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Pacific Rim National Park Reserve

Environmental Management Plan

for Pacific Traverse Trail Clearing and Grubbing

Draft 1, October 2016

Photographs by Steve Ogle, 2016

IMPORTANT NOTICE

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Revision signoff by Qualified Environmental Professional

Revision	Description	Qualified Environmental Professional	Signature	Date
00	Prepared by	Kim Poupard, R.P.Bio.		Aug 2016
00	Prepared by	Don Herron, R.P.Bio.		Sept 2016
00	Prepared by	Rachel Keeler, R.P.Bio.		Oct 2016
00	Reviewer	Chris Steeger, R.P.Bio.		19 Oct 2016
00	Reviewer			

Revision History

Version	Date	Comments

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List of Acronyms and Abbreviations

Acronym or Abbreviation	Definition
BC	British Columbia
DBH	Diameter at Breast Height
EM	Environmental Monitor
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
IEA	Independent Environmental Auditor
m	metre
mm	millimetre
NTUs	Nephelometric Turbidity Units
PCA	Parks Canada Agency
PEOR	Project Environmental Orientation Record
PRNPR	Pacific Rim National Park Reserve
PTT	Pacific Traverse Trail
Project (the)	Pacific Traverse Trail Project
PWGSC	Public Works and Government Services Canada
QEP	Qualified Environmental Professional
TEM	Terrestrial Ecosystem Mapping

1. Purpose of the Environmental Management Plan

This Environmental Management Plan (EMP) describes the environmental performance standards and responsibilities expected of all Contractors in executing the works described in *Pacific Traverse Trail Clearing and Grubbing, Pacific Rim National Park Reserve, British Columbia* (PWGSC Ref.#: R.081570.001) and summarized in Section 2.2. For the purposes of this EMP and related documents, the terms

- "Contractor" refers to all personnel completing works, including any assignment to third-party Contractors;
- "Owner" means Parks Canada Agency (PCA); and
- "Departmental Representative" means a representative appointed by Public Works and Government Services Canada (PWGSC) for the purpose of execution of this Contract.

The application, roles/responsibilities and communications of this EMP are described in Section 4 through Section 6.

This EMP includes both general and site-specific environmental protection measures developed based on PCA standards and practices, past project experience and current industry best management practices, as applicable to the clearing/construction activities. This EMP should be considered a "living document" whereby revisions and updates are made iteratively as the Project progresses. The EMP also provides the basis upon which the Contractor is to prepare and submit the Contractor's Environmental Protection Plans (EPPs).

2. Description of Works

2.1 Location of Works

The proposed Pacific Traverse Trail (PTT), the Project, is entirely located within Pacific Rim National Park Reserve (PRNPR) Long Beach Unit on the west coast of Vancouver Island between the communities of Tofino and Ucluelet, British Columbia (BC). The location of the PTT is shown on Figure 1.

2.2 Scope of Works

Parks Canada is planning to build a paved multi-use trail that runs the entire length of PRNPR Long Beach Unit, with connecting routes to Wickaninnish Beach and Florencia Bay (Figure 1). This EMP pertains to the specific works as described in the document entitled *Pacific Traverse Trail Clearing and Grubbing, Pacific Rim National Park Reserve, British Columbia*. Specifically, this document includes the following components:

- Clearing of vegetation and debris from a right-of-way with a length of approximately 30 kilometres and a width of 5.2 metres (m);
- Clearing of approximately 80 construction pull-off areas along the length of the trail, each measuring approximately 3 m wide by 20 m long;
- Clearing, grubbing, topsoil stripping, placing of geotextile and placing and compacting 300 millimetres (mm) of granular sub-base and 100 mm base material of approximately 40 access roads, each measuring 5.2 m wide by 20 m long;
- Clearing and grubbing for a planned 4,800 m^2 parking lot;
- Topsoil stripping, placing of geotextile and placing and compacting 450 mm of granular sub-base and 100 mm base material for one parking lot (3,200 m^2);
- Chipping and spreading of smaller organic material (to 120 mm diameter);
- Installing three HDPE culverts;
- Felling of specific danger trees throughout the PRNPR and along the trail alignment;
- Installing two Project signs at each end of the PTT along Highway 4; and
- Salvaging approximately 3,155 cubic metres of timber (all trees over 200 mm diameter).

Figure 1: Pacific Traverse Trail Overview Map

2.3 Key Environmental Concerns

Table 1 shows the key environmental concerns identified during the Detailed Impact Assessment that are relevant to the environmental management of the Project.

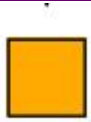
Table 1: Specific Considerations for the Works

Concern	Comments
Special management areas: Watercourses, riparian areas and wetlands	Watercourses, riparian areas and wetlands occur in the area where works will occur. See Figure 2 and Table 2 for more details.
Special management areas: Undefined species	Habitat protected under *Species at Risk Act* Schedule 1 for this species occurs where works will occur. See Appendix D, Figure 2 and Table 2 for more details.
Special management areas: Marbled Murrelet Critical Habitat	Habitat protected under *Species at Risk Act* Schedule 1 for Marbled Murrelet occurs where works will occur. See Appendix D, Figure 2 and Table 2 for more details.
Special management areas: Nesting, breeding and denning habitat	Suitable habitat is present for nesting, breeding and denning habitat for various species, including many species at risk, where works will occur. See Figure 2 and Table 2 for more details.
Special management areas: Old-growth forests	Old-growth forests occur in the area where works will occur. See Figure 2 and Table 2 for more details.
Special management areas: Ecological communities at risk	Blue-listed ecological communities were identified in the area where works will occur. See Figure 2 and Table 2 for more details.
Plant species at risk: Oregon ash California wax-myrtle	Suitable habitat is present for these two plant species at risk. See Appendix D, Figure 2 and Table 2 for more details.
Archaeology: Culturally modified trees	The archaeological review identified a number of culturally modified trees in the area where works will occur. See Appendix L for more details.
Archaeology: Cultural heritage resource sites	The archaeological review identified cultural heritage resource sites in the area where works will occur. See Appendix L for more details.

