



GEMTEC

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Appendix I VEC Land Use and Economy

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1.0 RATIONALE FOR THE VALUED ENVIRONMENTAL COMPONENT (VEC)

Although the Project essentially involves the replacement of an existing structure, the re-alignment of the roadway and the bridge may impact existing land uses within the Project and Assessment Areas. The construction, operational and maintenance phases of the Project may interact with local fisheries (*i.e.*, recreational, commercial and Aboriginal), vessel navigation through the Project Area, recreational vehicle traffic through the Project Area, and the current land and resource use by Aboriginal Persons.

In order to assess any influence of the Project on the land use and economy, five components have been identified for the VEC:

- *Existing Land Use* describes the current residential, recreational, industrial, and commercial arrangements within the Project Area;
- *Navigable Waters* identifies any interactions with vessel traffic within the waterways contained within the Project Area, and any consideration to the federal *Navigation Protection Act*;
- The *Commercial, Recreational and Aboriginal (CRA)* fisheries - as defined under the *Fisheries Act* and the functions of these fisheries may be impacted by the Project activities;
- *Local Economy* includes identifying any interactions with local industry (*e.g.*, retail sales, service businesses, *etc.*) as a result of Project related activities; and
- *The Current Use of Land and Resources for Traditional Purpose by Aboriginal Persons* includes determining if any of the land and/or resources that may be impacted by the Project are currently used by Aboriginal persons. Traditional uses of lands may include activities such as: hunting, trapping, fishing and/or gathering by First Nations. Aboriginal engagement is not included in the VEC, but is addressed in Section 4.2 of the EIA registration document.

2.0 BOUNDARIES FOR THE ENVIRONMENTAL EFFECTS ASSESSMENT

2.1 Spatial Boundaries

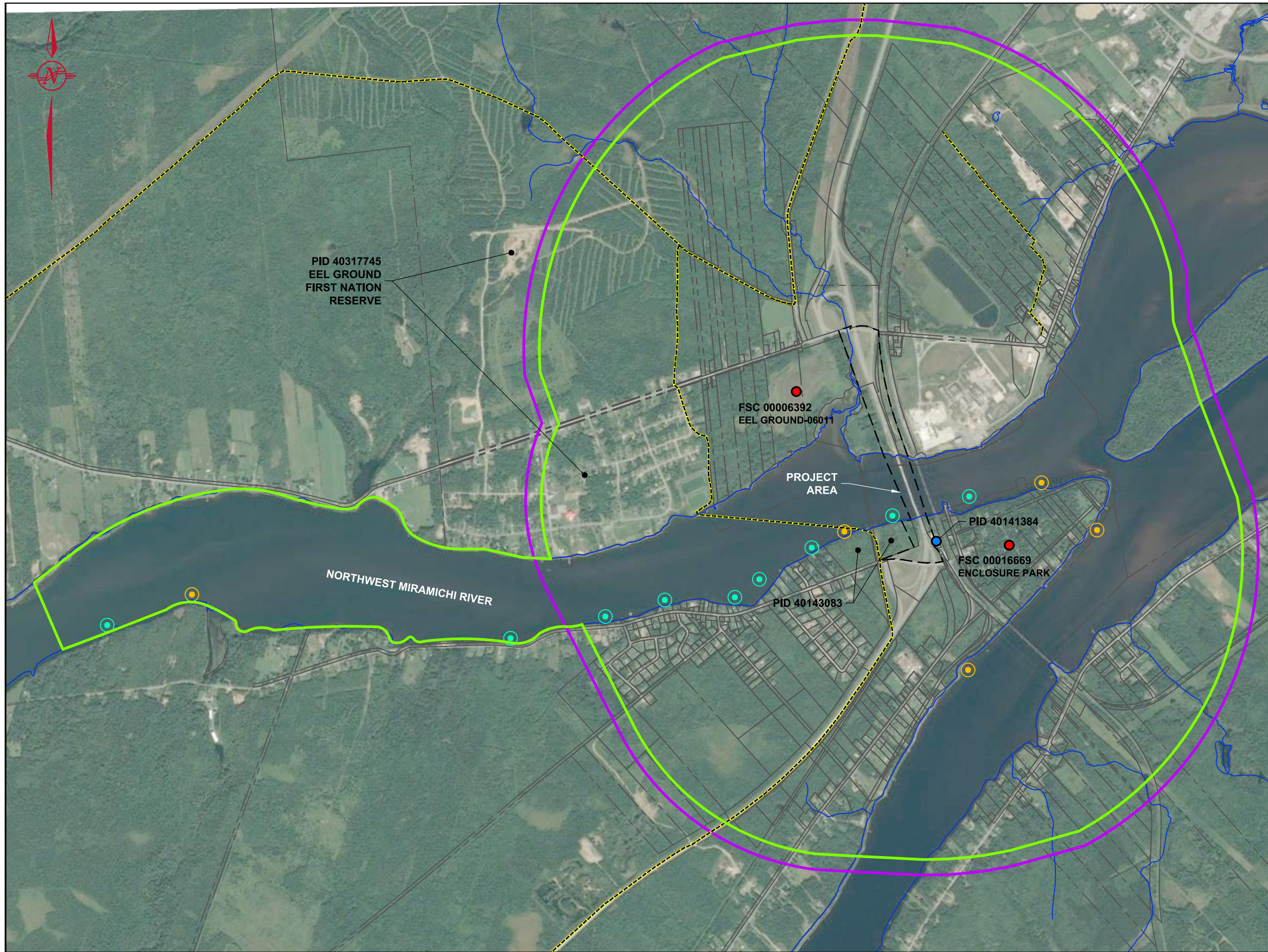
The assessment of the land use and economy has been completed for the following spatial boundaries:

