-developed shrub layer. In winter, this migratory bird uses primarily mature cloud rainforests located at an elevation of 1000 to 2500 m, as well as old-growth forests, forest edges, coffee plantations, agricultural field edges and semi-open areas (Environment Canada, 2018b).

The Maritime Breeding Bird Atlas identifies a total of 95 species of birds in the geographical block which contains New Mills Harbour (19GP11), 25 of which are listed as confirmed for breeding (Bird Studies Canada, 2018).

The following areas are the nearest Environmentally Significant Areas (ESAs) designated by the Nature Trust of New Brunswick (2005) to New Mills harbour:

- **New Mills ESA** is located at the western end of an irregular shore zone that runs to Black Point, which is the only area in northeastern New Brunswick with attached algae *Fucus* and *Ascophyllum*. Silurian maroon volcanic boulder conglomerate is exposed at the New Mills wharf and dark grey basalt underlies the conglomerate a short distance to the east (Nature Trust of New Brunswick, 1995).
- **Fleming Island ESA** is located near the mouth of Benjamin River, approximately 300 m northeast of West Point Island, and consists of a forested circular island with, at one time, the largest nesting colony of eider (*Somateria mollissima*) in eastern New Brunswick. It is also used as a nesting site for various species of gulls (Nature Trust of New Brunswick, 1995).
- **Heron Island ESA** is the large island situated directly across Heron Channel from the New Mills DFO-SCH. This island is characterized by sandstone cliffs and plains, barrier spits and beaches, submerged sand bars and rapid shore erosion. It is forested with balsam fir (*Abies balsamea*), white birch (*Betula papyrifera*), poplar (*Populus*), Eastern white cedar (*Thuja occidentalis*), and includes rare plants. The island is noted as hosting colonies of double-crested cormorants (*Phalacrocorax auritus*), black-crowned night heron (*Nycticorax nycticorax*), black guillemots (*Cephus grylle*), great blue heron (*Ardea herodias*), and osprey (*Pandion haliaetus*) (Nature Trust of New Brunswick, 1995).
- **Pointe La Roche ESA** is located along the shore between Charlo and New Mills, directly north of Blackland, approximately 3 km west of the New Mills DFO-SCH. Fossils of Silurian age, including corals, bryozoans and graptolites, are abundant in 135 m thick bluish-grey nodular limestone underlying Pointe la Roche, which is exposed at low tide. Basaltic volcanic rocks are exposed to the south with similar strike to the sediments (Nature Trust of New Brunswick, 1995).
- **Dickie Cove/Black Point ESA** is located between 5 and 8 km southeast of the New Mills DFO-SCH site and consists of an area of irregular shoreline with gravel beaches between New Mills and Black Point and is the only shoreline in northeastern New Brunswick with attached algae *Fucus* and *Ascophyllum*. There have also been numerous sightings of Atlantic white-sided dolphins (*Lagenorhynchus acutus*) and blue sharks (*Prionace glauca*) in the area. Grey seals (*Halichoerus grypus*) use the point as a haul-out area and migratory birds use the area as a stopover point (Nature Trust of New Brunswick, 2005).

Heron Island has also been designated as a national Important Bird Area (IBA) which, as previously noted, supports a large colony of double-crested cormorants. IBA Canada indicates that it is also possible that great blue herons and black-crowned night herons breed on Heron Island, however nesting has yet to be confirmed. In addition, approximately 250 common eiders nest on the small rocky islands adjacent to the mainland along the south shore of the Heron Channel (IBA Canada, 2018).

## **Human Environment**

New Mills DFO-SCH is located within the Heron Channel of Chaleur Bay along the northern shore of New Brunswick in Restigouche County. The Harbour is directly accessible from West Point Road off of NB Highway 134.

The Harbour Authority, through a lease agreement with DFO-SCH, manages the property and facilities. The structures occupying the site include a concrete deck wharf and parking area accessed by a causeway and a concrete haulout ramp that is located on the land-side of the causeway. One building, a former ice house, is located on the West Point Island and an above-ground storage tank (AST) used for waste oil is located adjacent to the former ice house. A privately-owned fisher container is located north of the causeway and a navigational light is located at the end of the wharf.

The New Mills DFO-SCH has capacity for approximately 12 – 15 fishing vessels. The Harbour currently accommodates a home fleet of 11 full-time commercial fishing vessels operated by members of the Eel River Bar First Nation (G. Moore and R. Friolet, pers. comm., 2018). According to the DFO Aboriginal Program Area Coordinators the only commercial fisheries operated out of this harbour is lobster, which is harvested between the end of April and the end of June. The DFO Aboriginal Program Area Coordinators also indicated that there are no Aboriginal fisheries for food, social, or ceremonial purposes known to be occurring at the Harbour (G. Moore and R. Friolet, pers. comm., 2018).

There are no fish processing plants or lobster holding facilities located near the wharf. The nearest aquaculture lease site is located in adjacent (to the south) of Heron Island, approximately 3 km north of the harbour (New Brunswick Department of Agriculture, Aquaculture and Fisheries, 2018).

The land in the immediate vicinity of the Harbour has been developed to serve the general fishing industry and by some residential and small commercial properties. The nearest residential property is located on West Point Island, approximately 100 m east of the wharf.

Lands adjacent to the coastlines in the Maritimes tend to have high archaeological potential given their historic importance and proximity to transportation routes and fishing resources. The shoreline around and including New Mills is considered high potential for heritage and archaeological resources and the nearest registered archaeological site (CIDn-2) is located along Benjamin River, approximately 2 km southeast of the project site (New Brunswick Department of Tourism, Heritage and Culture, 2013).

**21. Scope of Effects Considered (section 5(1) and 5(2)):**

**Table 1: Potential Project / Environment Interactions Matrix**

Project Phase / Physical Work/Activity	As per Section 5(1)			Section 5(1c) Aboriginal Interest				Section 5(2)			Due Diligence						
	Fish (Fisheries Act)	Aquatic Species (SARA)	Birds (MBCA)	Health and Socio Economic	Physical and Cultural Heritage	Land use	HAPA * Significance	Health and Socio Economic	Physical and Cultural Heritage	HAPA * Significance	Water (ground, surface, drainage, etc.)	Wetlands	Terrestrial / Aquatic Species	Fish	Birds	Soil / Marine Sediments	Air Quality
<b>Containment Cell Construction</b>																	
Transportation of Material and Equipment	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	P
Installation of Rubble Mound Walls	P	-	P	-	P	-	-	P	P	-	P	-	P	P	P	P	P
Removal of equipment	P	-	P	-	-	-	-	-	-	-	P	-	P	P	P	P	P
<b>Operation/Maintenance</b>	-	-	-	-	-	-	-	P	-	-	-	-	P	-	-	P	-
*structure, site or thing that is of historical, archaeological, paleontological or architectural significance																	
P = possible interaction																	
“-“ = no interaction																	

**Evaluation of Environmental Effects**

The Valued Ecological Components (VECs) selected in Table 1 are addressed in Sections 22 and 23 of the PED. The physical works/activities and required mitigation measures are detailed. The assessment is based on:

- information provided by the proponent;
- a review of project related activities;
- an appraisal of the environmental setting, and identification of resources at risk;
- the identification of potential impacts within the temporal and spatial bounds; and
- personal knowledge and professional judgment of the assessor.

The significance of project related impacts was determined in consideration of their frequency, the duration and geographical extent of the effects, magnitude relative to natural or background levels, and whether the effects are reversible or are positive or negative in nature. These criteria are described in Table 2 and used in Section 23.



**Table 2: Assessment Criteria for Determination of Significance**

<b>Magnitude</b>	Magnitude, in general terms, may vary among issues, but is a factor that accounts for size, intensity, concentration, importance, volume and social or monetary value. It is rated as compared with background conditions, protective standards or normal variability.	
	Small	Relative to natural or background levels
	Moderate	Relative to natural or background levels
	Large	Relative to natural or background levels
<b>Reversibility</b>	Reversible	Effects can be reversed
	Irreversible	Effects are permanent
<b>Geographic Extent</b>	Immediate	Confined to project site
	Local	Effects beyond immediate project site but not regional in scale
	Regional	Effects on a wide scale
<b>Duration</b>	Short-term	Between 0 and 6 months in duration
	Medium-term	Between 6 months and 2 years
	Long-term	Beyond 2 years
<b>Frequency</b>	Once	Occurs only once
	Intermittent	Occurs occasionally at irregular intervals
	Continuous	Occurs on a regular basis and regular intervals

**Methodology**

The environmental effects evaluation methodology used in this report focuses the evaluation on those environmental components of greatest concern. The VECs most likely to be affected by the project as described are indicated in Table 1. VECs were selected based on ecological importance to the existing environment (above), the relative sensitivity of environmental components to project influences, and their relative social, cultural or economic importance. The potential impacts resulting from these interactions are described below.