3. Environmental and Archaeological Specifications and Requirements

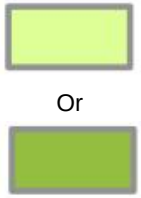
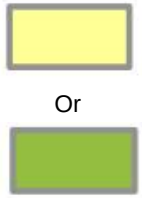
Table 2 lists site-specific environmental and archaeological requirements that must be implemented for the Project. Locations of sensitive environmental and archaeological features are presented in the Environmental and Archaeological Alignment Mapbook (Figure 2), which must be used together with this EMP.

Table 2: Site Specific Sensitivities and Mitigation Requirements

Map Symbol[1]	Descriptions	Location	Mitigation
	Waterbody Crossing		• No instream works are permitted. • Demarcate riparian areas in the field and minimize disturbance within these areas. • Install and maintain sediment and erosion control structures to prevent sediment from entering riparian areas or the watercourse. • No storage of fuels or fuelling of equipment within 30 m. • Fell trees away from watercourses and riparian areas. • Avoid the use of ground-based machinery within 15 m of waterbodies' top-of-bank and use handheld equipment for felling trees. • Prohibit siting access roads or temporary laydowns within riparian areas. • Do not disperse wood chips into watercourses or riparian areas. • Apply Table 4 as applicable.
	Pond Breeding Amphibian Site		• Install and maintain sediment and erosion control structures to prevent sediment from entering aquatic amphibian habitat. • Qualified Environmental Professional (QEP) to monitor amphibian migrations in the vicinity of known breeding areas and manage construction in a manner that avoids impacts to amphibians. Management strategies include temporary suspension of construction activities and exclusion fencing and salvage (See Appendix I). • Fell trees away from wetlands • Avoid siting access roads or temporary laydowns near these areas • No storage of fuels or fuelling of equipment within 30 m • Minimize sensory disturbance to these areas and avoid working at night using artificial lighting

Map Symbol[1]	Descriptions	Location	Mitigation
	Special Management Area		• QEP to complete a pre-clearing survey and salvage in coordination with the Independent Environmental Auditor (IEA). • Micro-route the trail such as to avoid clearing large or numerous trees and minimize root damage in order to maintain the characteristics of the habitat (i.e., cool, moist understorey). • Move large woody debris (>80 centimetre (cm) diameter) off the trail and place into similar habitat in the adjacent forest to the west of the trail wherever possible. • Minimize disturbance; do not place access roads or temporary laydowns within these areas. • No dispersal of wood chips into these habitats.
	Ephemeral Aquatics Habitat (Standing Water)		• Install and maintain sediment and erosion control structures to prevent sediment from entering aquatic amphibian habitat. • No storage of fuels or fuelling of equipment within 30 m.
	Wildlife Trees		• A QEP will field-verify wildlife trees to be retained. Wildlife trees to be avoided will meet at least one of the following criteria: o Diameter at Breast Height (DBH) ≥ 100 cm and co-dominant or dominant in the stand for western redcedar, hemlock and Sitka spruce and ≥ 70 cm DBH for shore pine. Also, must have a wildlife tree attribute rating of between 2 and 6 as per Ministry of Environment and Ministry of Forests 2010; o Evidence of recent use by wildlife (i.e., cavities, nests, feeding holes, raptor plucking perch); o Valuable habitat characteristics such as internal decay, crevices, large brooms, current infestation by insects or suitable structure for nesting and/or perching; or o Limiting in the forest type (i.e., few suitable wildlife trees in even-aged section growth). • Demarcate wildlife trees to be retained in the field.
	Blue-listed Communities		• Minimize disturbance. • Micro-route the trail such as to avoid clearing large trees and minimize root damage in order to maintain the characteristics of the habitat. • Avoid siting access roads or temporary laydowns within these areas as much as practicable.

Map Symbol[1]	Descriptions	Location	Mitigation
	Old-growth Forest		) Micro-route the trail such as to avoid clearing large trees and minimize root damage in order to maintain the characteristics of the habitat.) Minimize disturbance; avoid siting access roads or temporary laydowns within these areas.
	Wetland (TEM)		) Install and maintain sediment and erosion control structures to prevent sediment from entering aquatic amphibian habitat.) Fell trees away from wetlands.) No storage of fuels or fuelling of equipment within 30 m.) Minimize disturbance; avoid siting access roads or temporary laydowns within these areas.) No dispersal of wood chips into wetlands.
	Very High Soil Erosion Potential/Unstable Terrain		) Use sediment and erosion control techniques to avoid impacts to soil.) Define specific sediment and erosion protection measures in these areas as part of the EPP (see Section 6.1) that addresses potential impacts to erosion-prone soils.) Re-contour slopes and establish vegetation as soon as practicable.) Minimize impacts to vegetation and woody roots.) Where this area overlaps other sensitivities (i.e., wetlands), extra caution is required to minimize risks from soil erosion and sedimentation.) Apply Table 4 as applicable.