- The Project Area is defined as the footprint of ground disturbance required for the Project activities (PIDs 40381345, 40381337, 40437121, 40445330, 40495780, 40164808, portion of 40163826, portion of 40143083, portion of 40336240, and portion of 40437139). The project area is presented in Figure I-1;
- The Assessment Area considers the surrounding communities within the greater City of Miramichi Area. Generally, the assessment area will focused on areas within a 1-kilometre radius of the Project Area as presented in Figure I-1; and
- The CRA Fisheries Assessment Area encompasses a 2 km radius of the Project Area and extends an additional 3 km (5 km total) upstream of the Project Area within the Northwest Miramichi River. This distance was determined by DFO as appropriate to determine any foreseeable impact to local fisheries (Ms. Sandra Comeau, personal communication, March 21, 2018).

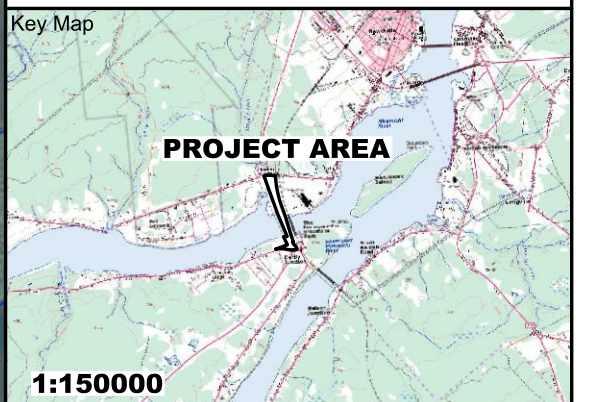
2.2 Temporal Boundaries

The assessment of the land use and economy has been completed for the following temporal boundaries:

- The construction phase of the Project (including the demolition of the existing bridge); and
- The operational and maintenance phase of the Project.



Legend	
	ABORIGINAL FSC FISHERIES
	COMMERCIAL FISHERIES
	FEDERAL CONTAMINATED SITE (FSC)
	CLOSEST RESIDENTIAL DWELLING
	NB SNOW MOBILE TRAIL
	PROJECT AREA
	ASSESSMENT AREA 2km from project area
	CRA FISHERIES ASSESSMENT AREA



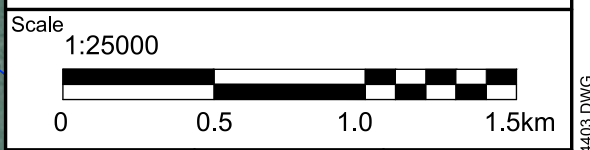
Note
 1. THIS DRAWING IS A SCHEMATIC REPRESENTATION. SIZES, LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

Drawn By	CHG	Checked By	JH
Calculations By	---	Checked By	---

Date
 JUNE 2018

Project
 EIA - NORTHWEST MIRAMICHI RIVER NO.1 ANDERSON BRIDGE REPLACEMENT

Drawing
 LAND USE ASSESSMENT
 SPATIAL BOUNDARIES, LAND USES AND
 CRA FISHERIES



File No. 69214403	Drawing FIGURE I-1	Revision No. 0
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3.0 METHODOLOGY

A desktop review of existing information for land use and economy was undertaken to determine the prevailing VEC conditions and any potential interaction with the Project.

With respect to the Environmental Impact Assessment (EIA) process, interactions or effects of the Project on the land use and economy have been identified and are discussed. Where residual effects are anticipated, the proposed methods for mitigating the potential effects have been presented.

3.1 Existing Land Use

3.1.1 Residential Land Use

The Service New Brunswick (SNB) Registry and Mapping of Real Property Information (Planet) was accessed to determine the presence of residential properties in the vicinity of the Project Area.

