REPLACEMENT CLASS SCREENING REPORT
FOR
MINOR TRANSPORTATION PROJECTS

Prepared for:

Transport Canada

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LIST OF ACRONYMS

BMP	Best Management Practices
CEAA	*Canadian Environmental Assessment Act*
CO	Carbon Monoxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
FA	Federal Authority
HC	Health Canada
INFC	Infrastructure Canada
ITS	Intelligent Transportation Systems
MIN	Minor Advers/Mitigable Effect
NEG	Negligible Effect
NOx	Nitrogen Oxides
RA	Responsible Authority
RCSR	Replacement Class Screening Report
SARA	*Species at Risk Act*
SIG	Significant Adverse Effect
TC	Transport Canada
VEC	Valued Ecosystem Component
VOC	Volatile Organic Compound

GLOSSARY OF TECHNICAL TERMS

Class A water body	Highest sensitivity – habitat areas are sensitive enough to be damaged by any type of activity within the water body; known habitats in the water body are critical to the continued viability of the fish population species in the area (Alberta Environment 2007).
Class B water body	High sensitivity – habitat areas are sensitive enough to be potentially damaged by any type of activity within the water body; habitat areas are important to the continued viability of the fish population species in the area (Alberta Environment 2007).
Class C water body	Moderate sensitivity – are broadly distributed habitats supporting local populations of fish species; habitat areas are sensitive enough to be potentially damaged by unconfined or unrestricted activities in the water body (Alberta Environment 2007).
Class D water body	Low sensitivity – fish species as defined under the Code of Practice are not present (Alberta Environment 2007).
Deleterious substance	Any substance added to water that would degrade or alter water quality in any way so that it is harmful to fish or fish habitat (*Fisheries Act* 1985).
Fish	Includes all the life stages of "fish, shellfish, crustaceans, marine animals and marine plants" (*Fisheries Act* 1985).
Fish habitat	Spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes (*Fisheries Act* 1985), i.e., Class A, Class B and Class C water bodies.
Highway footprint	The permanent physical intrusion of a highway or freeway, including the road surface, shoulders, side slopes, drainage ditches and/or storm drainage ponds (Ontario Ministry of Transportation 1997).
Shallow waters	Basins, pools and ponds, as well as wetlands found beside rivers, coastlines and shorelines; submerged vegetation; floating leaved plants. (*Canadian Wetland Classification System* 2006)
Water body	Includes a lake, a canal, a reservoir, an ocean, a river and its tributaries and a wetland, up to the annual high-water mark, but does not include a sewage or waste treatment lagoon, storm water management pond, a mine tailings pond, an artificial irrigation pond, a dugout or a ditch that does not contain fish habitat as defined in subsection 34(1) of the *Fisheries Act*. (*CEAA Exclusion List Regulations* 2007)

Wetland

A wetland is land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activity that are adapted to a wet environment. Wetlands include bogs, fens, marshes, swamps and shallow waters (usually 2 m deep or less) as defined in *The Canadian Wetland Classification System* published by the National Wetlands Working Group of the Canada Committee on Ecological Land Classification (1987). (Federal Policy on Wetland Conservation 1991)

1.0 INTRODUCTION

1.1 Background and Purpose

Transport Canada's mission is to develop and administer policies, regulations and services for the best transportation system for Canada, one that is safe and secure, efficient, affordable, integrated and environmentally friendly.

In recent years, Transport Canada (TC) has made significant investments in transportation infrastructure. Different funding programs target different elements of the entire transportation network throughout the country. Current contribution programs administered by TC include:

- The Strategic Highway Infrastructure Program, which targets transportation related projects on the national highway system that: support trade, tourism and investment in Canada; promote safety, efficiency and environmentally sustainable surface transportation; encourage the use of innovative transportation and information technologies; and, improve the quality of life of Canadians. Canada's national highway system is a network of 24,449 km of highways of national significance that form primary inter-provincial or international links.
- The Asia-Pacific Gateway and Corridor Initiative, Transportation Infrastructure Fund, which aims to enhance the capacity and efficiency of the transportation network that supports Asia-Pacific trade.
- The Urban Transit Showcase Program, which supports the development and integration of strategies, transportation planning tools and best practices so as to reduce GHG emissions; and establish a comprehensive and pro-active national network for the dissemination of information on successful GHG reduction strategies for sustainable urban transportation.

In addition, Transport Canada administers transportation projects in cooperation with Infrastructure Canada (INFC) for the following programs:

- The Canada Strategic Infrastructure Fund, which targets transportation infrastructure projects of major federal and regional significance, including highways and transit, in areas that are vital to sustaining economic growth and enhancing the quality of life of Canadians, often in urban areas. It aims to: provide safer and faster movement of people and goods on Canada's major land transportation routes; reduce the production of greenhouse gases and airborne pollutants; increase the effectiveness of urban development; promote increased economic activity, including tourism; and, promote the use of innovative technologies and practices to minimize greenhouse gas emissions.
- The Border Infrastructure Fund, which focuses on the transportation network within 100 km of the U.S. border targeting security improvements, capacity expansion and improvements to system linkages and efficiency at border crossings. It reflects Canada's commitment to address land border pressures such as traffic congestion, and to continue to facilitate the large volume of trade across the Canada – United States border.

These programs target different types of projects that take place across Canada, in all provinces and territories, including projects in urban and rural areas. In all cases, the transportation network itself is the responsibility of the provinces and municipalities and is not owned or operated by TC. Most of the initiatives funded through these programs are "projects" as defined by the *Canadian Environmental Assessment* Act (*CEAA*) and require that an environmental assessment (EA) be completed. Of these, several are smaller scale transportation projects that typically result in environmental effects that are predictable, well understood and that can be mitigated. Having a Replacement Class Screening in place will result in a more streamlined approach to the assessment of these small construction projects and will allow resources to be focused on larger projects.

This Replacement Class Screening for minor transportation projects includes two sub-classes of projects:

- *Intelligent Transportation Systems (ITS) Projects* – ITS projects involve the application of technologies such as changeable message signs and closed circuit cameras to make highway transportation systems, safer, more efficient and environmentally friendly. ITS projects are simple and straightforward to implement and can eliminate or reduce the need for more complicated roadway infrastructure improvements; and
- *Minor Roadway Enhancements* – Projects, such as the addition of bus bays or turning lanes, intersection improvements and roadway widening, that improve the efficiency and safety of major land transportation routes and border crossings.

The funding programs administered by TC/INFC apply across Canada therefore all provinces and territories are included in this Replacement Class. The majority of minor transportation projects included in this RCSR tend to occur in urban areas, for example, in south-western Ontario and the British Columbia lower mainland.

Forty-one projects for which TC/INFC has contributed funding over the last four years would fall within this Replacement Class Screening. Based on this experience, TC/INFC expects that this Replacement Class Screening will capture approximately ten to fifteen projects per year. This number may increase as new funding programs are developed.

1.2 Class Screening and the *Canadian Environmental Assessment Act*

The *CEAA* and its regulations set out the legislative basis for federal EAs. This legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The *CEAA* applies to projects that require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or licence). The FA then becomes a responsible authority (RA) and is required to ensure that an EA of the project is carried out prior to making its decision or taking action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need

to modify the project plan or recommend further mitigation to eliminate environmental effects or minimize the significance of these effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate the likely adverse environmental effects. The Canadian Environmental Assessment Agency (the Agency) may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A replacement class screening consists of a single report that defines the class of projects and describes the associated environmental effects, best management practices (BMPs) and mitigation measures for projects assessed within the report. It includes a conclusion regarding significance of environmental effects for all projects assessed by the replacement class screening. Once the Agency declares a Replacement Class Screening Report (RSCR), no further environmental assessment regarding the significance of the environmental effects is required for projects within the class, provided that BMPs and mitigation measures described in the RCSR are implemented.

1.3 Rationale for Replacement Class Screening Report

The applicability of the RCSR to minor transportation projects is based upon the demonstrated ability of the class to meet the following six criteria:

(1) Well defined class of projects

The projects selected for this class were chosen because of their small scale and routine nature. For added clarity, the projects have been divided into two sub-classes: Intelligent Transportation Systems (ITS) projects and Minor Roadway Enhancements. They are well defined in terms of their design, function and purpose, as well as how and where their works are undertaken. They involve a number of common physical works and activities and share many similarities such as equipment used and how activities are undertaken and regulated. The environmental impacts associated with the projects in this class are predictable and can be mitigated.

(2) Well-understood environmental setting

All of the projects under this RCSR will take place within or immediately adjacent to an existing highway footprint. Specifically:

- The highway footprint is defined as the width of the permanent physical intrusion of a highway or freeway, including the road surface, shoulders, side slopes, drainage ditches and/or storm drainage ponds; and
- Disturbance to areas adjacent to the highway footprint will extend no more than a total of 10 m outside of the existing footprint width (whether on one side or divided over both sides of the highway).

The environment within the highway footprint is well understood and has already been disturbed. Adjacent areas will only be disturbed if specific environmental setting criteria are met, as outlined in Section 2.2 of the RCSR. All projects will be implemented using standard construction methods and BMPs (Section 4.6). The typical environmental settings and interactions among Valued Ecosystem Components (VECs) are well understood and not likely to vary between projects.

(3) Unlikely to cause significant adverse environmental effects, taking into account BMPs and mitigation measures

The projects under this RCSR are regularly implemented by TC/INFC's funding recipients and are well understood in terms of their environmental effects. Both sub-classes use standard construction, operation, and maintenance methods with similar types of environmental effects and best management strategies. Although the projects occur in different areas across Canada, the potential environmental effects are well known, predictable, very limited and can be easily mitigated.

(4) Follow-up measures

The projects selected for this class are small in scale, and very routine in nature. Based on past screening reports for projects under this class, site-specific follow-up measures are not necessary because of the limited range of environmental effects and the efficacy of standard BMPs.

(5) Effective and efficient planning and decision-making process

From an operational perspective, these projects improve road conditions and contribute to enhanced safety. Transport Canada, in cooperation with INFC, is the only RA involved in these assessments and the projects under this class are straightforward and routine in nature. Streamlining the EA for these projects will help improve the effectiveness of the project planning process, by expediting the EA approval and allowing TC/INFC's funding recipients to implement these projects more quickly.

(6) Public concerns unlikely

Based on past experience, none of the projects selected for this class are expected to generate public concern.

