



# Basic Impact Assessment Parks Canada Version IAA 2019

## 1. PROJECT TITLE & LOCATION

Gulf Shore Parkway East - Renovations & Embankment Protection, Central Sector, PEINP

## 2. PROPONENT INFORMATION

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## 3. PROPOSED PROJECT DATES

Planned commencement: 2023-01-23

Planned completion: 2024-03-31

## 4. NOTICES ON REGISTRY

**Title for Registry:** *Gulf Shore Parkway East Road Renovations and Bank Stabilization*

Project notice posted on Registry 2022-11-02

BIA or any permits approval cannot be taken before 2022-12-01

## 5. PROJECT FILE NUMBER (internal /Registry)

PEINP22-32

## 6. PROJECT DESCRIPTION

**Project Objective:** The Gulf Shore Parkway East experienced significant damage following the impacts of Hurricane Fiona, including erosion and undercutting the bank beneath the roadbed. Damage has compromised the stability of the: 1) the Gulf Shore Parkway north of Dalvay Administrative complex; 2) a small area at a culvert near Stanhope Campground; 3) east and west approach to Covehead Bridge, making the roadways unsafe for visitor traffic (Appendix 3). This project aims to renovate the existing damaged roadbeds and provide embankment protection. Embankment protection will consist of 1) installation of imported granite and sandstone hydraulic riprap at both the east and west approaches to the bridge; 2) imported granite riprap around the impacted culvert; 3) granite riprap, which will be infilled with sand (buried revetment), at Dalvay. Riprap is a sloped protection using hydraulic riprap, which is of smaller size than armour stones. Some of the embankment protection solutions are interim measures to protect asset integrity and public safety/access; when the riprap is no longer required, it will be removed from the ecosystem. A monitoring plan will be implemented to inform adaptive management; beach nourishment will be considered as a maintenance approach based on expert advices, and as needed.

**Project Location:** Work will take place in three areas in the central sector of Prince Edward Island National Park: 1) at the approaching roadway (east and west) to Covehead Bridge, 2) a small area at a culvert near Stanhope Campground; 3) the Gulf Shore Parkway north of Dalvay

Administrative complex. (Appendix 3). Access to the beach will be required for installation and will be permitted at designated beach access points.

Project phase and activities:

*Covehead Bridge* - The project will involve stabilization and rebuilding of the existing roadbed north-west of Covehead Bridge and installation of granite and sandstone hydraulic riprap at the four corner abutments of Covehead Bridge. Existing stone will be reinforced and extended at all four locations (technical drawings Appendix 4). Project components include:

- Guardrail and fencing will be temporarily removed for site access.
- Rebuild the existing undercut roadbed North-west of Covehead Bridge. This section has been heavily damaged and will be used as a temporary access point (tote road) for work to be completed by heavy machinery on the beach north west of the bridge, but will be rebuilt following this work. This work will consist of:
  - Installation and compaction of common borrow and gravel
  - Repaving road surface
- Existing, exposed sandstone will be removed and is to be replaced by granite riprap. Sandstone will be removed from site or strategically utilized as agreed upon by the resident engineer and Impact Assessment Officer.
- Riprap installation will require excavation on the beach side to construct the “toe” of the shoreline protection. The “toe” allows for the placement of the bottom stones to ensure embankment protection is not undercut by storm surges and wave action. These stones will be placed in the dry excavation at a depth no deeper than 1400mm. A mid-size excavator will be used to construct the “toe”, with required excavation of a depth of 1.5m, and width of no more than 5m. The excavator will also be used to construct the grade required for installation of filter stone and riprap.
- Excavated materials from construction of “toe” will be stockpiled at a location approved by designated Parks Canada staff until they can be replaced to site following installation of riprap. All excavated sand not being re-deposited during construction will be placed on the existing beach in the dry within the tidal line.
- Geotextile material will be installed onto the graded surface in one continuous length from toe of slope to upper extent.
- A 500mm thick filter layer, composed of R25 (5-6” clean rock) will be placed atop the geotextile.
- R500 granite stone will be placed atop geotextile materials in a 1400mm thick layer
- Sandstone will be randomly placed at the uppermost section adjacent to the roadway in a 1000mm thick layer, at level with the roadbed
- Throughout the duration of work around Covehead Bridge, machinery required will include: excavator, dump trucks, loader and/or dozer
- Restoration following construction will include planting of marram grass and coastal shrubs (i.e. wild rose) to ensure stabilization. Where planting is not possible immediately post construction, banks dunes/banks may require temporary stabilization (i.e. erosion control blanket).
- Guardrail and fencing will be reinstated.

*Stanhope Culvert* - Erosion in the immediate vicinity of the culvert is a threat to the integrity of the adjacent Gulf Shore Parkway. This area will require the addition of granite riprap. Project components include:

- Riprap installation will require excavation on the beach side to construct the “toe”. These stones will be placed in the dry excavation at a depth no deeper than 1400mm. A mid-size excavator will be used to construct the “toe”, with required excavation of a depth of 1.5m, and width of no more than 5m. The excavator will also be used to construct the grade required for installation of filter stone and riprap.
- Excavated materials from construction of “toe” will be stockpiled at a location approved by designated Parks Canada staff until they can be replaced to site following installation of riprap. All excavated sand not being re-deposited during construction will be placed on the existing beach in the dry within the tidal line.
- Geotextile material will be installed onto the graded surface in one continuous length from toe of slope to upper extent.
- A 500mm thick filter layer, composed of R25 (5-6” clean rock) will be placed atop the geotextile.
- Granite riprap will be placed atop geotextile materials in a 1400mm thick layer
- The existing culvert will be extended by 3.5m to extend beyond the embankment protection crest

*Dalvay Corner/Beach* - Dune habitat at Dalvay corner, adjacent the east authorized beach access, was decimated during Hurricane Fiona. The dunes and the beach access were removed from the landscape by the storm and the road bed north of this access was undercut. The integrity of the road has been compromised and is at risk of further damage from future storm action. Given the susceptibility of this area to future storms, a short to medium-term embankment protection solution will be implemented in order to protect the integrity of the road for access and public safety until a long-term solution for this area is determined. Granite riprap will be added north of the Gulf Shore Parkway along a stretch of 270m (see technical drawings Appendix 4). The riprap will be buried under local and imported sands (from North Lake, PE) to create a buried revetment embankment protection design. Sand fencing will be installed south, between the road and the buried revetment. Project components include:

- Riprap installation will require excavation on the beach side to construct the “toe” of the shoreline protection. These stones will be placed in the dry excavation at a depth no deeper than 1400mm. A mid-size excavator will be used to construct the “toe”, with required excavation of a depth of 1.5m, and width of no more than 5m. The excavator will also be used to construct the grade required for installation of filter stone and riprap.
- Excavated materials from construction of “toe” will be stockpiled at a location approved by designated Parks Canada staff until they can be replaced to site following installation of riprap. All excavated sand not being re-deposited during construction will be placed on the existing beach in the dry within the tidal line.
- Select borrow (Class A Gravel) will be installed as required next to the roadbed to shape the grade the existing embankment for riprap installation
- Geotextile material will be installed onto the graded surface, and atop the select borrow in one continuous length from toe of slope to upper extent.

- Granite riprap will be placed atop geotextile materials in a 1500mm thick layer. As needed, a filter layer composed of R25 might be placed between the geotextile and the riprap.
- Excavated and imported sand from construction of the “toe” will be added back atop the granite riprap.
- Sand fencing will be installed south of the work area, between the road and the buried revetment.
- Throughout the duration of work around Dalvay, machinery required will include: excavator, dump trucks, loader and/or grader
- Restoration following construction will include planting of marram grass and coastal shrubs (i.e. wild rose) to ensure stabilization. Where planting is not possible immediately post construction, banks dunes/banks may require temporary stabilization.
- Monitoring of the efficiency of the buried revetment will assess the need for additional beach nourishment. Beach nourishment will be executed by depositing clean imported sand on the existing beach in the dry within the tidal line.

*Decommissioning of embankment protection* – Prince Edward Island National Park is assessing asset sustainability in the face of climate change and dynamic ecosystem processes. Addition of riprap in some of these ecosystems is an interim measure to provide protection to built assets until longer-term natural solutions can be determined. Any embankment protection no longer serving it’s intended purpose, or where alternate solutions are to be implemented, all riprap must be removed from the ecosystem.

- Geomorphologists and engineers will be consulted to determine best way to remove riprap and regrade the landscape to blend with the natural landscape and/or comply with engineered designs for natural solution.
- Riprap, geotextile material, sand fencing, and select borrow (Class A gravel) will be removed using excavator and will be trucked to location identified by project manager.
- Grading of natural materials will be required and imported materials (i.e. sand) may be required.
- Restoration following construction will include planting of marram grass and coastal shrubs (i.e. wild rose) to ensure stabilization. Where planting is not possible immediately post construction, banks dunes/banks may require temporary stabilization.

Authorized access routes for equipment to beach (consult Environmental Protection Officer if another route is to be used):

#### *Covehead*

- 1) North-west section of Covehead beach: use temporary access slip created during roadbed repair of north-west undercut
- 2) South-west section of Covehead beach: access via low point on south multi-use trail, equipment travelling along mean high-tide mark to access project area OR via temporary tote road built during placement of riprap
- 3) South-east section of beach: access via Covehead Harbour
- 4) North-east: access via slip at Stanhope Main

## *Dalvay*

- 1) Access via temporary tote road constructed during installation atop

## *Stanhope*

- 1) Access via Stanhope Lane slip

Project Timing: Work is anticipated to start February 2023; installation of riprap will be complete by June 30, 2023, and all paving work to be complete by July 14, 2023.

## **7. VALUED COMPONENTS LIKELY TO BE AFFECTED**

### **Species at Risk**

- The project will take place within critical habitat for Piping Plover and Bank Swallow and will result in the destruction or alteration of designated critical habitat. Project design has incorporated risk to Species at Risk critical habitat (Figure 9) and specific threats and mitigations are outlined in SARA Permit Decision Tool (Appendix 2). Should construction need to take place during the environmental timing windows for both Piping Plover and Bank Swallows and there is a potential for direct disturbance, mitigations will be in place to reduce the direct threat or the work shall cease.

### **Soil & Land Resources**

- Soil/sediment contamination from waste (e.g. garbage, litter, fuel)
- Increased disturbance footprint
- Soil/sediment compaction and rutting
- Soil/sediment removal
- Change in slopes, landforms and landscapes
- Potential changes in sediment movement (erosion and/or accretion) adjacent to embankment protection installation

### **Air and Noise Quality**

- Increased ambient noise level
- Temporary decreased ambient air quality (e.g. equipment emissions)
- Temporary increased levels of CO<sub>2</sub> and other pollutants

### **Water Quality**

- Increased sedimentation of nearby waterbodies
- Reduced water quality due to transportation of debris and contamination (i.e. from leaks and accidental spills, etc.)

### **Wildlife and Vegetation**

- Habitat destruction or alteration (Piping Plover and Bank Swallow Critical Habitat)
- Wildlife habituation/ attraction to artificial food sources

- Introduction of invasive species
- Damage to and removal of vegetation, and disturbance of adjacent natural areas

### **Visitor Experience and Safety**

- Reduced accessibility to portions of the site where work is taking place
- Hazard to visitors and staff due to construction activities
- Alteration to natural habitats at beaches with high visitation
- Removal of beach access point at Dalvay Beach (west Dalvay Beach access still available)

### **Cultural Resources**

- Adverse effects to the heritage value of character-defining elements of a cultural resource or heritage place
- Impacts to archaeological resources (known or potential) from displacement or destruction, resulting in loss of heritage value
- Impacts to cultural landscape, buildings, objects, views, or engineering work

## **8. EFFECTS ANALYSIS**

### **Species at Risk**

This project will take place in Piping Plover and Bank Swallow critical habitat. Whenever possible, construction will be scheduled to occur outside of the critical timing window for both species. However, some work may be required inside the critical timing window for both species. Additional mitigations will be required to reduce disturbance to the species at these times. It is not expected that any individuals will be killed, or nests or eggs destroyed; however, some residual disturbance may constitute harassment of individuals. In addition, the project will result in the destruction of critical habitat for both Piping Plover and Bank Swallow (Figure 9).

Piping Plover is listed as Endangered in Schedule 1 of the Species at Risk Act (SARA). This species has been documented nesting in the beach area directly adjacent to the project site at Covehead, north-west and south-west of the bridge (Figure 10). Piping Plover critical habitat exists throughout all three sites (Figure 9). A total of 4246.4 m<sup>2</sup> will be impacted. A SARA permit is required and mitigations listed in this permit must be followed to minimize impact on the species and its critical habitat as much as possible.

*Covehead* - Biophysical attributes of critical habitat exist on all four corners of the bridge. Replacement and extension of the current embankment protection will result in destruction of 1122.8 m<sup>2</sup> critical habitat at this site, including dune and open sand habitat. Critical habitat does not include areas that were previously protected prior to the storm event.

*Stanhope* - the area where embankment protection is proposed falls within the limits of critical habitat for Piping Plover; however, the presence of biophysical attributes required for nesting Piping Plover at this site is minimal and it is not likely nesting would occur at this site prior to Hurricane Fiona impacts. There are a lot of sandstone rocks at this site and the beach is narrow. However, Piping Plover could use this area for foraging and for staging prior to migration; these activities would not likely be impacted by the embankment protection. There will be 229.4m<sup>2</sup> of

riprap added to this site.

*Dalvay* - the area where embankment protection is proposed falls within the limits of critical habitat for Piping Plover and falls within what was dune and open sand habitat prior to the dunes being washed away by Hurricane Fiona. Embankment protection will remove an area of 2894.2 m<sup>2</sup> that was previously dune habitat and meets the biophysical attributes for critical habitat, resulting in a loss of critical habitat.

Bank Swallow is listed as Threatened in Schedule 1 of the Species at Risk Act. Biophysical attributes required for critical habitat of this species can be found in the sandstone/till banks and dunes adjacent the project sites.

*Covehead Bridge* - Installation of riprap along the northeast side of Covehead Bridge will remove dune habitat that is suitable for nesting and foraging Bank Swallows and will result in a loss of critical habitat. A small area of habitat that meets the biophysical attributes for foraging, will be removed from the southwest side of the bridge once embankment protection is extended in that area. 1122.8 m<sup>2</sup> of critical habitat will be removed around Covehead Bridge, including dune and open sand. Currently, the dune on the east side of the bridge is sheared and offers ephemeral nesting habitat. This dune face may look very different in the spring with further erosion and slumping. Most large dunes within PEI National Park have been eroded to expose this same vertical face and this ephemeral habitat is abundant across the park.