3.1.2 Recreational Land Use

The New Brunswick Federation of Snowmobile Clubs (NBFSC) mapping and New Brunswick All-Terrain Vehicle Federation (NBATVF) mapping was reviewed to determine any managed trails within the Project Area.

Other recreational activities (*i.e.*, boating, fishing, *etc.*) are discussed in the corresponding sections of this report.

3.1.3 Commercial and Industrial Land Use

The Treasury Board of Canada Secretariat maintains an inventory of federal contaminated sites. This inventory was reviewed, in conjunction with the SNB Planet, to determine the current and historical extent of commercial and/or industrial sites within the Project Area.

Commercial fisheries are discussed during the Commercial, Recreational and Aboriginal (CRA) fisheries sections of this report.

3.2 Navigable Waters

The *Navigation Protection Act (NPA)* was reviewed to determine if the Northwest Miramichi River and/or Oxford Brook require review under Transport Canada's Navigation Protection Program (NPP). The NPP administers and enforces the federal *NPA*. The NPP reviews and authorizes any work within navigable waters. In the *NPA*, work is defined as "any structure, device or thing - temporary or permanent - made by humans that is in, on, over, under, through or across any navigable water." Work also includes the dumping of fill or the excavation of material from the bed of any navigable water.

3.3 Commercial, Recreational and Aboriginal (CRA) Fisheries

CRA fisheries are regulated under the federal *Fisheries Act*, which is administered by Fisheries and Oceans Canada (DFO). CRA fisheries are defined by the *Fisheries Act* as follows:

- Commercial fisheries refer to fish harvested under the authority of a license for the purpose of sale, trade, or barter;
- Recreational fisheries refers to fish harvested under the authority of a license for personal use of the fish or for sport; and
- Aboriginal fisheries refers to fish harvested by an Aboriginal organization or any of its members for the purpose of using the fish as food, for social or ceremonial purposes or for purposes set out in an agreement entered into between DFO and the Aboriginal organization.

The *Fisheries Act* restricts work, undertakings or activities that result in “serious harm” to fish that are part of a CRA fishery, or to fish that support such a fishery. Serious harm is defined under section 2(2) of the *Fisheries Act* as “the death of fish or the permanent alteration to, or destruction of, fish habitat.”

Information from the New Brunswick Department of Energy and Resource Development (NBDERD) and DFO was reviewed to determine the extent of CRA fisheries within the Assessment Area, in addition to testimonial information from DFO officers, Mr. Frédéric Butruille and Ms. Sandra Comeau on March 16, 2018 and March 21, 2018, respectively.

3.4 Local Economy

Publicly accessible information from the City of Miramichi and the Canada Census was reviewed for the purposes of determining the local economy.

3.5 Current Use of Land and Resources for Traditional Purpose by Aboriginal Persons

Some information with regards to the possible use of land and resource was obtained during field investigations and during consultation with DFO.

4.0 DESCRIPTION OF EXISTING ENVIRONMENT

The Project Area is located west of the City of Miramichi, in a rural setting comprised of mixed forest stands, roadways, watercourses, and managed transmission lines. Route 8 extends north to south through the Project Area, and crosses the Northwest Miramichi River on the existing Northwest Miramichi No.1 (Anderson) bridge (see Figure I-1).

4.1 Existing Land Use

4.1.1 Residential Land Use

Generally, the neighbouring residential properties are located to the southwest of the Project Area, along Route 420. The closest residential property (PID 40141384) adjoins the Project Area to the southeast. A list of all adjoining property uses is presented in Attachment I-1 and the surrounding residential properties are presented in Figure I-1.

4.1.2 Recreational Land Use

Evidence of use by recreational vehicles was observed throughout the Project Area. A managed NBFSC snowmobile trail is located within the Assessment Area and west of the Project Area, extending from Route 8, through PID 40143083, and across the Northwest Miramichi River. Posted signs for snowmobile traffic were observed along this trail (Photos 1-2, Attachment I-2).

4.1.3 Commercial and Industrial Land Use

There are two registered Federal Contaminated Sites within close proximity of the Assessment Area (FCSI, 2017). The Eel Ground - 06011 - EEL GROUND 2 (Site 00006392) site is located approximately 400 metres north of the Project Area and currently has a closed status. Review of historic records show that the property was previously owned by Miramichi Pulp & Paper and aerial photographs show that the property may have also been used as an aggregate quarry. The second site, the Enclosure Park (Site 00016669) contaminated site, is located approximately 450 metres to the southeast of the Project Area and is also listed as closed. The contamination showed iron and turbidity exceedances in potable water. The Project is not expected to interact with either of these two closed Federal Contaminated Sites. The Federal Contaminated Sites mapping, relative to the Project location, is included in Attachment I-3.