**Scoping**

This environmental effects evaluation considers the full range of project / environment interactions and the environmental factors that could be affected by the project as defined above and the significance of related impacts with mitigation.

**22. Environmental Effects:**

Potential Project/Environment Interactions and their effects are outlined below. The effects are described for each project phase.

**Containment Cell Construction:**

- Increased suspended solid/sediments and turbidity adjacent to the project site.
- Activities may result in construction related debris or toxic material affecting marine water quality, fish, and fish habitat.
- Accidental release of toxic materials entering the marine environment.
- Potential for introduction of invasive species into the marine environment.
- Air emissions from construction related vehicles.
- Elevated noise levels may occur at the harbour. This could cause disruption to nesting or migration of birds or disruption to local land users
- Disturbance to fish and loss of fish habitat in the immediate project area.
- Disturbance to terrestrial/aquatic species from equipment operation and elevated noise levels.
- Food scraps could enhance populations of predators during construction period.
- Disturbance of birds during construction period.
- Interaction with commercial fishing activities.
- Interaction with recreational use (including fishing) of the harbour during construction.
- Potential discovery and disturbance or loss of heritage/archaeological resources.
- Worker health and safety during construction activities.

**Decommissioning / Abandonment:**

- Safety hazards to workers during decommissioning/abandonment.

**Navigation Consideration:**

- Environmental effects of the project on navigation are taken into consideration as part of the Project Effects Determination (PED) only when the effects are indirect, i.e. resulting from a change in the environment affecting navigation. Direct effects on navigation are not considered in the PED, but any measures necessary to mitigate direct effects will be included as terms and conditions associated with work approved or permitted pursuant to the *Navigation Protection Act*.

**23. Mitigation Measures for Project (including Habitat Compensation if applicable):**

**Table 3: Potential Project/Environment Interactions and Recommended Mitigation Measures**

<b>Containment Cell Construction</b>	
<b><u>Effect</u></b>	<b><u>Recommended Mitigation Measures</u></b>
Potential increase in suspended solid/sediments and turbidity adjacent to project site that may impact marine water quality, fish and fish habitat <i>(Small, Reversible, Local, Short Term)</i>	<ul style="list-style-type: none"><li>• Visual monitoring for suspended solid must occur daily. If any changes occur in the turbidity of the water in the vicinity of the work area as a result of construction activities, the work must be immediately stopped to determine if further mitigation measures are required.</li><li>• Weather conditions are to be assessed on a daily basis to determine the potential risk of weather on the project. Work is to be scheduled to avoid periods of heavy precipitation and to prevent erosion and release of sediment and/or sediment-laden water during the construction.</li><li>• Heavy machinery will not be allowed in the water. Machinery shall be operated on land above the high water mark, in a manner that minimizes disturbance to the banks and bed of the waterbody.</li><li>• Any excavated sediment will be stored in a contained storage area to prevent runoff into the harbor.</li><li>• Where possible, install site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., excavation, dredging).</li><li>• Erosion and sediment controls will be visually monitored throughout the life of the project, and repaired immediately if necessary.</li></ul>
Potential construction-related debris that may impact fish & birds <i>(Small, Reversible, Local, Short Term)</i>	<ul style="list-style-type: none"><li>• All construction debris will be disposed of in a provincially approved manner.</li><li>• All construction material/debris entering the marine environment will be immediately retrieved and disposed of in a provincially approved manner.</li></ul>
Potential accidental release toxic materials entering the marine environment and affecting marine water quality, fish and fish habitat <i>(Small to Large, Reversible, Local, Short Term)</i>	<ul style="list-style-type: none"><li>• All construction material used must be clean and non-toxic (free of fuel, oil, grease, and/or any contaminants).</li><li>• On-site crews must have emergency spill clean-up equipment, adequate for the activity involved, on-site. Spill equipment will include, as a minimum, at least one 250L (i.e., 55 gallon) overpak spill kit containing items to prevent a spill from spreading; absorbent booms, pillows, and mats; rubber gloves; and plastic disposal bags.</li><li>• All spills or leaks must be promptly contained, cleaned up, and reported to the 24-Hour Environmental Emergencies Report System (1-800-565-1633).</li><li>• Machinery must be checked for leakage of lubricants or fuel.</li><li>• Refueling must be done at least 30 m from any water body.</li><li>• Toxic materials must be kept in a contained storage area, at least 30 m from any water body.</li></ul>
Potential for introduction of invasive species into the marine environment that may affect fish, fish habitat, birds, and aquatic species <i>(Small, Reversible, Local, Short Term)</i>	<ul style="list-style-type: none"><li>• To minimize the possibility of fish habitat contamination and the spread of aquatic invasive species, all construction equipment which will be immersed into the harbour, or has the possibility of coming into contact with such water during the course of the work, must be cleaned to ensure that they are free of marine growth and invasive species. Equipment may include boats, cranes,</li></ul>

	excavators, haul trucks, pumps, pipelines and other all miscellaneous tools and equipment previously used in a marine environment. A record of cleaning must be provided prior to beginning of construction.
Potential reduction in air quality due to equipment/vehicle emissions <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• All equipment and vehicles are to be kept in good state of repair.</li> <li>• Idling of equipment and vehicles is to be limited to the extent necessary.</li> </ul>
Potential noise disturbance affecting birds, fish and land use activities <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• All equipment and vehicles are to be kept in a good state of repairs.</li> <li>• Best practices to minimize noise including equipment muffling.</li> <li>• Work is to be carried out during hours agreed upon with the Departmental Representative to mitigate any disturbance to harbour users and residents.</li> </ul>
Potential disturbance to fish and loss of fish habitat in the immediate project area <i>(Small, Reversible, Immediate, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• A Request for Review will be submitted to DFO-FPP. The project will adhere to mitigation measures proposed by DFO-FPP in a letter of Advice. If a Paragraph 35(2)(b) <i>Fisheries Act</i> Authorization is deemed required, measures proposed by DFO-SCH and accepted by DFO-FPP to offset serious harm to fish must be adhered to.</li> <li>• In the event that unexpected fish spawning is discovered in the project area (ie. herring), work should be stopped and the PSPC Project Manager be contacted immediately for further direction.</li> <li>• Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.</li> <li>• Where required, measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.</li> </ul>
Potential increased predators from presence of food scraps that may affect fish and birds <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• Contractors shall ensure that food scraps and garbage are not left at the work site.</li> <li>• In the event food scraps and garbage are found on site, they will immediately be disposed of in a properly secured waste receptacle.</li> </ul>
Potential disturbance of birds during construction period. <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• Concentrations of seabirds, waterfowl, or shorebirds shall not be approached when anchoring equipment, accessing wharves, or ferrying supplies.</li> <li>• All work to be conducted in accordance with the <i>Migratory Birds Convention Act</i>, which outlines that no migratory bird nests or eggs will be moved or obstructed during the construction or operational phase of the project.</li> <li>• The CWS Birds and Oil Response Plan Guidance will be followed in the event of a petroleum spill in or near the water.</li> </ul>
Potential disturbance to terrestrial/aquatic species. <i>(Small, Reversible, Immediate, Short-term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• Sensitive coastal habitats (i.e., any area in which plant or animal life or their habitats are either rare or especially valuable) must not be accessed nor used as staging areas.</li> <li>• All vessels and machinery should be well muffled, and maintained in proper working order and must be regularly checked for leakage of lubricants or fuel.</li> <li>• Construction waste or any miscellaneous unused materials must be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the marine or terrestrial environment.</li> </ul>
Potential disruption or loss of heritage/archaeological resources. <i>(Moderate, Irreversible, Immediate, Short-term, Once)</i>	<ul style="list-style-type: none"> <li>• All construction personnel will be responsible for reporting any unusual materials unearthed during project activities to the Construction Supervisor.</li> <li>• In those situations where the find is believed to be an archaeological resource, the Construction Supervisor will immediately stop work in the vicinity of the find and notify his/her immediate supervisor and the PSPC Project Manager.</li> <li>• Work in the area will be stopped immediately and an archaeological curator at the New Brunswick Department of Tourism, Culture and Heritage – Provincial Archaeological Services will be contacted at 506-453-2738.</li> </ul>