*Stanhope* - The area that has been eroded around the culvert near Stanhope Campground was previously suitable nesting habitat and meets the biophysical attributes for nesting Bank Swallows. It falls in the middle of a known Bank Swallow colony. Erosion from Hurricane Fiona was substantial enough that the bank is no longer suitable for nesting and only a small area will be impacted which could potentially be occupied by Bank Swallows. However, this will prevent erosion that could later expose new suitable nesting habitat. The embankment protection encompasses 229.4 m<sup>2</sup> resulting in the equivalent loss of Bank Swallow critical habitat, including sandstone/till bank and open sand.

*Dalvay* - the area where embankment protection is proposed falls within the limits of critical habitat for Bank Swallow (dune habitat) prior to the dunes being washed away by Hurricane Fiona. Embankment protection will remove an area of 2894.2 m<sup>2</sup> that was previously dune habitat and meets the biophysical attributes for critical habitat.

## **Soil & Land Resources**

During excavation, construction, backfill, and regrading, soils may be negatively impacted (compaction, erosion, petroleum contamination) from the use of heavy equipment travelling on and around the work site. The use of heavy machinery will be limited to the footprint of the work area, and where possible installation will be carried out from the roadside. Heavy machinery will be required to access the beach for installation of the riprap key resulting in compaction along the route travelled. Equipment will travel close to mean low tide to minimize impact. Access to the beach will be facilitated through approved access points or by creation of temporary slip (tote) roads created during installation of riprap, minimizing the impact caused by crossing over vegetated banks.

Mechanical removal of sand will be required for installation of the riprap key, to a depth of 1.5meters and width <5meters extending for the length of the riprap across all sections. This

activity could result in increased erosion potential during the time of construction. Activities shall not take place during adverse weather conditions that could result in unexpected erosion (i.e. heavy rain, high tides, significant wave action, etc.). Erosion and sediment control will be implemented to minimize erosion potential of the project. Excavated sands should be redeposited onsite atop the installed riprap to maintain a bank of material in that area. Sand that is not redeposited during construction is to be placed on the existing beach within the dry tidal line.

The addition of riprap to Dalvay and Stanhope areas, as well as the extension of embankment protection east of Covehead Bridge has the potential to initiate erosion directly seaward of the feature and downdrift. This will negatively impact the natural system, and prevent critical alongshore sediment exchanges needed for coastline accretion. This disturbed coastal erosion dynamic could lead to vulnerabilities at adjacent areas of the Parkway east and west of the newly protected sections overtime. Increased erosion was noted following surface hardening on the north side of Dalvay parking lot between 1965-1992.

Narrowing of the beach, resulting from the installed riprap slope, has the potential to undermine the hardened structure. Erosion at the base of the riprap will effectively decrease beach elevation and width over time, decreasing the protective beach and backshore during storm events. Decrease in beach width and elevation also prevents the recovery of any dune volume lost during the large storm events, such as Fiona, as a wider beach provides a platform for aeolian sediment transport to occur from the shoreline towards the upper beach and dune area. Placement of riprap at these locations could impact natural sediment exchange alongshore and lead to new vulnerabilities along the Gulf Shore Parkway.

A future phase of this program of work will evaluate further mitigation strategies to be implemented. These may include tactics such as beach nourishment recurring maintenance efforts to reduce beach loss overtime and other intervention measures following further consultations with subject matter experts.

### **Air & Noise Quality**

Provincial air quality is excellent. The province is occasionally subject to trans-boundary pollution from the mainland, including smoke from distant forest fires in neighboring provinces. Local air pollutants are restricted to seasonal (May to October) applications of pesticides, herbicides and fertilizers from park managed lands, adjacent farmlands and golf courses. Local air quality will be temporarily and minimally negatively impacted when heavy machinery is on-site excavating, landscaping or delivering materials. As this project is of a moderate scale, the scale of negative air quality impacts will be local and minimal. Construction shall limit impacts to Bank Swallow and Piping Plover and so any noise from construction shall be outside of the nesting season for these species.

### **Water Quality**

Construction activities (excavating, backfilling, riprap placement, leveling and grading) could result in the mobilization of on-site soils, especially during precipitation events, creating runoff containing suspended sediments which could negatively impact surface water quality. There is



also the potential for degradation of water quality from hydrocarbon release from equipment failures (broken hydraulic hoses) or refuelling spills. Potential hydrocarbon spills due to the presence of heavy equipment working adjacent to water bodies is a serious concern. However, there are spill mitigations in place to prevent and minimize this risk.

There is the potential for wind, rain, tidal events, sea spray, snow and flood events to result in accelerated erosion runoff at construction and staging sites. Weather conditions and forecasts should be assessed on a daily basis to determine the potential risk of severe weather events on the project. These issues are considered mitigatable through design, and standard operating, maintenance, and repair procedures, including an erosion and sediment control plan, and spill response plan.

### **Wildlife & Vegetation**

*Fauna*- Wildlife may be temporarily disturbed by the operation of heavy machinery during construction. The impact will be localized to the vicinity of the project footprint during construction. Feeding of wildlife and waste disposal will be mitigated by onsite crews. Work is scheduled to occur outside of the environmental timing window for migratory birds and mammals known to utilize the site. No anticipated impact is expected during the active construction phase of the project.

*Flora*- Construction activities (excavating, backfilling, riprap placement, grading, movement of heavy equipment) could result in disturbance to local flora within the project footprint. Flora bordering the project site (along the coastal bank and roadside) may be impacted by trampling or crushed by heavy equipment. Local flora consists of coastal shrubs and grasses (Bayberry, wild rose, marram grass). There will be loss of flora habitat resulting from installation of riprap, especially along the bank at Covehead.

No known invasive species occur within the project footprint. There is a potential risk for introduction and spread of invasive species by contaminated equipment. No topsoil is to be imported for this project.

### **Visitor Experience & Safety**

Heavy equipment will be in operation on, to, and from the worksite for the duration of the project. However, some sections of the Parkway slated for construction are currently closed off to visitor access as part of the full park closure following Hurricane Fiona. Visitor experience and safety will not be further impacted in these areas as the work area is inaccessible via jersey barriers. Areas that are/will be open to the public at the time of construction, will be either temporarily closed for the duration of the construction, or will exclude visitors from the construction site limits and, when necessary, use traffic control measures. Negative impacts to visitor experience during construction are anticipated to be minimal to none.

Upon completion of construction, the lower coastal slope of Dalvay Corner will be covered in riprap, decreasing visitor experience in the immediate area due to the changed landscape and removal of the east Dalvay Beach access.

## Cultural Resources

*Dalvay*- Work at this location will occur within the vicinity of Dalvay-by-the-Sea Hotel, a National Historic Site and Classified Federal Heritage Building. Character defining elements to this site include “the approach and views to and from the house, which give way to long open vistas of the sea, lake and surrounding grassy lawns”. Riprap installed at Dalvay corner will be buried under sand, elevated 1m above the adjacent roadway, altering the existing viewscales.

*Covehead* - The project footprint has been previously disturbed during construction of the Gulf Shore Parkway in the mid-1950s. This construction would have heavily disturbed the immediate area as the roadbed area was excavated and rebuilt with structural fill. The bridge was constructed in 1965, rehabilitated in 1990, and further repairs and armouring installation carried out in 2015 and 2017. The new construction will expand upon the previously installed riprap at this location, increasing the disturbance footprint (Figure 5).

Covehead Bridge is also in close proximity to Covehead Lighthouse, an iconic coastal landmark, and there is a potential that the extension of the embankment protection on the northeast side of Covehead Bridge could change the geomorphology in the area, potentially resulting in impacts to the coastal ecosystem surrounding Covehead Lighthouse.

The project sites have been reviewed by a cultural resource specialist, and determined that no archaeological overview assessment will be required.

## 9. MITIGATION MEASURES

### 1. General Activities

#### Site-specific mitigations

*Parks Canada IA Practitioner:*

- 1.1. The conditions presented in this environmental assessment will be considered part of the project. Failure to comply with any part of this screening may result in work being suspended or removal of the offending individual(s) from the construction site pending rectification of the problem(s).
- 1.2. The Project Management team will work with regional expertise to develop a research plan that will address the management effectiveness of shoreline protection, with specific emphasis around work in Dalvay. Evaluation of beach nourishment and adaptive management will be included in the research plan. The research plan must be approved by designated Resource Conservation staff. Mitigations applicable to beach nourishment are found in Section 11.
- 1.3. The Project Management team will work with regional expertise to develop an infrastructure removal/restoration plan. All materials are required to be removed from site, and site restored to a natural state when either; the infrastructure is no longer functioning as intended, the infrastructure is negatively impacting ecological integrity, and/or coastal infrastructure (i.e. Gulf Shore Parkway) is removed as part of the Field Unit’s planned coastal retreat as determined by the Field Unit Superintendent. The infrastructure removal/restoration plan must be approved by designated Resource Conservation staff. Mitigations applicable to removal are found in Section 8.
- 1.4. Site-specific restricted activity periods are outlined by the:
  - a) Environmental Timing Window Table (below)

b) Species at Risk permit supplementary to the mitigations outline in this Basic Impact Assessment

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Birds	Reduced risk for harm to birds			Bird Nesting Period: April - Mid August				Reduced risk for harm to birds				
Bats	Bat in Hibernacula			Bats Nursing Pups							Bat in Hibernacula	
Snakes	Avoid disturbance of Hibernacula			Road Mortality		Peak : breeding, young Mitigate road mortality		Migration Road mortality		Avoid disturbance of Hibernacula		

Delivery

- 1.5. All National Park regulations are to be observed by contractors, subcontractors and their employees (no feeding of wildlife, no littering, no camping, etc.). Failure to abide by National Park regulations may result in charges and/or removal from employment on the project.
- 1.6. The Contractor is to receive a copy of the approved Impact Assessment for this project and review, understand and comply with all components of the document. Any questions are to be directed to the project Impact Assessment Practitioner (IA Practitioner).
- 1.7. The Contractor and their employees / subcontractors are to have an on-site start-up meeting with the project IA Practitioner or designate prior to project works beginning. The IA Practitioner will present and discuss all mitigation measures that must be followed for the project and highlight environmental issues.
- 1.8. All work is to be confined to the site limits delineated and/or directed by the project IA Practitioner or designate.
- 1.9. Beaches, dunes and coastal wetlands must not be used as staging areas for the project. The storage of all materials will be at the pre-approved storage and staging sites; agreed upon by the EPO, contractor and project manager.
- 1.10. All construction materials must be clean and non-toxic (free of fuel, oil, grease, and/or any contaminants).
- 1.11. All machinery shall be free from loose petroleum fluids or lubricants harmful to the aquatic environment.
- 1.12. All equipment required for work on this project are to travel and work exclusively within designated roadway areas and staging areas and not into any of the adjacent wetlands or lands.
- 1.13. When possible, operate machinery on land above the high water mark, on ice, or in another manner that minimizes disturbance to the banks and bed of any water body.
- 1.14. All loads of materials transported through/within the Park must be covered and the loads secured in accordance to Section 45 of the National Park Highway Traffic Regulations.
- 1.15. Weather conditions should be assessed on a daily basis to determine the potential risk of climate on the project. The Contractor is encouraged to consult EC's local forecast at

<http://www.weatheroffice.ec.gc.ca> so that the construction work can be scheduled at an appropriate time. Contractor is to have a contingency (berming) plan at the ready to contain the construction, staging and disposal sites, should the weather create accelerated erosion conditions. The project IA Practitioner will review the contractor's plan and materials required to implement it to determine its effectiveness.

Modifications may be required to be made to the plan to enable better response time.

- 1.16. Open fires and burning in National Parks is strictly prohibited.
- 1.17. Any and all changes to the proposed project must be reviewed by and agreed to by Parks Canada's staff.

## Wildlife

### Planning

- 1.18. Schedule work to avoid restricted activity periods. Refer to site-specific mitigation (see 1.1).
- 1.19. Provide wildlife awareness training to on-site workers if required by field unit policy or site-specific advice.
- 1.20. All mitigations outlined in the Species at Risk permit must be adhered to. If work is occurring outside the Environmental Timing Window for birds (above), contractor must meet with Impact Assessment Practitioner (IA Practitioner) or designated Resource Conservation staff for a Species at Risk briefing.
- 1.21. If work taking place on site has the potential to disturb staging migrant shorebirds (i.e. construction, use of transport equipment, staging areas), the project IA Practitioner will contact Resource Conservation staff for information regarding the presence of waterfowl or shorebirds and direction to prevent adverse effects while then informing the contractor of the new mitigation measures to be put in place.
- 1.22. Prior to the commencement of structural work or vegetation removal, complete any pre-work surveys that are required (e.g., invasive alien species, species at risk, migratory birds). Develop a site and species specific mitigation strategy to be implemented in the event that survey results are positive.

### Delivery

- 1.23. Conduct any vegetation clearing outside applicable restricted activity periods (prior to April 01, 2023 or after August 15, 2023), unless otherwise directed.
- 1.24. If unexpected nests, Species at Risk or other wildlife are found, cease work in the immediate area and contact designated IA Practitioner for further direction.
- 1.25. Control materials that might attract wildlife (e.g., petroleum products, human food and garbage) as part of the waste management plan.
- 1.26. Never approach or harass wildlife (e.g., feeding, baiting, luring). If wildlife is observed at or near the work site, allow the animal(s) the opportunity to leave the work area.
- 1.27. Notify the IA Practitioner immediately about dens, litters, nests, carcasses (road kills), wildlife activity or encounters on or around the site or crew accommodation.
- 1.28. Immediately alert designated Parks Canada staff or emergency dispatch of any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion, etc.), encounters on or around the site or crew accommodation, distress or mortality.
- 1.29. Conduct activities during daylight hours and avoid critical foraging times (i.e., dusk and dawn) unless otherwise approved by designated Parks Canada staff.

- 1.30. Minimize the time excavations remain open. Slope the sides to no greater than 1:1 and ensure that wildlife and humans can safely exit it. Cover or fence smaller excavations when left unattended to reduce the potential for wildlife injury.

## Invasive Alien Species (terrestrial and aquatic)

### Planning

- 1.31. Develop an appropriate approach to mitigate the establishment and/or spread of invasive alien species (IAS) on the site. If IAS are a serious issue, more effective methods should be detailed in accordance with an approved integrated pest management plan.