4.2 Navigable Waters

The Northwest Miramichi River at the proposed bridge location is a scheduled waterway. Therefore the Project will require the proper approval from the Navigation Protection Program (NPP) to comply with the *Navigation Protection Act* (Transport Canada, 2017).

Additionally, the Northwest Miramichi River in the Project Area is used by recreational and fishing vessels; including, but not limited to:

- Canoes and kayaks;

- Recreational speed boats (e.g., bay boat, bow rider, runabout, cruiser);
- Personal water crafts (e.g., jetskis);
- Recreational pontoon boats;
- Inboard and outboard fishing boats (e.g., bass boat, utility boat, jon boat); and
- Recreational and commercial fishing boats.

4.3 Commercial, Recreational and Aboriginal (CRA) Fisheries

4.3.1 Commercial Fisheries

One licensed commercial fishery is currently located in close proximity to the Project Area. The fishery license holder has fishery locations immediately upstream and downstream of the Project Area and fishes primarily for Gaspereau using trap nets. Three additional commercial Gaspereau fishing license holders are located upstream of the Project Area. The approximate locations of active commercial fisheries within the CRA Fisheries Assessment Area are presented on Figure I-1.

4.3.2 Recreational Fisheries

The Project Area is contained within the NBDERD Recreational Fishery Area (RFA) 3 (Miramichi). The portion of the Northwest Miramichi River that is contained within the Project Area and Oxford Cove are considered as tidal waters. Under current provincial legislation, recreational fishing licenses are not required in tidal waters. NBDERD issues an annual report (Fish, 2018) that details the recreational fishing seasons for each region of New Brunswick. During the field investigations in late September, 2017, fishermen were observed within the Project Area along the bank of the Northwest Miramichi River.

DFO officials indicate that ice fishing activities (primarily for smelt) take place during the winter months, and that the prevalent period for fishing within the CRA Assessment Area is May 1 to September 31.

4.3.3 Aboriginal Fisheries

Two First Nations communities are within close proximity to the Project Area; the Eel Ground First Nation and Metepenagiag Mi'kmaq Nation. These communities may fish within the Northwest Miramichi River under a Food, Social or Ceremonial (FSC) permit. The FSC permit allows for the retention of fish but not for the commercial sale of fish. The approximate locations of the FSC fisheries within the CRA Fisheries Assessment Area are presented in Figure I-1.

Two additional First Nations communities had access in 2017 to various species found in the Northwest Miramichi River. Those two communities are the Elsipogtog First Nation and Buctouche Band, as well as the New Brunswick Aboriginal Peoples Council (NBAPC) but their FSC permits are not located within the CRA Fisheries Assessment Area for this Project. Table I-2 summaries the FSC access within the Northwest Miramichi River.

Table I-2 Summary of FSC Access within the Northwest Miramichi River in 2017

First Nations Community	Fish Species	Fishing Season¹
Eel Ground	Brook Trout	January to March, April to October
	American Eel	April to March
	Gaspereau	May
	Atlantic Salmon	June to October
	American Shad	April to March
	Rainbow Smelt	May
	Striped Bass	May to September, November
Metepenagiag Mi'kmaq Nation	Atlantic Salmon	May to October
	American Shad	May to October
	Striped Bass	May to September
	Brook Trout	January to March, April to October
Elsipogtog First Nation	Atlantic Salmon	April to October
	Brook Trout	April to December
Buctouche Band	Atlantic Salmon	May to October
	Striped Bass	May to October
	Brook Trout	April to October
NBAPC	Atlantic Salmon	April to October
	American Shad	April to March
	Rainbow Smelt	April to May
	Striped Bass	May to September
	White Perch	April to October
	Yellow Perch	April to October

1. Based on information provided by DFO.

It is important to note that access allocated to First Nations communities for FSC purposes are subject to change based on needs and agreements reached with each community. Therefore, the access reflected in Table I-2 is based on the 2017 season. Access for the 2018 season has yet to be finalized and is subject to further discussions that will occur between DFO and leadership of these communities.

4.4 Local Economy

According to 2016 Canada Census data, the City of Miramichi has a population of 17,500 people; approximately 2.3% of the Provincial population. The median household income in 2015 was \$57,000 and the average annual household income in 2015 was \$70,000 (STATCan, 2017). The City of Miramichi had a 2017 municipal tax base of \$1,457,089,250 and a tax rate of 1.7299 % (City of Miramichi, 2017).

4.5 Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons

The Project Area is located on NBDTI land and Crown Lands; however, it is not known if any traditional uses of land or resources are taking place within the Project Area.