Map Symbol[1]	Descriptions	Location	Mitigation
	Amphibian Habitat		• QEP to complete a pre-clearing survey and salvage in coordination with the Independent Environmental Auditor (IEA). Install exclusion fencing as directed by IEA. See Appendix I for amphibian salvage protocols • Install and maintain sediment and erosion control structures to prevent sediment from entering aquatic amphibian habitat. • See Appendix F for Coarse Woody Debris Disposal recommendations in this area. • Avoid creating surface depressions that catch and hold water (particularly during the amphibian-breeding season); immediately contour disturbed soils to drain effectively. • Minimize disturbance; avoid siting access roads or temporary laydowns within these areas as much as practicable. • No dispersal of wood chips into amphibian habitat. • Minimize sensory disturbance to these areas; avoid working at night using artificial lighting.
	Marbled Murrelet Habitat and Mapped Critical Habitat		• Retain all large trees (>100 cm DBH, >35 m height) and veteran crown class, including minimizing impacts to root structures by adjusting the trail alignment so that it avoids the drip line (unless the trail is elevated). • Minimize disturbance; avoid siting access roads or temporary laydowns within these areas, as much as practicable.
	Plant Species at Risk		• Avoid disturbance of plant species at risk (See Appendix D for more information).
	Invasive Plant		• Limit the spread of invasive plants. See Appendix G and H
	Known Bear Den		• A pre-clearing bear den survey is required between October 15 and April 30 along the entire Project corridor, coordinate pre-clearing bear den surveys with the IEA during this period.
	Archaeological Site		• See the Heritage Protection Plan in Appendix L for specific requirements by site.

Map Symbol[1]	Descriptions	Location	Mitigation
1. See map legend for additional details. Note that square symbols indicate mapped polygon colouration.			

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5,441,000

English Cove

Radar Hill

10 11

W00a W00b W00c

4

N

Place of Interest
Old Road Bed
Highway
Existing Road
Watercourse
Waterbody
First Nation Reserve
Pacific Rim National Park Reserve
Proposed PTT Marker (August 17 2016)
Proposed PTT Route (August 17 2016)
Parking Lot Area

Ephemeral Aquatic Habitat (Standing Water)
Invasive Plants
Pond Breeding Amphibian Habitat
Watercourse Crossing

Wildlife Trees
1
2
3
5
7
Number of Trees

Old-growth Forests
Blue List Communities
Wetland > 40%
Wetland < 40%
Very High Soil Erosion Potential / Unstable Terrain
Amphibian Habitat
Marbled Murrelet Critical Habitat
Amphibian / Marbled Murrelet Habitat Overlap
High Density Bear Den
Special Management Area

0 50 100 200
Meters Scale 1:5,000

Reference :
DataBC Data Distribution Service
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Parks Canada
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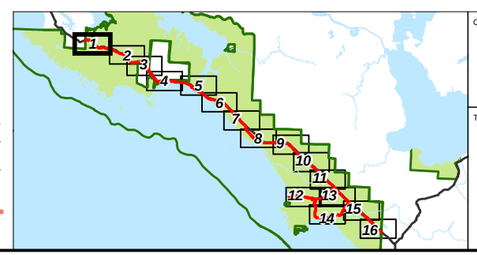

CLIENT:
Public Works and Government Services Canada

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Pacific Traverse Trail

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QA/QC: RK
Figure 2

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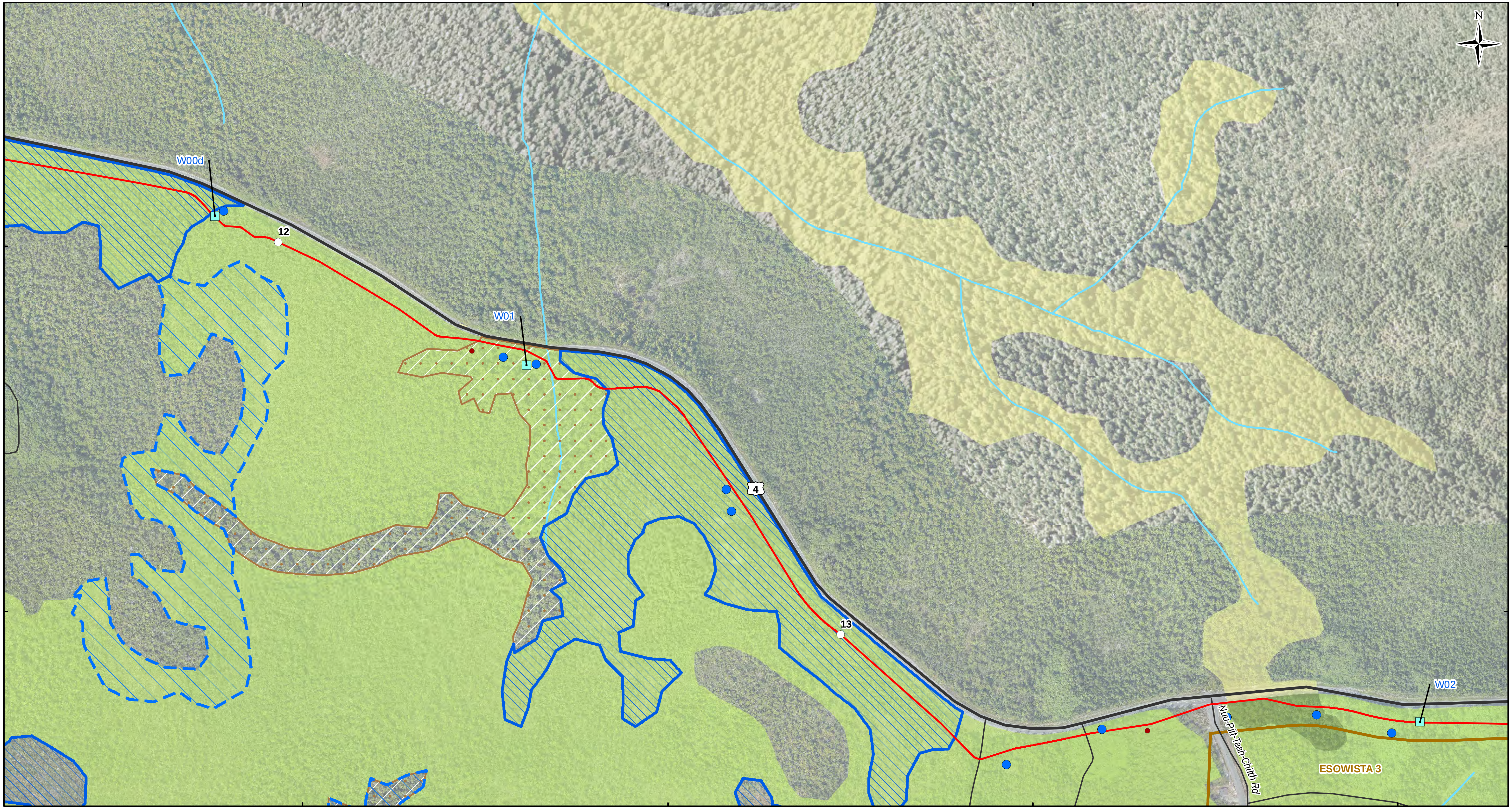

