



Public Services and
Procurement Canada

Timiskaming Dam-Bridge of Quebec Replacement Project (Quebec)

Environmental Impact Statement PART F – Summary of the Environmental Effect Assessment Chapter 19 Effects on the Biological Environment





PUBLIC SERVICES AND PROCUREMENT CANADA

Environmental Impact Statement Timiskaming Dam-Bridge of Quebec Replacement Project (Quebec)

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PART F - SUMMARY OF THE ENVIRONMENTAL EFFECT ASSESSMENT

19 EFFECTS ON THE BIOLOGICAL ENVIRONMENT

Table 19.1 presents the effects of the Project on the biological environment, the applicable mitigation measures and the significance and likelihood of these effects.

The construction activities will result in temporary loss of fish habitat while the dam itself and permanent structures will result in permanent loss of habitat. The temporary loss of fish habitat is estimated to be 3,907 m², including 3,842 m² of spawning grounds and 65 m² of other habitat (growth, feeding). This includes encroachments related to the cofferdam and the temporary dewatered area between the cofferdam and the existing dam. The permanent loss of spawning grounds is estimated to be 2,347 m², while the loss of other habitats is approximately 6,917 m², for a total of 9,264 m². A fish offsetting program will be developed to compensate for the loss of spawning grounds (walleye and sturgeon) downstream of the dam. This will be done in collaboration with the Indigenous groups and DFO and will be monitored for effectiveness.

The construction activities will potentially increase the suspended sediments in the water, resulting in unfavorable fish habitat. Erosion control measures commonly used on construction sites, such as sediment barriers and turbidity curtains will be implemented to reduce the effects. Suspended sediment monitoring will be conducted during construction. Indigenous groups raised some concerns regarding the water quality, and although no changes are anticipated in the quality of water with the exception of increased sedimentation, monitoring of pH, temperature, metals and mercury will be conducted during construction.

Fish may remain trapped between the existing dam and the turbidity curtain in phase 1, during the dewatering process after the construction of the cofferdam in Phase 1 or prior to the installation of the turbidity curtain upstream the demolition area in phase 4. Prior to this installation, fish will be captured and moved into the Ottawa River outside the cofferdam or the turbidity curtain by qualified personnel (ex: biologist, wildlife technician with scientific fishing experience). The methodology will be outlined in the DFO Authorization.

Changes in water velocities will occur during the various construction phases that involve a total or partial closure of the Quebec dam. These are likely to modify the hydraulic conditions in the downstream fish habitats and spawning grounds, approximately up to the southern end of Long Sault Island, which could impact the spawning. Fall spawning of whitefish could be disrupted, although no spawning grounds have been identified in this area. During the second Phase of the Project and during the installation of the half cofferdam, spring spawning along the left riverbank downstream of the dam could be affected due to the reduced water velocities.

Given the current state of knowledge on fish populations upstream and downstream of the dam, the effects of a potential multi-species fishway have raised several concerns in the Antoine Nation community. Initially, this fish passage specifically targeting the American eel and was considered a mitigation measure to restore free movement of the eel (incorporated into the DFO authorization for the Ontario dam replacement project completed in 2017). Based on concerns raised, PSPC has identified four potential options that will require further discussion with DFO and Indigenous groups before a decision can be made:

- 1) Fish passage for the American eel only (as stated in DFO's authorization for the Ontario dam project);
- 2) Fish passage for multiple species;
- 3) No fish passage;
- 4) Delay potential fish passage construction until a more detailed assessment of effects has been completed, as part of an Ottawa River-wide fisheries management plan.

The staging area and construction site on Long Sault Island will result in the temporary loss of vegetation and habitats for various wildlife species (avifauna, mammals, herpetofauna). A revegetation plan will be developed in conjunction with the Indigenous groups in order to achieve a more natural environment and to ensure that the revegetation can provide more sustainable habitat for wildlife species. Measures to keep wildlife away during construction, reduce noise to minimize disturbance and avoid destruction of migratory bird nests will also be implemented.

There is evidence that bats are roosting in an abandoned building upstream of the dam and could be disturbed by the construction activities, in particular the noise and lighting. There is further evidence that indicates that some species of bats are using the interstices of the upstream face of the dam. Measures to prevent them from settling in the existing dam before its demolition and to reduce noise and light (short winter days requiring lighting at the beginning and end of the day, as the work will not take place at night) will mitigate the effects. Additional studies will be implemented before and during the construction activities to ensure the mitigation measures are effective.