The nearest Aboriginal communities include the Eel Ground First Nation, located approximately 1 km northwest of the Project Area, the Metepanagiag Mi'kmaq Nation, located approximately 17 km west of the Project Area and the Esgenoôpetitj First Nation located approximately 45 km east of the Project Area.

A relatively large patch of northern Wild Rice (*Zizinia palustris*), approximately 1 hectare in size, was recorded immediately adjacent to Route 8 at Jones Cove (Wetland 2, Appendix G). Northern Wild Rice (*Zizinia palustris*) may be an important resource for First Nations.

5.0 SUMMARY OF POTENTIAL EFFECTS

5.1 Construction Phase Potential Effects

Potential effects to land use, navigable waters, CRA fisheries, economy, and current use of land and resources for traditional purposes by Aboriginal persons are detailed in the following sub-sections for the land use and economy VEC, during the construction phase of the Project.

5.1.1 Land Use

Potential effects to land use as a result of Project construction activities include traffic delays that are possible during construction activities. However, these are anticipated to be minimal as the existing bridge is to remain open and operational during the construction of the replacement structure.

5.1.2 Navigable Waters

Potential effects to navigable waters as a result of the construction phase of the Project may include a disruption to boat traffic within the Project Area. NBDTI plans to maintain a navigation channel during the construction activities, and the effect of the Project on navigation is not discussed further in this VEC assessment.

5.1.3 Commercial, Recreational and Aboriginal (CRA) Fisheries

Potential effects to CRA fisheries as a result of the construction phase of the Project include:

- Limited access to recreational fishing locations within the Project Area due to the presence of the Project features and construction zones. It is expected that approximately 150 metres of shoreline will be inaccessible for land based recreational fisheries and up to 250 square metres (m²) of river channel will be inaccessible for vessel-based fisheries. The anticipated impact to recreational fisheries is temporary and localized within construction zones;
- One licensed fishing site may be directly impacted during the construction of the new bridge as the license holder's trap nets are located within the Project Area. NBDTI is currently in consultation with DFO and this fisherman to find a solution to this issue;
- Three additional commercial license holders have a total of seven fishing sites located within a 5 km section around the Project Area. Construction activities may result in a reduction of the migration of fish through the Project Area; and
- The Eel Ground First Nations community has five FSC licensed fishing sites in proximity to the Project Area. Construction activities may result in a reduction of the migration of fish through the Project Area.

The proposed mitigation measures and residual effects are presented in the Aquatic Environment VEC assessment (Appendix E); therefore, CRA Fisheries are not discussed further in this VEC assessment.

5.1.4 Local Economy

Potential effects to local economy as a result of the construction phase of the Project include an increase in temporary construction-related employment. Increased employment may result in positive economic benefits for local persons, in addition to a temporary increase in demand for accommodations, consumables and other facilities required for construction workers. No adverse effects to the local economy are expected as a result of the Project; therefore, this component is not discussed further in this VEC assessment.

5.1.5 Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons

Potential effects to Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons as a result of the construction phase of the Project include:

- Temporary loss of access or use of fishing locations within the Project Area due to the presence of the Project features and construction zones; and
- Potential effects on traditional gathering and hunting practices. This will be discussed with the First Nations in the area during the summer of 2018 and any potentially required additional mitigation will be established at that time.

5.2 Operational and Maintenance Phase Potential Effects

Potential effects to land use and current use of land and resources for traditional purposes by Aboriginal Persons are detailed in the following sub-sections for the land use and community VEC during the operational and maintenance phase of the Project.

5.2.1 Land Use

Potential effects to land use as a result of the operational and maintenance phases of the Project include traffic delays during maintenance activities.

5.2.2 Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons

Potential effects to current use of land and resources for traditional purposes by Aboriginal Persons as a result of the operational and maintenance phase of the Project includes limited access to hunting and gathering locations within the Project Area due to the presence of maintenance equipment and working zones. The impact to land and resources use for traditional purposes by Aboriginal Persons is temporary and localized to on-going construction zones; therefore, the effect during the operational and maintenance phase of the Project is not discussed further in this VEC assessment.

5.3 Accidents, Malfunctions and Unplanned Events

There is the potential for accidents to occur during all phases of the Project. Accidents that may impact land use and economy within the Project Area include:

- Fire;
- Failure of sedimentation and erosion controls structures (*i.e.*, to result in damage to adjacent properties); and
- Accidental release of chemicals or petroleum products (*i.e.*, to result in contamination of adjacent properties).

6.0 PROPOSED MITIGATION MEASURES

The potential effects, standard NBDTI Environmental Management Manual (EMM) mitigation measures and any additional mitigation measures recommended by GEMTEC in order to minimize the potential effects to land use and economy during the construction, operational and maintenance phases of the Project are summarized in Table I-3.