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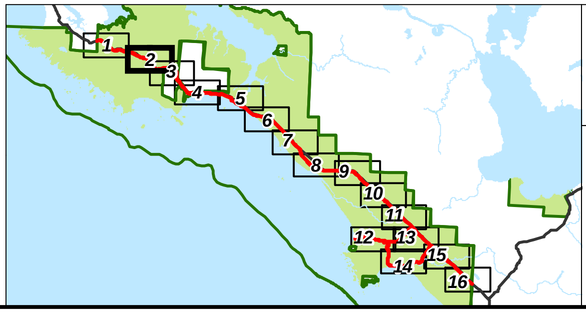

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14

W02

W02a

W03

ESOWISTA 3

NUU-PRIT-TAAH-CHILTH RD

Grice Bay

Campground

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
- First Nation Reserve
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Wildlife Trees
- 1
- 2
- 3
- 5 *Number of Trees*
- 7

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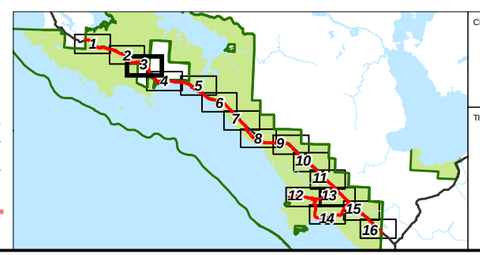

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W03 15 Nuu-Piit-Taah-Chiith Rd Village Connector Rd ESOWISTA 3 ESowistaRRd W03a 4 16 Yellow Iris W03b Canada thistle Oxeye daisy park access road Wickaninnish Bay

- Place of Interest
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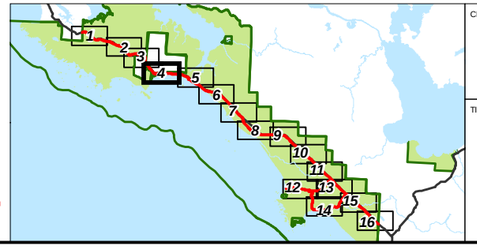

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298,500 299,000 299,500 300,000

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Airport Rd

Grice Bay

Wickaninnish Bay

English Ivy

English Ivy

English Ivy

English Ivy

English Ivy

Himalayan blackberry

17

18

4

W03c

W03d

W03e

- Place of Interest
- Old Road Bed
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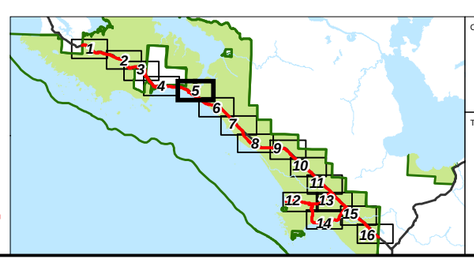

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W03e

19

4

20

Wickaninnish Bay

Park Administration

- Place of Interest
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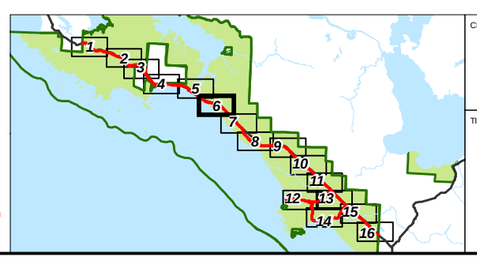

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301,000 301,500 302,000 302,500

5,437,500 5,437,000 5,436,500

Yellow Iris

W03f

Green Point Campground

21

4

Wickaninnish Bay

N

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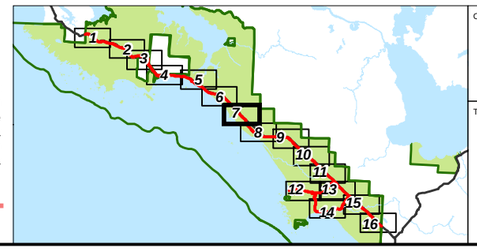

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JOB No: VE52602
COORDINATE SYSTEM: NAD 1983 UTM Zone 10N