	<ul style="list-style-type: none"> <li>• Work can only resume in the vicinity of the find when authorized by the PSPC Project Manager and Construction Supervisor, after approval has been granted by the New Brunswick Department of Tourism, Culture and Heritage.</li> <li>• In the event of the discovery of human remains or evidence of burials, the excavation work will immediately cease and nearest law enforcement agency will be contacted immediately by the PSPC Project Manager and/or the Construction Supervisor.</li> </ul>
Potential interaction with commercial fishing due to restricted harbour use <i>(Small, Reversible, Immediate, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• The Harbour Authority will coordinate all construction/vessel activities within the harbour for the duration of the project so as to avoid unnecessary interference with fishers/aquaculture operations. Any and all stipulations of federal, provincial, or municipal authorities or their officers must be strictly followed.</li> <li>• A <i>Navigation Protection Act</i> (NPA) approval is likely required for this project. The proponent will comply with all/any conditions of the NPA approval.</li> </ul>
Potential interaction with recreational users of the harbour due to restricted harbour use <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• The Harbour Authority will coordinate all construction/vessel activities within the harbour for the duration of the project so as to avoid unnecessary interference with recreational use of the harbour. Any and all stipulations of federal, provincial, or municipal authorities or their officers must be strictly followed.</li> <li>• A <i>Navigation Protection Act</i> (NPA) approval is likely required for this project. The proponent will comply with all/any conditions of the NPA approval.</li> </ul>
Potential disruption to local land owners from construction activities <i>(Small, Reversible, Local, Short Term, Intermittent)</i>	<ul style="list-style-type: none"> <li>• Vehicles and equipment will be maintained in good working order.</li> <li>• All machinery must be well muffled at all times. Contractors should avoid any sharp or loud noises (e.g., not blow horns or whistles) and should maintain constant noise levels. If necessary, trucks may be required to avoid the use of “hammer” braking along specific sections of the route, while radio communication should replace whistle blasts and horns.</li> <li>• Excessive idling of motorized equipment/vehicles will not be permitted.</li> <li>• Neighbouring/affected landowners will be notified and consulted on the project and timelines.</li> </ul>
Worker health and safety <i>(Medium-term, other criteria not applicable)</i>	<ul style="list-style-type: none"> <li>• Site access must be restricted to authorized workers only.</li> <li>• Workers in contact with hazardous materials must be provided with and use appropriate personal protective equipment.</li> <li>• Proper safety procedures must be followed for the duration of the project as per applicable municipal, provincial and federal regulations.</li> <li>• Employees will be trained in health and safety protocols (i.e. safe work practices, emergency response).</li> </ul>

**24. Description of any Significant Adverse Environmental Effects of the project (after applying mitigation):**

Although the potential exists for short-term environmental effects during the Project phase, including potential disruption to fisheries and the destruction of fish habitat, with the implementation of recommended mitigation measures along with the execution of the habitat off-setting plan, any adverse environmental effects resulting from this project should be adequately mitigated for.

**25. Other monitoring and Compliance Requirements:**

- Fisheries Act review under way.
- The contractor shall obtain all necessary permits (e.g., Access Permit/Certificate of Setback, Highway Usage Permit, Special Permits) and adhere to applicable legislation (e.g., Community Planning Act, Highway Act (Transfer of Administration and Control), Provincial Motor Vehicle Act) for transportation over public roadways.
- Seasonal weight restrictions will be strictly adhered to.
- Accidental spillage that occurs during hauling will be promptly removed from the highway following appropriate safety procedures.
- The NBDTI District Engineer will be contacted prior to initiating the project to ensure all concerns are addressed.
- The NBDTI District Engineer will be contacted immediately in the event of a road, bridge, culvert or other transportation-related issue.
- A Quarriable Substances Permit will be obtained from NBDERD.

## CONCLUSION

### 26. Conclusion on Significance of Adverse Environmental Effects:

The Federal Authorities have evaluated the project in accordance with Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the departments have determined that the project is not likely to cause significant adverse environmental effects with mitigation and, therefore can proceed as proposed.

27. Prepared by:

28. Date: July 25, 2018

29. Name: Jay Carr

30. Title: Environmental Specialist, PSPC

31. Approved by:

32. Date:

33. Name: Raymond Losier

34. Title: Senior Project Engineer, DFO-SCH

35. Approved by:

36. Date:

37. Name: George Brown

38. Title: Senior Biologist, DFO-FPP

## DECISION

### 39. Decision Taken

- The project is not likely to cause significant adverse environmental effects, and DFO may exercise its power, duty or function.
- The project is likely to cause significant adverse environmental effects, and DFO has decided not to exercise its power, duty or function.
- The project is likely to cause significant adverse environmental effects, and DFO will ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances

36. Approved by:

37. Date:

38. Name: Raymond Losier

39. Title: Senior Project Engineer, DFO-SCH

**40. Transport Canada**

<b>Project Title:</b>	Containment Cell Construction, New Mills, New Brunswick	
<b>TC File No.:</b>	47493	
<b>NPP File No.:</b>	2015-200080	
<b>Environmental Review Decision:</b>	Taking into account the implementation of any mitigation measures that Transport Canada considers appropriate, the project is not likely to cause significant adverse environmental effects and, as such, Transport Canada may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part.	
<b>Reviewed by:</b>	Melissa Ginn Environmental Officer – Environmental Affairs and Aboriginal Consultation Unit	
<b>Signature:</b>		<b>Date:</b>
<b>Mailing Address:</b>	10 Barter's Hill, St. John's, NL	
<b>Tel:</b>	709-351-3200 / 709-772-3088	
<b>Fax:</b>	709-772-3072	
<b>Email:</b>	Melissa.ginn@tc.gc.ca	
<b>Recommended by:</b>	J. Jason Flanagan Senior Environmental Assessment Officer – Environmental Affairs and aboriginal Consultation Unit	
<b>Signature:</b>		<b>Date:</b>
<b>Approved By:</b>	Kevin LeBlanc Regional Manager – Environmental affairs and Aboriginal Consultation Unit	
<b>Signature:</b>		<b>Date:</b>

#### 41. References:

- ACCDC (Atlantic Canada Conservation Data Centre). 2018. ACCDC data response for New Mills Harbour, New Brunswick. Accessed through PSPC Atlantic Species at Risk Information System on March 8, 2018
- Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Americas Limited. 2015 Marine Sediment Sampling Program, New Mills DFO-SCH, New Mills, New Brunswick. Final Report Prepared for Public Works and Government Services Canada dated November 12, 2015.
- Bird Studies Canada. 2018. Maritime Breeding Bird Atlas, 2nd Edition. Accessed March 9, 2018 at: <http://www.mba-aom.ca/>
- Dillon Consulting. 2018. Underwater Benthic Habitat Survey, New Mills DFO-SCH, Restigouche County, NB. Report to Public Services and Procurement Canada dated July 3, 2018.
- Environment Canada. 2018a. Canadian Climate Normals 1981-2010. Charlo A Climate Station, New Brunswick. Accessed March 9, 2018 at: [http://climate.weather.gc.ca/climate\\_normals/results\\_1981\\_2010\\_e.html?searchType=stnProv&lstProvince=NB&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6137&dispBack=0](http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProv&lstProvince=NB&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6137&dispBack=0)
- Environment Canada. 2018b. Species at Risk Public Registry – Species Profiles. Accessed online March 8, 2018 at: [http://www.registrelep-sararegistry.gc.ca/species/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm).
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- New Brunswick Department of Natural Resources and Energy. 2000. Bedrock Geology of New Brunswick. Minerals and Energy Division. Map NR-1 (2000 Edition). Scale 1:500 000.
- New Brunswick Department of Tourism, Heritage and Culture. 2013. Archaeological Resource Mapping. Query including New Mills, New Brunswick. Mapping produced by the New Brunswick Department of Tourism, Heritage and Culture – Archaeological Services Unit.
- Rampton, V.N., A.A. Seaman, and K.J. Mersereau. 1984. Surficial Geology. New Brunswick. Geological Survey of Canada. Map 1594A (scale 1:500 000).
- Stantec Consulting Ltd. 2010. Marine Sediment Sampling Program, New Mills Small Craft Harbour, Restigouche County, New Brunswick. Report Prepared for Public Works and Government Services Canada dated November 1, 2010.

# APPENDIX A

## Figures

*(include topographic map indicating the location of the harbour,  
an aerial view of the harbour, and at least one figure of the proposed works)*



Location of proposed work –  
New Mills DFO-SCH



Figure 1: Map of New Brunswick showing the location of New Mills Harbour, Restigouche County, NB.



Figure 2: Topographic map identifying proposed project site at New Mills Harbour, Restigouche County, New Brunswick.





Figure 3: Aerial photo of New Mills DFO-SCH with location of proposed containment cell indicated in red.