Table I-3 Summary of Mitigation Measures for Land Use and Economy

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Construction Phase			
Land Use	Traffic delays are possible during construction activities and altered access and use to the NBFSC trail on the south side of the Northwest Miramichi River.	<ul style="list-style-type: none"> • 5.5 Detouring; • 5.15.1 Structure Construction; • 5.17 Temporary Ancillary Facility Management; • 5.19 Vehicle and Equipment Management; and • 5.22 Work Progression. 	No additional mitigation measures are recommended by GEMTEC.
Current Use of Land and Resources for a Traditional Purpose by Aboriginal Persons	Temporary loss of access or use of fishing locations within the Project Area.	<ul style="list-style-type: none"> • 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.8 Excavation, Blasting and Aggregate Production; • 5.10 Fire Prevention and Contingency; • 5.15 Structures; • 5.17 Temporary Ancillary Facility Management; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas 	Provide passage for boat traffic through construction site (temporary trestle), including passage for fishing boats, and provide signage for boats.
Operational / Maintenance Phase			
Land Use	Traffic delays are possible during construction activities.	<ul style="list-style-type: none"> • 5.5 Detouring; • 5.15.2 Structure Maintenance; • 5.16 Summer Highway Maintenance; • 5.17 Temporary Ancillary Facility Management; • 5.19 Vehicle and Equipment Management; and • 5.21 Winter Highway Maintenance. 	No additional mitigation measures are recommended by GEMTEC.

Project Component	Summary of Potential Interaction	Standard NBDTI EMM Mitigation Measures	Additional Recommended Mitigation Measures
Accidents, Malfunctions and Unplanned Events			
Fire	Increased potential of smoke to reduce air quality and destruction of adjoining land uses.	<ul style="list-style-type: none"> • 5.10 Fire Prevention and Contingency; • 5.13 Storage and Handling of Petroleum Products; and • 5.14 Storage and Handling of Other Hazardous Materials. 	No additional mitigation measures are recommended by GEMTEC.
Accidental Release of Chemical or Spill	Increased potential for contaminants to be released into surface water/soil through the accidental release of fuels and lubricants from maintenance equipment or vehicle collisions.	<ul style="list-style-type: none"> • 5.10 Fire Prevention and Contingency; • 5.13 Storage and Handling of Petroleum Products; and • 5.14 Storage and Handling of Other Hazardous Materials. 	
Failure of Erosion Control Structures	Increased potential for the degradation of surface water and adjoining properties via the failure of erosion and sediment control structures.	<ul style="list-style-type: none"> • 5.3 Clearing; • 5.7 Erosion and Sediment Management; • 5.18 Topsoil; • 5.22 Work Progression; and • 5.23 Working Near Environmentally Sensitive Areas. 	

7.0 SUMMARY OF POTENTIAL SIGNIFICANT RESIDUAL EFFECTS

A significant residual effect to the land use and economy VEC is defined as the permanent change in land use in the Assessment Area as a direct result of the Project.

Potential effects will be limited to the construction phase of the Project and include:

- Some disturbance to traffic flow through the Project Area is expected. However, the existing bridge will be maintained throughout the construction phase for continued connectivity across the Northwest Miramichi River. It is important to note that the existing bridge is currently restricted to one-lane due to structural deficiencies, and traffic is controlled via traffic lights at each approach. It is not expected that traffic interruptions will increase significantly beyond what is currently observed on-site;
- Changes in vessel navigation patterns will likely occur near the Project Area. A designated boating lane will be maintained through the construction zone in the Northwest Miramichi River to ensure continuous vessel traffic through the Project Area;
- CRA fisheries may be temporarily impacted during the construction phase of the Project. Appropriate work windows will be defined in consultation with DFO to minimise activities that could impact fish at the site and fish migrating through the site at certain times of the year; and
- One licensed fishing site for Gaspereau will be likely become unusable for several years or permanently due to the close proximity to the Project Area. NBDTI is currently working with DFO and the fishing license holder to find a solution to this issue.

The implementation of the proposed mitigation measures will minimize adverse impacts on land use and the economy, and therefore, the interaction of the Project on this VEC is considered to be non-significant.