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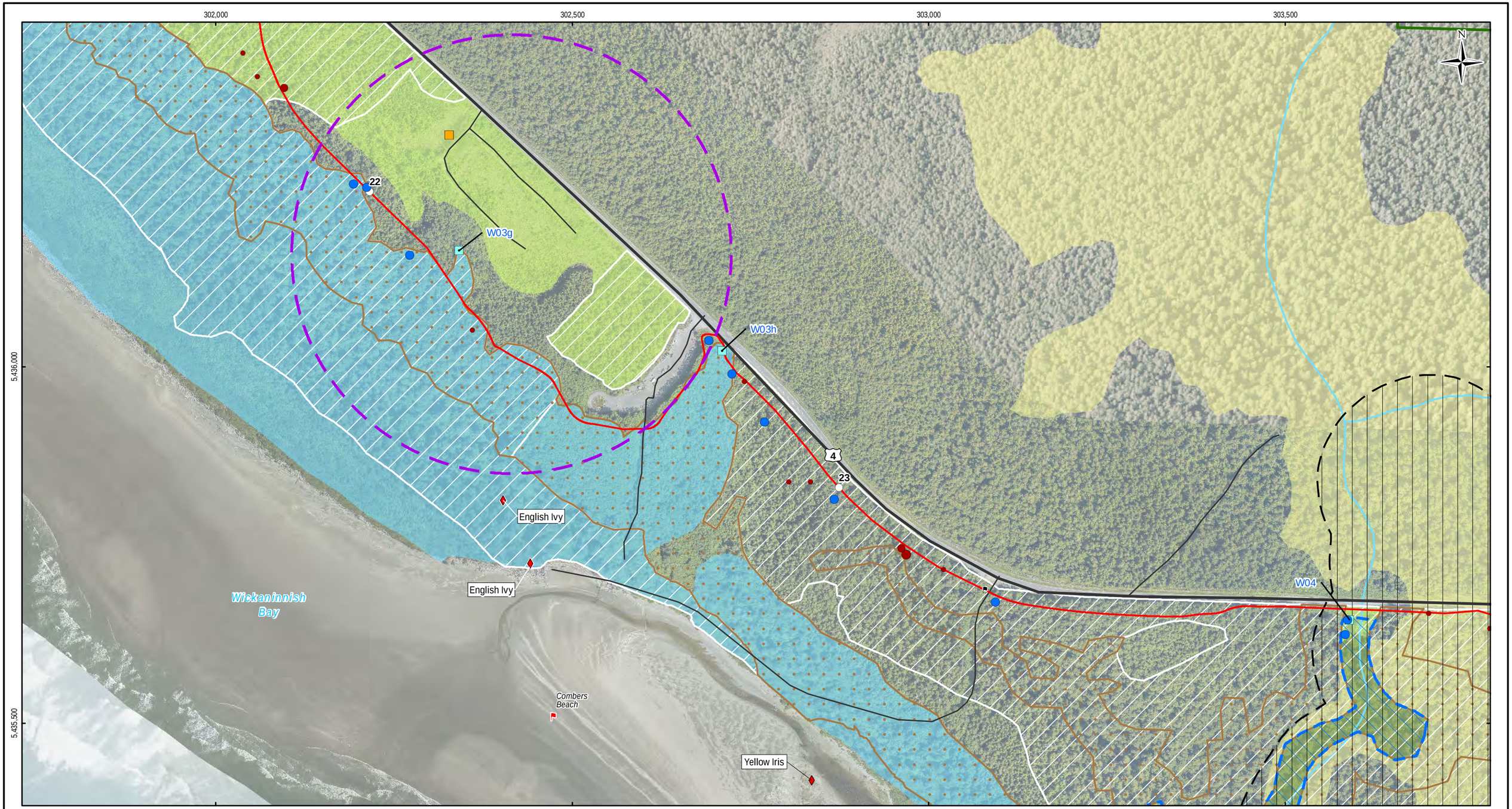

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
- First Nation Reserve
- Pacific Rim National Park Reserve
- Proposed PTT Marker (August 17 2016)
- Proposed PTT Route (August 17 2016)
- Parking Lot Area
- Ephemeral Aquatic Habitat (Standing Water)
- Invasive Plants
- Pond Breeding Amphibian Habitat
- Watercourse Crossing

Wildlife Trees
- 1
- 2
- 3
- 5
- 7

Number of Trees

- Old-growth Forests
- Blue List Communities
- Wetland > 40%
- Wetland < 40%
- Very High Soil Erosion Potential / Unstable Terrain
- Amphibian Habitat
- Marbled Murrelet Critical Habitat
- Amphibian / Marbled Murrelet Habitat Overlap
- High Density Bear Den
- Special Management Area

0 50 100 200
Meters Scale 1:5,000

Reference :
DataBC Data Distribution Service
www.data.gov.bc.ca
Parks Canada
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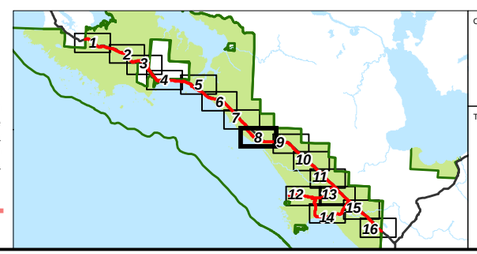

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304,000 304,500 305,000 305,500

5,436,000

5,435,500

5,435,000

N

Recreation Rd

24

4

25

Rainforest

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
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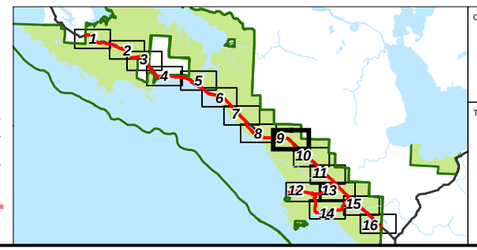