### Delivery

- 1.32. Wash all construction equipment from outside the Parks Canada protected heritage place prior to arrival to minimize risk of introducing IAS, noxious weeds and soils from off-site. Proof that equipment was washed outside the protected heritage place may be requested before equipment is permitted into the protected heritage place.
- 1.33. Control IAS in parking or staging areas as needed to reduce the spread of invasive plants or seeds.
- 1.34. Ensure machinery already in the protected heritage place is in a clean condition and maintained free of IAS before moving to new sites, within or beyond the protected heritage place.
- 1.35. Use caution during loading of trucks and transport of any IAS and plant materials to minimize loss of materials (e.g., cover materials during transport).
- 1.36. Soil, gravel, erosion and sediment control products or other applicable materials shall not be imported from outside the protected heritage place without approval from the designated Parks Canada staff.
- 1.37. If organic material cannot be used in the construction site, it may be used in other parts of the protected heritage place with approval by the designated Parks Canada staff. Organic material (e.g, topsoil, borrow and fill material, gravel) taken from the construction site will not be used in other parts of the protected heritage place unless approved by the designated IA Practitioner.
- 1.38. Minimize ground disturbance, vegetation removal and bare soil exposure (e.g., cover stockpiled material with tarps, plant seeds or plants, cover with natural mulch/ground coverings).
- 1.39. Stabilize and revegetate disturbed areas as soon as possible. If there is insufficient time remaining in the growing season, stabilize the site to prevent erosion and vegetate the following spring.
- 1.40. Before and after the use of equipment in waterbodies, clean, drain and dry it on land, to prevent the introduction or spread of aquatic invasive/non-indigenous species.
- 1.41. Monitor disturbed and re-vegetated areas until native vegetation is growing successfully and invasive alien species spread is prevented.

## Cultural Resources

### Planning

- 1.42. If significant features (i.e., structural remains and/or high artifact concentrations) are encountered, development work should stop in the immediate area, photographs taken and the Parks Canada project manager informed. The project manager should then contact Parks Canada's Terrestrial Archaeology section for advice and assessment of

significance that will in turn determine what will be required to mitigate the chance find.

#### Delivery

- 1.43. Provide on-site workers with appropriate cultural resource awareness training if required.
- 1.44. If cultural resources (i.e., structural remains and/or artifact concentrations) are encountered, cease work in the immediate area, secure the site and contact the designated Parks Canada staff for further direction.
- 1.45. Apply additional mitigation measures as identified by a Parks Canada archaeologist and/or cultural resource management advisor for the immediate area of work.

## Visitor Experience

#### Planning

- 1.46. Ensure traffic accommodation plans are consistent with field unit standards, where they exist.

#### Delivery

- 1.47. Close and mark the work site and safety hazards with appropriate signage while active construction, repair or maintenance is underway; consider temporary detours or reroutes as appropriate.
- 1.48. If closing the area is not possible, maintain a safe working distance between work activities and visitors. If traffic control is required, use flaggers or other standardized traffic management approaches to direct traffic through the construction/hazard area.
- 1.49. Keep visitor access trails and roads outside the construction area free of construction materials, waste, machinery and equipment.

## In or Near Water Works

#### Planning

- 1.50. To protect aquatic habitat, a 30 m buffer zone is generally required from a waterbody, in which no activities<sup>1</sup> can occur. However, the appropriate buffer zone will be determined based on site-specific conditions by qualified IA Practitioner. Where appropriate, the buffer should also apply to storm drain inlets and outlets.
- 1.51. Plan in-water work to respect site-specific restricted activity periods to protect fish, amphibians or reptiles, including their eggs, juveniles, spawning or migrating adults and/or the organisms upon which they feed or as directed by the designated Parks Canada staff.
- 1.52. When appropriate, an in-stream work plan, or a specific section for work in and around water in an Environmental Protection Plan can be developed by a qualified professional (see reference) and is subject to approval by the IA Practitioner.

#### Delivery

- 1.53. Work shall comply with Fisheries Act.
- 1.54. Implement erosion and sediment control measures to protect waterbodies, wetlands and riparian environments.

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<sup>1</sup> E.g., refueling; storage of hazardous products; long-term stockpiling of soil, aggregate or asphalt; establishment of concrete washout facilities; removal of vegetation.

- 1.55. Limit machinery crossing (fording) a stream or watercourse to a onetime event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure in compliance with the Fisheries Act.
- 1.56. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- 1.57. Use temporary crossing structures or other practices to cross streams or water bodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds.

## Erosion and Sediment Control

### Planning

- 1.58. A site specific Erosion and Sediment Control Plan<sup>2</sup> (ESCP) must be approved in advance of starting work in the vicinity of waterbodies, wetlands or riparian environments. It must cover all construction and reclamation periods.
- 1.59. The ESCP must be developed by a qualified environmental professional and is subject to approval by the PC IA Practitioner.

### Delivery

- 1.60. Provide a briefing about the ESCP for all crew members on site and ensure they are aware of the mitigations.
- 1.61. Plan project activities to minimize soil handling and limit equipment movement over exposed soils and steep or unstable slopes prone to erosion.
- 1.62. Avoid activities that contribute to soil compaction and use practices that roughen and decompact soils to promote infiltration.
- 1.63. Use erosion and sediment control products, including backing, that are made of 100% biodegradable materials (e.g., jute, sisal or coir fiber) when possible.
- 1.64. Erosion and sediment control products should be selected to reduce potential for wildlife entanglement/attraction and prevent introduction of invasive alien species.
- 1.65. Avoid straw-based erosion control unless authorized by designated Parks Canada staff. The use of hay is not permitted due to risk of introducing invasive species.
- 1.66. All products must be approved by IA practitioner or designate and installed prior to commencement of work.
- 1.67. In the event of erosion and sediment control measure malfunction or of deleterious substance, including sediment, run off (current or impending), work shall stop until measures are adjusted to address the problem.
- 1.68. Minimize the length of time soils are exposed and complete work in one area before commencing work in another area.
- 1.69. If vegetation clearing is scheduled early due to restricted activity periods, maintain soil stability by delaying grubbing until just prior to construction activities.

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<sup>2</sup> Parks Canada IA practitioner has to determine the project risk and sensitivity of the environment and provide ESCP scale and scope, including whether the ESCP may be included within a general Environmental Protection Plan.

- 1.70. Store excavated material and debris in a stable area above the high water mark or active floodplain and, where possible, 30 m from drainage features and/or the top of steep slopes.
- 1.71. Protect excavated material from entering a waterbody (e.g., cover with erosion blankets or tarps, seed, or plant with native vegetation).
- 1.72. Maintain effective sediment and erosion control measures until complete revegetation of disturbed areas is achieved unless directed otherwise by IA practitioner or designate.

## Staging and Laydown Sites

### Planning

- 1.73. Identify key contacts and their respective roles and responsibilities prior to work starting, and communicate this to all on-site workers.

<b>Parks Canada Key Contacts</b>	<b>Roles and Responsibilities</b>	<b>Contacts</b>
Parks Canada Emergency Dispatch	Dispatch of emergency services (i.e. PCA spill team, wildlife conflict team, etc.)	1-877-852-3100
IA Practitioner – Louis Charron	Impact Assessment Practitioner and Environmental Protection Officer	1-709-769-6555
On-site Project Manager	Prince Edward Island National Park Asset Manager – site project manager	1-902-626-9083

### Delivery

- 1.74. Ensure all on-site staff attend a briefing with designated Parks Canada staff before beginning work at the site to review and explain mitigations.
- 1.75. Delineate the work zone by clearly marking with stakes, flagging tape or other means to limit active construction and define access and egress locations. Remove completely when the project is completed.
- 1.76. Identify staging areas, material/equipment drop sites, and parking areas. Locate these areas within an existing disturbed footprint (e.g., roadways, gravel surface, previously disturbed areas with high resiliency) or other site as approved by designated Parks Canada staff.
- 1.77. Use existing roadways, trails, identified disturbed areas or other areas as approved by designated Parks Canada staff for site access.

## Noise Management

### Planning

- 1.78. Identify noise limits (e.g., location, time of year), especially near areas of high use by park visitors (e.g., campgrounds, picnic areas) or in vicinity to sensitive areas and wildlife and incorporate into plans and specifications.

### Delivery

- 1.79. Maintain equipment and heavy machinery in good working order (e.g., adequate muffler, regular maintenance).
- 1.80. Use the noise attenuation devices provided with certain equipment or tools (e.g., compressor side panels).



- 1.81. Shut off motorized equipment if it is not used for an extended period of time.
- 1.82. Whenever possible, locate stationary equipment away from noise-sensitive areas or in such a way as to reduce the impact on the ambient noise level.

## Fuel Storage and spills

### Planning

- 1.83. A Spill Contingency and Response Plan must be submitted and approved by designated Parks Canada staff prior to starting work.

#### Note:

The Spill Response Plan must, at minimum, include the following information:

- List of products and materials that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement, sand blasting agents, paint, solvents and hydrocarbons;
- Required equipment on site and location of spill kits;
- Spill prevention procedures (i.e., containment and storage of materials, security, handling, use and disposal of empty containers, surplus products or waste generated in the application of these products in accordance with all applicable federal and provincial legislation);
- Fueling and fuel storage procedures;
- Spill response procedures (i.e., containment, clean-up, disposal of contaminated materials, etc.);
- Spill reporting procedures; and
- Up-to-date emergency response contact list including contact information for reporting spills.

### Delivery

- 1.84. Ensure drip trays are placed under equipment when not in use.
- 1.85. Retain spill kits sufficient to contain and clean up 110% of the site's largest possible fuel or chemical spill at each location of potential spills, including all sites where equipment is working.
- 1.86. Provide a briefing about the Spill Response Plan for all crew members on site and ensure they are aware of the location and use of spill kits and containment devices.
- 1.87. No fuel or petroleum products shall be stored on site. Containment pads must be used during refueling operations.
- 1.88. If potentially hazardous materials (e.g., cement-based products, sealants or paints) are used on site, ensure raw material, mixed compounds and wash water are not released to any waterbody or soils. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- 1.89. Hazardous or toxic products shall be stored no closer than 100 metres from streams, wetlands, water bodies or waterways.
- 1.90. Take timely and effective action to stop, contain and clean-up all spills if the site is safe to enter. Immediately notify the designated Parks Canada staff of any spill (see 1.60). In the event of a major spill, stop all other work and devote all personnel to spill containment and clean-up. Remediate the site to pre-spill conditions. Spills must be reported to Environmental Emergency 1-800-565-1633.

- 1.91. The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions), shall be the responsibility of the proponent. The site will be inspected to ensure completion to the expected standard and to the satisfaction of Parks Canada.
- 1.92. Dispose of contaminants at an approved facility. A detailed receipt of delivery to an approved facility may be requested by the designated Parks Canada staff.

## Dust Management

### Delivery

- 1.93. For dust control from all project activities, use only water that is free of waste and organic matter. Chemical dust suppressants shall not be used unless directed otherwise by designated Parks Canada staff, in accordance with Parks Canada health and safety and environmental policies.

## Site Clean Up/General Waste Management

### Delivery

- 1.94. Clean tools and equipment outside of protected heritage places to prevent the release of wash water that may contain deleterious substances, unless otherwise directed by designated Parks Canada staff.
- 1.95. Remove all salvageable, non-combustible and non-hazardous materials and reuse or recycle it to the greatest extent possible.
- 1.96. Contain and remove all waste in a timely and approved manner, and dispose of it at an approved disposal facility outside the protected heritage places unless otherwise directed.
- 1.97. Empty construction waste storage containers when 90% full. Provide lids for waste containers, ensure they are wildlife proof if there are attractants, and cover waste loads during transport (including waste containers and truck loads).
- 1.98. Separate on site any hazardous material<sup>3</sup> and pollutants such as fuels and solvents. Dispose of contaminated materials at provincially or territorially certified disposal sites.
- 1.99. If present, service portable sanitary facilities on a regular basis and dispose of accumulated waste at a sanitary waste disposal facility. Provide adequately sized portable facilities and manage them to ensure waste is not discharged to the environment.
- 1.100. Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in Parks Canada protected heritage places. These wastes shall be contained and removed in a timely and approved manner and disposed at an appropriate waste landfill site located outside the Parks Canada protected heritage place.

## Site Reclamation

### Planning

- 1.101. Post-construction reclamation activities must be detailed in an approved Reclamation Plan, Environmental Protection Plan or other project document prior to construction.

### Delivery

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<sup>3</sup> E.g., asphalt shingles, creosote treated wood, asbestos, lead paint, molds, animal excrement, paints, automotive products, electrical equipment...

- 1.102. Implement Reclamation Plans for the disturbed area immediately following completion of construction. Long delays between vegetation removal and revegetation should be avoided. For some projects, revegetation in smaller phases should be considered to minimize soil exposure.

#### *Subsoil and Topsoil Placement:*

##### Planning

- 1.103. Assess methods of bioengineering such as terracing, willow staking, or live pole drain systems where soils are steeper or remain unstable.
- 1.104. Avoid use of fertilizer to limit non-native vegetation growth and allow for local species to use available nutrients. Any use of compost, foreign soils, fertilizers, locally sourced mycorrhizae compost and soil amendments must be approved by designated Parks Canada staff.
- 1.105. Place and grade topsoil before winter.

##### Delivery

- 1.106. Excavate, conserve, store and replace existing site topsoil unless otherwise directed by designated Parks Canada staff. Soil imports from other project sites or outside of the protected heritage place is not generally recommended. However, if required, it must be approved by designated Parks Canada staff.
  - Where insufficient topsoil is available, imported topsoil may be used as a last resort. Imported topsoil must be certified completely free of non-native seeds and compost developed from sewage treatment plants. Methods of improving vegetation succession using locally sourced, weed and contaminant free materials are preferred.
- 1.107. Salvage site topsoil using a “two lift” method and store topsoil and subsoil separately for improved reclamation success.
- 1.108. Compact backfill or allow it to settle to prevent depressions.
- 1.109. Replace topsoil to all areas immediately following fine grading.
- 1.110. Do not compact topsoil by driving repeatedly over the site. Keep topsoil “rough and loose” or as directed by designated Parks Canada staff.
- 1.111. Where remaining soils are unstable due to steepness or soil characteristics, install erosion controls immediately or apply a hydraulic erosion control product to the target areas (i.e. sod or erosion control blanket).

#### *Revegetation:*

##### Planning

- 1.112. Determine the appropriate site-specific seed mix(es) and/or plantings. Revegetation plan is to be directed by Resource Conservation staff.
- 1.113. Schedule construction so that seeding or planting can coincide with seasonal planting windows (i.e., spring or fall).
  - Vegetation restoration is most effective if seeded in the fall, this allows for full scarification of the seed over the winter and adequate moisture available. Spring and early summer will also work, consider using seed that requires shorter scarification times for these applications.
  - Transplants will do best in the spring and summer and will require adequate watering.
- 1.114. Salvage of native plants is preferred over purchase of commercial plugs or container stock where possible.