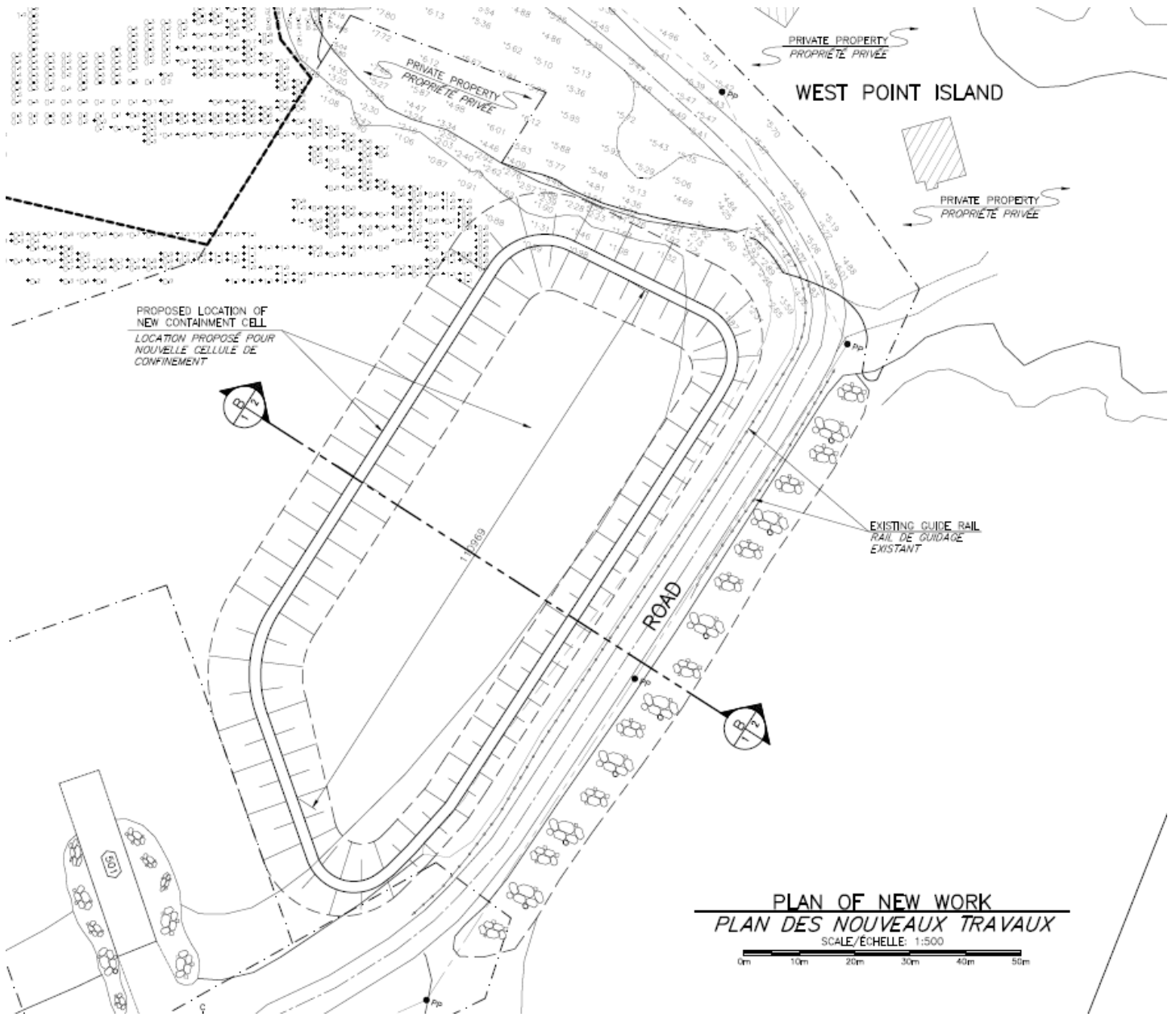


Figure 4: Plan view of proposed containment cell at New Mills DFO-SCH, Restigouche County, NB.

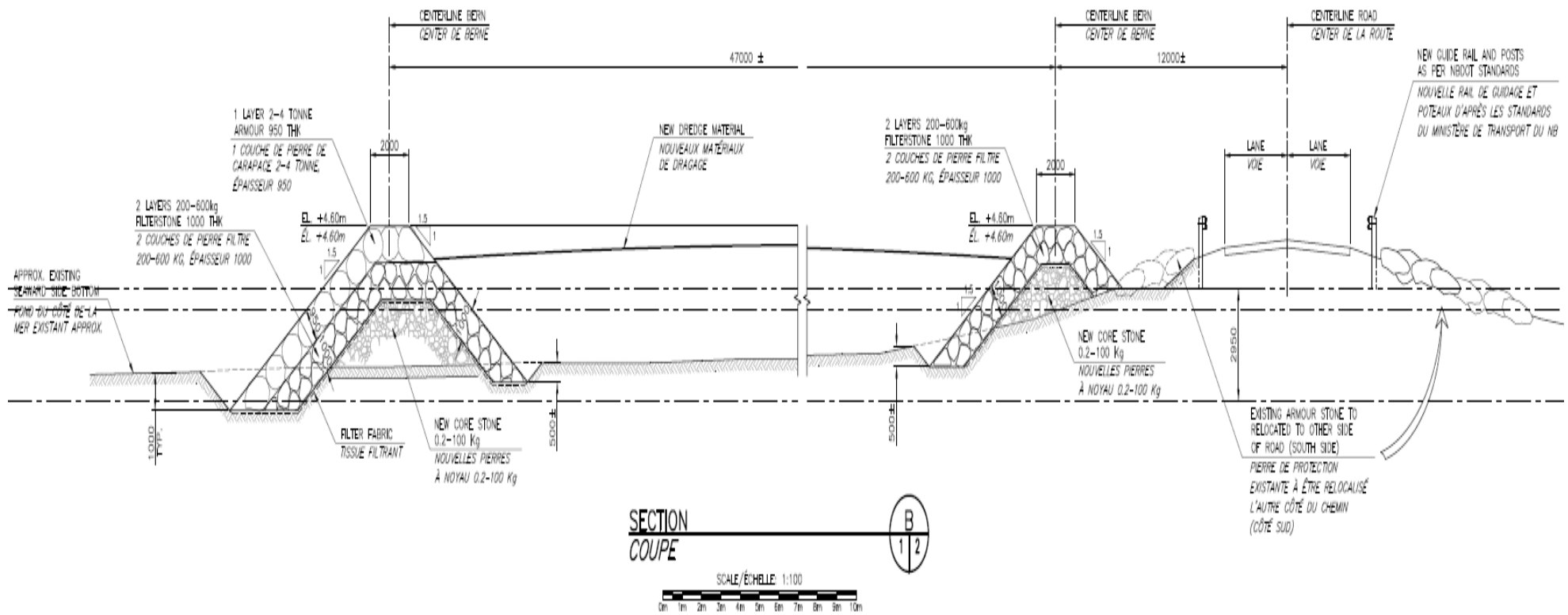


Figure 5: Cross-sectional view of proposed containment cell at New Mills DFO-SCH, Restigouche County, NB.



July 3, 2018



**Public Services and Procurement Canada**  
**Environmental Services Atlantic Region**  
3 Queen Street  
Charlottetown, PEI  
C1A 4A2

Attention: Mr. Jay Carr  
Environmental Specialist, PSPC

***RE: Underwater Benthic Habitat Survey (Final), New Mills Department of Fisheries and Oceans Canada Small Craft Harbour, Restigouche County, New Brunswick***

Dillon Consulting Limited (Dillon) is pleased to provide the following letter report summarizing the results of an underwater benthic habitat survey (UBHS) at the New Mills Department of Fisheries and Oceans Canada Small Craft Harbour (DFO-SCH) (DFRP No. 04804; SCH No. 2601; RPIS No. MS 02601) in Restigouche County, NB. Dillon was retained by Public Services and Procurement Canada (PSPC) to conduct the UBHS to characterize the substrate, document any macrofaunal and macrofloral species presence and abundance, and confirm the presence and extent, if any, of eelgrass beds within the extent of a proposed containment cell (i.e., the study area). The UBHS was conducted at the New Mills DFO-SCH on May 24, 2018.

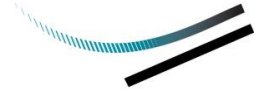
## **SCOPE OF WORK**

The DFO-SCH in New Mills is located on the Bay of Chaleur, near the mouth of the Restigouche River in northern NB. The harbour requires dredging, however, past marine sediment sampling programs (MSSPs) have indicated that the disposal options for the dredge material would be limited due to various contaminants. In order to proceed with dredging of the harbour basin, a containment cell is proposed to be constructed on-site to manage the dredge material. In order to apply for the necessary regulatory permits to construct the containment cell, an UBHS is required to characterize the benthic habitat within the proposed project footprint (i.e., study area; refer to **Figure 1**).

## **UBHS METHODOLOGY**

On May 24, 2018, qualitative and quantitative observations were obtained from the proposed footprint of the containment cell at the New Mills DFO-SCH using video survey techniques to map substrate type and document macrofaunal and macrofloral species presence and abundance. Dominator Marine Services of Carters Point, NB, was contracted by Dillon to perform the diving and video services required for the

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UBHS and eelgrass delineation. A Dillon biologist was on site to assist and direct the divers throughout the field program and to document the findings and diver observations.

A total of six lead-line transects marked at every 5 meters (m) were laid on the harbour bottom. The survey was divided into six transects; five transects measuring 60m each were spread at equal distances along the harbour and were directed from the shoreline out to sea (east to west) and one transect measuring 100m was extended the length of the harbor (north to south) and crossed each of the five transects at approximately the 30m point (**Figure 1**). The transect locations were visually referenced in the field and coordinates were recorded using a handheld Global Positioning System (GPS) to mark the start and end points of the transects. The coordinates are listed below in **Table 1**.