8.0 REFERENCES

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ATTACHMENTS

I-1 - Surrounding Land Use

Table I-1: Surrounding Area Land Uses

PID Number	Land Use	Location in Relation to Site
40113680	Timberland	West
40113664	Residential Land - Vacant	Northwest
40437154	Route 8 Highway	North
40169864	Railway Lines (In Use)	East
40406696	Railway Lines (In Use)	East
40064107	Railway Lines (In Use)	East
40141384	Apartment & Lot	East
40141392	Residential Improved	East
40336265	Route 8 Highway	Southeast
40141376	Route 8 Highway	Southeast
40141400	Timberland	South
40135956	Pipeline	South
40381360	Residential Improved	South
40448557	Residential with Non-Residential Portion	Southwest
40146656	Residential Improved	Southwest



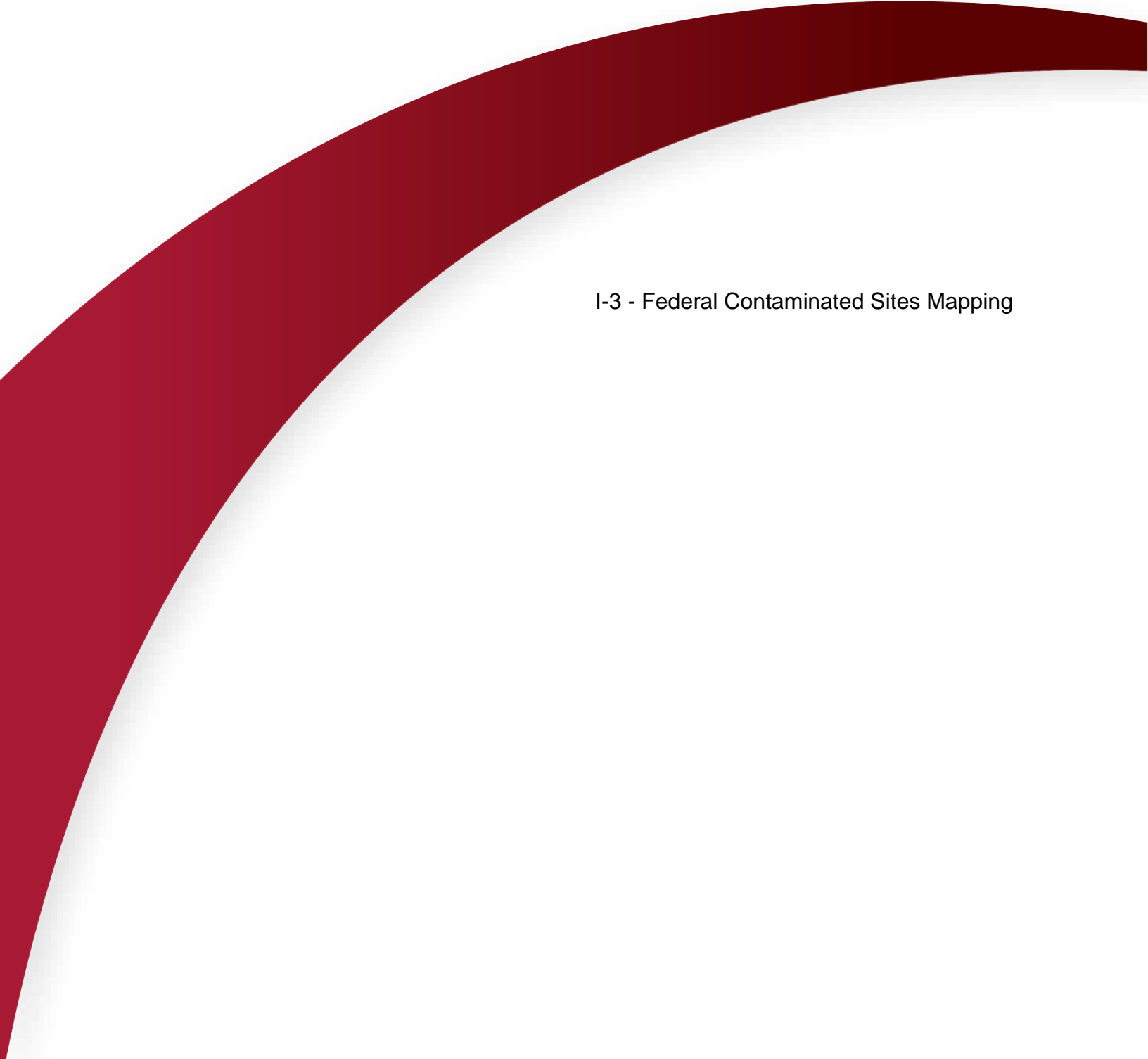
I-2 - Site Photos



Photo 1: View of snowmobile trail on PID 40143083, facing south (September 27 2017).