All mitigation measures as well as the fish habitat compensation program will be monitored during construction and some measures will be followed up for effectiveness. Several management plans (erosion control, vegetation protection, invasive species control and management, wildlife management, etc.) will be developed in collaboration with Indigenous groups and implemented during construction. Chapters 22 and 23 provide more details on the preliminary monitoring and follow-up programs.

Table 19.1 Summary of Effects on the Biological Environment

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
Vegetation (terrestrial and riparian vegetation, wetlands, species at risk)		Pre-construction, construction, emergencies	Permanent and temporary loss of vegetation	<p><u>Pre-construction</u></p> <ol style="list-style-type: none"> 1. Install temporary construction fencing to delineate vegetation clearing areas. 2. During clearing, all trees and shrubs should be removed from work area to avoid damage to remaining vegetation. 3. During clearing and earthmoving, do not push materials against remaining vegetation to protect plant communities beyond the limits of the work area. 4. Protect trees and vegetation at clearing limits. 5. Instruct site workers to always remain in designated work areas to avoid trampling plants and to minimize disturbance to remaining vegetation. 6. Limit machinery traffic in the work area to avoid soil compaction at the edge of the vegetation. 7. Keep equipment, storage sites and stored material away from remaining trees in the work area to prevent root damage from soil compaction. 8. Install a barrier 1 m beyond the drip line around residual trees that may be affected by the work. Keep barriers in good condition throughout the construction period. 9. Properly prune damaged residual trees. 10. If a substantial portion of a branch 25 mm Ø or wider is damaged, cut cleanly at the break or within 10 mm of its base. 11. Cut off any exposed roots that are 25 mm Ø or wider from the soil surface within five calendar days of exposure to the air. 12. Cut off damaged bark to an uninjured patch, without causing further injury, within five calendar days of damage. 13. Restore disturbed areas upon completion of the work through appropriate planting and seeding (restoration plan developed in consultation with Indigenous communities). If the topsoil in place is suitable for revegetation (according to the results of the soil analysis), salvage and stockpile it for reuse during restoration; 14. Define disposal areas for materials and excess excavated material outside of natural environments. 15. Require contractors to clean machinery prior to arrival at work sites and to ensure that it is free of mud, animals or plant fragments and invasive alien species (IAS). 16. Prepare and implement an IAS management plan (including a pre-work inventory in the work areas); 17. Rapidly revegetate exposed soils with native species to re-create habitats present prior to construction. 18. Do not import topsoil or other materials that may contain invasive alien species. 19. Allow representatives of Indigenous communities to access raspberry, wild blackberry, American elm, white pine, balsam poplar, yarrow, white birch and cedar for traditional uses prior to the commencement of work if these species will be affected. 20. If the large white pine near the cofferdam construction area is cut down, offer it to Indigenous communities for traditional crafts. 21. In consultation with Indigenous communities, prepare a revegetation plan for the island and areas disturbed by the work. Recommendations presented by the Kitchi Sibi Technical Team in Chapter 6 of Appendix 12.3 (see the above Section 12.2.2.1) will be considered when developing the revegetation plan. <p><u>Construction</u></p> <ol style="list-style-type: none"> 22. Same as above. 	Low	Project footprint	Medium	Continuous	Reversible (revegetation plan)	Non-significant	N/A

