



Basic Impact Analysis
Route 117 Rehabilitation

Kouchibouguac National Park of Canada

January 12, 2015



Parks Canada
Parcs Canada

Canada

**1. PROJECT TITLE**

Route 117 Rehabilitation

2. PROJECT LOCATION

Kouchibouguac National park of Canada.

3. PROJECT SITE(S)

The segment of road of route 117 starting at the southern end Park entrance and extending northward (23.7 km).

4. PROPONENT

Maurice Landry
Asset Manager

5. PROPONENT CONTACT INFORMATION

Northern New Brunswick Field Unit
Parks Canada Agency
186 Route 117
Kouchibouguac National Park, NB
E4X 2P1

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6. PROJECT DATES

Planned commencement: 2015-06-01
Planned completion: 2016-07-31

7. INTERNAL PROJECT FILE #

NNBFU-2015-0001

8. PROJECT DESCRIPTION

The purpose of this project is to rehabilitate the pavement of 23.7 km of Route 117 in Kouchibouguac National Park of Canada. The highway was originally part of the provincial network of highways and was rebuilt in the 1960's. Various sections have been re-built over the years. Route 117 was last paved in 1993 with the pavement inspection data collected every three years for the last ten years. Frost heaving and cracking have caused deterioration of the roadways and the proposed method of rehabilitation needs to address underlying causes.

The rehabilitation will include the following:

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- Provide and implement designated controls for traffic and environment aspects of the work.
- Remove 56 existing Corrugated Steel Pipes and Creosote-Timber Culverts ranging in size from 450 mm to 1400 mm in diameter and install new plastic culverts including rip rap and end treatment where required. This item includes: excavating, stockpiling, disposal, alternative, disposal, recycling, backfilling and restoration.
- Disposal of old culverts.
- Clearing, grubbing, ditching and subgrade widening as required.
- Widen cross section 1 Km of Roadway curve at the Black River area.
- Remove of the existing asphalt concrete and reuse/disposal as required.
- Removal and reuse/disposal of existing granular base, subbase and subgrade materials to the required elevation.
- Compact and proof roll new subgrade surface.
- Remove existing guide rail posts and install new in designated locations. This item includes: dismantling, salvage, stockpiling, and disposal of guide rail, hardware, wooden guide posts and offset blocks.
- Supply and place granular base and subbase materials.
- Supply and place base course asphalt concrete and temporary markings.
- Remove and replace sign posts and the reinstate signs.
- Supply and place topsoil and hydroseeding on designated slopes.
- Install silt fence barriers
- Supply and place of surface course asphalt concrete and final pavement markings (2016).
- Disposal of waste material in designated disposal.

9. VALUED COMPONENTS LIKELY TO BE AFFECTED

Valued components likely to be affected by project activities include:

- I. Fish migration and habitat
- II. Water quality
- III. Amphibians and reptiles
- IV. Cultural resources (Artefacts)
- V. Visitor experience

10. EFFECTS ANALYSIS

I. Fish migration and habitat

Fish may migrate to spawn and reproduce, find food, escape predators, or find different habitats as they grow older. Fish entrance to the culvert may be restricted by obstructions at the entrance, excessive outlet velocity, or perch height. Barriers can be created by improperly designed or installed culverts and may impede the fish swimming ability created by the culvert slope, perched outlet, channelizing of flow leading to increased velocity, inadequate water depth caused by an oversized culvert and excessive culvert length.





II. Water quality

Suspended sediments made of soil particles released due to erosion of the banks or disturbed upland areas can interfere fish spawning breathing processes, migration patterns and feeding habits.

III. Amphibians (mainly american toad, spring peeper, wood frog, leopard frog, green frog, blue-spotted salamander and yellow-spotted salamander) and a reptile (wood turtle)

Roads and traffic can have major impacts on various amphibian species and wood turtle populations. This is particularly the case if they cut across annual migration routes between hibernation and breeding habitats. Previous studies/monitoring have shown that vehicle traffic results in considerable mortality of amphibians (Mazerolle, 2004). The highest abundance of amphibians crossing the road are located **9.4 km, 11.209 km, 11.537 km and 17.537 km** starting at the park entrance at Route 134 and extending northward. The wood turtle has been designated as vulnerable by the IUCN and "species of special concern" by the New Brunswick Endangered Species. The COSEWIC and the Canadian Species at Risk Act (SARA) have designated the wood turtle as threatened species. The wood turtles are more abundant at 11.2 km and 11.537 km starting at the park entrance at Route 134 and extending northward.