As the project class meets the necessary six criteria, this RCSR is applicable. Projects that do not meet the above criteria must be environmentally assessed outside of this RCSR (i.e., individual screening).

1.4 Consultation

Inter-agency consultation on this RCSR took place in 2007. A preliminary draft was prepared, and forwarded to the Agency, the Department of Fisheries and Oceans (DFO) and Environment Canada (EC) for review. The comments received from these federal authorities were recorded,

considered and incorporated into the RCSR, as appropriate. Consultations with provincial agencies was also undertaken.

Following its submission to the Agency, the final RCSR was made available in 2008 for a period of public review prior to declaration. Public review comments were recorded, considered and incorporated into the RCSR, as appropriate.

1.5 Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to EAs and to provide notice in a timely manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Internet site is administered by the Agency. The responsible authority and the Agency are required to post specific records to the Internet site in relation to a RCSR.

Upon declaration of the class screening report, the Agency requires responsible authorities to post on the Internet site of the Registry, at least every three months, a statement of projects for which a class screening was used. The statement should be in the form of a list of projects, and will include:

- The title of each project for which the replacement class screening report was used;
- The location of each project;
- Contact information (name or number); and
- The date when it was determined that the project falls within the class of projects covered by the report.

The schedule for posting statements is:

- July 15 for projects assessed from April 1 to June 30;
- October 15 for projects assessed from July 1 to September 30;
- January 15 for projects assessed from October 1 to December 31; and
- April 15 for projects assessed from January 1 to March 31.

The responsible authority must also provide annual confirmation of cumulative effects assessment conditions.

The project file must include a copy of the RCSR. The responsible authority must maintain the file, ensure convenient public access, and respond to information requests in a timely manner.

Further information regarding the Registry can be found in *The Guide to the Canadian Environmental Assessment Registry* (2005), prepared by the Agency.

2.0 PROJECTS SUBJECT TO THE CLASS SCREENING

2.1 Projects Covered by the Replacement Class Screening Report

Projects that fall into one of the following two sub-classes are subject to this RCSR:

- Intelligent Transportation Systems (ITS) projects, including installation of:
  - Closed Circuit Television (CCTV) cameras;
  - Vehicle Detection Systems (VDS);
  - Video Vehicle Detection Systems (VVDS);
  - Roadside communication equipment;
  - Environmental scientific data collection instruments;
  - Changeable message signs / Queue-end warning systems; and
  - Fibre optic cables;
- Minor Roadway Enhancement projects, including the following:
  - Adding turn lanes or bus bays;
  - Adding bus shelters;
  - Adding traffic lanes and service roads;
  - Intersection improvements; and
  - Extending passing lanes or on/off ramps.

Table 2.1 provides a summary of the criteria used to determine:

- Whether ITS and Minor Roadway Enhancement projects trigger the requirement for an environmental assessment under *CEAA*; and
- Whether ITS and Minor Roadway Enhancement projects are not suited for assessment under this RCSR (i.e., require an individual screening).

2.1.1 CEAA *Triggers*

Many ITS and Minor Roadway Enhancement projects are excluded from the requirement for an EA under the CEAA *Exclusion List Regulations,* 2007 (Table 2.2). The projects selected for this RCSR involve physical works that are not on the Exclusion List and therefore trigger the requirement for an EA.

Specifically, the projects included in this RCSR are subject to the requirement for an EA based on the following triggers (Table 2.1):

- ITS projects that are described in Table 2.1 and involve:
  - Work outside of an existing highway footprint with a disturbance footprint greater than 25 m^2;
  - Work within 30 m of a water body; and/or
  - Potential for release of a polluting substance into a water body;

- Minor Roadway Enhancement projects that are described in Table 2.1 and involve:
    - Widening a road by more than one lane beyond the number of lanes contained within the road on the day of completion of its original construction;
    - Work outside of an existing highway footprint with a disturbance footprint greater than 25 m^2 (**in relation to the addition of bus shelters**);
    - Work within 30 m of a water body; and/or
    - Potential for release of a polluting substance into a water body.

2.2 Projects Not Suitable for the Replacement Class Screening Report

Some projects that require a screening under the *CEAA* are not suitable for this RCSR as their environmental effects are either unknown or may potentially be significant in the absence of project-specific mitigation. Based on the project information provided by the proponent (see Section 5.3), a determination will be made by TC on whether individual projects are suitable for assessment under the RCSR.

The project or site-specific conditions that would make a project unsuitable for assessment under this RCSR are as follows:

- Any projects for which the CEAA applies and that are not listed in Table 2.1 of this RCSR;
- Projects that require certain permits, approvals or authorizations from another federal department, including but not limited to the following:
    - Projects that are likely to have an adverse effect on species at risk (flora and fauna), either directly or indirectly, and/or that would require a permit from Environment Canada under the *Species at Risk Act* (SARA). Species at risk include:
        a) Species identified on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA; and
        b) Species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities;
    - Projects that are likely to cause the harmful alteration, disruption or destruction of fish habitat that would require an authorization from Fisheries and Oceans Canada in accordance with the *Fisheries Act*;
    - Projects on First Nations Land;
- Projects that require a provincial EA (with the exception of projects that are deemed approved under a similar class environmental assessment process);
- Projects that involve blasting;

- Projects that involve work within 10 m of a water body, with the exception of the following, which are included in the RCSR as they are unlikely to cause any impacts to water bodies:
    - Installation of conduits across an existing bridge;
    - Trenchless water body crossings (e.g., horizontal directional drilling) where the associated surface disturbance (e.g., excavation of access/borehole pits) does not come within 10 m of the water body;
- Projects involving work that extends more than a total of 10 m outside of the width of the existing highway footprint;
- Projects affecting land that has not been previously disturbed in some form and which conflict with adjacent land use;
- Projects that have a potential to impact permafrost areas; and/or
- Projects that involve the creation of ponds or wetlands for the purpose of stormwater treatment.

Projects where these conditions are identified are excluded from this RCSR and will require a separate individual screening. A summary of the above conditions is included in Table 2.1.

Table 2.1 Projects Subject to the Replacement Class Screening Report

Sub-Class	Project Type	Physical Works that Require Assessment (Exclusion List does not apply)	Projects Unsuitable for the RCSR
Intelligent Transportation System	• Closed Circuit Television (CCTV) cameras • Vehicle Detection Systems (VDS) • Video Vehicle Detection Systems (VVDS) • Roadside communication equipment • Environmental scientific data collection instruments • Changeable message signs/ Queue-end warning systems • Fibre optic cables	• Work outside of an existing highway footprint with a footprint greater than 25 m^2. • Work within 30 m of a water body. • Potential for the release of a polluting substance into a water body.	• Projects that require a permit, approval or authorization from another federal department. • Projects that require a provincial EA. • Projects that involve blasting. • Projects that involve work within 10 m of a water body with the exception of the following: - Installation of conduits across an existing bridge; or - Trenchless water body crossings where the associated surface disturbance does not come within 10 m of the water body. • Projects affecting land that has not been previously disturbed in some form and which conflict with adjacent land use. • Projects that have a potential to impact permafrost areas.
Minor Roadway Enhancements	Within or outside the existing highway footprint: • Adding turn lanes, bus bays or terminus loops • Adding bus shelters • Adding traffic lanes and service roads • Intersection improvements • Extending passing lanes or on/off ramps	• Widening a road by more than one lane beyond the number of lanes contained within the road on the day of completion of its original construction. • Work outside of an existing highway footprint with a disturbance footprint greater than 25 m^2 (**in relation to the addition of bus shelters**). • Work within 30 m of a water body. • Potential for the release of a polluting substance into a water body.	• Projects that require a permit, approval or authorization from another federal department. • Projects that require a provincial EA. • Projects that involve blasting. • Projects that involve work within 10 m of a water body. • Projects that involve work that extends more than a total of 10 m outside of the width of the existing highway footprint. • Projects affecting land that has not been previously disturbed in some form and which conflict with adjacent land use • Projects that have a potential to impact permafrost areas. • Projects that involve the creation of ponds or wetlands for the purpose of stormwater treatment.

Table 2.2 Exclusion Criteria (*CEAA Exclusion List Regulations* 2007)

Sub-Class	Issue
Intelligent Transportation System	There is no item in the *Exclusion List Regulations* dedicated to ITS projects, however ITS projects may sometimes be excluded from the need for an EA based on the following exclusion criteria in Schedule 1 of the Regulations (2007): • Part 1 (5): The proposed construction, installation, operation, expansion, modification or decommissioning of a physical work not otherwise referred to in the Schedule 1 of the *Exclusion List Regulations* if i) the project does not result in a physical work with a footprint greater than 25 m^2, ii) is not carried out within 30 m of a water body and iii) does not involve the likely release of a polluting substance into a water body; • Part 1 (17): The proposed construction, installation, operation, expansion and modification or removal of a sign if the project does not involve the likely release of a polluting substance into a water body; and • Part 8 (58): The proposed construction, installation, operation, modification, abandonment or replacement of a portion of a buried telecommunication or electrical power line that is located alongside or under a road if the project i) is not carried out within 30 m of a water body and ii) does not involve the likely release of a polluting substance into a water body.
Minor Roadway Enhancements	Under Schedule 1, Part 8 (62) of the *Exclusion List Regulations* (2007), Minor Roadway Enhancements that are excluded from the need for an EA are those that: • Do not lengthen the road; • Do not widen the road by more than one lane beyond the number of lanes contained within the road on May 31, 2007 or, for roads constructed after May 31, 2007, on the day of completion of its original construction. • Do not result in a culvert that extends more than 10 m beyond the roadbed; • Are not carried out within 30 m of a water body; and • Do not involve the likely release of a polluting substance into a water body. In relation to the addition of bus shelters outside of the existing highway footprint, projects may be excluded from the need for an EA based on the following exclusion criteria in Schedule 1 of the Regulations (2007): • Part 1 (5): The proposed construction, installation, operation, expansion, modification or decommissioning of a physical work not otherwise referred to in the Schedule 1 of the *Exclusion List Regulations* if i) the project does not result in a physical work with a footprint greater than 25 m^2, ii) is not carried out within 30 m of a water body and iii) does not involve the likely release of a polluting substance into a water body.