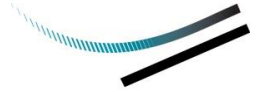
**TABLE 1 – UNDERWATER BENTHIC HABITAT SURVEY TRANSECT COORDINATES, NEW MILLS, RESTIGOUCHE COUNTY, NB**

Transect	Start (UTM NAD 83 Zone 19)		End (UTM NAD 83 Zone 19)	
	Easting	Northing	Easting	Northing
T-1	709936.9	5317279.2	709913.8	5317166.5
T-2	709908.4	5317273.9	709963.2	5317268.7
T-3	709904.9	5317252.9	709959.1	5317243.3
T-4	709900.4	5317230.9	709954.4	5317220.3
T-5	709897.3	5317209.9	709950.3	5317195.2
T-6	709893.5	5317189.7	709942.2	5317164

A Canadian Standards Association (CSA)-certified diver using SCUBA was equipped with an underwater video camera and swam the length of each transect to record the substrate, macrofloral and macrofaunal communities along these transects. Where possible, the underwater video surveillance covered approximately 1m on either side of the transect line. Seabed characterization included field observations made by the field crew and a review of the video footage by a Dillon biologist. Observations were recorded for every 5m segment along each transect. Specific observations made by the Dillon biologist during the UBHS included the following:

- Interpretation of site specific information on the substrate type and marine macrofaunal/faunal species present;
- Detailed descriptions of biological (especially fish) presence and/or habitat that are related to commercial, recreational or aboriginal fisheries;





- Examination of the proposed project area for shellfish presence and abundance, including siphon holes; and,
- General characterization and delineation of substrate types (i.e., rippled sand/rock/gravel) and a general characterization (i.e., what percentage of area is sand).

### UNDERWATER BENTHIC HABITAT SURVEY RESULTS

The results of the transect surveys (i.e., Transect Nos. 1 to 6) are presented in **Table 2** (attached). These detailed results include:

- visual determination of substrate type;
- macrofaunal species identification and abundance; and
- macrofloral species identification and percent coverage.

#### **Substrate:**

According to the video surveillance, the predominant substrate types for the individual transects are as follows:

#### ***Transect 1 (T-1):***

- 0 – 100m: Sand (100%)

#### ***Transect 2 (T-2):***

- 0 – 60m: Sand (100%)

#### ***Transect 3 (T-3):***

- 0 – 60m: Sand (100%)

#### ***Transect 4 (T-4):***

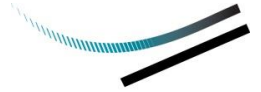
- 0 – 60m: Sand (100%)

#### ***Transect 5 (T-5):***

- 0 – 5m: Predominantly rock (90%) with lesser amount of sand (10%)
- 5 – 60m: Sand (100%)

#### ***Transect 6 (T-6):***

- 0 – 5m: Predominantly rock (90%) with lesser amount of sand (10%)
- 5 – 60m: Sand (100%)



**Macrofauna:**

During the UBHS, macrofaunal species identification and enumeration was divided into four categories in order to characterize the observed abundances. These categories are as follows:

- i. **Abundant (“A”)** – Numerous (not quantifiable) observations made throughout the 5m segment;
- ii. **Common (“C”)** – Numerous (not quantifiable) observations made intermittently along the 5m segment;
- iii. **Occasional (“O”)** – Quantifiable (number of individuals) observations made intermittently along the 5m segment; and,
- iv. **Uncommon (“U”)** – Quantifiable (number of individuals) observations made infrequently along the 5m segment.

**Transect 1 (T-1):** Observations of the macrofaunal life were noted infrequently along the 100m length of T-1. Macrofaunal life noted along the transect included the following:

- Periwinkle (*Littorina sp.*): uncommon occurrence (1 individual) along the 65-70m and 70-75m segments; and
- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 15-20m segment.

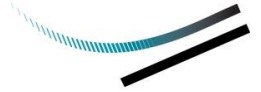
Siphon holes, indicating shellfish presence, were noted along T-1 at the 15-20m segment (uncommon occurrence: 1 individual); 30-40m segment (common occurrence); and 60-65m segment (common occurrence).

**Transect 2 (T-2):** Observations of the macrofaunal life were noted infrequently along the 60m length of T-2. Macrofaunal life noted along the transect included the following:

- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 35-40m segment.

Siphon holes, indicating shellfish presence, were noted along T-2 at the 15-20m segment (uncommon occurrence: 1 individual).

**Transect 3 (T-3):** Observations of the macrofaunal life were noted infrequently along the 60m length of T-3. Macrofaunal life noted along the transect included the following:



- Clams (*Mya arenaria*): uncommon occurrence (5 individuals) along the 0-5m segment; and
- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 35-40m segment.

Siphon holes, indicating shellfish presence, were noted along T-3 between the 5-30m segments (common occurrence).

**Transect 4 (T-4):** Observations of the macrofaunal life were noted intermittently along the 60m length of T-4. Macrofaunal life noted along the transect included the following:

- Clams (*Mya arenaria*): uncommon occurrence (2 individuals) along the 0-5m;
- Periwinkle (*Littorina sp.*): uncommon occurrence (5 individuals) along the 5-10m segment; uncommon occurrence (2 individuals) along the 15-20m segment; and uncommon occurrence (2 individuals) along the 35-40m segment; and
- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 5-10m segment; and uncommon occurrence (2 individuals) along the 35-40m segment.

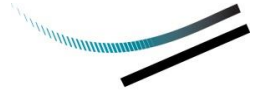
Siphon holes, indicating shellfish presence, were noted along T-4 at the 15-20m segment (common occurrence).

**Transect 5 (T-5):** Observations of the macrofaunal life were noted infrequently along the 60m length of T-5. Macrofaunal life noted along the transect included the following:

- Periwinkle (*Littorina sp.*): abundant occurrence along the 0-5m segment;
- Clams (*Mya arenaria*): uncommon occurrence (2 individuals) along the 5-10m; and
- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 35-40m segment.

Siphon holes, indicating shellfish presence, were noted along T-5 at the 10-25m segment (abundant occurrence).

**Transect 6 (T-6):** Observations of the macrofaunal life were noted infrequently along the 60m length of T-6. Macrofaunal life noted along the transect included the following:



- Periwinkle (*Littorina sp.*): abundant occurrence along the 0-5m segment;
- Clams (*Mya arenaria*): uncommon occurrence (2 individuals) along the 5-10m; and
- Fish (unknown juvenile species): uncommon occurrence (1 individual) along the 35-40m and 50-55m segments.

Siphon holes, indicating shellfish presence, were noted along T-6 at the 5-10m segment (abundant occurrence); and 15-25m segments (common occurrence).

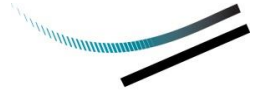
#### **Macroflora:**

Observations of macrofloral life were noted along each of the transects, as further described below and in **Table 2** (attached). Macrofloral debris (i.e., detritus) was also noted along each of the transects; however, for the purpose of this report the debris was not considered as macrofloral life. A summary of the macrofloral species for each transect is presented below. Live eelgrass (*Zostera marina*) bed delineation and description of coverage density is presented in **Figure 1**.

**Transect 1 (T-1):** Observations of the macrofloral life were noted intermittently along the 100m length of T-1. Macrofloral life noted along the transect included the following:

- Bladderwrack (*Fucus sp.*): observed along the 0-10m segments (25% coverage); and the 10-40m, 45-50m, 60-65m and 75-95m segments (5% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 0-10m segments (15% coverage); and the 10-15m, 20-25m, 30-35m and 60-65m segments (5% coverage).
- Kelp (*Laminaria saccharina*): observed along the 0-5m segment (10% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 0-10m segments (25% coverage); 10-15m segment (10% coverage); and 15-40m, 75-80m, and 85-100m segments (5% coverage).
- Irish Moss (*Chondrus crispus*): overserved along the 0-35m segments (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 55-65m segments (5% coverage); 65-90m segments (20% coverage); and 90-100m segments (30% coverage).

Macrofloral debris was noted along the 0-10m segments (20% coverage); 10-15m, 25-60m and 80-85m segments (10% coverage); and the 15-25m and 85-100m segments (5% coverage) of T-1.



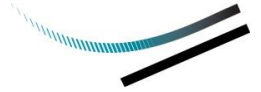
**Transect 2 (T-2):** Observations of the macrofloral life were noted intermittently along the 60m length of T-2. Macrofloral life noted along the transect included the following:

- Bladderwrack (*Fucus sp.*): observed along the 0-5m, 20-25m, and 35-45m segments (15% coverage); 5-10m segment (10% coverage); 10-20m and 25-30m segments (5% coverage); 30-35m segment (25% coverage); and the 45-60m (20% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 0-15m, 25-30m, and 40-45m segments (5% coverage); and the 20-25mm and 30-40m segments (10% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 0-30m and 45-60m segments (5% coverage); 30-35m segment (15% coverage); and the 35-45m segments (10% coverage).
- Irish Moss (*Chondrus crispus*): overserved along the 20-25m and 30-35m segments (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 40-45m segments (30% coverage); 45-50m segments (60% coverage); and 50-60m segments (70% coverage).