IV. Cultural resources (artefacts)

The widening at various locations of route 117 could impact the artifacts if present while grubbing excavating and trenching.

V. Visitor experience

Temporary lane and full lane road closures will be required for the culvert replacements and during the pavement rehabilitation activities. The visitor experience quality can be affected with a long waiting period or a detour due to lane or road closure.

11. MITIGATION MEASURES

I. Fish migration and habitat

The culverts should be installed:

- At least 300 mm lower than the other culvert to receive all the water during the period of low-flow.
- With effective slope of the culvert at any point along its length should not exceed one-half of one percent (0.5%) unless appropriate compensation is made by the addition of baffles within the culvert.





- A minimum water depth of 200 mm must be provided through the culvert length to maintain this water depth at low flow periods an entrance/downstream pool can be constructed.
- The culvert inlet and outlet must be adequately protected with rip-rap to prevent erosion and scour around the culvert during high runoff events.
- Maintain temporary diversion of water course to permit fish circulation.
- When dewatering/temporary diversion is required a Diversion/Dewatering Work Plan must be presented to the park Environmental Surveillance Officer prior to work commencement.

II. Water quality

The sediment control devices should be in place before the construction phase. In order to intercept and trap sediment before it reaches the watercourse. These devices must remain in place until permanent vegetation has been established. Prevention of sedimentation can be done

- Limit the size of the disturbed area.
- Limit the time the disturbed area is exposed.
- Plan construction during the low flow period from June 1st to September 30th.
- Retain existing vegetation wherever feasible.
- Straw bale barriers and silt fences must be placed around the downslope perimeter of a disturbed area or along the bank of a watercourse
- Re-vegetate exposed areas. Seeds should not be planted within 45 days of the killing frost. Mulch must be used
- Keep the velocity of surface runoff low by limiting the slope and gradient of disturbed area, covering erodible soils with mulch, vegetation or rip-rap.

Regular inspections of the park Environmental Surveillance Officer are necessary to ensure the sediments do not reach the watercourse.

III. Amphibians (mainly american toad, spring peeper, wood frog, leopard frog, green frog, blue-spotted salamander and yellow-spotted salamander) and a reptile (wood turtle)

Installation of amphibian wood turtle tunnel crossings under the road can improve the ecological integrity of Kouchibouguac National park by reducing the highway-caused mortality of amphibians and the wood turtle. Four (4) culverts will be modified for the amphibians and wood turtle crossing. These four (4) culverts are located **9.405 km, 11.209 km, 11.537 km and 17.537** starting at from the park entrance at Route 134 and extending northward (see figure 1.1 attached). The contractor must report immediately to the park Environmental Surveillance Officer if there is any presence of the wood turtle in the construction area.





IV. Cultural resources (artefacts)

The archaeological assessment and proposed testing methodology will be drafted when the project schedule is known. It will include a provision for archaeological tests before the project begins as well as monitoring if required during the construction phase.

V. Visitor experience

Kouchibouguac National Park staff can inform on a daily basis the visitors of the road conditions during the construction.

12. CONSIDERATION OF THE NEED FOR PUBLIC PARTICIPATION & ABORIGINAL CONSULTATION

12 a) Indicate whether opportunity for public participation should be offered:

No Yes

12 b) Indicate whether there is a requirement for Aboriginal Consultation in relation to project impacts:

No Yes

Letters had been send to THE ASSEMBLY of FIRST NATION' CHIEFS in NEW BRUNSWICK, regarding the Government of Canada \$20 million investment in deferred maintenance work projects across the New Brunswick North Field Unit as well as the description of the work to complete.

The AFNCNB requested additional information ahead of the advisory meeting, including maps of proposed projects, a list of water crossings, the number and size of any bridges or culverts and their proximity to wetlands.

The AFNCNB believe the consultation process can be achieved through the existing advisory committee with the Assembly, which meets again in early May.

13. EFFECT SIGNIFICANCE

The project will have no significant residual adverse effects. Any punctual effects can be mitigated on site.

14. SURVEILLANCE

The Environmental Surveillance Officer must inspect the work on a daily basis and take notes.