## Delivery

- 1.115. Do not use seed that is coated (including “ultra-coating”) unless approved by the designated Parks Canada staff.
- 1.116. Ensure seed certificates are approved by the designated Parks Canada staff prior to seeding.
- 1.117. Ensure seed mix(es) and any species substitutions are approved by the designated Parks Canada staff.
- 1.118. Unless otherwise directed, seed certificates must include both the common and scientific name following the CANADENSYS nomenclature system; indicate if the seed is a cultivar, ecovar, or wild native species; geographic origin (seed source); date of collection; method of seed storage; germination, viability and vigour; and indicate all other species occurring including agronomic, weed, and native species; and date of the analysis. The contact information for the Seed Supplier shall be included.
- 1.119. Broadcast seeding is the preferred method of seeding native seeds, where terrain and soil conditions permit.
- 1.120. Do not exceed 30 kg/ha for the broadcast method, ensure seed is integrated with the soil by light rake or harrow. Broadcast method seeding rate is 25 kg/ha (2.5g/m<sup>2</sup>) (e.g., 1x25 kg bag will cover 10,000m<sup>2</sup> or 1 hectare).
- 1.121. Do not increase the seeding rate to compensate for poor seedbed conditions.
- 1.122. If using Hydraulic Erosion Control Products (HECP or hydromulch) apply over top of native seed already in place, where possible. Avoid using native seeds in tank mixes unless specified by the designated Parks Canada staff.
- 1.123. For hydro-seeding do not exceed 75 kg/ha with light mulch rates (500 kg/ha- of mulch with hydro-seeding) and 150 kg/ha with heavy mulch rates (1500 kg/ha of mulch with hydro-seeding).
- 1.124. For hydroseeding and hydromulching, thoroughly clean and rinse tanks to remove any unwanted species. All tank additions (e.g., hydro-mulch, tackifier, soil amendments) must be pre-approved by the designated Parks Canada staff.
- 1.125. For hydroseeding or hydromulching, ensure that full coverage and minimum depth are attained for erosion protection, and depth is consistent across site. Trees and established existing vegetation are not to be covered with mulch.
- 1.126. Seed and stabilize bare areas as soon as possible after disturbance, preferably as soon as a significant area is graded and finished and before the next rain event, unless otherwise directed.
- 1.127. Slopes to be seeded should be no steeper than 2 horizontal to 1 vertical (2:1) and covered with a minimum of 5 cm (2 inch) of topsoil. Finish grading should always follow top soil placement.
- 1.128. Do not perform seeding under adverse field conditions such as frozen soils, excessively wet or dry soil, ice or standing water, heavy rain, or high winds.
- 1.129. The seedbed may need to be scarified by hand or, with the approval of the IA Practitioner, by machine on large areas (i.e., roadbeds) where it is accessible and appropriate.
- 1.130. Sod may be required in high traffic areas or places that need extra erosion control. Source sod grown from native species (often called fescue sod) and ensure adequate anchoring and watering is in place.
- 1.131. In cases where mulching is necessary to assist with seed establishment, apply it immediately after seeding.

- 1.132. Apply seed at a rate appropriate to the seed mixture, seeding method and existing vegetation conditions or as directed by the designated Parks Canada staff.
- 1.133. Do not seed on hardened (compacted), crusted or mechanically rutted surfaces.
- 1.134. Following broadcast seeding, rake soil to set seed in place and reduce foraging; this may be completed by hand or light harrow for larger areas.
- 1.135. Protect seeded area against erosion or damage as appropriate for the specific site (e.g., erosion control blanket, hydro-mulching, mulching).
- 1.136. Some seeding procedures may have to be completed or repeated in subsequent years as per the Reclamation Plan.
- 1.137. Ensure live plants (e.g., transplants, plugs, container stock) are watered-in well and receive sufficient moisture until established, and through any periods of extended drought. Provide regular watering unless there is sufficient rainfall.

*Monitoring and Control:*

- 1.138. Monitor temporary erosion control measures to prevent seed loss.
- 1.139. Schedule site inspections to monitor reclamation progress for an appropriate timeframe following construction to ensure establishment of vegetation.
- 1.140. Vegetation and IAS establishment will be assessed and minimum standards met before Certificate of Completion is issued.
- 1.141. Some seeding/planting procedures may have to be completed or repeated in subsequent years.

## **2. Asphalt Production and Handling**

### **Operation of Asphalt Plants**

#### Planning

- 2.1. Select low volatile organic compounds<sup>4</sup>-emitting asphalt products in paving activities or maintenance operations (e.g., emulsified asphalt) when appropriate.
- 2.2. Asphalt works should be undertaken during periods of dry weather whenever possible as this allows easier control of contaminated runoff and sediment.
- 2.3. If the work schedule requires working in the rain, install appropriate sediment and erosion controls to prevent the release of sediment-laden water or any other deleterious substances into surface waters, particularly for surface repair works requiring the application of patching and sealing compounds, tar, asphalt, and chemical surface sealants. Stop paving if deleterious substances are running off (or are obviously going to run off).
- 2.4. Asphalt plant operation shall comply with all environmental pollution control regulations, including provincial regulations, and the plant operational plan.
- 2.5. Ensure asphalt plant emissions do not exceed the limits set by provincial emission regulation.
- 2.6. Determine acceptable operating hours of operation and, if applicable, local noise standards.

#### Delivery

- 2.7. If excess or reject new asphalt product is stockpiled during significant rainfalls, contain all runoff as directed by the designated Parks Canada staff.

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<sup>4</sup> VOC-emitting asphalt

- 2.8. Make every effort to recycle waste asphalt, either as a base course, or by recycling waste asphalt product through the asphalt plant according to engineering specifications. Old cured ground asphalt material shall be removed and recycled, or stored for future recycling at an approved operational gravel pit or asphalt plant site.

## Gravel Crushing and Washing

### Planning

- 2.9. Where possible within engineering constraints, recycle asphalt materials to reduce the need for new gravel.

### Delivery

- 2.10. Gravel will not be crushed within National Park.
- 2.11. Gravel will be obtained from an approved operational borrow pit only. For gravel obtained from a borrow pit within a protected heritage place or borrow pit, gravel extraction within the footprint of the disturbed area of the approved operational borrow pit is permitted.
- 2.12. Water is not to be extracted from watercourses for use in any aspect of this project.
- 2.13. If gravel requires washing, it must be done outside the National Park.
- 2.14. Discharge water free from chemical contaminants onto the ground where further erosion and runoff into surface water is prevented. Discharging into well-vegetated ground surface, at a rate which prevents erosion can often provide increased absorption and reduction of sediment load.
- 2.15. Contaminated water shall be treated to meet CCME guidelines or transported outside of the protected heritage place for disposal at an approved facility.
- 2.16. For waste removed from the National Park, a detailed receipt of delivery to an approved facility is required.
- 2.17. Ensure there are no vertical faces on gravel stockpiles, to prevent nesting by Bank Swallows.

## Oiling of Truck Boxes

### Planning

- 2.18. Ensure trucks used for hauling asphalt mixture have tight, clean, smooth metal boxes. Acceptable lubrication to prevent asphalt product from adhering include a minimum amount of thin fuel oil or, where oil is prohibited, a non-petroleum lubricant.

### Delivery

- 2.19. Oil truck boxes only when absolutely necessary.
- 2.20. All oiling will take place outside of national park.
- 2.21. Vehicle covers shall be securely fastened.

## Disposal and Clean Up of Other Waste Products

### Planning

- 2.22. During the preconstruction meeting, establish a defined schedule to ensure regular clean-up of waste asphalt and petroleum spills.

### Delivery

- 2.23. Refer to module 1: General Activities-Site Clean Up/General Waste Management.
- 2.24. Collect leaks in drip-trays. Remove the collected material from the protected heritage place and dispose of at appropriate facility.

- 2.25. Collect used oil, filters, grease cartridges, oil cans and other waste products of plant servicing, and dispose of them at the nearest, approved industrial waste facility.

### **3. Concrete Handling and Washout Facilities**

#### Delivery

- 3.1. Prevent wash water, concrete, debris and sediment used in roads, barriers, guardrails or other-related infrastructure from directly or indirectly entering water by establishing and maintaining effective separation of the concrete work from the storm drain inlets, open drainage facilities, and waterbodies.

### **Concrete Washout**

#### Delivery

- 3.2. Washout of concrete mixer trucks shall be performed only back at the concrete yard or contractor's facility. No concrete washout shall occur within the National Park.
- 3.3. Pump excess concrete in concrete pump bin back into concrete mixer truck.

### **Concrete Application**

#### Planning

- 3.4. Determine site specific mitigation measures for larger scale manual mixing activities (around >20 litres) including buffer zones, drip trays, and daily surveillance requirements.

#### Delivery

- 3.5. Collect wash water when cleaning areas and equipment used during concrete activities and dispose of wash water with slurry.
- 3.6. Do not dump unused wet concrete on bare ground to harden at construction sites.

### **Concrete Work In or Near Water**

#### Delivery

- 3.7. During concrete delivery for works near water, where the 30 m buffer zone cannot be observed (e.g., bridge work), establish extra measures to prevent spills into the environment (e.g., collection/drip trays and berms lined with impervious material (such as plastic and a layer of sand), and double-lined fuel tanks).
- 3.8. Use anti-leaching concrete for projects that are likely in contact with a waterbody. Provide all workers with proper training on handling and application of anti-leaching concrete.
- 3.9. Maintain complete isolation of all cast-in-place concrete and grouting from fish-bearing waters until significantly cured.
- 3.10. If concrete materials are found to be entering waterbodies, monitor turbidity and pH and have a CO<sub>2</sub> diffusion system in place to neutralize pH levels.
- 3.11. If working below the water table without anti-leaching concrete, implement effective isolation, dewatering and other methods to keep the toxic product from entering the water.

## **4. Paving, Resurfacing and Grading**

### **Grading**

#### Delivery

- 4.1. Do not grade or allow material to spill outside of the delineated work area, within 1 m of the forest drip line, or in a stream, waterbody or wetland. Any material inadvertently falling outside the work limits will be removed promptly in a manner that does not damage vegetation or water quality.
- 4.2. Avoid grading following seed set if it is likely to spread seeds of non-native vegetation.
- 4.3. During grade construction conducted close to any watercourse, water body or wetland ensure materials are not pushed, fall or are eroded into the water or wetlands.
- 4.4. Materials shall be placed at storage sites or on the grade without spillage outside the work limits. Any material inadvertently falling outside the work limits will be removed promptly in a manner that does not damage trees or vegetation.
- 4.5. Retain a 30 metre vegetated buffer around water bodies or install runoff management structures where possible.
- 4.6. If possible, grade roads early in the spring before vegetation develops seed heads or late in season after vegetation has set seed and is dormant to minimize non-native vegetation propagation.
- 4.7. Ensure gravel or road bed material is free of weeds and comes from an approved operational gravel source free of other contaminates.

### **Paving and Resurfacing**

#### Delivery

- 4.8. Paving should not be undertaken during steady rain to prevent entry of concrete, asphalt, or patching and sealing compounds directly or indirectly in water.
- 4.9. If the work schedule requires working in light rain conditions, the area of work must be isolated and appropriate sediment controls must be installed to prevent the release of sediment-laden water or any other deleterious substances into surface waters, particularly for surface repair works requiring the application of patching and sealing compounds, tar, asphalt, and chemical surface sealants.
- 4.10. Minimize changes to the surface that could negatively affect infiltration and runoff characteristics and maintain effective surface drainage to limit direct runoff into surface waters.
- 4.11. Follow manufacturer guidelines and methods for proper use in the handling and application of sealants or other compounds.
- 4.12. Minimize application of seal coats or tack in wet conditions:
  - Apply seal coats only to dry surfaces and not within 24 hr of rainfall
  - Apply tack coats only if no rain is expected prior to covering the tack-coated surface with asphalt. If unforeseen rain arrives ensure runoff from recently seal coated surfaces are prevented from entering surface waters.

### **Pavement Marking and Barrier, Concrete Barrier and Guardrail Reinstatement**

#### Delivery



- 4.13. If pressure treated wood is used, follow procedures in the Parks Canada Treated Wood Management Guidelines.
- 4.14. Undertake pavement marking pursuant to standard methods applied in the protected heritage place for control of paint products, both in transport and handling.
- 4.15. A plan for the transport and control of paint and hazardous products (e.g., application of paint, cleaning of equipment, containment and disposal of waste paint and cleaning products) must be approved by designated Parks Canada staff.
- 4.16. Where concrete barriers or guard rails are temporarily removed, for highway improvements, temporary glow posts shall be installed, at 20.0 m intervals on straight sections and at 10.0 m intervals on curves and shall remain in place until permanent barrier system has been installed.
- 4.17. Where use of concrete is required for guardrail post holes, Concrete Handling Mitigations apply.

## **5. Roadside Vegetation Removal**

### **General**

#### Planning

- 5.1. Flag clearing areas. Clearing plans shall be approved by designated Parks Canada staff.
- 5.2. Identify and preserve trees with obvious wildlife use (e.g., snags with cavity nests, large trees with stick nests) unless assessed as hazard trees. If felling is unavoidable, designated Parks Canada staff consultation and approval is required.
- 5.3. Consider potential wildlife impacts (e.g., impacts of clearing Milkweed on Monarchs) when planning the extent of vegetation removal along roadways.

#### Delivery

- 5.4. Vegetation clearing should be conducted using methods that minimize ground disturbance, promote effective reclamation and minimize the potential for the establishment and spread of non-native vegetation.
- 5.5. Clear the minimum of area necessary; trees should be removed only if necessary for project completion or visitor/staff safety. Minimize full removal and retain vegetation when possible to reduce erosion.
- 5.6. If removal of riparian vegetation is unavoidable, use manual methods and directionally fall trees as far as possible from watercourses. Designated Parks Canada staff consultation and approval is required.
- 5.7. When work involves the disturbance of soils or the use of erodible materials (e.g. sands, topsoil), prevent the transport of sediment by the installing of appropriate erosion and sediment control.
- 5.8. Protect roots of trees to drip line to prevent disturbance or damage. Avoid traffic, dumping and storage of materials over the root zone.
- 5.9. When felling trees, take precautions to minimize damage to surrounding vegetation.
- 5.10. When removing individual branches, employ pruning techniques to minimize risk of tearing the bark and harming the tree; ensure that only branch tissue is removed and stem or trunk tissue is left undamaged.
- 5.11. Cut stumps flush with the ground, and leave ground cover undisturbed to promote slope stability. If clearing operations are conducted during snow cover, revisit the site after snowmelt to flush cut stumps.
- 5.12. Grub only if the removal of stumps is required to achieve project goals.