Macrofloral debris was noted along the 0-10m and 20-25m segments (20% coverage); 10-15m and 45-50m segments (10% coverage); 25-30m segment (50% coverage); 30-45m segment (30% coverage); and the 50-60m segments (5% coverage) of T-2.

**Transect 3 (T-3):** Observations of the macrofloral life were noted intermittently along the 60m length of T-3. Macrofloral life noted along the transect included the following:

- Bladderwrack (*Fucus sp.*): observed along the 0-10m and 40-60m segments (5% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 10-25m and 50-60m segments (5% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 0-5m and 40-50m segments (5% coverage).
- Irish Moss (*Chondrus crispus*): overserved along the 0-5m segment (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 30-35m segments (10% coverage); 35-40m segments (40% coverage); and 40-60m segments (80% coverage).



Macrofloral debris was noted along the 0-5m and 25-35m segment (10% coverage); 5-25m and 35-60m segments (5% coverage) of T-3.

**Transect 4 (T-4):** Observations of the macrofloral life were noted intermittently along the 60m length of T-4. Macrofloral life noted along the transect included the following:

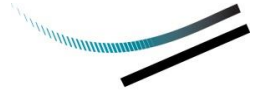
- Bladderwrack (*Fucus sp.*): observed along the 10-15 and 25-45m segments (5% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 10-15m, 30-35m and 40-45m segments (5% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 25-35m segments (5% coverage).
- Irish Moss (*Chondrus crispus*): overserved along the 15-20m segment (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 10-55m segments (5% coverage); 20-25m and 40-45m segments (30% coverage); 25-35m segments (50% coverage); 35-40m segment (40% coverage); 45-50m segment (70% coverage); and the 50-60m segments (100% coverage).

Macrofloral debris was noted along the 0-20m and 25-50m segment (5% coverage); and 20-25m segments (10% coverage) of T-4.

**Transect 5 (T-5):** Observations of the macrofloral life were noted intermittently along the 60m length of T-5. Macrofloral life noted along the transect included the following:

- Bladderwrack (*Fucus sp.*): observed along the 0-5 and 20-30m segments (10% coverage); and the 15-20m, 40-50m segments (5% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 0-5m segment (10% coverage); and 25-35m, 40-50m and 55-60m segments (5% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 0-5m, 10-30m and 40-45m segments (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 5-10m segment (5% coverage); 20-25m segment (10% coverage); 25-30m, 35-40m segments 30% coverage); 30-35m segment (15% coverage); 40-45m segment (50% coverage); 45-50m segment (60% coverage) 50-55m segment (80% coverage) and, 55-60m segments (85% coverage).

Macrofloral debris was noted along the 0-45m and 50-60m segments (5% coverage) segments of T-5.



**Transect 6 (T-6):** Observations of the macrofloral life were noted intermittently along the 60m length of T-6. Macrofloral life noted along the transect included the following:

- Bladderwrack (*Fucus sp.*): observed along the 0-5m segment (10% coverage); and the 5-25m, 35-40m and 55-60m segments (5% coverage).
- Rock weed (*Ascophyllum nodosum*): observed along the 0-5m segment (10% coverage); and the 5-25m, 35-45m, and 55-60m segments (5% coverage).
- Brown algae (*Desmarestia sp.*): observed along the 0-10m segments (5% coverage).
- Irish Moss (*Chondrus crispus*): overserved along the 0-5m, 15-25m and 50-55m segments (5% coverage).
- Eelgrass (*Zostera marina*): observed along the 5-10m and 50-55m segments (30% coverage); 10-15m and 25-30m segments (20% coverage); 15-25m and 45-50m segments (10% coverage); 30-35m and 40-45m segments (15% coverage); 35-40m segment (70% coverage); and the 55-60m segment (90% coverage).

Macrofloral debris was noted along the 0-5m and 30-35m segments (15% coverage); 5-25m, 35-40m and 45-55m segments (5% coverage); and the 25-30m and 40-45m segments (10% coverage) of T-6.

#### QUALITY ASSURANCE/QUALITY CONTROL

The UBHS field component was conducted by a CSA certified diver using SCUBA, and directed by a Dillon biologist experienced with environmental field data and sample collection. During the UBHS, Dillon was responsible for ensuring that standard operating procedures, best management practices and health and safety measures were maintained throughout the field survey.

#### SUMMARY

Characterization of the New Mills Harbour DFO-SCH site, Restigouche County, NB was completed through the combination of visual field observations and underwater video survey techniques.

The dominant substrate type among all six transects was sand. There was a low abundance of macrofaunal life within the study area. Organisms encountered included periwinkles (*Littorina sp.*), juvenile unidentifiable fish (~5 cm), clams (*Mya arenaria*) and siphon holes, which indicate the presence of shellfish species.



The macrofaunal life encountered included Rock weed (*Ascophyllum nodosum*), Bladderwrack (*Fucus sp.*), Kelp (*Laminaria saccharina*), Brown algae (*Desmarestia sp.*), Irish moss (*Chondrus crispus*), and eelgrass (*Zostera marina*). Macrofloral debris was also noted along all transects.

During the UBHS, it was identified that a live eelgrass bed occurs along the westerly portion of the study area and extends the full length of the area, from north to south (**Figure 1**). A thick, well established eelgrass bed was observed around the 30-40m mark in each of the 5 x 60m transects and became thicker as the divers moved north ward, and expanded beyond each of the transects. Live eel grass was also observed intermittently along Transect 1; however, a well-established eel bed was not observed.

## CLOSURE

This report was prepared exclusively for the purposes, project, and site location(s) outlined in the report. The report is based on information provided to, or obtained by Dillon Consulting Limited ("Dillon") as indicated in the report, and applies solely to site conditions existing at the time of the site investigation(s). Although a reasonable investigation was conducted by Dillon, Dillon's investigation was by no means exhaustive and cannot be construed as a certification of the absence of any contaminants from the site(s). Rather, Dillon's report represents a reasonable review of available information within an agreed work scope, schedule, and budget. It is therefore possible that currently unrecognized contamination or potentially hazardous materials may exist at the site(s), and that the levels of contamination or hazardous materials may vary across the site(s). Further review and updating of the report may be required as local and site conditions, and the regulatory and planning frameworks, change over time.

This report was prepared by Dillon for the sole benefit of Public Services and Procurement Canada and Fisheries and Oceans Canada. The material in it reflects Dillon's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report was prepared by Alison Smith, B.Sc. ENR. The report was reviewed by Shawn Forster, B.Sc., M.Eng., P.Eng.





We trust this report meets your current requirements. If you have any questions or comments, please contact the undersigned.

Yours sincerely,

**DILLON CONSULTING LIMITED**

Michelle DeGarie, P.Eng.  
Senior Project Team Contact (NB/PE)

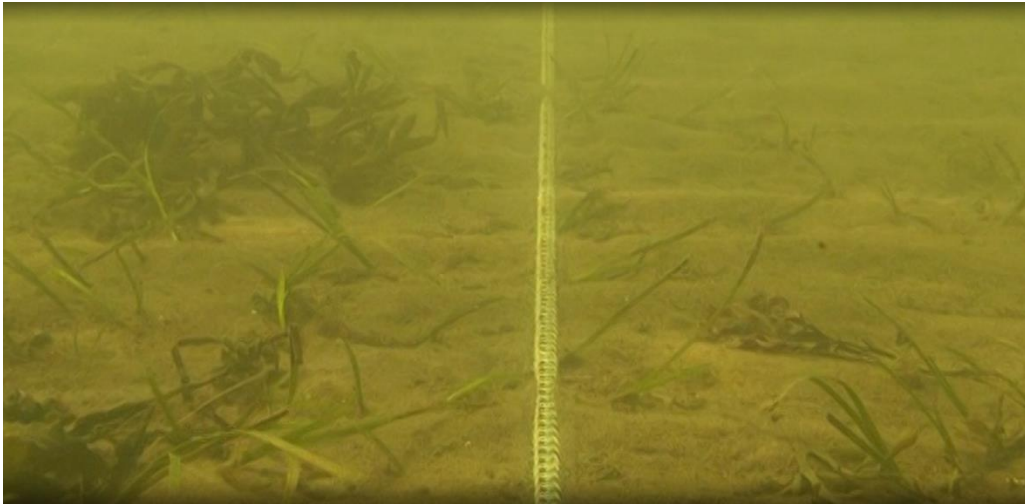
Shawn Forster, B.Sc., M.Eng., P.Eng.  
Project Manager