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
				21. Prepare and implement an IAS management plan 22. Report any IAS sightings and eliminate them properly 23. Minimize the use of explosives near or in fish habitat. If necessary to use blasting, follow DFO measures for blasting near or in Canadian waters. 24. Before removing the upstream turbidity curtain and reopening the new dam after demolition, sample the pH inside that area. If the pH is higher than the criteria (>9) and if the pH does not naturally decrease after few hours or days, the water could be treated to lower the pH before removing the turbidity curtain and reopening the dam. The water treatment to be used and the methodology will be discussed with Indigenous groups. 25. Develop a contingency plan for excessive flood flows 26. Monitor the work and planned measures 27. Restore shoreline after the cofferdam is removed 28. Restore habitat at the existing dam site 29. Stabilize soil and restore vegetation 30. Implement an offsetting plan and a monitoring program <u>Operation period</u> 31. Apply the Operational Management Plan (if needed, bonify it) 32. Contain work to avoid discharges into water 33. Decontaminate and restore sites in the event of spills <u>Emergencies</u> 34. Develop an emergency response procedure 35. Develop sediment- and erosion-control measures 36. Stabilize soils and restore vegetation 37. Decontaminate and restore sites in the event of spills							
Aquatic species at risk	√ 5(1)a)(iii)	Pre-construction, construction, operation, emergencies	Fish mortality (species at risk), permanent and temporary habitat alteration (species at risk), permanent and temporary effects (species at risk)	1. Evaluate the four options for the fishway in conjunction with DFO experts and Indigenous communities and select one of the options. <u>Pre-construction</u> 2. Develop and implement a Construction Environmental Management Plan, that will include, among other things, an Erosion and Sediment Control Plan, a Spill prevention and Response Plan, an IAS Management Plan, etc.) 3. Comply with construction start date. Take water temperature in the downstream area of the dam and begin the work in water for Phase 1 only after a 10-day period following a temperature of 18°C (which should be around mid-July) 4. Implement sediment- and erosion-control measures 5. Educate workers on waste management <u>Construction</u> 6. Adhere to dam closure dates and periods and in-water work dates (see section 7.1.2 and see Measure #3 above) 7. Avoid work that could affect critical fish spawning dates 8. Work must be done during low flow conditions, outside of the period from April 15 to June 30. The materials used must be free of fine particles for in-water works, while the machinery used must contain biodegradable oil 9. Minimize the water footprint of the structures and works. The size of the work site and the equipment installed should be optimized to minimize the direct footprint on fish habitat, destruction or alteration, or incidental mortality of individuals. 10. Ensure that the cofferdam is installed quickly (mid-July to late September). 11. Implement an erosion and sediment control and mitigation plan that includes all the measures and additional measures suggested by the contractor 12. Install erosion and sediment barriers	Low Medium to high	Local Project footprint	Medium Long	Cyclic Continuous	Reversible (offsetting measures) Reversible (offsetting measures)	Non-significant Non-significant	N/A N/A

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
				13. Educate and train workers in relation to the fish and fish habitat constraints and the measures that will be implemented during the project 14. Provide work-containment and sediment- and erosion-control measures for all in-water work 15. Filter pumped water when dewatering the area inside the cofferdam to reduce SS before they are discharged into the river 16. Install a turbidity curtain prior to installation and removal of the rockfill cofferdam and during demolition 17. Capture fish in the area between the old dam and the turbidity curtain and relocate them prior to the installation of the cofferdam. Redo the same process during the dewatering phase (Phase 1). Capture fish in the area between the turbidity curtain upstream and the new dam before the demolition of the existing dam (Phase 4) 18. Install filters on pumps during dewatering to prevent fish from entering (according to the criteria from DFO's Interim Code of Practice for End of Pipe Fish Screens (Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater (dfo-mpo.gc.ca)) 19. Use clean and appropriate-sized materials for in-water work 20. Clean all equipment and boats that may come into contact with river water to prevent the spread of invasive alien species (IAS) 21. Prepare and implement an IAS management plan 22. Report any IAS sightings and eliminate them properly 23. Minimize the use of explosives near or in fish habitat. If necessary to use blasting, follow DFO measures for blasting near or in Canadian waters. 24. Before removing the upstream turbidity curtain and reopening the new dam after demolition, sample the pH inside that area. If pH is higher than the criteria (>9) and if the pH does not naturally decrease after few hours or days, the water could be treated to lower the pH before removing the turbidity curtain and reopening the dam. The water treatment to be used and the methodology will be discussed with Indigenous groups. 25. Develop a contingency plan for excessive flood flows 26. Monitor the work and planned measures 27. Restore shoreline after the cofferdam is removed 28. Restore habitat at the existing dam site 29. Stabilize soil and restore vegetation 30. Implement an offsetting plan and a monitoring program <u>Operation period</u> 31. Apply the Operational Management Plan (if needed, bonify it) 32. Contain work to avoid discharges into water 33. Decontaminate and restore sites in the event of spills <u>Emergencies</u> 34. Develop an emergency response procedure 35. Develop sediment- and erosion-control measures 36. Stabilize soils and restore vegetation 37. Decontaminate and restore sites in the event of spills							
Wildlife and habitats		Pre-construction, construction, emergencies	Temporary and permanent loss of habitat	<u>Pre-construction</u> 1. Limit vegetation clearing and other interventions to required areas 2. Optimize movement in the work area to minimize disturbance to wildlife. 3. Protect trees adjacent to the site by erecting a two-metre-high barrier situated one metre from the drip line.	Low	Local	Medium	Continuous	Reversible (revegetation plan)	Non-significant	N/A