Photo 2: View of the southern bank of the Northwest Miramichi River and snowmoible trail facing east (September 30, 2017)



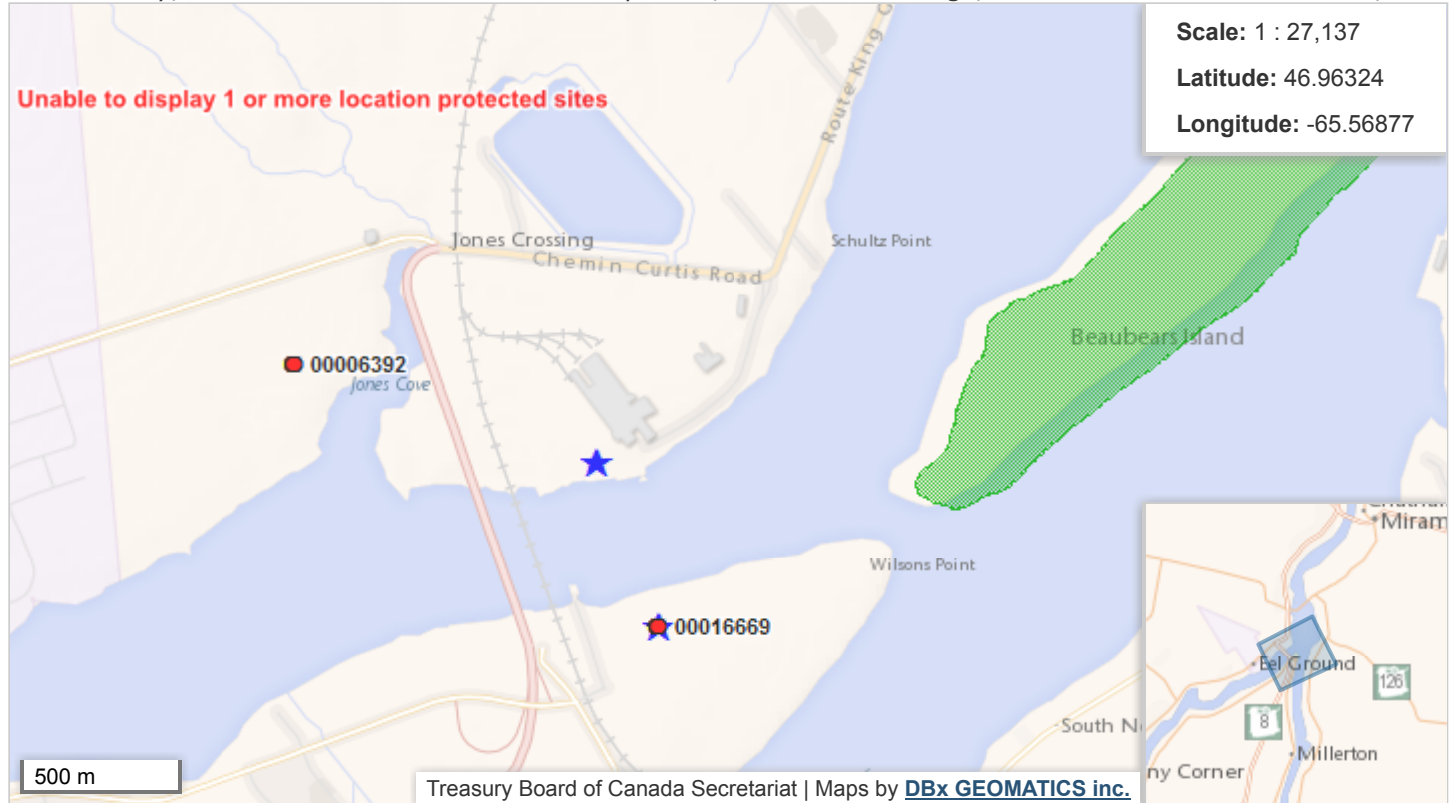
I-3 - Federal Contaminated Sites Mapping

Treasury Board of Canada Secretariat

Home > [OCG](#) > [Real Property Management](#) > [FCSI](#) > DFRP/FCSI - Map Navigator

DFRP/FCSI - Map Navigator

Area: Derby, Miramichi **Content:** 4 Federal Properties, 2 Federal Buildings, 2 Federal Contaminated Sites,



Layers

- Contaminated Sites from active query
- ★ Federal Properties
- ★ Federal Buildings
- Federal Contaminated Sites
- Economic Region
- Census Divisions
- Census Subdivisions
- Metropolitan Areas
- Federal Electoral Districts
- Census Subdivision Classification
- Treaty Areas

¹ This layer is visible only when the map scale is smaller than 1:3,000,000.

²  Urban  Rural  Isolated

³ Google base maps are only available when the map scale is smaller than 1:60,000.

IMPORTANT NOTE: The tables below are currently not synchronized with the map content.

Please click on the following hyperlink if you want to update the tables content: [UPDATE TABLES](#)

Federal Properties

Federal Buildings

Federal Contaminated Sites