3.0 PROJECT CLASS DESCRIPTION

3.1 Description of Sub-Classes and Project Activities

3.1.1 Project Construction

Intelligent Transportation System Projects

ITS projects include a broad range of diverse technologies applied to highway transportation to make systems safer, more efficient, more reliable and more environmentally friendly. Projects include changeable message signs, queue-end warning systems, roadside communication equipment, closed-circuit cameras and vehicle detection systems that transmit information to traffic management centres. ITS initiatives are routine, repetitive and straightforward to implement and can eliminate or reduce the need for more complicated highway infrastructure improvements. Core construction activities include:

- Installation of rigid conduits under the pavement or the roadway shoulders to convey power and fibre optic control cables;
- When a conduit must cross a water body:
  - Installation of conduits on existing bridge structures where possible; or
  - Trenchless methods such as high-pressure directional drilling and punch and bore crossings are used to avoid disturbance to the water body. These activities are undertaken in accordance with DFO provincial/territorial Operation Statements (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm). In addition, DFO has Operational Statements with standardized mitigation measures specific to all regions which can be accessed at the national website (http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp);
- If conditions require, temporary road detours, tree trimming or removal and/or utility relocation are undertaken. Temporary road detours or lane closures may be necessary when installing ducts under pavement and bridge structures, manholes and junction boxes; and
- Following installation of the ITS infrastructure, grading, repaving, and seeding and planting of cover vegetation are undertaken as necessary to reclaim the disturbed area.

Descriptions of typical ITS projects are provided below and typical ITS project activities are listed in Table 3.1. Photographs of example projects are provided in Appendix A.

Closed Circuit Television (CCTV) Cameras

CCTV camera projects require excavation for the installation of concrete cabinet pads and concrete poles for mounting cameras, unless there are existing, usable poles. The poles are located within the median or at the side of the roadway. Fibre optic cable installation allows for the CCTV cameras to be linked together and to the communication centre.

Table 3.1 Typical Project Activities

Sub-Class	Project Component	Typical Project Activities
Intelligent Transportation System	Construction	• Site preparation (i.e. removal of existing ITS signs, cutting existing ITS loops, grading, vegetation removal/trimming, excavation, trenching) • Utility relocation • Installation of fibre optic conduits, conduit hand-holes and manholes • Installation of conduits on existing bridges and/or trenchless water body crossings • Installation of concrete cabinet pads, concrete poles, sign footings, cameras and vehicle detector stations • Installation of steel beam guide rail for CCTV poles, cabinets and signs • Office trailer, equipment and materials storage • Place and compact granular sub-base and shoulder material (including establishment of borrow sites) • Place and compact asphalt/concrete base and seal • Erosion and sedimentation control measures • Re-seeding and re-vegetation of all disturbed soils • Waste management
	Operation	• Operation of ITS infrastructure is undertaken remotely at traffic management centres • Loop cutting and sign relocation may be required as part of future roadway improvements
	Accidents/ Malfunctions	• Mishaps associated with the operation of construction equipment (e.g., soils, fine sand and clay that are exposed by construction activities and petroleum product and lubricant spills could be flushed by rain into storm drainage systems and nearby water bodies)

Sub-Class	Project Component	Typical Project Activities
Minor Roadway Enhancements	Construction	• Site preparation (i.e. removal of existing asphalt, grading, vegetation removal/trimming, excavation, trenching) • Utility relocation • Construction of retaining walls, drainage ditches, raised medians, concrete curbs • Installation/upgrading of subterranean storm drain catch basins • Replacement of existing culverts that do not contain fish habitat • Place and compact granular sub-base and shoulder material (including establishment of borrow sites) • Place and compact asphalt/concrete base and seal • Installation of roadside barriers, lighting, traffic signals and signs • Installation of asphalt/concrete pads and anchors for local, minor and major bus stops and terminals • Installation and bolting of completely prefabricated, partially prefabricated, and unassembled shelters requiring on site assembly and anchoring, for local, minor and major stops and terminals • Installation of heating, electrical and information technology wiring, and seating for bus terminals • Erosion and sedimentation control measures • Re-seeding and re-vegetation of new ditches and all disturbed soils • Line painting • Office trailer, equipment and materials storage • Waste management

Table 3.1 Typical Project Activities *Continued*

Sub-Class	Project Component	Typical Project Activities
Minor Roadway Enhancements *Continued*	Operation	• Sign and light maintenance • Litter control • Roadside vegetation control/mowing • Pavement maintenance and repair • Drainage management • Winter snow removal, sanding and de-icing
	Accidents/ Malfunctions	• Mishaps associated with the operation of construction equipment (e.g., soils, fine sand and clay that are exposed by construction activities and petroleum product and lubricant spills could be flushed by rain into storm drainage systems and nearby water bodies)

Vehicle Detection Systems (VDS) (Non-intrusive and Intrusive Systems)

Unless there are suitable sightlines from an existing structure, non-intrusive vehicle detector projects, such as radar and microwave based detectors, require excavation for the installation of concrete or metal poles for mounting of detector units along the roadside. Cable installation permits real time exchange of data with other roadside equipment or with communication and traffic control centres for traffic management and traveller information activities.

Intrusive vehicle detectors projects, such as inductive loops used for queue-end warning systems and vehicle classification, and weigh-in-motion sensors and load cells used for heavy vehicle main line clearance, are installed in the existing roadway.

Video Vehicle Detection Systems (VVDS)

Unless there are suitable sightlines from an existing structure, VVDS camera projects require excavation for the installation of concrete cabinet pads and concrete poles for mounting cameras along the roadside. Fibre optic cable installation facilitates real time exchange of images with communication centres allowing for rapid response to traffic problems. Fibre optic cables are often installed to connect VVDS cameras to changeable message signs to warn oncoming motorists of traffic conditions.

Roadside Communication Equipment for Electronic Toll, Weigh-in-Motion and Vehicle Infrastructure Integration (VII) Projects

To support short-range communications between vehicles and roadside stations, antenna are installed along the roadside or over the roadway with ancillary equipment (e.g. transceivers, readers) also installed within the right-of-way, to permit vehicle identification and two way communications between vehicles and the roadside equipment.

Environmental Scientific Data Collection Instruments

Road Weather Information Systems projects require excavation for the installation of concrete cabinet pads and concrete or metal poles for mounting data collection instruments along the roadside.

Changeable Message Signs (CMS) / Queue-end Warning Systems

Changeable Message Sign and Queue-end Warning System projects require the installation of large overhead signs. Unless there are suitable sightlines from an existing structure, CMS and Queue-end Warning System projects require excavation for the installation of concrete cabinet pads and concrete poles for mounting the signs. CMS projects also require an adjacent roadside cabinet to house the sign controller, communications modem, power distribution panel and other equipment. Fibre optic cables are installed to connect signs to communication control centres.

Minor Roadway Enhancement Projects

Minor roadway enhancements include transportation projects that improve the efficiency and safety of major land transportation routes and border crossings. Projects include the addition of bus bays or turning lanes, addition of bus shelters, intersection improvements, roadway widening (e.g., to accommodate border programs for low-risk travelers, such as FAST and NEXUS), and roadway reconstruction. Core construction activities include:

- Placement of road and shoulder base material;
- Installation and/or relocation of underground services and/or utilities;
- Installation of new curbs, raised medians and sidewalks;
- Installation of new drainage ditches (non fish bearing), reshaping of existing drainage swales and/or installation of subterranean storm drain catch basins;
- Placing and compacting asphalt/concrete over road surfaces;
- Installation of asphalt/concrete pads and anchors for local, minor and major bus stops and terminals;
- Installation and bolting of completely prefabricated, partially prefabricated, and unassembled shelters requiring on site assembly and anchoring, for local, minor and major stops and terminals;
- Installation of heating, electrical and information technology wiring, and seating for bus terminals;
- Installation of lighting, underground cables, signs and guardrails;
- Installation of new traffic control lights, including steel poles and duct work for wiring;
- Line painting; and
- Re-vegetation of ditches and all disturbed soils.

Descriptions of typical Minor Roadway Enhancement projects are provided below and typical project activities are listed in Table 3.1. Photographs of example projects are provided in Appendix A.

Extending Passing Lanes or On/Off Ramps

Projects involving the extension of lanes and on/off ramps begin with site preparation measures that may include milling of existing asphalt/concrete, removal of sidewalks and underground utilities, clearing or grubbing of native vegetation species, retaining wall construction and/or material stockpiling. Temporary lane restrictions or closures may occur during the course of these projects.

Adding Turn Lanes or Bus Bays

Adding turn lanes and bus bays along a roadway begins with property acquisition (if required) followed by site preparation measures that include milling of existing asphalt/concrete, removal of sidewalks, and/or clearing or grubbing of native vegetation species adjacent to the roadway where required. Temporary lane closures and detours may be necessary for these projects. Bus bays are located at the sides of the road while turn lanes may also be located within the median.

Adding Bus Shelters

Bus stops/shelters covered by this RCSR are distinguished into three main types as follows:

- *Local* - Generally limited to an asphalt/concrete pad with a post embedded in the asphalt/concrete pad for schedule and map information. This involves excavation and placement of an asphalt/concrete pad and embedment of the post below the frost line;
- *Minor* - A local stop that has a shelter. Typical activities include excavation and placement of concrete pad with anchors to hold the shelter in place. A post is embedded in the asphalt/concrete pad for schedule and map information; and
- *Major* - a bigger version of a minor stop, taking up a larger footprint and generally used for key stops or interchanges.

Adding Traffic Lanes

The addition of traffic lanes along an existing roadway requires site preparation including removal of existing asphalt/concrete, curbs, and traffic control lights and poles along the corridor. Utility relocation may be needed, as well as clearing and grubbing of vegetation within the project footprint. Lane restrictions and temporary closures may be necessary during the construction process.

Intersection Improvements

Intersection improvement projects consist of site preparation measures including removal of existing asphalt/concrete, sidewalks and curbs. Utility relocation may be required along with

temporary traffic lights as existing traffic control lights and poles are removed. Lane and intersection closures or restrictions may be necessary over the construction phase.

3.1.2 Project Operation

Intelligent Transportation System Projects

Once in place, ITS project operations are conducted remotely from traffic management centres. Loop cutting and sign relocation may be required as part of future ITS projects and roadway improvements.

Minor Roadway Enhancement Projects

The projects covered by this RCSR will not result in changes to existing operation activities. These include sign and light maintenance, litter control, roadside vegetation control/mowing, pavement maintenance and repair, winter snow removal, sanding and de-icing, and runoff/drainage management. Runoff is typically collected in storm sewers and conveyed to existing stormwater treatment facilities within the project limits. Alternatively, where stormwater treatment facilities are not available, new facilities are developed as part of the project to treat stormwater prior to discharge to receiving water bodies. In rural sections, runoff is collected and treated in roadside ditches.