SAF:acs:scn:trw

Attachments: Site Photographs  
Table 2 – Underwater Benthic Habitat Survey  
Figure 1 – Underwater Video Transect Locations

Our file: 18-7533

## Site Photographs



**Photo 1:** Typical sand substrate (pictured at 25m within Transect No. 6 on May 24, 2018).



**Photo 2:** Typical rock substrate (pictured at 1m within Transect No. 5 on May 24, 2018).



**Photo 3:** Dense live Eelgrass bed (pictured at 55m within Transect No. 3 on May 24, 2018).



**Photo 4:** Typical Macrofloral life (pictured at 2m within Transect No. 1 on May 24, 2018).





**Photo 5:** New Mills DFO-SCH looking northwest (May 24, 2018).



**Photo 6:** New Mills DFO-SCH looking west (May 24, 2018).

## Tables

TABLE 2 - UNDERWATER BENTHIC HABITAT SURVEY RESULTS FOR TRANSECTS 1 - 6

Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
Transect No. 1			
0-5	Sand (100%)	No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (15%), Bladderwrack ( <i>Fucus</i> sp.) (25%), Kelp ( <i>Laminaria saccharina</i> ) (10%) Brown algae ( <i>Desmarestia</i> sp.) (25%), macrofloral debris (20%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
5-10		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (15%), Bladderwrack ( <i>Fucus</i> sp.) (25%), Kelp ( <i>Laminaria saccharina</i> ) (10%) Brown algae ( <i>Desmarestia</i> sp.) (25%), macrofloral debris (20%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
10-15		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (10%), macrofloral debris (10%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
15-20		Fish (unknown small juvenile ~5 cm) (U: 1 individual); Siphon holes (C)	Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
20-25		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), %, Irish Moss ( <i>Chondrus crispus</i> ) (5%) macrofloral debris (5%)
25-30		Siphon hole (U:1)	Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (10%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
30-35		Siphon holes (C)	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (10%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
35-40		Siphon holes (C)	Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (10%),
40-45		No life observed	Macrofloral debris (10%)
45-50		No life observed	Bladderwrack ( <i>Fucus</i> sp.), macrofloral debris (10%),
50-55		No life observed	Macrofloral debris (10%)
55-60		No life observed	Eelgrass ( <i>Zostera marina</i> ) (5%), Macrofloral debris (10%)
60-65		Siphon holes (C)	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Eelgrass ( <i>Zostera marina</i> ) (5%), Macrofloral debris (5%)
65-70		Periwinkle ( <i>Littorina</i> sp.)(U:1)	Eelgrass ( <i>Zostera marina</i> ) (20%), Macrofloral debris (5%)
70-75		Periwinkle ( <i>Littorina</i> sp.)(U:1)	Eelgrass ( <i>Zostera marina</i> ) (20%), Macrofloral debris (5%)
75-80		No life observed	Eelgrass ( <i>Zostera marina</i> ) (20%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
80-85		No life observed	Eelgrass ( <i>Zostera marina</i> ) (20%), Bladderwrack ( <i>Fucus</i> sp.) (5%), macrofloral debris (10%)
85-90		No life observed	Eelgrass ( <i>Zostera marina</i> ) (20%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
90-95		No life observed	Eelgrass ( <i>Zostera marina</i> ) (30%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
95-100		No life observed	Eelgrass ( <i>Zostera marina</i> ) (30%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.

Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
<b>Transect No. 2</b>			
0-5	Sand (100%)	No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (15%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (20%)
5-10		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (10%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (20%)
10-15		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (10%)
15-20		Siphon hole (U:1)	Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
20-25		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (10%), Bladderwrack ( <i>Fucus</i> sp.) (15%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (20%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
25-30		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (50%)
30-35		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (10%), Bladderwrack ( <i>Fucus</i> sp.) (25%), Brown algae ( <i>Desmarestia</i> sp.) (15%), macrofloral debris (30%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
35-40		Fish (unknown small juvenile ~5 cm) (U: 1 individual)	Rock weed ( <i>Ascophyllum nodosum</i> ) (10%), Bladderwrack ( <i>Fucus</i> sp.) (15%), Brown algae ( <i>Desmarestia</i> sp.) (10%), macrofloral debris (30%)
40-45		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (15%), Brown algae ( <i>Desmarestia</i> sp.) (10%), macrofloral debris (30%), eelgrass ( <i>Zostera marina</i> ) (30%)
45-50		No life observed	Bladderwrack ( <i>Fucus</i> sp.) (20%), Brown algae ( <i>Desmarestia</i> sp.) (5%), eelgrass ( <i>Zostera marina</i> ) (60%), macrofloral debris (10%)
50-55		No life observed	Bladderwrack ( <i>Fucus</i> sp.) (20%), Brown algae ( <i>Desmarestia</i> sp.) (5%), eelgrass ( <i>Zostera marina</i> ) (70%), macrofloral debris (5%)
55-60		No life observed	Bladderwrack ( <i>Fucus</i> sp.) (20%), Brown algae ( <i>Desmarestia</i> sp.) (5%), eelgrass ( <i>Zostera marina</i> ) (70%), macrofloral debris (5%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.



Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
<b>Transect No. 3</b>			
0-5	Sand (100%)	Clams ( <i>Mya arenaria</i> ) (U:5)	Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (10%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
5-10		Siphon holes (C)	Bladderwrack ( <i>Fucus</i> sp.) (5%), macrofloral debris (5%)
10-15		Siphon holes (C)	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
15-20		Siphon holes (C)	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
20-25		Siphon holes (C)	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
25-30		Siphon holes (C)	Macrofloral debris (10%)
30-35		No life observed	Eelgrass ( <i>Zostera marina</i> ) (10%), macrofloral debris (10%)
35-40		Fish (unknown small juvenile ~5 cm) (U: 1 individual)	Eelgrass ( <i>Zostera marina</i> ) (40%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
40-45		No life observed	Eelgrass ( <i>Zostera marina</i> ) (80%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
45-50		No life observed	Eelgrass ( <i>Zostera marina</i> ) (80%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%)
50-55		No life observed	Eelgrass ( <i>Zostera marina</i> ) (80%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
55-60		No life observed	Eelgrass ( <i>Zostera marina</i> ) (80%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.

Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
<b>Transect No. 4</b>			
0-5	Sand (100%)	Clams ( <i>Mya arenaria</i> ) (U:2)	Macrofloral debris (5%)
5-10		Fish (unknown small juvenile ~5 cm) (U: 1 individual), Siphon holes (C), Periwinkle ( <i>Littorina</i> sp.)(U:5)	Macrofloral debris (5%)
10-15		No life observed	Eelgrass ( <i>Zostera marina</i> ) (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus</i> sp.) (5%), macrofloral debris (5%)
15-20		Siphon hole (C), Periwinkle ( <i>Littorina</i> sp.)(U:2)	Macrofloral debris (5%), Irish Moss ( <i>Chondrus crispus</i> ) (10%)
20-25		No life observed	Eelgrass ( <i>Zostera marina</i> ) (30%), macrofloral debris (10%)
25-30		No life observed	Eelgrass ( <i>Zostera marina</i> ) (50%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%)
30-35		No life observed	Eelgrass ( <i>Zostera marina</i> ) (50%), Bladderwrack ( <i>Fucus</i> sp.) (5%), Brown algae ( <i>Desmarestia</i> sp.) (5%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%)
35-40		Fish (unknown small juvenile ~5 cm) (U: 2 individual), Periwinkle ( <i>Littorina</i> sp.)(C)	Eelgrass ( <i>Zostera marina</i> ) (40%), Bladderwrack ( <i>Fucus</i> sp.) (5%), macrofloral debris (5%)
40-45		No life observed	Eelgrass ( <i>Zostera marina</i> ) (30%), Bladderwrack ( <i>Fucus</i> sp.) (5%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%)
45-50		No life observed	Eelgrass ( <i>Zostera marina</i> ) (70%), macrofloral debris (5%)
50-55		No life observed	Eelgrass ( <i>Zostera marina</i> ) (100%)
55-60		No life observed	Eelgrass ( <i>Zostera marina</i> ) (100%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.