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
				<ol style="list-style-type: none"> 4. Prune any tree branches damaged during pre-construction. 5. Clear vegetation and grade the site between early September and early March, which is outside the general wildlife breeding season. 6. Conduct a daily visual inspection of the work site and equipment to confirm the absence of animal species before work begins. 7. If an active animal is found in the work area, all work in the immediate area must cease. A standard wildlife-management protocol should be implemented to relocate animals that enter the work area. If individuals are observed, they will either be directed out of the work area (mammals) or captured by a designated employee trained in the safe handling and transport of wildlife, transported to the nearest available off-site location and released. 8. Control noise levels by using silencers on heavy equipment and portable generators. 9. Inspect equipment regularly and operate vehicles only when necessary. 10. Enforce the speed limit on the construction site to minimize the risk of wildlife mortality. 11. Keep the site clean to avoid attracting wildlife. 12. Record all incidental captures and accidents involving wildlife, and if significant levels are recorded at a particular location (more than 5), a biologist should be consulted to determine, with Indigenous peoples, if additional mitigation measures are required (develop, in collaboration with Indigenous groups, and implement a wildlife management plan). 13. Notify Indigenous groups in the event of high wildlife mortality (more than 5). 14. Inform site workers of the potential presence of wildlife and of the measures that must be taken to avoid adverse impacts. 15. Install signage at the edge of habitats indicating the potential presence of wildlife. <p><u>Construction</u></p> <ol style="list-style-type: none"> 16. Same as above. <p><u>Emergencies</u></p> <ol style="list-style-type: none"> 17. Develop an emergency response procedures 18. Decontamination and remediation of site in the event of a spill 							
Wildlife species at risk	√ 5(1)a)(ii)	Pre-construction, construction, emergencies	Temporary and permanent loss of habitat	<p><u>Pre-construction</u></p> <ol style="list-style-type: none"> 1. Limit vegetation clearing and other interventions to required areas 2. Protect trees adjacent to the site. 3. Clear and grade the site between early September and early March, which is outside the general wildlife breeding season. 4. If an active animal is found in the work area, work in the immediate area should cease. A standard wildlife-management protocol should be implemented to relocate animals that enter the work area. If individuals are observed, they will either be directed out of the work area or captured by a designated employee trained in the safe handling and transport of wildlife, transported to the nearest available off-site location and released 5. Use sediment barriers along the Long Sault Island shoreline and along the western shoreline of the province to prevent snapping turtles from entering the construction site. The barriers must be biodegradable and designed to minimize entrapment. 6. Control noise levels by using silencers on heavy equipment and portable generators. 7. Inspect equipment regularly and operate vehicles only when necessary. 8. Enforce the speed limit on the construction site to minimize the risk of wildlife mortality. 	Low	Local	Medium	Continuous	Reversible (revegetation plan)	Non-significant	N/A