3.2 Seasonal Scheduling and Duration of Minor Transportation Projects

Construction and operation activities for projects in this RCSR may take place at any time of year, although winter construction is usually quite limited due to frost. The construction duration for ITS projects is typically in the range of weeks, while the construction of Minor Roadway Enhancement projects typically takes in the order of months. In accordance with the Migratory Birds Convention Act, vegetation clearing will be avoided during the site-specific breeding and nesting periods to minimize impacts on migratory birds.

4.0 ENVIRONMENTAL REVIEW

4.1 Approach

The overall approach of the environmental assessment is to identify potential impacts to existing environmental baseline conditions that may result from project activities within a defined study area. Best Management Practices are identified to minimize the potential impacts. The significance of residual impacts, which are those impacts remaining after implementation of all appropriate BMPs, is evaluated based on the criteria and rating system shown in Table 4.1. The environmental assessment approach can be broken down into the following steps:

- Describe the typical environmental setting (Section 4.2);
- Identify Valued Ecosystem Components (VECs) (important ecosystem components that are most likely to be affected by project activities) through an issues scoping process (Section 4.3);
- Based on the identified VECs, define the study area boundaries (Section 4.4);
- Describe the potential environmental effects from project construction activities for each VEC (Section 4.5);
- Identify BMPs to address and alleviate the potential effects on each VEC, including potential effects from accidents and malfunctions (Section 4.6); and
- Identify and rate the significance of residual environmental effects based on the magnitude, geographic extent, duration, frequency and permanence of the effect (Section 4.7).

Potential effects of the environment on RCSR projects are discussed in Section 4.8 and cumulative effects are discussed in Section 4.9.

4.2 Typical Environmental Setting

Projects under this Replacement Class Screening take place within 10 m of the existing highway footprint width. The environment within the highway footprint is well understood and has already been disturbed. Projects may occasionally take place in rural areas. In all cases, the project footprint may only affect land that has been previously disturbed in some form (i.e., the native vegetation is no longer present) and must not conflict with adjacent land use (see Section 2.2).

Projects subject to this RCSR are clearly understood, routine and repetitive with well-established BMPs and well-understood potential environmental effects. Detailed descriptions of location-specific environmental settings for projects subject to the RCSR have therefore not been provided. A brief description of the typical environmental setting is provided below.

Table 4.1 Rating System Used to Determine Significance of Residual Environmental Effects Following the Application of Best Management Practices

Criterion	Criteria Ratings		
	Low (L)	**Moderate (M)**	**High (H)**
Magnitude	Effect is evident only at or nominally above baseline conditions	Effect is likely to be measurable over baseline conditions however is less than regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of a VEC	Effect may exceed a regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of a VEC
Geographic Extent	Effect is most likely to be limited to the project site/footprint	Effect is likely to extend into areas adjacent to the project site/footprint boundary	Effect is likely to extend into areas beyond those adjacent to the project site/footprint boundary
Duration	Effect lasts the duration of the activity	Effect continues up to one year after the activity ceases	Effect continues longer than one year after the activity ceases and beyond the life of the project
Frequency	Effect occurs only once	Effect occurs occasionally or periodically	Effect occurs frequently or continuously
Permanence	Effect is likely to be reversible over a short period of time (e.g., within several days or months) after the completion of the activity causing the effect	Effect is likely to be reversible over an extended period of time (e.g., a growing season, following a freshet)	Effect is likely to be permanent
Likelihood	Effect is unlikely to occur	Effect is likely to occur	Effect will definitely occur

4.2.1 Air Quality

It is expected that air quality in the transportation corridors relevant to this RCSR is affected by dust and emissions associated with traffic use. Pollutants from vehicular traffic include combustion products (CO, NOx, VOCs), fugitive dust and diesel odour emissions, which can have an impact on the health and/or reproduction of plants directly adjacent to roadways where concentrations are at their highest (RWDI and Highwood 2004). Concentrations of these pollutants generally drop off within 200 m of the roadway depending on traffic volumes (RWDI and Highwood 2004).

4.2.2 Terrain, Topography and Soils

Terrain, topography and soils surrounding the transportation corridors relevant to this RCSR may vary widely, however the terrain and soils within the highway footprints will have been altered to achieve standard roadway gradients, curves, sight lines and sub-base soil conditions.

4.2.3 Water Resources

Project activities cannot be carried out in water bodies, however water resources that may be present in the vicinity of project sites include lakes, rivers, streams, riparian areas, wetlands and groundwater aquifers. Surface water bodies may provide habitat for a wide range of aquatic wildlife and vegetation species.

4.2.4 Terrestrial Habitat and Species

Most often, work is carried out in an urban environment where adjacent areas are typically characterized by low-lying, largely non-native vegetation or urban streetscapes. Traffic is consistently present within the highway footprints where this RCSR applies. Given this present land use, terrestrial wildlife present in the area will be accustomed to the sounds and movement of heavy traffic.

4.2.5 Cultural and Heritage Resources

Cultural and heritage resources that could potentially be present in undisturbed areas include cultural landscapes, archaeological and paleontological sites, structures, engineering works and artefacts, and any other associated features assigned important historic value.

4.3 Valued Ecosystem Component Scoping

Issues scoping was carried out to:

- Identify all project activities associated with RCSR minor transportation projects, including potential accidents and malfunctions;
- Identify VECs for RCSR minor transportation projects; and
- Establish a matrix of potential interactions between identified project activities and VECs.

Various expert authorities were consulted as part of this process, including Environment Canada, DFO and the Canadian Environmental Assessment Agency.

The matrix that identifies potential interactions between project activities and VECs is shown in Table 4.2. These VECs include:

- Air Quality;
- Terrain and Topography;

- Soils;
- Surface Water Hydrology;
- Surface Water Quality;
- Groundwater Quality;
- Aquatic Habitat and Species;
- Terrestrial Habitat and Species; and
- Cultural and Heritage Resources.

These potential interactions are discussed in more detail in Section 4.5, Potential Environmental Effects.

4.4 Study Area Boundaries

Study area boundaries serve to identify the area within which an environmental effect is likely to occur from project activities. The study area is a function of the extent and duration of potential interaction between a proposed project activity and VEC. Generally, these boundaries are defined by temporal and spatial characteristics.

The ***spatial boundary*** encompassing the potential effects of a project is generally expected to be limited to the RCSR project footprint. Given the type of projects covered by this class, the spatial boundary is not expected to extend more than a total of 10 m outside of the existing highway footprint width. The potential effects are not expected to occur beyond this spatial extent.

However some effects may extend beyond the limits of the RCSR project footprint for certain VECs. These include:

- Air quality: study area spatial boundary extends to the surrounding area within 200 m of the project footprint; and
- Adjacent water bodies and/or groundwater aquifers: study area spatial boundary extends to include any water bodies or aquifers in the project vicinity that have the potential to be affected by the deposit of deleterious substances into those water resources, either directly or indirectly via drainage pathways flowing out of the project footprint.

Table 4.2 Potential Interactions Between Project Activities and VECs

Project Phase	Physical Works and Project Activities	VECs (? = Both sub-classes; I = ITS Projects; R = Minor Roadway Enhancements)											
		Air Quality	**Terrain and Topography**	**Soils**	**Surface Water Hydrology**	**Surface Water Quality**	**Groundwater Quantity**	**Groundwater Quality**	**Aquatic Habitat and Species**	**Terrestrial Habitat and Species**	**Land and Resource Use**	**Health and Socio-Economic Conditions**	**Cultural and Heritage Resources**
Construction	Site preparation (i.e., removal of existing ITS signs, cutting existing ITS loops, asphalt removal, vegetation removal, grading, excavation, trenching and utility relocation)	?	R	?	?	?		?	?	?			?
	Installation of conduits, manholes and catch basins							?					
	Installation of conduits on existing bridges and/or trenchless water body crossings					I			I				
	Concrete pouring					?			?				
	Installation of sign, light, camera and bus shelter footings, pads, anchors, shelter structure and poles, cabinets, guiderails/barriers, curbs and raised medians												
	Installation of heating, electrical and information technology wiring, and seating for bus terminals												
	Installation of retaining walls		R	R	R	R			R	R			
	Installation/upgrading of drainage ditches and subterranean storm drain catch basins				R	R			R				
	Replacement of existing culverts that do not contain a water body			R	R	R			R				
	Operation and maintenance of construction vehicles and equipment	?		?		?		?	?				
	Office trailer, equipment and materials storage	?		?	?	?			?				
	Establishment of borrow sites	R	R	R	R	R			R	R			
	Place and compact granular sub-base and shoulder material	?				?			?				
	Placing and compacting of asphalt and concrete	?				?			?				
	Erosion and sediment control measures	?		?	?	?			?				
	Re-vegetation and seeding of disturbed soils and new ditches	?		?		?			?	?			
	Line painting					?			?				
	Waste management	?		?		?			?				

Table 4.2 Potential Interactions Between Project Activities and VECs *Continued*

Project Phase	Physical Works and Project Activities	VECs (? = Both sub-classes; I = ITS Projects; R = Minor Roadway Enhancements)											
		Air Quality	**Terrain and Topography**	**Soils**	**Surface Water Hydrology**	**Surface Water Quality**	**Groundwater Quantity**	**Groundwater Quality**	**Aquatic Habitat and Species**	**Terrestrial Habitat and Species**	**Land and Resource Use**	**Health and socio-Economic Conditions**	**Cultural and Heritage Resources**
Operation	Operation of ITS projects												
	Sign and light maintenance												
	Litter control					R			R	R			
	Roadside vegetation control/mowing									R			
	Pavement maintenance and repair	R				R			R				
	Drainage management				R	R			R				
	Winter snow removal, sanding and de-icing					R			R				
Accidents/ Malfunctions	Mishaps associated with the operation of construction equipment (e.g., petroleum product or lubricant spill, sediment release)\			?		?		?	?				

The ***temporal boundary*** encompassing the potential project/VEC interactions will for the most part be limited to the construction phase. Project construction activities for RCSR minor transportation projects continue on a year round basis, however, most are initiated in spring, summer or fall seasons. Construction activities can last from weeks to months depending on project requirements. Project/VEC interactions may extend into the operation phase for some VECs until reclamation has been completed (e.g., until reclamation planting to control erosion and sedimentation, stabilize slopes and/or re-establish wildlife habitat has become established).