- 5.13. Ensure grubbing and stripping do not damage trees and roots beyond clearing limits.
- 5.14. On steep slopes, avoid grubbing and stripping unless otherwise directed.
- 5.15. During grubbing, shake stumps, roots, imbedded logs and other non-soil debris free of loose soil and rocks before transport.
- 5.16. Stabilize and re-vegetate like-for-like disturbed areas as soon as possible, using native plants/seed mix, approved by designated Parks Canada staff.

## Disposal of Vegetation Debris

### Planning

- 5.17. Adhere to all federal and provincial policies with regards to the transport of wood beyond park boundaries.
- 5.18. Set aside logs for use elsewhere if directed by the designated Parks Canada staff. All cut wood is the property of Parks Canada; consult with designated Parks Canada staff to determine appropriate cutting methods, use and disposal of cut wood and other plant material.
- 5.19. Where fire fuel loading is not a concern, consider placing limited amounts of vegetation debris in the forest to mimic natural tree fall, using it as a natural erosion control method along stream banks or large side slopes, or including it in site restoration. Such uses must be approved by designated Parks Canada staff.

### Delivery

- 5.20. Debris shall not be disposed of in waterbodies.
- 5.21. Remove all vegetation debris as soon as possible from the work site, either by transporting off-site for disposal or as directed by the designated Parks Canada staff.
- 5.22. Convey logs and other salvage materials to storage sites without spreading debris or damaging standing trees or other features outside the marked clearing or storage limits. Do not skid material through wetlands, waterways or water bodies.

## 6. Excavations, Soil Stripping and Overburden Removal

### Excavation

#### Planning

- 6.1. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation. If the work schedule requires working in the rain, appropriate sediment controls must be installed to prevent the release of sediment-laden water or any other deleterious substances into surface waters.

#### Delivery

- 6.2. Strip topsoil under dry conditions, whenever possible.
- 6.3. Minimize changes to the ground surface that negatively affect infiltration and runoff characteristics and maintain or re-establish effective surface drainage on completion of the project.
- 6.4. All sediment control measures must be in place before starting work in the vicinity of rivers, water bodies, watercourses, and wetlands.
- 6.5. Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation.

- 6.6. Do not spill materials outside the work limits. If any material inadvertently falls outside the work limits, remove it promptly in a manner that does not damage trees or vegetation.
- 6.7. Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for re-vegetation.
- 6.8. In the event of a work program shutdown during inclement weather (e.g., winter conditions unfavourable for construction, heavy rain events) establish sediment and erosion control and a contingency planning for bared soils or excavated material stockpiles.
- 6.9. All trenches or ditches left unattended overnight must be fenced or covered to prevent wildlife entrapment.
- 6.10. Reuse excavated material on site, unless there are any indicators of potential contamination.
- 6.11. An erosion control plan is also needed to control dust generated from the construction site.
- 6.12. Remove temporary erosion and sediment control products, especially non-biodegradable materials, when they are no longer required.
- 6.13. Maintain effective sediment and erosion control measures until any required re-vegetation of disturbed areas is achieved.

## Soil Salvage

### Planning

- 6.14. Plan the topsoil and subsoil salvage to minimize handling and traffic on soils.

### Delivery

- 6.15. Salvage topsoil and subsoil at all excavation sites in separate layers or lifts for reclamation purposes. Topsoil shall not be removed from the site unless otherwise directed.
- 6.16. Store topsoil separately from subsoil. Never pile subsoil on top of topsoil.
- 6.17. Stumps and woody debris should be removed from topsoil, but retained for restoration where applicable and at the direction of the designated Parks Canada staff.
- 6.18. Stabilize and repair all eroded areas prior to surface preparation, as determined by the designated Parks Canada staff, using local material where possible.
- 6.19. For multi-lift procedures, place the final layer of organic material containing the seed bank last.
- 6.20. Unless otherwise directed, apply topsoil at a depth of 30- 50 mm, or at the depth of the original site conditions<sup>5</sup>. Topsoil depths can be increased on gentler slopes and the surface should remain rough.
- 6.21. Do not allow equipment to compact topsoil after replacement, which should be timed to coincide with seeding or other revegetation work.

## Storage of Excavated Materials

### Planning

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<sup>5</sup> When sites were lacking of topsoil prior to construction, returning to that condition can be approved by the by the designated Parks Canada staff

- 6.22. Identify soil storage locations when developing construction plans. During the winter (when ground is frozen) soil storage can occur on undisturbed areas. When soil is thawed, soil storage should be located on previously disturbed areas (e.g., pull outs, roads, trails, campsite, and staging area) so that no soil compaction occurs outside of the construction area, unless otherwise directed.
- 6.23. Plan to separate stored topsoil from spoil by at least 1 m. Use appropriate material (e.g., geo-textile) to separate soil components where space is limited.

#### Delivery

- 6.24. Store stockpiled material on flat ground, away from drainage areas, waterbodies, subsoil, spoil material, construction activity and day-to-day operations unless otherwise directed; follow Erosion and Sediment Control Plan or Environmental Protection Plan.
- 6.25. Ensure there are no vertical faces on stockpiles, to prevent nesting by Bank Swallows.
- 6.26. Topsoil may be stored on hardened surfaces, geo-textile material or directly on undisturbed vegetation. If storage occurs on vegetation, material recovery by hand may be required.
- 6.27. Limit soil stockpile height to 2 m unless approved by designated Parks Canada staff.
- 6.28. Avoid topsoil loss. For example:
  - Do not store soil in areas prone to high winds.
  - Surround soil with berms or construct barricades in areas with steeper slopes.
  - Cover and anchor stockpile with dark geotextile when storage will exceed a week.
  - Plant approved native seed over topsoil stockpiles instead of using covers if approved by the designated Parks Canada staff.
- 6.29. If surplus topsoil is available after site reclamation:
  - it may be used to fill depressions around the project site with approval from designated Parks Canada staff; or,
  - make arrangements for disposal or stockpiling for other projects in consultation with the designated Parks Canada staff.

## **7. Slope Stabilization, Drilling and Blasting**

### **Slope Stabilization-Scaling**

#### Delivery

- 7.1. Time work to reduce impact to mammals, amphibians and reptiles using rock faces during sensitive life stages such as birthing and rearing of young. This often occurs during the spring. Confirm timing windows with local wildlife ecologists.
- 7.2. Refer to Species at Risk permit and abide by mitigations to reduce impact on Piping Plover and Bank Swallows.
- 7.3. Placement of rip rap and backfill on shorelines shall be undertaken without contacting the watercourse, wetted margins and must not be below the High Water Mark.
- 7.4. If replacement rock reinforcement is required to stabilize eroding or exposed areas, ensure that appropriately- sized, clean rock is used, and rock is installed at a similar slope to maintain a uniform bank.
- 7.5. Direct concentrated surface water (runoff) away from cut and fill slopes.
- 7.6. Immediately stabilize banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through vegetation restoration with native species.

## 8. Demolition/Decommissioning

### Planning

- 8.1. Before undertaking the partial or complete demolition of existing infrastructure, prepare a demolition plan or a written procedure for partial demolition. This is subject to approval and direction from the designated Parks Canada staff.
- 8.2. Prior to commencement of demolition activities, identify water and septic systems, lines and/or fields and take precautions during the operation of heavy equipment to avoid damaging them.

### Delivery

- 8.3. If undocumented contamination is found, cease work immediately and contact designated Parks Canada staff.
- 8.4. During decommissioning, all infrastructure (i.e. riprap, geotextile, sand fencing) is to be completely removed and is subject to the approval of designated Parks Canada staff.

## 9. Drainage Structures

### Drainage Structures

#### Delivery

- 9.1. Ensure compliance with current DFO standards and codes of practice (e.g., [Interim code of practice: Culvert maintenance](#) or [Interim code of practice: Temporary cofferdams and diversion channels](#)).
- 9.2. Isolate your work area from any flowing water that may be present. Ensure any flows are temporarily diverted around the portion of the ditch or watercourse where you are working.
- 9.3. When removal of debris is required within culverts and around bridge piers and abutments, implement the following:
  - Remove materials by hand when feasible.
  - Limit removal of accumulated material (e.g., branches, stumps, woody materials, garbage) to the area within the culvert, immediately upstream of the culvert and to that which is necessary to retain culvert function and water flow.
- 9.4. Adequately protect the culvert, inlet(s) and outlets(s) with rip rap to prevent erosion and scour around the culvert during high runoff events.
- 9.5. Maintain effective sediment and erosion control measures until complete re-vegetation of disturbed areas is achieved.

## 10. Bridge

### Bridge Repairs

#### Delivery

- 10.1. Use of untreated wood products is recommended when feasible. If there is no alternative to using treated wood, ensure it has been treated with a wood preservative appropriate for the project. Follow procedures in the Parks Canada Treated Wood Management Guidelines.
- 10.2. Avoid use of toxic paints, primers, solvents, degreasers and rust inhibitors.
- 10.3. Prevent entry of deleterious substance<sup>6</sup> directly or indirectly in water. For example:

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<sup>6</sup> e.g., concrete, asphalt, paint, solvents, sandblast material, patching and sealing compounds

- Establish and maintain effective separation of the work from the waterbody.
- Attach drop cloths or tarps (supported by webbing or netting if necessary) to prevent materials from entering the water, and inspect regularly for signs of failure.
- Stop work if deleterious substances are running off (or are obviously going to run off).
- If treated timber must be cut to size, ensure cutting takes place away from the bridge and waterbody. Sawdust must be prevented from entering any waterbody and removed from the protected heritage place or otherwise disposed of as directed by the designated Parks Canada staff.

## **11. Beach Nourishment**

### **Beach Nourishment**

#### Planning

- 11.1. Beach nourishment practice shall be informed by the monitoring and research plan developed at the onset of the project. Follow-up monitoring shall be implemented on the management effectiveness of beach nourishment. Beach nourishment practices shall follow adaptive management principles. This is subject to approval and direction from the designated Parks Canada staff.

#### Delivery

- 11.2. Sand or other applicable materials shall not be imported from outside the protected heritage place without approval from the designated Parks Canada staff. Approval of imported materials must have considered risks surrounding invasive species and contaminants, among others considerations.
- 11.3. Ensure there are no vertical faces on stockpiles, to prevent nesting by Bank Swallows.
- 11.4. Access to the beach will be permitted at designated beach access points approved by designated Parks Canada staff

## **10. OTHER Considerations**

- Comments received from the public /stakeholder engagement
- Indigenous peoples engagement or consultation
- Surveillance
- Follow-up monitoring
- SARA Follow-up monitoring

A Species at Risk permit is required for destruction of critical habitat and potential harassment of individuals, and mitigations specific to Species at Risk are included in the SARA Permit Decision Tool (Appendix 2). Additionally, mitigations include the development of a monitoring plan.

Surveillance is required throughout project construction by Parks Canada designated Environmental Protection Officer.

Follow-up monitoring is required to assess the efficacy of the embankment protection, the needs for beach nourishment as well as implications of embankment protection on geomorphology in and surrounding the construction site. SARA follow-up monitoring will assess any adverse effects (e.g. whether individuals are disturbed, whether estimated amount of critical habitat destruction was accurate, etc.).

**11. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS**

The proposed project will result in residual adverse effects including: the loss of natural coastline, Species at Risk critical habitat, visitor experience, and potentially cultural viewsapes. These residual adverse effects are local in scale and some impacts could be reversed if required (i.e. removal of riprap). Embankment protection will remove 4,246.4 m<sup>2</sup> of previously undisturbed critical habitat, consisting of coastal habitat (dunes, open sand, sandstone/till banks). The addition of riprap will change the visitor experience of these sites, especially at Dalvay Beach, where visitors are used to a naturalized coastline. The east access to Dalvay Beach has been removed, at least in the short-term, and this will impact visitors and hotel guests of Dalvay-by-the-Sea. However, an alternate access can be found just 130m west.

**12. EXPERTS CONSULTED**

Department/Agency/Institution: Parks Canada	Date of Request: 2022-10-31
Expert's Name & Contact Information: Sofie Desjardin, <a href="mailto:sofie.desjardins@pc.gc.ca">sofie.desjardins@pc.gc.ca</a>	Title: Policy Advisor, Cultural Resource Management
Expertise Requested: Cultural Resource Management	
<p>Response: “A portion of the work on the gulf shore parkway east will be near Dalvay by the Sea Hotel. This is a NHS and a Classified Federal Heritage Building for its historical, architectural and environmental values. While the visual relationships with the lake, grassy areas and some nearby buildings are key aspect, its location near the beach is also highlighted: ‘the building’s function as a summer hotel along the sandy beaches of Prince Edward Island National Park of Canada’. It is recommended to maintain the significant relationship between Dalvay by the Sea and this ecological feature (beach).</p> <p>The proposed project (and especially if this approach is taken at various locations) could impact sandy beaches and dunes are iconic of PEINP. They have not been formally evaluated as cultural resources officially yet but, beyond their interest on the ecological level, the dunes and beaches also present an undeniable patrimonial interest (aesthetic, socio-cultural, etc.) and have a high potential of being designated as cultural landscape.</p> <p>It is recommended to consider Standards and Guidelines for the Conservation of Historic Places to inform the decision making and mitigate the impact of this intervention, especially with regards to the installation of rock rip rap.</p> <p>The guidelines related to cultural landscapes (4.1.5 visual relationships, 4.1.7 ecological features, and 4.1.9 landform) are particularly relevant to this project.</p> <p>We recommend:</p>	

- Considering options that are physically and visually compatible with the zone to reduce the visual impact of rock rip rap that are significantly different visually from the composition of PEI beaches (by their size, proportions, forms, colour, etc.). For example, choosing small rocks, providing camouflage over the rip rap, reducing the height of the rip rap (currently about 1m over the level of the road)
- Considering the reversibility of the option should this is temporary (the presence of large granite rocks would make it hardly reversible)”

Expert's Name & Contact Information: Vincent Bourgeois, <a href="mailto:vincent.bourgeois@pc.gc.ca">vincent.bourgeois@pc.gc.ca</a>	Title: Terrestrial Archaeologist
Expertise Requested: Cultural Resource Management	
Response: No archaeological Overview Assessment or Archaeological Impact Assessment required. Terrestrial Archaeological resources (including sites, artifacts, features, and traces) “There are no known sites within the project area. Low potential. Implement Chance Finds Protocol. Provide specific protocol for the site as required.”	