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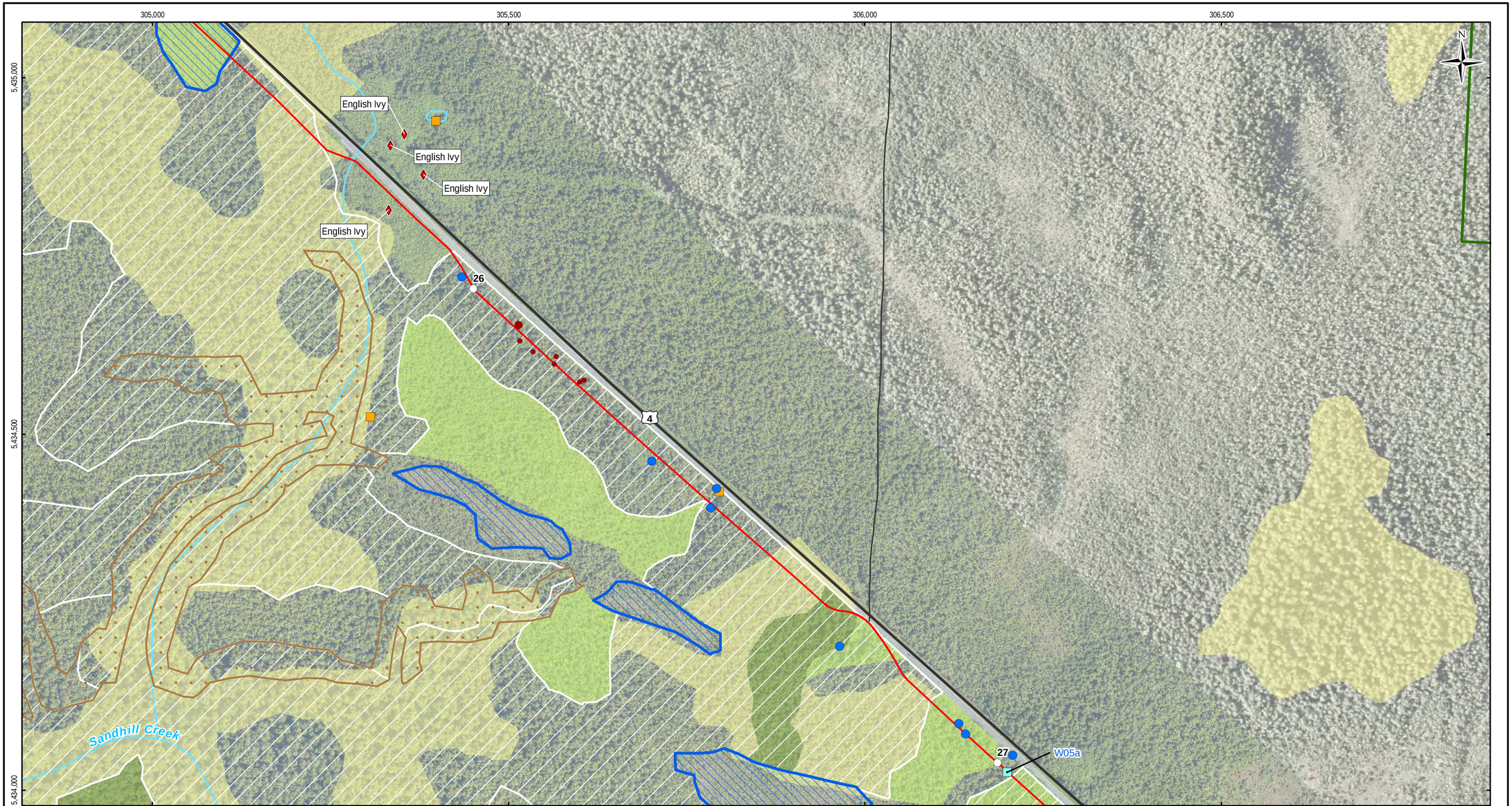

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0 50 100 200
Meters
Scale 1:5,000

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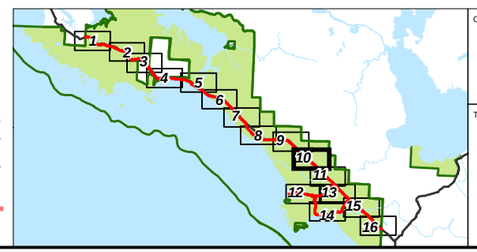

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306,000 306,500 307,000 307,500

5,434,000 5,433,500 5,433,000

N

27 W05a English Ivy W07 W06 Sandhill Creek 4 28 42.996 Wick Rd.

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
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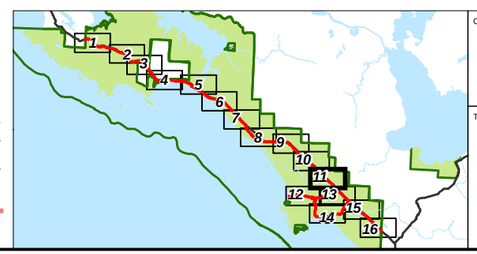

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304,500 305,000 305,500 306,000

5,433,000 5,432,500 5,432,000

N

English Ivy
English Ivy
English Ivy
English Ivy
English Ivy
English Ivy

parking lot

Ocean Terrace Rd

Wickaninnish Bay

W09

W09a

40 41 60

Wick Rd

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
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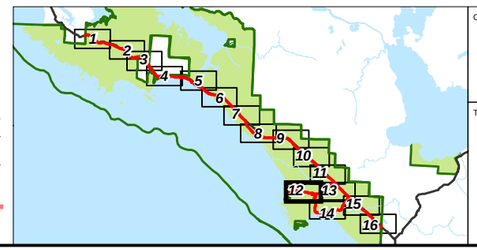

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306,500 307,000 307,500 308,000

5,433,000

5,432,500

5,432,000

N

Wick Rd

W08.1

W08

29

4

42

63.825

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
- First Nation Reserve
- Pacific Rim National Park Reserve
- Proposed PTT Marker (August 17 2016)
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0 50 100 200

Meters Scale 1:5,000

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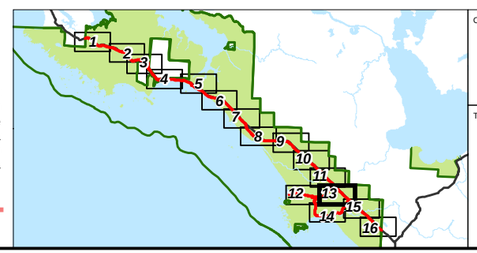

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306,000
306,500
307,000
307,500
5,432,000
5,431,500
5,431,000
N
61
62
63
English Ivy
Lost Shoe Creek
Florencia Bay