4.5 Potential Environmental Effects

This section outlines the potential effects from RCSR projects on each of the VECs identified in Section 4.3 and Table 4.2 as susceptible to adverse environmental effects from project activities.

4.5.1 Air Quality

During construction and during operational maintenance activities, emissions from project construction vehicles and equipment have the potential to contribute to air quality impacts. Soil disturbance and earth moving activities have the potential to contribute to the levels of dust in the air.

4.5.2 Terrain and Topography

In order to meet standard roadway gradients, curves and sight lines and depending on surrounding terrain and topographic conditions, project activities for minor roadway enhancements may include grading or earth moving activities that result in terrain alterations adjacent to existing highway footprints. Activities may include cut and fill, and/or the installation of retaining walls and/or new drainage ditches. Terrain alterations have the potential to cause slope instability if new slope faces are too steep and exposed or if equipment is improperly handled while working on disturbed slopes. Terrain alterations also have the potential to disrupt natural drainage patterns. Projects that require blasting are excluded under this RCSR.

4.5.3 Soils

Well-managed soils have high moisture-absorbing capacities, which can reduce the intensity of runoff and thus reduce potential erosion and loss of soil resources. Project activities, such as excavation, grading and equipment movements, and improper management have the potential to result in a number of environmental effects, including: erosion due to increased soil exposure and disturbance, reduced soil capability through soil compaction and mixing, and soil contamination through unsafe handling, storage or the accidental spills of stored materials.

4.5.4 Surface Water Hydrology

Project activities could negatively affect surface water hydrology through alteration of surface drainage patterns, and rate and volume of runoff, both during construction and once projects are operational.

4.5.5 Surface Water Quality

Project activities cannot be carried out in water bodies and must take measures to prevent the deposit of materials or sediments into them. However surface water quality has the potential to be reduced by the accidental release of sediment or contaminants such as oil, grease, or fuel spills from construction vehicles or equipment, directly or indirectly into surface water bodies. During project operations, roadway runoff, road de-icing and vegetation management (herbicide/fertilizer use) activities have the potential to affect surface water quality.

4.5.6 Groundwater Quality and Quantity

Projects could negatively affect groundwater quality through the accidental introduction of contaminants to groundwater aquifers. Because of the surficial nature of the construction activities, the quality and quantity of deep groundwater aquifers are unlikely to be affected. The quantity of contaminant that may potentially reach an aquifer following a spill or machinery malfunction would likely be relatively small. Return to a pre-contamination state would be reflective of the natural assimilative ability of the individual site, as it would be left to natural attenuation.

4.5.7 Aquatic Habitat and Species

Project activities cannot be carried out in water bodies and must take measures to prevent the deposit of materials or sediments into them. However, projects could negatively affect aquatic habitat and species (e.g., fish, benthic invertebrates) directly or indirectly through the accidental release of sediment or contaminants such as oil, grease, or fuel spills from construction vehicles or equipment into surface water bodies and/or from roadway runoff, road de-icing and vegetation management (herbicide/fertilizer use) activities.

4.5.8 Terrestrial Habitat and Species

Projects could negatively affect terrestrial habitat and species by the disturbance or destruction of vegetation and habitat, the introduction of non-native species and opportunistic species, or the disruption to wildlife movement, nesting and rearing. This includes potential effects on terrestrial habitat from road de-icing and roadside fertilizer/herbicide use during project operation. Special value is given to rare or uncommon native species since loss of individuals of such species has the greatest potential to affect the ecological integrity of an area. Given that wildlife are likely to be accustomed to the sounds and movement of heavy traffic, it is unlikely that wildlife will be adversely affected by sensory disturbance associated with the construction and operation of projects under this RCSR.

4.5.9 Cultural and Heritage Resources

Projects have the potential to damage or disturb previously unknown cultural resources during earthmoving activities.

4.5.10 Land and Resource Use

Projects have limited potential to disturb land and resource use within the vicinity of the project. Based on the limited duration, frequency, and spatial extent of the potential environmental effects from these projects it is unlikely that land and resource use will be affected.

4.5.11 Health and Socio-Economic Conditions

Projects have limited potential to disturb health and socio-economic conditions within the project area. Based on the limited duration, frequency, and spatial extent of the potential environmental effects from these projects it is unlikely that health and socio-economic conditions will be affected.

4.6 Best Management Practices (BMPs)

Best Management Practices are identified as approaches and guidelines based on known science that, if followed, should allow the proponent to meet or exceed the desired environmental objective(s), regardless of site specific conditions, and are components of proper project planning, site preparation, construction, restoration and operation.

Minor transportation projects that fall within this RCSR involve routine projects with predictable environmental effects that can be avoided or minimized using proven BMPs.

Tables 4.4 and 4.5 identify the BMPs that should be implemented to eliminate, reduce, or control potential adverse environmental effects on identified VECs, as a result of project activities. This includes the effects of potential accidents and malfunctions. If all applicable BMPs identified in Tables 4.4 and 4.5 are employed, minor transportation projects that fall under this RCSR are not likely to cause significant adverse residual environmental effects.

In some cases, it is possible historical contamination may be encountered during earthmoving activities. If historical contamination is found, a remedial work plan will be developed to return the site to an environmental condition that will sustain its use with no adverse environmental effect. Site remediation and/or restoration will depend on the type of contamination. Measures to manage contaminated soils could range from in-situ procedures to excavation and off-site disposal at a licensed facility. The decision will be made in consultation with appropriate regulatory agencies.

In order to ensure that conditions of funding, including BMPs, provided to the proponent have been successfully completed, TC will provide technical advice to projects during project planning and may, during and/or upon completion of the project, conduct either telephone interviews or site visits of projects. Such visits will also provide TC staff with greater understanding of the on the ground nature and benefits of the projects.

4.7 Analysis and Predictions of Residual Environmental Effects

Analysis and prediction of residual environmental effects is based on the potential project/VEC interactions described in Section 4.5 and Table 4.2 and the BMPs identified in Section 4.6 to eliminate, reduce, or control these potential effects. The significance of the predicted residual effects, which are those effects predicted to remain after implementation of all appropriate BMPs, is rated based on specific criteria. These criteria consider a project's magnitude, geographic extent, duration, frequency of occurrence, and permanence, as defined in Table 4.1.

After the application of these definitions, an environmental effect is assessed to be either a negligible effect, a minor adverse effect or a significant adverse effect, according to the definitions provided in Table 4.3.

The significance rating established represents the residual significance of each environmental effect, including accidents and malfunctions, following the application of BMPs. Tables 4.4 and 4.5 summarize the applicable VECs, potential environmental effects, necessary BMPs, and the

predicted significance of residual adverse environmental effects, for each of the two sub-classes covered by this RCSR.

Table 4.3 Defining Impact Significance

Impact Significance Rating	Definition
Negligible Effect (NEG) (Not Significant)	Those environmental effects which, after taking into consideration applicable BMPs, have been assessed to have a "low" rating for all criteria or have been rated as "moderate" for some criteria but are rated as "low" for likelihood.
Minor Adverse / Mitigable Effects (MIN) (Not Significant)	Those environmental effects which, after taking into consideration BMPs, have been assessed to have a "low" or "moderate" rating for all criteria, are rated as "moderate" for likelihood and *do not* have a "moderate" rating for both magnitude and permanence.
Significant Adverse Effects (SIG)	Those environmental effects which, after taking into consideration BMPs, have a "moderate" or "high" magnitude and likelihood, and are also rated as "moderate" or "high" for permanence and/or as "high" for extent, duration and/or frequency.

Table Abbreviations

L – Low

M – Moderate

H – High

NEG – Negligible

MIN – Minor

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Air Quality	Decreased air quality due to emissions from construction vehicles/equipment and dust	Wet down or cover dry, exposed soils during windy conditions or when dust becomes a problem. Ensure spoil materials being transported are covered with securely fastened tarps or equivalent material. Ensure all construction vehicles and equipment are properly tuned, in good operating order and fitted with standard air emission control devices. Minimize idling of engines at all times. Vehicle speeds within the construction area should be kept to a minimum to reduce dust production.	L	M	L	M	L	M	MIN
Soils	Increased soil exposure resulting in erosion or slope instability	Keep site clearing to a minimum to maintain vegetative cover and wind breaks. Stabilize slopes as appropriate for local site conditions. Avoid activities on areas with steep and/or sensitive slopes. Install erosion controls prior to work and maintained until the site has been stabilized. Phase work to minimize duration of exposure of disturbed areas. Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible. Avoid work during excessively wet site conditions. Restore disturbed areas as soon as possible, to minimize duration of soil exposure.	L	L	L	L	L	L	NEG

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Soils ***Continued***	Reduced soil capability/productivity through compaction, and topsoil and subsoil mixing	Conserve topsoil by removal and stockpiling prior to construction. Avoid stripping of topsoil in frozen conditions, where feasible. Maintain a 1 m separation distance between stockpiled topsoil, subsoil, and overburden to minimize mixing and replace them in a manner that ensures replacement with like materials. Avoid work during excessively wet site conditions. Restore disturbed areas as soon as possible, to minimize duration of soil exposure.	L	L	L	L	L	L	NEG
	Soil contamination through unsafe handling, storage or the accidental spills of stored materials and/or excavation of soils impacted by historical contamination	Spill contingency plans, equipment and supplies will be present on-site at all times and employees trained in their use. If spills occur, they will be appropriately removed and disposed of. Soils being excavated will be visually inspected for physical signs of contamination (e.g., oil and grease). If historical contamination is found on site, a remedial work plan will be developed and may include in-situ procedures or excavation and off-site disposal at a licensed facility, depending on the type of contamination. Potentially contaminated soils and sediments to be removed from the site will be tested in accordance with all relevant guidelines. Contaminated materials will be stockpiled in a stabilized condition outside the flood line. A Risk Management Plan will be developed for short-term stockpiling prior to disposal.	L	L	L	L	L	L	NEG