Expert's Name & Contact Information: Aaron Waddell, <a href="mailto:aaron.waddell@pc.gc.ca">aaron.waddell@pc.gc.ca</a>	Title: Indigenous Relations Advisor
Expertise Requested: Indigenous Consultation	
Response: Consultation letter was sent to L’nuely (Mi’kmaq partners) and a response is pending. The Basic Impact Assessment will reflect the concerns raised by L’nuely, once the response is received.	

Expert's Name & Contact Information: Chris Houser, <a href="mailto:chris.houser@Uwindsor.ca">chris.houser@Uwindsor.ca</a> Libby George, <a href="mailto:george21@Uwindsor.ca">george21@Uwindsor.ca</a> ;	Title: VP Research & Innovation, University of Windsor; Masters Research Student
Expertise Requested: Geomorphology/ Alongshore Sediment Transport	
Response: “Upon reviewing the draft report and historical aerial photographs, Chris and I suggest that shoreline hardening should be avoided in this area of the park. Given the potential supply of sediment to the beach, nearshore and adjacent sections of beach alongshore, an alternative approach is to move the road further back and lower in elevation to avoid undercutting and erosion. Unlike the previously hardened area fronting base rock, the new area appears to be sedimentary (old dune and washover areas) and may not respond the same way.	
As noted in the report, a hardened shoreline surface has the potential to initiate erosion directly seaward of the feature and downdrift. This will negatively impact the natural system, and prevent critical alongshore sediment exchanges needed for the coastline to recover from Fiona and remain resilient in future years. Furthermore, narrowing of the beach has the potential to undermine the hardened structure. The erosion at the base will effectively decrease beach elevation and width over time, decreasing the protective beach and backshore during storm events. Decrease in beach width and elevation also prevents the recovery of any dune volume lost during the storm, as a wider beach provides a platform for aeolian sediment transport to occur from the shoreline towards the upper beach and dune area.	
In conclusion, placement of riprap along this section will upset natural alongshore and cross-shore sediment exchanges. The riprap will eventually erode at the base, destabilizing and	



impacting the natural protective buffer of the beach in front of the installation as it decreases in elevation and width. Moving the road back in this vulnerable area may be more expensive in the short term, but it will allow the system to maintain its resiliency to changes in climate naturally, and save the park money in the future when the riprap either needs to be replaced, or increased in length due to erosional hotspots caused by the reflective surface.”

Department/Agency/Institution: Parks Canada	Date of Request: 2022-12-12
Expert's Name & Contact Information: Darren Fitzgerald, P. Eng., <a href="mailto:darren.fitzgerald@pc.gc.ca">darren.fitzgerald@pc.gc.ca</a>	Title: Highway Engineer/Project Manager, Highway Engineering Services (East)
Expertise Requested: Highway Renovations and Embankment/Shoreline Protection	
<p>Response:</p> <p>“As of the Gulf Shore Parkway (GSP), commonly known as Dalvay Corner, requires immediate attention based on the damages incurred by a recent storm surge event caused by post-tropical storm Fiona. The current condition of the GSP within this area is considered critically compromised placing the highway in an unwanted state both operationally and structurally. During post-tropical storm Fiona, approximately 18m of in-situ sand dunes vanished during the storm surge event undermining the existing parkway. HES along with WSP have prepared a road stabilization and protection strategy to reinstate the existing highway and provide necessary embankment/shoreline protection.</p> <p>With respect to the road reinstatement component, standard/typical construction processes will be utilized to strengthen and improve the existing condition of the highway. Moreover, the embankment/shoreline protection strategy shall be a more contentious approach as Dalvay is home to critical habitat and is perceived to have high aesthetic values to the users of the Park.</p> <p>Understanding the importance of the field unit’s request to provide a protection system utilizing only native materials (ie: sandstone), HES along with WSP investigated many alternatives to provide an acceptable protection measure which includes, sandstone rip rap, granite rip rap and/or concrete/steel sheet pile retaining systems.</p> <p>Both the steel sheet pile and concrete retaining system were determined to be unsuitable based on construction time and aesthetics therefore, HES, WSP and the asset team from the PEIFU determined that the rip rap solution would suffice. In attempting to keep with the Park’s intentions of utilizing only local materials, both HES and WSP determined that the sandstone would not provide the required protection based on its poor physical properties (brittle, porous, density, etc.) and granite (R250) should be utilized as the embankment/shoreline protection aggregate.</p> <p>Included in the granite rip rap protection recommendation, the PEINP Resources Conservation and Asset teams asked if HES could assist in sand dune revetment by importing local sand to cover the rip rap protection. A clean, local source was discovered by the Asset team at North Lake, PEI where annual dredging of the harbour is performed. HES has visited site and has included this source within the contract documents.</p> <p>Therefore, HES recommends:</p> <ul style="list-style-type: none"> <li>Utilizing granite rip rap (R250) for the embankment/shoreline protection;</li> </ul>	

- Importing sand from North Lake, PEI;
- Complete necessary renovations to the existing GSP utilizing standard construction practices.”

Department/Agency/Institution: WSP Canada Inc.	Date of Request: 2022-12-12
Expert's Name & Contact Information: Wade Enman, P.Eng.; wade.enman@wsp.com	Title: Senior Project Manager

Expertise Requested: Roadway Protection – Design Consultant

Response: WSP’s mandate for this project is to complete a design that provides road rehabilitation and erosion protection for the Gulf Shore Parkway. In February 2018, WSP’s coastal engineering team completed a coastal erosion study report for Category 3 Highways in the PEI National Park. The study work and findings of this report formed the basis of the design of the rip rap protection for the Gulf Shore Parkway at Dalvay Beach.

WSP’s 2018 coastal erosion study report outlined several options for erosion protection including revetments (rip-rap or armour stone), beach nourishment, groynes, breakwaters and dune stabilization. Following Hurricane Fiona and a review of the extensive damage at Dalvay Beach, it has been determined that the most viable option to protect Gulf Shore Parkway in the short and medium term given the current state of the shoreline is by utilizing a rip-rap revetment. Other options such as beach nourishment, groynes and breakwaters would continue to leave the Gulf Shore Parkway unprotected during future storm events until the dunes were fully reconstructed which could take several years. To have the Gulf Shore Parkway safely reopen in 2023 and not be at risk of a future storm event, rip rap revetment is the most viable and recommended option. Sandstone was also considered for the revetment, but was not recommended due to sandstone having a lower density; the likelihood of weak seams and zones within the sandstone; and its poorer impact and abrasion resistance properties. It is also noted that standard practice of the PEI Department of Transportation and Infrastructure is to use rip rap and armour stone to protect various roadways along the North Shore.

Historical erosion rates and a review of the shoreline retreat due to Hurricane Fiona has been used to determine the extents of the revetment towards the east and west of the Dalvay Beach site. Beach nourishment has been also incorporated into the design as per the 2018 coastal report. The placement of the beach nourishment and appropriate sand fencing will be completed to promote dune reconstruction and regrowth of native marram grass.

At the Covehead Bridge location, rip rap revetment has been used successfully to provide protection to the bridge abutments and adjacent roadway embankments. The remedial design at these locations will blend into the existing rip rap placement and provide protection to the Gulf Shore Parkway. Similar to the Dalvay Beach site, historical erosion rates and a review of erosion caused by Hurricane Fiona has been used to determine the extents of the rip rap placement.

**13. 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.


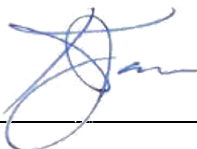
**FOR SARA REQUIREMENTS:**

Residual adverse effects to species at risk are not likely, and therefore, the SARA-Permit Decision Tool was not required

**OR**, the SARA-Permit Decision Tool ([Appendix 2](#)) was used and determined:

- This activity does not require a SARA permit
- This activity requires a SARA permit and one can be issued
- This activity requires a SARA permit but one cannot be issued

**14. RECOMMENDATION AND APPROVAL**

<b>Prepared by:</b> Lindsey Burke, Environmental Impact Assessment Practitioner Kim Gamble, Species at Risk Ecologist Louis Charron, Impact Assessment Practitioner	Date:  January 6, 2023
<b>Recommended by:</b> Brad Romaniuk, Resource Conservation Manager  	Date:  January 9, 2023
<b>Approval signature:</b> Karen Jans, Prince Edward Island Field Unit Superintendent  	Date:  January 9, 2023

## **15. ATTACHMENTS**

### **Appendix 1. Effects Identification Matrix**

### **Appendix 2. SARA Permit Decision Tool**

### **Appendix 3: Figures and Maps**

Figure 1. Proposed site for embankment protection, Dalvay, PEINP.

Figure 2. Storm damage to Gulf Shore Parkway in Dalvay post Hurricane Fiona.

Figure 3. Proposed site for embankment protection, Stanhope, PEINP.

Figure 4. Storm damage to shoreline and infrastructure north of Stanhope Campground post-Hurricane Fiona.

Figure 5. Proposed site for embankment protection, Covehead Bridge, PEINP.

Figure 6. Footprint of new embankment protection Covehead East (A) and Covehead West (B)

Figure 7. Storm damage to Multi-use trail on north side of Gulf Shore Parkway, west of Covehead bridge, post Hurricane Fiona.

Figure 8. Storm damage to Gulf Shore Parkway just West of Covehead Bridge.

Figure 9. Critical habitat for species at risk found in PEI National Park.

Figure 10. Piping plover nest locations near Covehead Bridge from 2005 – present.

### **Appendix 4: Technical Drawings**



## Appendix 1: Effects Identification Matrix

**Table A: Direct effects**

<i>Revise the associated activities and the valued components for the specific project being reviewed</i>	<b>Valued components potentially directly affected by the proposed project phases (Preparation (P) / Construction (C) / Operation (O) / Decommissioning (D))</b>						
	Natural Resources				Cultural Resources		
	Air	Soil & landforms	Water (surface, ground, crossings, etc.)	Flora (specify, including SAR)	Fauna (specify, including SAR, migratory birds, fish)	Archaeological Resources	Cultural Landscape
<b>Associated Activities</b>							
Supply and storage of materials		C	C	C			C
Vegetation clearing		C		C	C/O	C	C/O
Demolition	C	C	C	C	C	C	
Waste disposal			C				
Excavation		C	C	C		C	C
Grading		C	C	C			
Backfilling		C	C	C			
Use of machinery/ generators	C	C	C		C		
Transport of materials/ equipment	C	C					
Paving	C	C				C	
Maintenance		O	O	O			O
Planting/Seeding				C/D			

**Table B: Indirect effects**

Revise the associated activities and the valued components for the specific project being reviewed	Valued components potentially directly affected by the proposed project phases (Preparation (P) / Construction (C) / Operation (O) /Decommissioning (D))								
	With respect to non-Indigenous peoples:	With respect to Indigenous peoples:				With respect to visitor experience			
	Health, social and -economic conditions	Health & socio-economic conditions	Physical & Cultural heritage	Current use of lands & resources for traditional purposes	Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	Access & services	Recreation & accommodation opportunities	Safety	Viewscapes and essence of place
<b>Natural resource components affected by the project</b>									
Could impacts to <u>air</u> lead to adverse effects on...									
Could impacts to <u>soils and landforms</u> lead to adverse effects on...			O			C	O	C	O
Could impacts to <u>water</u> (e.g. surface, ground water and water crossings) lead to adverse effects on...									
Could impacts to <u>flora</u> (including SAR) lead to adverse effects on...									
Could impacts to <u>fauna</u> (including SAR) lead to adverse effects on...	O	O							



## Appendix 2. SARA Permit Decision Tool

Parks Canada place where the activity will occur	Species at risk affected by the activity:	Title of activity (e.g., Trail development in Blue Meadow):
Prince Edward Island National Park – Dalvay Beach, Stanhope, and Covehead Bridge	Piping Plover <i>melodus</i> subspecies ( <i>Charadrius melodus melodus</i> ) and Bank Swallow ( <i>Riparia riparia</i> )	Shoreline hardening

### Part A – Does a SARA permit need to be considered for this activity?

**1. Will residual adverse effects of the activity (effects that will still occur even after mitigation measures are implemented) contravene a SARA prohibition for a listed endangered (En), threatened (Th) or extirpated (Ex) species, its residence or its critical habitat?** (If more than one species will be affected, then clearly delineate the effects on each species).

SARA prohibitions: Section 32 - Cannot: kill, harm, harass<sup>7</sup>, capture, or take an individual; possess, collect, buy, sell or trade an individual or any part or derivative of an individual; Section 33 – Cannot damage or destroy a residence; Section 58 – Cannot destroy any part of critical habitat<sup>8</sup>; Section 80 - Cannot carry out an activity that is prohibited under an emergency order.

**Yes. There are residual adverse effects of the activity that will contravene a SARA prohibition.**

Summary of activities:

The Gulf Shore Parkway East (running east-west between Dalvay Gate and Brackley Gate) experienced significant damage following the impacts of Hurricane Fiona. Prince Edward Island National Park is working on a coastal retreat plan for infrastructure in the face of climate change; however, interim measures are required to protect current infrastructure until this plan is developed. The coastal shoreline protection, where required, will be treated as case study and will require monitoring to assess its effectiveness and impacts on the coastal ecosystem, including individual SAR and their critical habitat.

This project aims to rehabilitate the existing roadbed and provide shoreline protection to prevent future loss of the roadway. Bank stabilization work is proposed at three locations: Dalvay Corner, Stanhope, and Covehead Bridge.

<sup>7</sup> A 2008 legal opinion concluded that it could be validly argued that any activity which causes even one individual of a wildlife species, on just one occasion, to be disturbed, alarmed, distressed, or molested, constitutes “harassment” under SARA.

<sup>8</sup> Critical habitat destruction results if a portion of the critical habitat is degraded, either permanently or temporarily, by activities occurring either internal or external to the critical habitat, such that the habitat function provided by the degraded portion is no longer available to the species when needed.

Shoreline protection will be achieved utilizing hydraulic rip rap (shoreline hardening) to protect against erosion. The project will see the addition of an estimated 229.4 m<sup>2</sup> of new riprap at Stanhope, 2894.2 m<sup>2</sup> of new riprap at Dalvay, and 1122.8m<sup>2</sup> of new riprap at Covehead Bridge. Existing shoreline hardening will be reinforced at Covehead Bridge, on an area of approximately 571.9 m<sup>2</sup>. The distance from the road edge to the top of the hardened embankment ranges from 0-20m; a riprap key will be buried at a depth of approximately 1.5m by 5m width for the entire length at all sites. Work will be completed from the paved highway where possible, equipment access to the beach may be needed at some locations for installation.