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
- First Nation Reserve
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0 50 100 200
Meters
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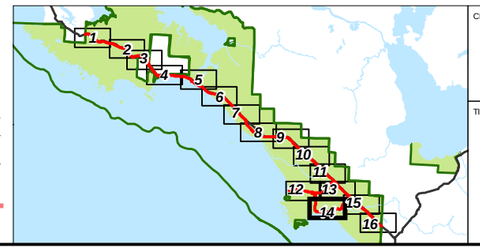

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308,000 308,500 309,000 309,500

5,432,000

5,431,500

63.825

30

31

4

W10

W11

Lost Shoe Creek

N

- Place of Interest
- Old Road Bed
- Highway
- Existing Road
- Watercourse
- Waterbody
- First Nation Reserve
- Pacific Rim National Park Reserve
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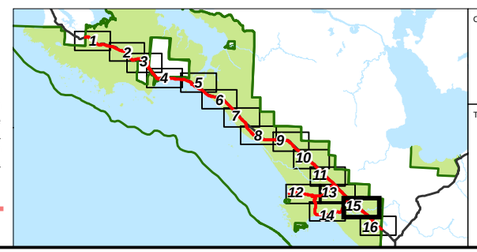

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309,000
309,500
310,000
310,500
5,431,000
5,430,500
N
Swan Lake
4
32
32.192

Place of Interest
Old Road Bed
Highway
Existing Road
Watercourse
Waterbody
First Nation Reserve
Pacific Rim National Park Reserve
Proposed PTT Marker (August 17 2016)
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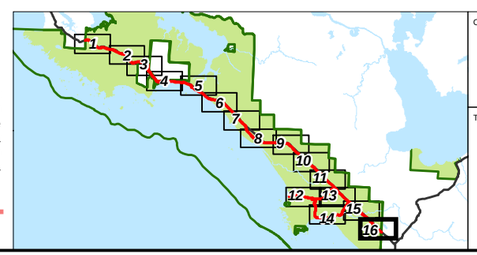

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4. Application of the Environmental Management Plan

This EMP describes the mitigation requirements of the Project. It applies to all Project areas, including the trail right-of-way, parking areas, access roads, trail infrastructure, toilets and temporary construction staging areas.

This EMP is designed to be used along with the Environmental and Archaeological Alignment Mapbook, which shows the locations of sensitive environmental features (Figure 2).

The EMP includes the roles and responsibilities of the parties and the environmental specifications and requirements and has the following attached appendices:

Appendix A: Project Environmental Orientation Record (PEOR): The PEOR must be signed by the Contractor and by the Departmental Representative to indicate their understanding of the environmental requirements of the works and the planned mitigation measures as outlined in the EMP.

Appendix B: Example Spill Response for Contractors: The Contractor is to use this example to prepare their own Spill Response Plan.

Appendix C: Environmental Incident Report Form: The Contractor must review and prepare as necessary *Environmental Incident Report Form*, which must also be provided to the Departmental Representative within 24 hours of any incidents.

Appendix D: Species At Risk Identification Tool: The Contractor is to review and become familiar with species at risk they may encounter on site.

Appendix E: Example Environmental Monitoring Report: The Contractor's Environmental Monitor (EM) is to use this example report while conducting environmental site visits or have an alternative option accepted by the IEA.

Appendix F: Best Management Practices for Coarse Woody Debris Disposal: The Contractor is to use this material to help prepare their Vegetation Management Plan and Waste Disposal Plan.

Appendix G: Invasive Plant Species Identification Tool: The Contractor is to review and become familiar with invasive plant species they may encounter on site.

Appendix H: Best Management Practices for Prevention of Invasive Plant Species: The Contractor is to use this material to help prevent the spread of invasive plant species on site.

Appendix I: Salvage Protocol for Amphibian Species: The Contractor is to review and become familiar with the salvage requirements.

Appendix J: Salvage Protocol for Jumping-slugs: The Contractor is to review and become familiar with the salvage requirements.

Appendix K: Chance Find Protocol for Cultural Resources: The Contractor is to review and become familiar with the requirements in the event that an unanticipated change find of cultural resources occurs.

Appendix L: Heritage Site Protection Plan: The Contractor is to review and become familiar site-specific mitigation measure that are required for each known cultural resource site.

5. Environmental Management Roles and Responsibilities

The following sections describe the roles and responsibilities of each of the various agencies and organizations involved with the Project during construction.

5.1 Contractors

Throughout the execution of the work, the Contractor is solely responsible for ensuring:

- Compliance with the Contract Documents and/or related work instructions;
- Compliance with all applicable regulatory requirements, including federal and provincial laws and any applicable local bylaws or related requirements;
- Implementation of the environmental measures outlined in the EMP and as indicated in the Environmental and Archaeological Alignment Mapbook (Figure 2);
- Review and signing off on the PEOR and submission to the Departmental Representative;
- Submission, as necessary, of the *Environmental Incident Report* form as directed by the EMP; and
- Submission of other information as outlined in the EMP.

The Contractor is responsible for all activities related to the works and to ensure that, in consultation with the Departmental Representative, applicable permits, licences or related authorizations are in place for activities that will or could affect the environment.

The Contractor will take all reasonable and necessary measures to ensure that any activities undertaken in the performance of the work are conducted in such a way as to minimize any impacts to the environment in accordance with commitments made in the Biophysical Assessment (Amec Foster Wheeler, 2016) and the Detailed Impact Assessment (PCA, 2016).

The Contractor shall retain one or more EMs to monitor Project activities, to prepare EPPs, to address permitting requirements and to assist the Contractor in ensuring compliance with environmental requirements.

If any unanticipated impacts to the environment occur that do not have applicable regulatory approval, the Contractor will mitigate and restore the impacted areas as deemed appropriate by the Owner, Departmental Representative and applicable regulatory agencies.