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Surface Water Hydrology	Changes to surface drainage patterns, and rate and volume of runoff	Ensure earthworks do not exacerbate flood hazards or create undesirable obstructions to drainage into natural water bodies. Minimize disturbance to ground surface and vegetation that affect infiltration and runoff characteristics.	L	L	L	L	L	L	NEG
Surface Water Quality	Reduced water quality due to increased sediment loads	Avoid work during excessively wet site conditions. Stabilize slopes as appropriate for local site conditions. Install effective long-term erosion and sediment controls prior to work and maintain until the site has been stabilized. Remove accumulated sediments prior to removal of controls, where feasible. Restore or re-vegetate work site to pre-construction conditions, to the extent possible. Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible. All trenchless water body crossings for conduits are to be undertaken in accordance with DFO provincial/territorial Operation Statements (http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm).	L	M	L	M	L	L	NEG

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Surface Water Quality ***Continued***	Reduced water quality due to introduction of contaminants	Maintain construction equipment to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants. Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation. Re-fuel and/or service mobile construction equipment and store hazardous materials at a construction site at a distance greater than 100m from any water body. Undertake fuelling and/or servicing of immobile construction equipment within 100m of a water body in a manner such that any spillage will not enter the water body. Capture, contain, and clean up spills and leaks immediately. Ensure that contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial sorbent, 30 m^2 of 6 mm polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). Notify appropriate provincial/territorial authorities in the event of any reportable spills of petroleum products or hazardous materials. Ensure emergency contact numbers are available on site.	L	M	L	L	M	L	NEG

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Groundwater Quality	Reduced groundwater quality due to introduction of contaminants	Maintain construction equipment to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants. Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation. Capture, contain, and clean up spills and leaks immediately. Ensure that contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial sorbent, 30 m^2 of 6 mm polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). Notify appropriate provincial/territorial authorities in the event of any reportable spills of petroleum products or hazardous materials. Ensure emergency contact numbers are available on site.	L	L	M	L	M	L	NEG
Aquatic Habitat and Species	Disturbance to aquatic habitat and species	Minimize disturbance to the ground surface and vegetation that affect infiltration and runoff characteristics. Restore or re-vegetate work site to pre-construction conditions, to the extent possible. Ensure that if riprap is used, the riprap is clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. Ensure earthworks do not exacerbate flood hazards or create undesired obstructions to drainage into natural water bodies.	L	M	L	L	L	L	NEG

Table 4.4 Potential Environmental Effects and Best Management Practices for Intelligent Transportation System (ITS) Projects *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Terrestrial Habitat and Species	Disturbance or destruction of vegetation and habitat	Keep site clearing to a minimum to maintain vegetative cover and windbreaks. Use existing roads and trails for site access. Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species. Salvage the topsoil stripped and disturbed during the project and replace it as quickly as possible to allow natural re-vegetation. Avoid vegetation clearing during the sensitive breeding and nesting periods until fledglings have left parental territories, to minimize impacts on migratory birds and help comply with the Migratory Birds Convention Act.	L	L	L	L	M	M	MIN
	Introduction of non-native species and opportunistic species	Clean all machinery and equipment prior to transport to new construction areas. Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species.	L	L	L	L	M	M	MIN
	Disruption to wildlife movement, nesting and rearing	Survey area for nests or dens prior to clearing. Avoid disturbing any active nests or dens. Avoid construction activities during sensitive nesting/rearing periods if migratory birds or other wildlife are found in project area.	L	L	L	L	L	L	NEG
Cultural and Heritage Resources	Loss or disruption to cultural or heritage resources	Cease construction in the event that any cultural or heritage resources are discovered, and notify the appropriate provincial/territorial authority immediately. If this occurs, construction will occur as directed by the appropriate provincial/territorial authority.	L	L	L	L	L	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Air Quality	Decreased air quality due to emissions from construction vehicles/equipment and dust	Wet down or cover dry, exposed soils during windy conditions or when dust becomes a problem. Ensure spoil materials being transported are covered with securely fastened tarps or equivalent material. Ensure all construction vehicles and equipment are properly tuned, in good operating order and fitted with standard air emission control devices. Minimize idling of engines at all times. Vehicle speeds within the construction area should be kept to a minimum to reduce dust production.	L	M	L	M	L	M	MIN
Terrain and Topography	Slope instability and/or disruption to natural drainage patterns due to terrain modifications	Careful planning should be undertaken for work on slopes of Class 6 (15 to 30%) or greater, especially where soils are shallow and likely to move with disturbance. Tracked equipment should be used and anchored as necessary. Re-contour areas of terrain modification to blend with the existing topography and to maintain slope stability and natural drainage patterns. Re-vegetate as soon as possible to maintain slope stability. Use measures such as geotextile fabrics to maintain stability until vegetation has become established.	L	L	M	L	M	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Soils	Increased soil exposure resulting in erosion or slope instability	Keep site clearing to a minimum to maintain vegetative cover and wind breaks. Stabilize slopes as appropriate for local site conditions. Avoid activities on areas with steep and/or sensitive slopes. Install erosion controls prior to work and maintained until the site has been stabilized. Phase work to minimize duration of exposure of disturbed areas. Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible. Avoid work during excessively wet site conditions. Restore disturbed areas as soon as possible, to minimize duration of soil exposure.	L	L	L	L	M	L	NEG
	Reduced soil capability/productivity through compaction, and topsoil and subsoil mixing	Conserve topsoil by removal and stockpiling prior to construction. Avoid stripping of topsoil in frozen conditions, where feasible. Maintain a 1 m separation distance between stockpiled topsoil, subsoil, and overburden to minimize mixing and replace them in a manner that ensures replacement with like materials. Avoid work during excessively wet site conditions. Restore disturbed areas as soon as possible, to minimize duration of soil exposure.	L	L	L	L	L	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Soils ***Continued***	Soil contamination through unsafe handling, storage or the accidental spills of stored materials and/or excavation of soils impacted by historical contamination	Spill contingency plans, equipment and supplies will be present on-site at all times and employees trained in their use. If spills occur, they will be appropriately removed and disposed of. Soils being excavated will be visually inspected for physical signs of contamination (e.g., oil and grease). If historical contamination is found on site, a remedial work plan will be developed and may include in-situ procedures or excavation and off-site disposal at a licensed facility, depending on the type of contamination. Potentially contaminated soils and sediments to be removed from the site will be tested in accordance with all relevant guidelines. Contaminated materials will be stockpiled in a stabilized condition outside the flood line. A Risk Management Plan will be developed for short-term stockpiling prior to disposal.	L	L	L	L	L	L	NEG
Surface Water Hydrology	Changes to surface drainage patterns, and rate and volume of runoff	Ensure earthworks do not exacerbate flood hazards or create undesirable obstructions to drainage into natural water bodies. Minimize disturbance to ground surface and vegetation that affect infiltration and runoff characteristics. Enhanced grassed swales, oil/grit separators, infiltration/exfiltration trenches, filter strips, etc. should be incorporated into the design of storm drainage management on a site-specific basis in order to maintain the quality and quantity of surface water within the project limits.	L	L	L	L	L	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Surface Water Quality	Reduced water quality due to increased sediment loads	Avoid work during excessively wet site conditions. Stabilize slopes as appropriate for local site conditions. Install effective long-term erosion and sediment controls prior to work and maintain until the site has been stabilized. Remove accumulated sediments prior to removal of controls, where feasible. Restore or re-vegetate work site to pre-construction conditions, to the extent possible. Divert runoff and overland flow away from working areas and areas of exposed or susceptible soils, where feasible. Enhanced grassed swales, oil/grit separators, infiltration/exfiltration trenches, filter strips, etc. should be incorporated into the design of storm drainage management on a site-specific basis in order to maintain the quality and quantity of surface water within the project limits.	L	M	L	M	L	L	NEG
	Reduced water quality due to introduction of contaminants	Maintain construction equipment to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants. Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation. Re-fuel and/or service mobile construction equipment and store hazardous materials at a construction site at a distance greater than 100m from any water body. Undertake fuelling and/or servicing of immobile construction equipment within 100m of a water body in a manner such that any spillage will not enter the water body.							NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Surface Water Quality *Continued*	Reduced water quality due to introduction of contaminants ***continued***	Capture, contain, and clean up spills and leaks immediately. Ensure that contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial sorbent, 30 m^2 of 6 mm polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). Notify appropriate provincial/territorial authorities in the event of any reportable spills of petroleum products or hazardous materials. Ensure emergency contact numbers are available on site. Enhanced grassed swales, oil/grit separators, infiltration/exfiltration trenches, filter strips, etc. should be incorporated into the design of storm drainage management on a site-specific basis in order to maintain the quality and quantity of surface water within the project limits. In order to reduce potential impacts from road salt application, manage the application of road salt through judicious timing, improved spreader machine, pre-wetting methods, pavement temperature monitoring and other techniques. Use alternative substances to de-icing salt including other chloride salts and acetate-based substances where appropriate. When road patching, only apply seal coat to a dry surface and not prior (within 24 hrs.) or during rainfall. Accurately assess the need for herbicide/fertilizer use and avoid use in proximity to, or where run-off may reach water bodies.	L	M	L	L	M	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Groundwater Quality	Reduced groundwater quality due to introduction of contaminants	Maintain construction equipment to prevent leaks and spills of fuels, lubricants, hydraulic fluids, or coolants. Store, handle and dispose of fuel, wastes and hazardous waste materials properly and in accordance with all relevant municipal, provincial, and federal legislation. Capture, contain, and clean up spills and leaks immediately. Ensure that contractor has spill clean up materials on site (e.g. 25 kg of suitable commercial sorbent, 30 m^2 of 6 mm polyethylene, a shovel and an empty fuel barrel for spill collection and disposal (CPWCC, 1999)). Notify appropriate provincial/territorial authorities in the event of any reportable spills of petroleum products or hazardous materials. Ensure emergency contact numbers are available on site.	L	L	M	L	M	L	NEG
Aquatic Habitat and Species	Physical disturbance to aquatic habitat and species and/or reduction in habitat quality due to the introduction of contaminants or sedimentation	Minimize disturbance to the ground surface and vegetation that affect infiltration and runoff characteristics. Restore or re-vegetate work site to pre-construction conditions, to the extent possible. Ensure that if riprap is used, the riprap is clean, free of fine materials, and of sufficient size to resist displacement during peak flood events. Ensure earthworks do not exacerbate flood hazards or create undesired obstructions to drainage into natural water bodies. Enhanced grassed swales, oil/grit separators, infiltration/exfiltration trenches, filter strips, etc. should be incorporated into the design of storm drainage management on a site-specific basis in order to maintain the quality and quantity of surface water within the project limits.	L	M	L	L	L	L	NEG