*Dalvay Corner* – buried revetment will be constructed in order to protect Dalvay Corner road infrastructure. The riprap will be buried with local sand, allowing dune vegetation to be planted and provide dune-like habitat. There have been no known Piping Plover nests and no known Bank Swallow colonies at this site. However, the site falls within areas identified as containing Piping Plover and Bank Swallow critical habitat, and the biophysical attributes of critical habitat are present for both species at the site. Much of the dune habitat required by the species was destroyed or altered during Hurricane Fiona, but the riprap used in this project will preclude the ability for the dunes to rebuild naturally. Additionally, although the majority of the work will be completed within the footprint of the pre-Fiona dune habitat, the use of riprap will remove some open sand and cobble (biophysical attributes of Piping Plover critical habitat).

*Stanhope* – riprap will be placed around an existing culvert. This site falls within a stretch of beach with a known Bank Swallow colony and is within an area identified as containing critical habitat for the species. Nest holes that were present prior to hurricane Fiona were all completely eroded away in the storm. The area to be hardened has been eroded such that it is no longer suitable habitat for nesting Bank Swallow (i.e., the attributes of critical habitat are no longer present). However, there is a minimal potential that, in the absence of riprap, natural erosion could result in the re-creation of habitat that would support nesting. Suitable habitat will remain on either side of the culvert. This site falls also within a polygon containing critical habitat for Piping Plover. The biophysical attributes of foraging/staging critical habitat are present at this site, and will not be destroyed. Foraging can still take place at this location both during and after project implementation, should Piping Plover be present.

*Covehead* – riprap will be used to replace and extend shoreline hardening around Covehead Bridge (previous armouring completed in 2015). This area occurs within a critical habitat polygon for both Piping Plover and Bank Swallow, and meets the biophysical attributes of critical habitat for both species. The west side of Covehead Bridge is a known Piping Plover nesting area and has provided successful nesting habitat in recent years. Construction will not disturb areas where recent nests have occurred; however, hardening will impact the adjacent dune habitat and reduce the local critical habitat available for Piping Plover to utilize. Bank Swallows foraging habitat exists in the dune habitat surrounding Covehead Bridge. Currently, the dune on the east side of the bridge is sheared and offers ephemeral nesting habitat. This dune face may look very different in the spring with further erosion and slumping. Most large dunes within PEI National Park have been eroded to expose this same vertical face and this ephemeral habitat is abundant across the park. Riprap will remove a small area of critical habitat for bank swallow by not permitting the dune to rebuild in this area.

Proposed activities take place in/adjacent to both Piping Plover *melodus* subspecies and Bank Swallow critical habitat. Shoreline hardening is listed in both species' recovery strategies as an



activity that leads to destruction of critical habitat. Should construction need to take place during the environmental timing windows for both Piping Plover and Bank Swallows and there is a potential for direct disturbance of individuals; mitigations will be in place to reduce the direct threat or the work shall cease until the individuals have left the area.

**Continue to Question 2.**

**No. There are NO residual adverse effects of the activity that will contravene a SARA prohibition.**

**STOP** - you have completed the tool. **Check the first box in Part C and submit for approval.**

**2. Does the activity qualify for an exception under s 83 of SARA?**

**Yes. A SARA permit is NOT required, as the activity is permitted in a published recovery strategy or action plan and authorized under an Act of Parliament.**

**OR**

**Yes. A SARA permit is NOT required, as the activity is required for public safety, health or national security AND is authorized by or under another Act of Parliament.**

**STOP** - If **ALL** activities that would contravene a SARA prohibition qualify for an exception under SARA s 83, **check the first box in Part C and submit for approval (Part F).**

**No. A SARA permit is required. Continue to Part B.**

**Part B – Can a SARA permit be issued for this activity?**

**\*\*\*\*Complete ONLY if you have answered NO to Question 2, above\*\*\*\***

**3. What is the purpose of the activity?**

Select the appropriate box:

**The activity is scientific research related to the conservation of the species and conducted by qualified persons (continue to Question 4); OR**

**The activity benefits the species or is required to enhance its chance of survival in the wild** (i.e., an activity that supports the implementation of recovery actions as described in recovery documents (recovery strategies/action plans) for the species, where these are available. Where recovery documents are not available, the activity must support the recovery of the species based on an assessment of best information available (including status reports, species experts, peer-reviewed information) **(continue to Question 4); OR**

**Affecting the species is incidental to the activity** (i.e., the purpose of the activity is not to engage in an activity that is prohibited under SARA (e.g., kill, harm, harass an individual; destroy a residence or critical habitat). For example, fishing for a listed species would not be incidental, but accidental by-catch would be. A construction activity that causes destruction of critical habitat, such as building a parking lot, would be considered to incidentally affect the species.) **(continue to Question 4; If the activity will incidentally affect a species listed under the Migratory Bird Convention Act, consult with the Species Conservation team); OR**

**The proposed activity DOES NOT fit in any of the above three categories, and the activity CANNOT be permitted; check the second box in Part C and submit for approval (Part F).**

**4. Have alternatives that would reduce the impact(s) on the species been considered and the best solution adopted?**

Excerpts from SARA Permits and Agreements Policy: The purpose of this section is impact avoidance. The alternatives provided must clearly articulate how the impacts of the activity on the listed wildlife species have been avoided by considering reasonable alternatives. Moreover, it must be demonstrated that there are no other reasonable alternatives to the one selected that would further avoid the impact. Biological, ecological, conservation and recovery objectives, and technical and economic factors may be considered when deciding whether a given alternative is reasonable. The amount of analysis undertaken for the alternatives must be proportional to the magnitude and severity of the impact on the listed wildlife species. An explanation of why not undertaking the activity is not considered reasonable must be provided.

*Document the assessment of alternatives here, based on the above policy excerpt. If this tool is being used with a RCPS application or environmental impact assessment and this question is already addressed in that document, copy and paste the information here.*

The Gulf Shore Parkway and Covehead Bridge are to be stabilized to ensure the integrity of the infrastructure for public access/safety. The infrastructure is at risk of further damage during future tide/wave/wind events. This is an interim solution for infrastructure management and will be in place until an evidence-based decision can be made on the best solution for this infrastructure. Prince Edward Island National Park is planning a coastal retreat plan that reduce the vulnerability of coastal infrastructure. Alternate options available at this time are not adequate within the current timelines required to stabilize this infrastructure:

-infrastructure removal – coastal retreat is an option being explored for much of the infrastructure in PEI NP. However, this is complex and must be well planned for specific infrastructure. At this time, PEINP does not have a fully developed plan for coastal retreat of major infrastructure (i.e. roads/bridges) and repair will be necessary to ensure access and public safety. Hurricane Fiona has changed the landscape of Prince Edward Island and PEINP will work to understand how to best to manage infrastructure in this dynamic ecosystem in the face of climate change.

-sandstone riprap rock – PEINP explored the option of using sandstone rock at Dalvay beach, as opposed to granite, and was planning to use this as a more natural option for the PEI landscape. However, sandstone is exceptionally hard to find and must be excavated from elsewhere in the province to source adequate supplies. PEINP determined that it was likely more detrimental to ecological integrity to mine for this rock source than to use granite (which will be removed once long-term solutions are determined). Additionally, there were concerns from engineers that sandstone would not provide suitable protection.

-Nature-based solutions (living shorelines) – Nature-based solutions are evolving in the face of climate change and options to promote shoreline protection with natural elements are available. Following Hurricane Fiona, we have engaged with experts on nature-based solutions and are exploring longer-term solutions to coastal retreat and infrastructure management. At this time, there is not a well-defined nature-based solution PEINP can implement in the short-term to mitigate future impacts from tide/wave/wind conditions to this infrastructure. PEINP will continue to determine what evidence-based solutions would work best to mitigate future damage to this infrastructure, should it remain in place.

**Continue to Question 5.**

**5. Have all feasible measures been taken to minimize the impact of the activity?**

Excerpts from SARA Permits and Agreements Policy: After having determined that impacts on the listed wildlife species have been avoided to the extent reasonably possible, the applicant must apply all feasible mitigation measures to minimize the impacts that could not otherwise be avoided despite having selected the best alternative. Demonstrate that the needs of the species were fully considered during the design of the activity and for identifying all feasible measures to minimize the impact of the activity. Consideration must be given to identifying and adopting best practices for the species. Biological, ecological, technical and economic factors may be considered when considering what measures are feasible.

*If conducting this assessment as part of an environmental impact assessment, in this space also address SARA s 79 requirements to monitor measures that are taken to avoid or lessen adverse effects to the species, its residences or its critical habitat. Describe how adverse effects on the species will be monitored. Include specific information regarding the objectives, scope, timelines and responsibilities for carrying out the monitoring. Also identify the circumstances under which corrective measures may be needed to address any issue or problem identified during the monitoring, for example, if unanticipated effects occur or the importance of the effects is greater than anticipated. If this has already been done within the environmental impact assessment, reference the location of that information here.*

**Mitigations**

1. Adhere to all mitigations found in the Basic Impact Assessment for this project (PEINP22-32)
2. Schedule work to avoid Environmental Timing Windows for Piping Plover and Bank Swallows. Work should take place prior to April 01 or after October 15, whenever possible. If work must happen between April 01 and October 15, Parks Canada staff designated lead for Species at Risk must be engaged. An Environmental Protection Officer (EPO) must be on site during any work between April 01 and October 15.
3. All contractors must engage in Species at Risk briefing with designated Parks Canada staff.
4. Areas known to have had Piping Plover nesting sites in the past 10 years, adjacent to Covehead Bridge, will be buffered by a minimum of 25 m. No shoreline hardening or construction equipment will be permitted in these areas.
5. If unexpected nests, Species at Risk or other wildlife are found, cease work in the immediate area and contact designated IA Practitioner for further direction.
6. All work is to be confined to the site limits delineated and/or directed by the project IA Practitioner or designate. No disturbance to take place in the dunes or sandstone/till banks outside the footprint required for construction. These areas are currently suitable nesting habitat for Bank Swallows and the slope of the bank and vegetation shall not be disturbed.
7. Conduct activities during daylight hours and avoid critical foraging times (i.e., dusk and dawn) unless otherwise approved by designated Parks Canada staff.
8. Equipment access to the beach will be permitted at designated beach access points approved by designated Parks Canada staff.
9. Heavy equipment requiring beach access shall travel along wet sand to avoid destruction/compaction of potential suitable Piping Plover nesting habitat.
10. Beaches, dunes and coastal wetlands must not be used as staging areas for the project. The storage of all materials will be at the pre-approved storage and staging sites; agreed upon by the EPO, contractor and project manager.
11. Identify noise limits (e.g., location, time of year), especially in vicinity to sensitive areas and wildlife and incorporate into plans and specifications.

12. Maintain equipment and heavy machinery in good working order (e.g., adequate muffler, regular maintenance).
13. Use the noise attenuation devices provided with certain equipment or tools (e.g., compressor side panels).
14. Shut off motorized equipment if it is not used for an extended period of time.
15. Whenever possible, locate stationary equipment away from noise-sensitive areas or in such a way as to reduce the impact on the ambient noise level.
16. Post-construction reclamation activities must be detailed in an approved Reclamation Plan, Environmental Protection Plan or other project document prior to construction.
17. Determine the appropriate site-specific seed mix(es) and/or plantings. Revegetation plan is to be directed by Resource Conservation staff.
18. Ensure live plants (e.g., transplants, plugs, container stock) are watered-in well and receive sufficient moisture until established, and through any periods of extended drought. Provide regular watering unless there is sufficient rainfall.
19. Ensure there are no vertical faces on stockpiles, to prevent nesting by Bank Swallows.
20. Limit soil stockpile height to 2 m unless approved by designated Parks Canada staff.
21. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation. If the work schedule requires working in the rain, appropriate sediment controls must be installed to prevent the release of sediment-laden water or any other deleterious substances into surface waters.
22. Beach nourishment practice shall be informed by the monitoring and research plan developed at the onset of the project. Follow-up monitoring shall be implemented on the management effectiveness of beach nourishment. Beach nourishment practices shall follow adaptive management principles. This is subject to approval and direction from the designated Parks Canada staff.
23. Sand or other applicable materials shall not be imported from outside the protected heritage place without approval from the designated Parks Canada staff. Approval of imported materials must have considered risks surrounding invasive species and contaminants, among others considerations.
24. PEINP commits to improving coastal habitat for Species at Risk. PEINP will increase its existing commitment to restoring dunes impacted by human activity between 2023-2025. PEINP currently plants 2000 marram grass plugs annually throughout PEINP and uses coniferous trees, where applicable, to rebuild dunes damaged by human activity. Dune restorations will take in to account "Hurricane Fiona-related habitat restoration considerations" provided by Canadian Wildlife Service (Environment and Climate Change Canada).

### **Monitoring Plan**

1. Ongoing (annual) monitoring activities in these areas of PEINP will continue to document population health and habitat suitability for Piping Plover and Bank Swallow.
2. Project surveillance will take place to assess impacts to individuals, nests and/or critical habitat, including but not limited to:
  - Determining what, if any, work had to occur during critical timing windows and, if so, were individuals observed/disturbed?
  - Were any nests discovered and, if so, were their any negative impacts to those nests?
  - Was the amount of critical habitat destruction as expected?
3. Erosion rates and dune movement at and surrounding riprap will be monitored.
4. Ongoing monitoring activities in these areas of PEINP will continue to document the condition of ecological integrity indicators relative to the physical habitat, including rates of erosion and dune crest movement.

5. Subject matter experts, including geomorphologists, will be consulted to better understand how physical changes may, or are already impacting habitat suitability. A research and monitoring plan will be developed at the onset of the project. Follow-up monitoring shall be implemented on the management effectiveness of beach nourishment. Beach nourishment practices shall follow adaptive management principles. This is subject to approval and direction from the designated Parks Canada staff.

**Continue to Question 6.**

**6. Will the activity jeopardize the survival or recovery of the species?**

Excerpts from SARA Permits and Agreements Policy: An activity will jeopardize the survival or recovery of the species if it increases threats to the extent that the species is not able to, or may not be able to, survive or recover. As the degree of uncertainty increases about whether an activity would affect a species to such an extent that it may not be able to survive or recover, the likelihood decreases that a permit can be issued. Where data is sufficient to support the completion of quantitative analyses, such as population viability, this should be done. However, in some cases, such analyses will not be possible and a precautionary approach will guide the assessment of jeopardy based on the best available information and the weight of available evidence.