15. EXPERTS CONSULTED

Department/Agency/Institution:	Date of Request: 2015-01-13
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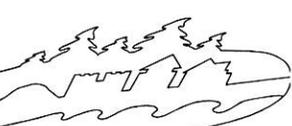


Parks Canada / Cultural Sciences Branch	
Expert's Name: Charles A Burke	Title: : Senior Archaeologist
Contact Information: 1869 Upper Water Street, Suite AH 201 Halifax, Nova Scotia, B3J 1S9 Charles.Burke@pc.gc.ca Telephone 902- 426-7513 / Cell 902-402-8065	
Expertise Requested: Archeology	

Department/Agency/Institution: Parks Canada / Sciences Branch	Date of Request: 2015-01-14
Expert's Name: Eric Tremblay	Title: Park Ecologist
Contact Information: New Brunswick North Field Parks Canada 186 route 117 Kouchibouguac, NB, E4X 2P1 eric.tremblay@pc.gc.ca Telephone: 506-876-1210 Cell: 506-521-5011	
Expertise Requested: Ecosystem Science	

Department/Agency/Institution: Fisheries and Oceans	Date of Request: 2015-01-14
Expert's Name: Francois Plante	Title: Senior Biologist
Contact Information: Gulf Region 343, Université avenue P.O. Box 5030 Moncton, N.B. E1C 9B6 Tel: (506) 851-2985 Cell: (506) 381-0784 Francois.Plante@dfo-mpo.gc.ca	
Expertise Requested: Fish Habitat	

Department/Agency/Institution: La Mauricie National Park	Date of Request: 2015-01-30
Expert's Name: Denis Masse	Title: Park Ecologist



Department/Agency/Institution: La Mauricie National Park	Date of Request: 2015-01-30
Expert's Name: Denis Masse	Title: Park Ecologist
Resources Conservation Service La Mauricie National Park Parks Canada Agency 2141, Saint-Paul Road, Saint-Mathieu-du-Parc (Québec) G0X 1N0 Denis.Masse@pc.gc.ca Tel : 819-532-2282, Ext. 234 Fax : 819 532-2602	
Expertise Requested: Wood turtle	

16. DECISION

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

not likely to cause significant adverse environmental effects.

likely to cause significant adverse environmental effects.

17. SIGNATURES AND APPROVAL

EA Author (Add additional signature blocks for multiple authors as required)

Name: Léophane LeBlanc	Date: 2015-04-17
Position: Resource Management Officer II	
Signature: 	

Decision Approval

Name: Géraldine Arsenault	Date: 2015-04-17
Position Field Unit Superintendent	
Signature: 	



Gravel, M. (2006). Réponse des amphibiens aux routes pavées dans le grand écosystème de Kouchibouguac : test de l'effet de barrière.

Gravel, M., Tremblay, E., Beaudet, M., Herman, T. and McAlpine, D. (2007). Population dynamics of wood turtles (*Glyptemys insculpta*) in the Greater Kouchibouguac Ecosystem.

Mazerolle, M.J. (2002). Night Driving Surveys as an Amphibian Monitoring Technique in Kouchibouguac National Park.

Mazerolle, M.J. (2004). Amphibian road mortality in response to nightly variations in traffic intensity

Mazerolle, M.J., Huot, M., & Gravel, M. (2005). Behavior of amphibians on the road in response to car traffic.

Masse, D. 1996. Situation de la population de tortues des bois (*Clemmys insculpta*) dans le parc national de la Mauricie et la rivière Shawinigan, état des connaissances sur le site de reproduction et préoccupations de conservation.

Province of New Brunswick Department of Environment, Sustainable Development, Planning and Impact Evaluation (2012). Watercourse and Wetland Alteration Technical Guidelines.

Savoie, R., Haché, D., Department of Fisheries and Oceans, Habitat Management Section, (2002). Design criteria for fish passage in new and retrofits culverts in the Maritime Provinces.

Stantec Consulting LTD (2015). RS 4 -99% Construction Documents – Route 117 Rehabilitation, Kouchibouguac National Park.

Yorks, D.Y., Siever, P.R., Paulson, D.J. (2011). Experimental tests of tunnel and barrier options for reducing road mortalities of fresh water turtles.

19. ATTACHMENTS LIST