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Aquatic Habitat and Species ***Continued***	Physical disturbance to aquatic habitat and species and/or reduction in habitat quality due to the introduction of contaminants or sedimentation *continued*	In order to reduce potential impacts from road salt application, manage the application of road salt through judicious timing, improved spreader machine, pre-wetting methods, pavement temperature monitoring and other techniques. Use alternative substances to de-icing salt including other chloride salts and acetate-based substances where appropriate. Accurately assess the need for herbicide/fertilizer use and avoid use in proximity to, or where run-off may reach water bodies.							NEG
Terrestrial Habitat and Species	Disturbance or destruction of vegetation and habitat	Keep site clearing to a minimum to maintain vegetative cover and windbreaks. Use existing roads and trails for site access. Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species. Salvage the topsoil stripped and disturbed during the project and replace it as quickly as possible to allow natural re-vegetation. Avoid vegetation clearing during the sensitive breeding and nesting periods until fledglings have left parental territories, to minimize impacts on migratory birds and help comply with the Migratory Birds Convention Act. In order to reduce potential impacts from road salt application, manage the application of road salt through judicious timing, improved spreader machine, pre-wetting methods, pavement temperature monitoring and other techniques. Use alternative substances to de-icing salt including other chloride salts and acetate-based substances where appropriate. Accurately assess the need for herbicide/fertilizer use and ensure adjacent areas are not affected.	L	L	L	L	M	M	MIN

Table 4.5 Potential Environmental Effects and Best Management Practices for Minor Roadway Enhancements *Continued*

VEC	Potential Environmental Effects	Best Management Practices	Magnitude	Extent	Duration	Frequency	Permanence	Likelihood	Significance of Adverse Effect
	Note: The proponent is responsible for observing and abiding by all applicable municipal, provincial/territorial, and federal legislation relating to public health and safety, protection of the environment and wildlife habitat, labour codes, land use, and zoning regulations, along with acquiring forthwith and prior to commencement of any work, all necessary rights, licenses, approvals, and authorizations. This will help mitigate environmental effects associated with any environmental component affected by these projects.								
Terrestrial Habitat and Species *Continued*	Introduction of non-native species and opportunistic species	Clean all machinery and equipment prior to transport to new construction areas. Re-vegetate disturbed areas and exposed soils with species that existed prior to construction or suitable native species.	L	L	L	L	M	M	MIN
	Disruption to wildlife movement, nesting and rearing	Survey area for nests or dens prior to clearing. Avoid disturbing any active nests or dens. Avoid construction activities during sensitive nesting/rearing periods if migratory birds or other wildlife are found in project area. Where feasible, road and traffic barriers will allow for passage of small terrestrial species.	L	L	L	L	M	L	NEG
Cultural and Heritage Resources	Loss or disruption to cultural or heritage resources	Cease construction in the event that any cultural or heritage resources are discovered, and notify the appropriate provincial/territorial authority immediately. If this occurs, construction will occur as directed by the appropriate provincial/territorial authority.	L	L	L	L	L	L	NEG

4.8 Potential Effects of the Environment on the Project

Under the Act, an EA must consider potential effects the environment may have on projects. Increased weather extremes and number of extreme events due to climate change may affect construction and operation of projects, therefore ensuring protection against these effects is increasingly important. Minor transportation projects are vulnerable to a variety of environmental effects such as:

- Extreme weather-related effects (i.e. wind, precipitation) can damage the physical integrity of projects, and/or cause unpredictable run-off, erosion or sedimentation during the construction phase;
- Sinking or settling of soils, ground subsidence and ground surface movement could also damage the physical integrity of projects, potentially leading to a reduced quality of end products;
- Landscape features, surficial geology, and physical characteristics of project location could alter materials or methods used in construction; and
- Normal 'wear and tear' brought on by weather-related effects and forces (i.e. deterioration due to sun exposure, wind, freeze/thaw cycles).

The effects that have been identified are considered mitigable and avoidable through design, the use of accepted best management construction practices, and the use of standard operating, maintenance and repair procedures. These specific BMPs are identified in Tables 4.4 and 4.5.

4.9 Cumulative Effects

Cumulative effects may result when VECs are affected by interactions among multiple projects. Therefore, it is necessary to consider past, present, and likely future projects to determine the full extent of potential environmental effects associated with each project activity.

Cumulative effects assessment must consider the potential cumulative effects resulting from interactions between all activities and projects flowing from highway network operations, as well as between projects and activities outside the highway network footprint. Minor transportation projects that fall under this RCSR have the potential to interact with:

- Other construction projects addressed by this RCSR;
- Other highway construction projects not covered by this RCSR;
- Highway network operational activities; and
- Projects and activities occurring outside the highway footprint.

4.9.1 Interactions Between RCSR Minor Transportation Projects

The environmental effects associated with minor transportation projects included in this RCSR have been found to be negligible to minor and limited to the immediate project area. A number of RCSR projects occurring in the same time and space could possibly contribute to 'nibbling'

cumulative effects. However, considering the negligible to minor nature of impacts, individual RCSR minor transportation projects are not likely to contribute to measurable cumulative effects.

4.9.2 Interactions Between RCSR Projects and Other Highway Construction Projects not Covered by this RCSR

The environmental effects associated with minor transportation projects, as defined by this RCSR, have been found to be negligible to minor and limited to the immediate project area. In the case of another highway construction project occurring in a similar time and space to an RCSR minor transportation project, there is the potential for combined effects to incrementally contribute to cumulative environmental effects on affected resources. Provided appropriate BMPs are followed for all projects, the cumulative effect on environmental resources should be minor. The contribution to the cumulative effect by the RCSR projects would be minimal.

4.9.3 Interactions Between RCSR Projects and Transportation Network Operational Activities

Generally, transportation network operational activities (e.g., sign and light maintenance, litter control, roadside vegetation control/mowing, winter snow removal, pavement maintenance and repair) within the project area have been taking place for extended periods of time, and the immediate environment has been routinely exposed to these activities prior to any undertakings related to RCSR minor transportation projects. The environmental effects associated with RCSR minor transportation projects have been found to be negligible to minor therefore it is unlikely that projects under this RCSR will contribute to cumulative adverse environmental effects when combined with ongoing operational activities.

4.9.4 Interactions Between RCSR Minor Transportation Projects and Projects/Activities Outside the Highway Footprint

The environmental effects associated with minor transportation projects, as defined by this RCSR, have been found to be negligible to minor and limited to the immediate project area. In the case of other construction projects occurring outside the highway footprint but in a similar time and space to an RCSR minor transportation project (e.g., construction of a residential or commercial site), there is the potential for combined effects to incrementally contribute to cumulative environmental effects on affected resources. The contribution of RCSR projects would minimal. Provided appropriate BMPs are followed for all projects, the cumulative effect on environmental resources should be minor.

4.9.5 Cumulative Effects Assessment Summary

Based on knowledge of potential environmental effects and past experience, it is possible to predict the cumulative environmental effects that might result from a combination of projects or activities known at the time of declaration of this RCSR. Proper project planning and design will take into account surrounding infrastructure, other transportation network operations, and projects or activities outside of project boundaries that have potential to place a cumulative demand on affected VECs.

All residual environmental effects following the application of recommended BMPs were found to be negligible to minor, insignificant, and limited to the immediate project area. Therefore, the potential for any cumulative effects to occur is unlikely and generates low concern. Although potential exists for short-term environmental effects during construction, the implementation of recommended BMPs will result in insignificant impacts. TC considers it unlikely that projects under this RCSR will contribute to significant adverse cumulative environmental effects.

5.0 ROLES AND RESPONSIBILITIES

The following section discusses, in general terms, the federal and provincial/territorial regulatory requirements and coordination mechanisms for RCSR minor transportation projects.

5.1 Federal Coordination

This section summarizes the involvement of responsible and federal authorities in this RCSR process.

This RCSR does not exempt a proponent from the requirement to obey all other relevant federal legislation, such as the *Fisheries Act*. This RCSR is not designed to compensate for any other federal requirements. If a project involves any other RAs other than TC and INFC, the project will be excluded from this RCSR.

5.1.1 Responsible Authorities

TC and INFC are the only RA's involved in the EA process of minor transportation projects covered by this RCSR, therefore TC will assume the lead role in the EA process. No federal authorizations, permits, or approvals are required for these projects; no other federal departments are expected to be involved in the EA process. In some cases, projects are jointly funded by both Transport Canada and Infrastructure Canada. In these cases TC will track the number of times the RCSR is applied to projects that are being implemented by TC alone and by TC and INFC. This RCSR will not apply to projects that involve another RA via a regulatory or other trigger.

5.1.2 Federal Authorities

No other FAs have been identified which are likely to require an EA of these projects, other than TC and INFC, under Section 5 of the *CEAA*, or to possess specialist or expert information or knowledge that is necessary to conduct the EA of the projects covered by this RCSR. No other federal departments are expected to be involved in the EA process. Any projects that require an assessment by or a referral to another FA, will not be assessed under the RCSR.

Fisheries and Oceans Canada and Environment Canada were provided an opportunity to review the RCSR. All comments received have been considered and incorporated into the RCSR.

5.2 Provincial/Territorial Coordination

Only minor transportation projects exempted from the provincial/territorial EA process will be covered by this RCSR. This RCSR is not designed to compensate for provincial/territorial requirements nor do they eliminate the need for project specific provincial/territorial approvals where required. This RCSR does not exempt a proponent from the requirement to obey all other relevant provincial/territorial legislation.

5.3 The Proponent

Project proponents are responsible for providing project specific information to TC, and ensuring that design standards and BMPs described in the RCSR are implemented. Proponents are also responsible for obtaining all relevant licenses, permits, and authorizations and ensuring that the project meets all federal, provincial/territorial and municipal legislative requirements. All relevant licenses, permits, approvals, or authorizations must be made available to TC upon request.

Project information that may be required as part of the funding agreement for projects under this RCSR is listed in Table 5.1. This information will allow TC to determine whether the project requires an EA under the CEAA and, if so, whether it is suitable for assessment under this RCSR.