Critical habitat for Piping Plover and Bank Swallows can be found throughout the entire coastal ecosystem of Prince Edward Island National Park. However, the construction will result in a net loss of critical habitat (4,246.4 m<sup>2</sup> overall). This loss is estimated to be less than 0.2% of Piping Plover critical habitat and includes the open beaches and dunes. Of this area of critical habitat, only an estimated 488.2 m<sup>2</sup> of new riprap falls within areas known to be in close proximity to areas used by Piping Plover or Bank Swallow. PEI National Park is currently in the process of identifying all areas within the Bank Swallow critical habitat polygon that meet the biophysical attributes for critical habitat. This area, although yet to be determined, is larger than Piping Plover critical habitat and; therefore, will remove a smaller proportion of critical habitat for this species.

The proposed activity and its residual adverse effects to critical habitat and individuals shall not increase threats to the extent that the population and distribution objectives will not be attained (see below for P&D objectives). This project will not jeopardize survival or recovery of the species.

Conservation gains to critical habitat will be carried out through increased dune restoration throughout PEINP.

*Population and Distribution Objectives:*

Piping Plover

*Short-term population objective 1: Achieve and maintain a minimum of 250 year-end pairs of Piping Plover.*

*Short-term population objective 2: Achieve and maintain an annual productivity greater than 1.65 chicks fledged per*

*territorial pair.*

*Long-term population and distribution objectives: Increase the population, and maintain it for the long-term, to a minimum of 310 year-end pairs.*

*See the Recovery Strategy (Amended) and Action Plan for the Piping Plover *melodus* subspecies for more details ([https://wildlife-species.canada.ca/species-risk-registry/virtual\\_sara/files/plans/amended\\_rs\\_and\\_ap\\_piping\\_plover\\_melodus\\_e\\_final.pdf](https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/amended_rs_and_ap_piping_plover_melodus_e_final.pdf))*

Bank Swallow

*Distribution objective: Maintain the extent of occurrence in Canada.*

*Short-term population objective: By 2033, the population objective is to achieve a reduced rate of decline while*

*ensuring that the population index remains above 80% of the 2021 level.*

*Long-term population objective: By 2053, the population objective is to achieve a stable 10-year trend while ensuring that the population index remains above 90% of the 2021 level.*

*See the Recovery Strategy for the Bank Swallow for more details ([https://wildlife-species.canada.ca/species-risk-registry/virtual\\_sara/files/plans/rs-HirondelleRivageBankSwallow-v00-2022Apr-eng.pdf](https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/plans/rs-HirondelleRivageBankSwallow-v00-2022Apr-eng.pdf))*

**Yes. The activity will jeopardize the survival or recovery of the species and cannot be permitted.**

**Check the second box in Part C and submit for approval (Part F).**

**No. The activity will not jeopardize survival or recovery of the species and can be permitted.**

**Yes. The activity will jeopardize survival or recovery of the species, but an offset will be implemented to ensure survival or recovery of the species is not jeopardized.**

*Append the completed offsetting plan from Parks Canada's [SARA Biodiversity Offsets Guideline](#) to this decision tool for final approval (Part F).*

**Check the third box in Part C and submit for approval (Part F).**

## Part C – SARA Permit Decision

**Select the appropriate answer from the options below. Note: if this section addresses multiple species and the answer varies among species, specify to which species each answer pertains.**

This activity does not require a SARA permit, as was documented in the answers to Questions 1 and 2. **Continue to approval of the decision tool (Part F).**

This activity requires a SARA permit but one cannot be issued because it does not fit into one of the three required categories (see response to Question 3), OR it does not meet one of the SARA pre-conditions (see responses to Questions 4-6). **Continue to approval of the decision tool (Part F).**

This activity requires a SARA permit and one can be issued (see response to Questions 3-6). **Continue to issuing the permit (Part D).**

## Part D – Issuing the Permit

**Select the appropriate section of SARA being used, issue the permit, and continue to Part E.**

**SARA s 74:** This activity is already being permitted under another Act of Parliament (e.g., a research, collection or restricted activity permit is already being issued for this activity) and therefore that permit can be made SARA-compliant. Issue the permit for the activity and, below,

specify the relevant section(s) of the other Act of Parliament being used to issue the permit (examples provided).

Either include language in the permit already being issued under another Act of Parliament to indicate that the permit is also being issued pursuant to s 74 of the *Species at Risk Act*, or use the [SARA Permit Template](#) to attach a SARA s 74 permit to the other permit being issued.

The terms and conditions of the permit being issued under the other Act or Parliament should refer to or include any measures required to ensure compliancy with meeting SARA s 73 pre-conditions (e.g., mitigations outlined in question 5 of this tool). The permit issued under the other Act of Parliament is the enforceable permit.

**SARA s 73:** This activity is NOT being permitted under another Act of Parliament. Issue the permit using the [SARA Permit Template](#).

The terms and conditions of the permit should refer to or include any measures required to ensure compliancy with meeting SARA s 73 pre-conditions (e.g., mitigations outlined in question 5 of this tool).

## Part E - Preparing the Explanation of the Permit

### 7. Provide an explanation of the permit for posting on the SAR Public Registry and continue to Part F.

SARA requires an explanation of any SARA permit issued to be posted on the SARA Public Registry in both official languages (the Species Conservation team recommends that this be completed within 30 days of the permit being issued). Prepare the explanation, using the information you entered in the previous sections of this tool. The Species Conservation team will review the explanation, have it translated and publish it on the SAR Public Registry.

**Regional or Local Number:** Basic Impact Assessment PEINP22-32

**Start Date of Permit:** January 23<sup>rd</sup>, 2023 **End Date of Permit:** March 31<sup>st</sup>, 2024

**Issuing Authority:** Parks Canada Agency

**Authority Used:** SARA s 73

**Location of Activity (*province, territory or ocean*):** Prince Edward Island

**Affected Species:**

Piping Plover *melodus* subspecies (*Charadrius melodus melodus*)

Bank Swallow (*Riparia riparia*)

**Purpose:**

- Affecting the species is incidental to the activity

**Description of the Activity:**

The Gulf Shore Parkway East (running east-west between Dalvay Gate and Brackley Gate) experienced significant damage following the impacts of Hurricane Fiona. Prince Edward Island National Park is working on a coastal retreat plan for infrastructure in the face of climate change; however, interim measures are required to protect current infrastructure until this plan is developed. Coastal shoreline protection will be treated as case study and will require monitoring to assess its effectiveness and impacts on the coastal ecosystem, including SAR critical habitat. This project aims to rehabilitate the existing roadbed and provide shoreline protection to prevent future loss of the roadway. Shoreline stabilization work is proposed at three locations: Dalvay Corner, Stanhope, and Covehead Bridge. Shoreline protection will be achieved utilizing hydraulic rip rap to protect against erosion. Granite riprap will be used at all sites, with a buried revetment being constructed at Dalvay Corner. Proposed activities take place in/adjacent to critical habitat for both Piping Plover *melodus* subspecies and Bank Swallow. Shoreline hardening is listed in both species' recovery strategies as an activity that leads to destruction of critical habitat. Efforts will be made to work outside of sensitive periods for both species. Should construction need to take place during the environmental timing windows for Piping Plover and Bank Swallows, there is a potential for disturbance of individuals; however, harm of individuals or destruction of nests is not expected.

**Pre-Conditions:**Alternatives

Alternate options available at this time are not adequate within the current timelines required to stabilize this infrastructure. Coastal retreat is an option being explored for much of the infrastructure in Prince Edward Island National Park. However, this is complex and must be well planned for specific infrastructure. At this time, the park does not have a fully developed plan for coastal retreat of major infrastructure (i.e. roads/bridges) and repair will be necessary to ensure access and public safety. The park also explored the option of using sandstone riprap at Dalvay beach, as opposed to granite, and was planning to use this as a more natural option for the PEI landscape. However, sandstone is exceptionally hard to find and must be excavated from elsewhere in the province to source adequate supplies. Nature-based solutions are evolving in the face of climate change and options to promote shoreline protection with natural elements are available. At this time, there is not a well-defined nature-based solution that the park can implement in the short-term to mitigate future impacts from tide/wave/wind conditions to this infrastructure. Prince Edward Island National Park will continue to determine what evidence-based solutions would work best to mitigate future damage to this infrastructure, should it remain in place.

Mitigations

Actions will be taken to mitigate impacts on Piping Plover, Bank Swallows, and the critical habitat for each of these species. Working outside of environmental timing windows (when species are not present) will be the most important in mitigating impacts to the species. Should some work be required when species are present, mitigations are in place to reduce exposure to noise and physical

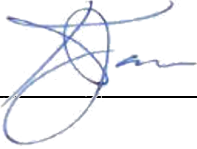


disturbance. Work will cease if an individual or its nest are likely to be negatively impacted. Measures will be taken to reduce impacts on critical habitat, such as limiting the footprint of the construction site and ensuring access to site is only through approved areas. Mitigations also require plans for vegetating impacted areas, research and monitoring, and for conservation gains in other areas of critical habitat.

Jeopardy of survival or recovery of this species

Critical habitat for Piping Plover and Bank Swallows can be found throughout the entire coastal ecosystem of Prince Edward Island National Park. However, the construction will result in a net loss of critical habitat (estimated to be a maximum of 0.2% of the critical habitat identified for each species). The residual adverse effects of the project to individuals and critical habitat shall not increase threats to the extent that the population and distribution objectives will not be attained, and will not jeopardize survival or recovery of the species.

<b>PART F - TRANSMITTAL FORM</b>			
Delete, modify or add rows as required			
<b>Tool Completed By</b>	<b>Name &amp; Title</b>	<b>Date Completed</b>	<b>Specific Comments</b>
Resource Conservation	Kim Gamble, Species at Risk Ecologist, Prince Edward Island National Park	22 December 2022	
<b>Functional Teams Consulted:</b>	<b>Name &amp; Title</b>	<b>Date of Review</b>	<b>Specific Comments</b>
<b>National Office Teams</b>			
PAEC (Species Conservation)	Diane Casimir, Ecosystem Scientist, Species Conservation, Conservation Programs Branch, Parks Canada	22 December 2022	
<b>Field Unit Teams</b>			
Choose an item.		Click here to enter a date.	
<b>Other</b>			
<input type="checkbox"/> Legal Services		Click here to enter a date.	
<input checked="" type="checkbox"/> Other ( <i>specify</i> ):	Paul Knaga, Species at Risk Recovery Biologist, Canadian Wildlife Service, ECCC	6 January 2023	

<b>Approved By (FUS, Director of Waterway)</b>	<b>Name &amp; Title</b>	<b>Date Approved</b>	<b>Signature</b>
Karen Jans, Prince Edward Island Field Unit Superintendent		January 9, 2023	

### Appendix 3: Figures & Maps



Figure 1. Proposed site for embankment protection, Dalvey, PEINP.



A.



B.



C.

Figure 2. Storm damage to Gulf Shore Parkway in Dalvay post Hurricane Fiona. A) view from beach B) view from Gulf Shore Parkway looking east C) view from road looking north.



Prince Edward Island  
National Park

Parc national de  
l'Île-du-Prince-Édouard

## Stanhope Armour Stone



Figure 3. Proposed site for embankment protection, Stanhope, PEINP.



A.



B.



C.

Figure 4. Storm damage to shoreline and infrastructure north of Stanhope Campground post-Hurricane Fiona A) view looking north B) view looking west C) view looking south.



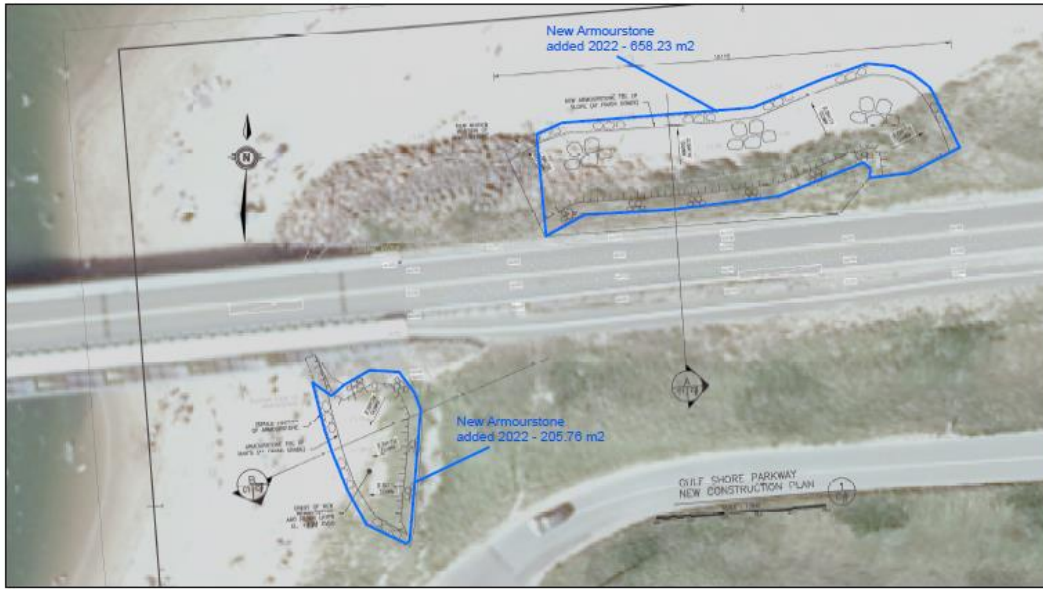
Figure 5. Proposed site for embankment protection, Covehead Bridge, PEINP.



Prince Edward Island National Park

Parc national de l'Île-du-Prince-Édouard

### Covehead Armourstone East




 Parks Canada / Parcs Canada
 

A.



Prince Edward Island National Park

Parc national de l'Île-du-Prince-Édouard

### Covehead Armourstone West




 Parks Canada / Parcs Canada
 

B.

Figure 6. Footprint of new embankment protection Covehead East (A) and Covehead West (B)





A.



B.

Figure 7. Storm damage to Multi-use trail on north side of Gulf Shore Parkway, west of Covehead bridge, post Hurricane Fiona. A) view looking east B) view looking west.



A.



B.

Figure 8. Storm damage to Gulf Shore Parkway just West of Covehead Bridge. A) view looking west B) view looking east.



Figure 9. Critical habitat for species at risk found in PEI National Park. Orange is piping plover (*Charadrius melodus*) and green is Gulf of St. Lawrence Aster (*Symphyotrichum laurentianum*). Yellow areas represent proposed areas for embankment protection installation.



Figure 10. Piping plover nest locations near Covehead Bridge from 2005 – present.

**Appendix 4: Technical Drawings**