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
				9. Keep the site clean to avoid attracting wildlife. 10. Record all incidental captures and accidents involving wildlife, and if significant levels (one for the species at risk) are recorded at a particular location, a biologist should be consulted to determine if additional mitigation measures are required (develop, in collaboration with Indigenous groups, and implement a wildlife management plan). 11. Inform site workers of the potential presence of wildlife and of the measures that must be taken to avoid adverse impacts. 12. Install signage at the edge of habitats indicating the potential presence of wildlife. 13. Notify Indigenous groups in the event of any wildlife species at risk mortality. <u>Construction</u> 14. Same as above. 15. Prior to demolition of the dam, in the spring before bats emerge from hibernation, install a curtain over the existing dam to prevent bats from using or settling in the gaps of the existing dam. <u>Emergencies</u> 16. Develop an emergency response procedures 17. Decontamination and remediation of site in the event of a spill							
Migratory birds	√ 5(1)a)(iii)	Pre-construction, construction, emergencies	Temporary and permanent loss of riparian and terrestrial habitat in the work area; temporary loss of aquatic habitat in Phase 1 (mid-July to end of December); noise may deter birds	<u>Pre-construction</u> 1. Limit vegetation clearing and work to the required areas 2. Clear and grade the site between early September and early March, which is outside the bird breeding season in the area 3. Protect trees adjacent to the site. 4. If clearing and grading cannot be scheduled to avoid the bird nesting season, prior to the start of the breeding season, install an audible bird scaring device to prevent birds from nesting in the planned work areas. A biologist should conduct bird surveys during the two days before the work is started. If nests are identified, develop a mitigation plan to minimize disturbance and access to the nest and wait until the chicks leave the nest to cut the tree or backfill the area. If this is not possible due to the work schedule, the work will be completed and incidental captures will be recorded, unless it is a SARA, COSEWIC or LEMV species, in which case, the chicks must have left the nest before the tree and any nearby trees can be cut. 5. If a nest of active migratory birds is discovered during the work, all work in the immediate area must cease and a biologist must be contacted to develop a mitigation plan. 6. Control noise levels by using silencers on heavy equipment and portable generators. 7. Inspect equipment regularly and operate vehicles only when necessary. 8. Enforce the speed limit on the construction site to minimize the risk of wildlife mortality. 9. Keep the site clean to avoid attracting wildlife. 10. Record all incidental captures, and if significant levels are recorded at a particular location (more than 5 or more than one event for species at risk), notify Indigenous groups and consult a biologist to determine, in collaboration with Indigenous groups, if additional mitigation measures are required. 11. Inform site workers of the potential presence of migratory birds and nesting sites, and of the measures that must be taken to avoid negative effects. 12. Install signage indicating the potential presence of the migratory bird nest on the construction site at the edge of the habitats.	Low	Local	Medium	Continuous	Reversible (revegetation plan)	Non-significant	N/A

Valued component affected	Area of federal jurisdiction (√)	Project activities	Potential effects	Proposed mitigation measures	Key criteria for determining the significance of effects					Significance of residual adverse effects	Likelihood of significant residual adverse effects
					Magnitude	Geographic range	Duration	Frequency	Reversibility		
				<u>Construction</u> 13. Same as above. 14. Revegetation of banks (measures included in the revegetation plan). <u>Emergencies</u> 15. Develop an emergency response procedures 16. Decontamination and remediation of site in the event of a spill							
Bird species at risk	√ 5(1)a)(iii)	Pre-construction, construction, emergencies	Temporary and permanent loss of riparian and terrestrial habitat in the work area; temporary loss of aquatic habitat in Phase 1 (mid-July to end of December); noise may deter birds	<u>Pre-construction</u> 1. Limit vegetation clearing and other interventions to required areas 2. Carry out clearing and grading of the site between early September and early March, which is outside the general bird breeding season in the area 3. Protect trees adjacent to the site. 4. If clearing and grading cannot be scheduled to avoid the bird nesting season, prior to the start of the breeding season, install an audible bird scaring device to prevent birds from nesting in the planned work areas. A biologist should conduct bird surveys during the two days before the work is started. If nests are identified, develop a mitigation plan to minimize disturbance and access to the nest and wait until the chicks leave the nest to cut the tree or backfill the area. If this is not possible due to the work schedule, the work will be completed and incidental captures will be recorded, unless it is a SARA, COSEWIC or LEMV species, in which case, the chicks must have left the nest before the tree and any nearby trees can be cut. 5. If a nest of active special status birds is discovered during the work, all work in the immediate area must cease and a biologist must be contacted to develop a mitigation plan. 6. Control noise levels by using silencers on heavy equipment and portable generators. 7. Inspect equipment regularly and operate vehicles only when necessary. 8. Enforce the speed limit on the construction site to minimize the risk of wildlife mortality. 9. Keep the site clean to avoid attracting wildlife. 10. Record all incidental captures, and if significant levels are recorded at a particular location (more than 5 or more than one event for species at risk), notify Indigenous groups and consult a biologist to determine, in collaboration with Indigenous groups, if additional mitigation measures are required. 11. Inform site workers of the potential presence of migratory birds and nesting sites, and of the measures that must be taken to avoid negative effects. 12. Install signage indicating the potential presence of nests of special status bird species on the construction site at the edge of the habitats. 13. Notify Indigenous groups in the event of any bird species at risk mortality. <u>Construction</u> 14. Same as above. <u>Emergencies</u> 15. Develop an emergency response procedures 16. Decontamination and remediation of site in the event of a spill.	Low	Local	Medium	Continuous	Reversible (revegetation plan)	Non-significant	N/A