Table 5.1 Project Information Requirements

Category	Information Items
Project Background	Overall project objective and expected benefits
	Alternatives considered
Site Location and Ownership	Map and site plan indicating location of site property, adjacent properties and/or likely area of influence
	Geographic location (e.g., region, county, city, town, township, sub-watershed)
	Ownership of project site property and owner contact information
Regulatory Requirements	Required permits, approvals, authorizations and land use zoning changes (if required)
	Other federal departments providing funds, lands or other support for the project
Stakeholder Consultation	Interested and affected community groups consulted
	Details of previous and planned public consultation
	Public concerns identified and responses (if applicable)
Site Area and Access	Approximate area of project (in hectares or sq. m)
	Proposed access to site (i.e., existing road/trail or water access)
Existing Environmental Conditions	Existing on-site slopes (ground slopes, stream banks, shorelines), presence of unstable slopes, existing site drainage
	Type of on-site water bodies (watercourses, ponds, lakes, wetlands, etc.)
	Lengths of shorelines or stream banks within or adjacent to the project area
	Size of natural buffer to adjacent water bodies
	Surface water flow volumes and historic flood and ice regime for water bodies
	Groundwater levels and presence of seeps/upwelling
	Surface or groundwater quality (as applicable)
	Vegetation communities on site property, adjacent properties and/or area of influence
	Land use within the past 12 months
	Types of soils on-site
	Inventory of breeding/resident fish and wildlife species, including use of the site (e.g., nesting/breeding, spawning, hibernation or nursing)
	Identification of areas with known or potential habitat for Species at Risk
	Inventory of Species at Risk (on-site, adjacent properties and/or area of influence)
	Areas of known soil contamination (locations, types of contaminants)
Existing Socio-Economic Conditions	Land uses on adjacent properties
	First Nation's interests (reserve land, traditional use)
	Distance to nearest groundwater well
	Distance to nearest surface water intake
	On-site presence of known historical, heritage or archaeological sites

Table 5.1 Project Information Requirements *Continued*

Category	Information Items
Equipment	Heavy equipment and vehicles to be used (e.g., backhoes, bulldozers, bobcats, trucks, trailers)
	Hand machinery to be used (e.g., pumps, generators, cement mixers, chainsaws, drills and carpenters equipment)
Personnel	Technical specialists and conservation agencies providing advice or supervision
	Anticipated number of on-site personnel
Project Design	Details of all structures (i.e., dimensions, locations and materials)
	Blueprints
	Concept drawings (i.e., plans, elevations, cross-sections) and construction (i.e., environmental) specifications
Site Preparation and Construction Activities	Scheduling of site preparation and construction activities
	Location and area of staging/construction and fuelling areas
	Inventory of hazardous products to be managed
	Temporary fencing (material, length, height)
	Area of vegetation to be cleared
	Topsoil stripping and/or grading required (area and proposed slopes)
	Excavations required (surface dimensions, depth of excavation)
Site Preparation and Construction Activities ***Continued***	Groundwater dewatering (locations, volumes/rates)
	Dewatering storage and discharge activities (i.e., locations, volumes)
	Area to be paved or hard-surfaced
	Types and volumes of stockpiled materials (e.g., removed vegetation, soils, gravel, waste rock)
	Vegetation species to be planted (i.e., species, seed mixes, amount and location of plantings)
Maintenance, Modifications and Repair Activities	Pest (i.e., insect, invasive plant species) control plans
	Parties responsible for maintenance and repairs
	Maintenance schedule
Environmental Management Plans	Erosion and sediment control plans, including maintenance activities and contingencies
	Spill response plans
	Waste management plans
	Public and occupational health and safety plans
Monitoring and Follow-up	Environmental monitoring plans (type, location, frequency)
	Follow-up plans (type and frequency of reporting)

Source: Gartner Lee Limited 2002

6.0 PROCEDURES FOR AMENDING THE REPLACEMENT CLASS SCREENING REPORT

6.1 Terms of the Application

This RCSR will be in effect for a period of five years, from the date of declaration.

6.2 Amendment Procedures

The purpose of an amending procedure is to allow the modification of the RCSR after experience has been gained with its operation and effectiveness. The reasons for such modification may include:

- Clarification of the document and procedures;
- Streamlining or modifying the planning process in areas where problems may have arisen;
- Minor modifications and revisions to the factors to be considered in the assessment to reflect new or changed regulatory requirements, policies or standards;
- Extension of the application of the RCSR to RA(s) who were not previously declared users of the report; and/or
- New procedures and environmental mitigation practices that have been developed over time.

The RA will notify the Agency in writing of its interest to amend the RCSR. It will discuss the proposed amendments with Agency and affected federal government departments and may invite comment from stakeholders and the public on the proposed changes. The RA will then submit the amended RCSR to the Agency, along with a request that the Agency amend the RCSR and a statement providing a rationale for each amendment proposed.

The Agency may amend the RCSR without changing the declaration period if the changes:

- Are minor;
- Represent editorial changes intended to clarify or improve the screening process;
- Do not materially alter either the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects; and
- Do not reflect new or changed regulatory requirements, policies or standards.

The Agency may initiate a new declaration for the RCSR for the remaining balance of the original declaration period or for a new declaration period if the changes:

- Are considered to be substantial; or
- Represent modifications to the scope of the projects subject to the RCSR or the factors to be considered in the assessment required for these projects.

7.0 REFERENCES

7.1 Literature

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7.2 *CEAA* Screening References

British Columbia Ministry of Transportation. 2003. Environmental Screening Report for Highway #15 FAST/NEXUS Pacific Border Project. Submitted to Transport Canada.

British Columbia Ministry of Transportation. 2003. Environmental Screening Report for Highway 99 NEXUS Lane Extension. Submitted to Transport Canada.

British Columbia Ministry of Transportation. 2006. Environmental Screening Report for Highway 15 Extension of FAST Truck Lane. Submitted to Transport Canada.

Delcan. 2005. Environmental Screening Report for Highway 402 – Queue End Warning System Blue Water Bridge Easterly to Lambton County Road 26 (Mandaumin Road), City of Sarnia, Village of Point Edward, Lambton County. Prepared on behalf of the Ontario Ministry of Transportation. Submitted to Transport Canada.

Manitoba Ministry of Transportation and Government Services. 2002. Environmental Screening Report for Highway 16 Rehabilitation near Minnedosa and Neepawa. Submitted to Transport Canada.

Manitoba Transportation and Government Services Highway Planning & Design Branch. 2005. CEAA Screening Report for Proposed Upgrading of Provincial Trunk Highway No. 1 (Trans-Canada Highway) – Intersection Improvements West of Winnipeg City Limits in the Rural Municipality of Headingley. Submitted to Transport Canada.

Prince Edward Island Department of Transportation and Public Works. 2003. Environmental Screening Report for Trans-Canada Highway Improvements at Cornwall Intersection, PEI. Submitted to Transport Canada.

Yukon Department of Highways and Public Works. 2003. Environmental Screening Report for Highway Reconstruction, km 1573 to km 1579 and km 1603 to km 1633, Alaska Highway, Yukon. Submitted to Transport Canada.

Yukon Department of Highways and Public Works. 2005. Environmental Screening Report for Re-establishing Fish Passage Through the Marshal Creek Culvert Crossing, Tributary of Dezadeash River. Submitted to Transport Canada.

7.3 Class Screening References

Agriculture and Agri-Food Canada-Prairie Farm Rehabilitation Administration. 2005a. Replacement Class Screening Report for Water Well Construction and Decommissioning.

Agriculture and Agri-Food Canada-Prairie Farm Rehabilitation Administration. 2005b. Replacement Class Screening Report for Small Scale Farm Infrastructure Projects.

Gartner Lee Limited. 2002. Draft Model Class Screening Report for Small Scale Water Quality and Habitat Improvement Projects. Prepared for Environment Canada.

APPENDIX A

EXAMPLE PHOTOGRAPHS OF MINOR TRANSPORTATION PROJECTS

Photographs of Example Intelligent Transportation Systems Projects

Photo 1: Vehicle Detection Video – monitors and collects traffic data (Huron Church Road, Ontario BIF)

Photo 2: Pole with camera (Mandaumin Road, Ontario BIF)

Photographs of Example Intelligent Transportation Systems Projects *Continued*

Photo 3: Permanent counting station (Ontario SHIP)

Photo 4: Changeable message sign (Ontario BIF)

Photographs of Example Intelligent Transportation Systems Projects *Continued*

Photo 5: Changeable message sign (Highway 99, BC SHIP)

Photo 6: Windsor traffic control centre (Ontario BIF)

Photographs of Example Minor Roadway Enhancement Projects

Photo 7: Intersection improvements (Manitoba SHIP)

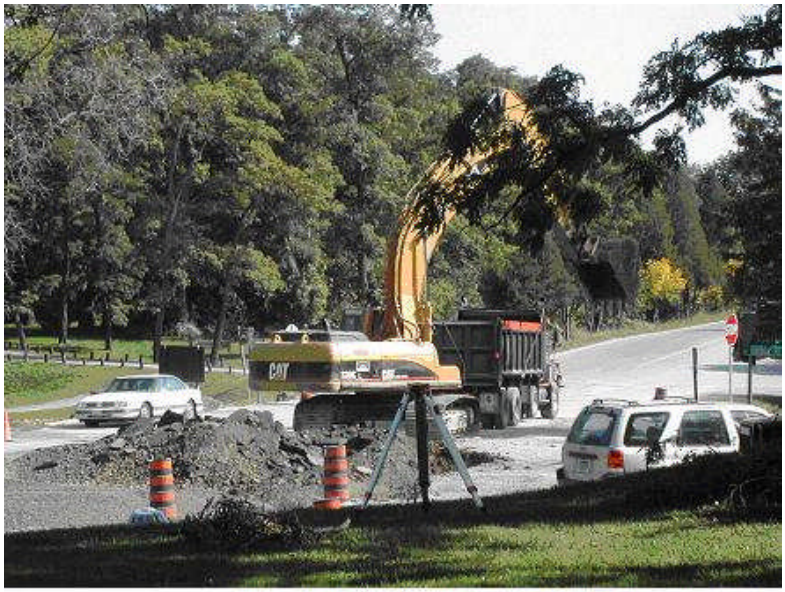

Photo 8: Roundabout construction (Ontario BIF)

Photographs of Example Minor Roadway Enhancement Projects *Continued*

Photo 9: Construction of passing lanes (BC SHIP)

Photo 10: New eastbound off-ramp (BC SHIP)

Photographs of Example Minor Roadway Enhancement Projects *Continued*

Photo 11: Installing barriers and widening the shoulders of a curvilinear section of Highway 1 (BC SHIP)