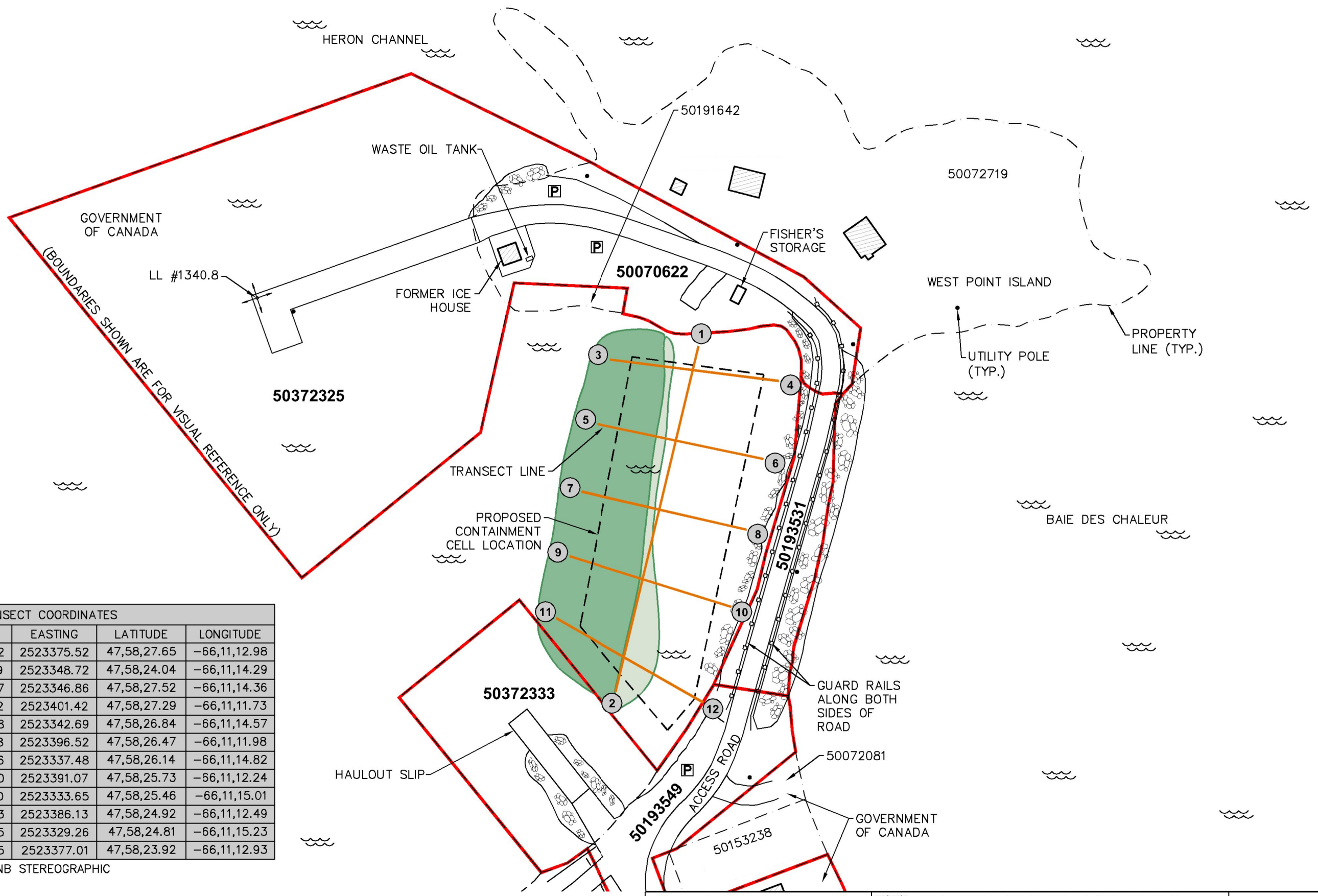
Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
<b>Transect No. 5</b>			
0-5	Rock (90%), Sand (10%)	Periwinkle ( <i>Littorina sp.</i> ) (A)	Rock weed ( <i>Ascophyllum nodosum</i> ) (10%), Bladderwrack ( <i>Fucus sp.</i> ) (10%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
5-10	Sand (100%)	Clams ( <i>Mya arenaria</i> ) (U:2)	Macrofloral debris (5%), Eelgrass ( <i>Zostera marina</i> ) (5%),
10-15		Siphon holes (A)	Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
15-20		Siphon holes (A)	Bladderwrack ( <i>Fucus sp.</i> ) (5%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
20-25		Siphon holes (A)	Eelgrass ( <i>Zostera marina</i> ) (10%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (10%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
25-30		No life observed	Eelgrass ( <i>Zostera marina</i> ) (30%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (10%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
30-35		No life observed	Eelgrass ( <i>Zostera marina</i> ) (15%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), macrofloral debris (5%)
35-40		Fish (unknown small juvenile ~5 cm) (U: 1 individual)	Eelgrass ( <i>Zostera marina</i> ) (30%), (10%), macrofloral debris (5%)
40-45		No life observed	Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), Eelgrass ( <i>Zostera marina</i> ) (50%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
45-50		No life observed	Eelgrass ( <i>Zostera marina</i> ) (60%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%)
50-55		No life observed	Eelgrass ( <i>Zostera marina</i> ) (80%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), macrofloral debris (5%)
55-60		No life observed	Eelgrass ( <i>Zostera marina</i> ) (85%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.

Transect Distance (m)	Substrate %	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
<b>Transect No. 6</b>			
0-5	Rock (90%), Sand (10%)	Periwinkle ( <i>Littorina sp.</i> )(A)	Rock weed ( <i>Ascophyllum nodosum</i> ) (10%), Bladderwrack ( <i>Fucus sp.</i> ) (10%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris 15%, Irish Moss ( <i>Chondrus crispus</i> ) (5%)
5-10	Sand (100%)	Siphon holes (A)	Eelgrass ( <i>Zostera marina</i> ) (30%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), Brown algae ( <i>Desmarestia sp.</i> ) (5%), macrofloral debris (5%)
10-15		No life observed	Eelgrass ( <i>Zostera marina</i> ) (20%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), macrofloral debris (5%)
15-20		Siphon hole (C)	Eelgrass ( <i>Zostera marina</i> ) (10%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), Macrofloral debris (5%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
20-25		Siphon hole (C)	Eelgrass ( <i>Zostera marina</i> ) (10%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%), Irish Moss ( <i>Chondrus crispus</i> ) (5%)
25-30		No life observed	Eelgrass ( <i>Zostera marina</i> ) (20%), macrofloral debris (10%)
30-35		No life observed	Eelgrass ( <i>Zostera marina</i> ) (40%), macrofloral debris (15%)
35-40		Fish (unknown small juvenile ~5 cm) (U: 1 individual)	Eelgrass ( <i>Zostera marina</i> ) (70%), macrofloral debris (5%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%)
40-45		No life observed	Eelgrass ( <i>Zostera marina</i> ) (15%), macrofloral debris (10%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%)
45-50		No life observed	Eelgrass ( <i>Zostera marina</i> ) (10%), macrofloral debris (5%)
50-55		Fish (unknown small juvenile ~5 cm) (U: 1 individual)	Eelgrass ( <i>Zostera marina</i> ) (30%), Irish Moss ( <i>Chondrus crispus</i> ) (5%), macrofloral debris (5%)
55-60		No life observed	Eelgrass ( <i>Zostera marina</i> ) (90%), Rock weed ( <i>Ascophyllum nodosum</i> ) (5%), Bladderwrack ( <i>Fucus sp.</i> ) (5%)

\*Note: A=Abundant, C = Common, O = Occasional, U = Uncommon.

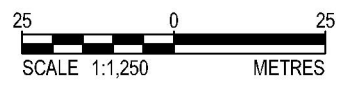
## Figures



TRANSECT COORDINATES					
NUMBER	POINT	NORTHING	EASTING	LATITUDE	LONGITUDE
T-1	1	7663953.02	2523375.52	47,58,27.65	-66,11,12.98
	2	7663841.19	2523348.72	47,58,24.04	-66,11,14.29
T-2	3	7663948.67	2523346.86	47,58,27.52	-66,11,14.36
	4	7663941.72	2523401.42	47,58,27.29	-66,11,11.73
T-3	5	7663927.78	2523342.69	47,58,26.84	-66,11,14.57
	6	7663916.48	2523396.52	47,58,26.47	-66,11,11.98
T-4	7	7663905.96	2523337.48	47,58,26.14	-66,11,14.82
	8	7663893.60	2523391.07	47,58,25.73	-66,11,12.24
T-5	9	7663885.10	2523333.65	47,58,25.46	-66,11,15.01
	10	7663868.63	2523386.13	47,58,24.92	-66,11,12.49
T-6	11	7663865.05	2523329.26	47,58,24.81	-66,11,15.23
	12	7663837.75	2523377.01	47,58,23.92	-66,11,12.93

COORDINATES NAD83 (CSRS) NB STEREOGRAPHIC

LEGEND	
	LIGHT COVERAGE
	DENSE COVERAGE



 <b>DILLON CONSULTING</b>	PROJECT <b>UNDERWATER BENTHIC HABITAT SURVEY NEW MILLS DFO-SCH, RESTIGOUCHE CO., NB DFRP No. 04804; SCH No. 26018; MS No. 02601</b>	PROJECT NO. <b>18-7533</b>
	DATE <b>JULY 2018</b>	TITLE <b>UNDERWATER VIDEO TRANSECT LOCATIONS</b>

File Name: c:\project\iseworking directory\projects 2018\50heblclms\18468187533-05-03-fig 1.dwg