A copy of the EMP, including a signed PEOR and all related permits, licences and approvals, will be available on site at all times.

5.2 Owner – Parks Canada Agency

The PCA is committed to ensuring that Project activities be undertaken in such a manner that the Project will not result in significant adverse environmental effects.

PCA is responsible for ensuring all mitigation measures applicable to the Project are added to the terms and conditions of any permits or contracts issued for the Project. This EMP is included in the Contract Tender documents as it forms a significant part of the Contractor's obligations under the Tender.

PCA may require or conduct surveillance of the Project throughout its implementation to confirm work is being carried out in accordance with the conditions specified in the Detailed Impact Assessment (PCA, 2016) and associated Project authorizations and permits.

Specifically, Parks Canada will:

- Review and sign off on the EMP, including updates made as the Project progresses;
- Lead communication with regulatory agencies, local governments, First Nations and public stakeholders;
- Oversee the activities of the Departmental Representative and IEA; and
- Conduct all post-construction follow-up monitoring activities.

5.3 Departmental Representative – PWGSC

The role of the Departmental Representative (or their delegate) is to oversee the successful completion of the contract and manage communication between the various parties. Further, the Departmental Representative is responsible for:

- Tracking and updating contractual requirements and specifications;
- Communicating the Project schedule to the Project team;
- Recording and communicating non-conformances with the EMP and other contract obligations;
- Liaising with the various agencies and Contractors working on the Project to facilitate clear communication; and
- Facilitating communication between the IEA and provide direction to the EM(s) and other contract personnel.

5.4 Independent Environmental Auditor – Amec Foster Wheeler

Amec Foster Wheeler will act as the IEA for this Project. The IEA will prepare and update as necessary the EMP. The IEA will review the EMP and any revisions with the Contractor and record this review on the PEOR.

The IEA will prepare and update as necessary the Environmental and Archaeological Alignment Mapbook.

The IEA will complete site visits to monitor and/or audit the Contractor's compliance with the EMP and all applicable regulatory requirements.

The IEA has the authority to order the Contractor to modify and/or halt any work activity if deemed necessary for the protection of the environment and observance of statutory requirements.

The IEA must also review and accept the EPPs (see Section 6.1) prepared by the Contractor.

The IEA will complete site visits to audit the Contractor's compliance with the EMP and all applicable regulatory requirements, including ensuring

- Conformance of construction activities to environmental requirements;
- Effectiveness of implemented mitigation measures;
- Mitigation measures are maintained for as long as those mitigation measures are required;
- Applicable permits and approvals have been obtained;
- Spill response and emergency equipment and procedures are implemented and maintained; and
- Adequate reporting and response to environmental incidents.

5.5 Environmental Monitor

All EMs for the Project must be a Qualified Environmental Professional (QEP) or must be under the supervision of a QEP. A QEP is an applied scientist or technologist that satisfies the following qualifications:

1. The individual is registered and in good standing in BC with an appropriate professional organization constituted under a provincial Act, acting under that association's code of ethics and subject to disciplinary action by that association.
2. As required by the QEP organization code of ethics, the individual must be working within their respective area of expertise and degree of experience relative to the Project's environmental requirements.
3. The individual, including both the QEP and any field EMs working under the direction of the QEP, are acting within their respective areas of expertise.

The EM is responsible for

- Recording and monitoring compliance with this EMP, EPPs, permits and other legal requirements;
- Identifying the requirement for specialty services (i.e., nesting bird surveys, amphibian salvage, invertebrate salvage, wildlife tree assessments, etc.); and

- Halting work if a major non-conformance occurs or an unforeseen environmental sensitivity is discovered.

Prior to the commencement of any construction activities, the EM shall orient new workers joining the construction crew. During construction, appropriate meetings involving the crew will be held as required to allow potential environmental issues to be identified and discussed to ensure that environmental risks are addressed and mitigated.

Instances of non-conformance and environmental incidents and near misses will be brought to the attention of the Departmental Representative and IEA as soon as it is safe to do so.

6. Environmental Communications

Environmental communication involves a number of documents and activities, including the following:

- Environmental Management Plan: The EMP details the roles, responsibilities and expectations regarding the activities associated with the works.
- Environmental Protection Plans: The EPPs will outline how the Contractor intends to meet the environmental requirements for the Project as outlined in this EMP while completing their scope of work.
- Project Environmental Orientation Record: The PEOR is used to document the review of the EMP with the Contractor(s).
- Environmental Monitoring Reports: The EM will be assigned to the works and will be responsible for completing and submitting environmental monitoring reports to the Departmental Representative and IEA.
- Environmental Incident Reporting: The procedures for incident reporting are outlined in the EMP and are the responsibility of the EM to complete for submission to Departmental Representative and the IEA.

More details for each type of environmental communication are provided below.

6.1 Environmental Protection Plans

Table 3 provides the EPP specification and requirements for the Project. The Contractor is responsible for ensuring that a QEP prepares EPPs, describing the site-specific measures to be implemented to ensure compliance with this EMP. The EPPs must address all aspects of the Contractor's works. Measures of the EPPs will be task-specific and should include all administrative and engineering controls. EPPs must be submitted to the Departmental Representative and IEA within 10 business days from contract award. The Contractor shall not mobilize to site prior to receiving written acceptance of their EPPs from the Departmental Representative and IEA.

In developing the EPPs, the QEP will take into consideration

- All applicable laws, regulations and/or guidance issued by the Owner or regulatory authorities;
- Requirements outlined in this EMP;
- The Biophysical Assessment (Amec Foster Wheeler, 2016) and the Detailed Impact Assessment (PCA, 2016) for the Project; and
- Other contract requirements.

The EPP will include

- A description of the particular construction activities and location to which the EPP applies;
- Mapping at a suitable scale (or reference to Environmental and Archaeological Mapbook), including identification of any environmentally sensitive areas; and
- Identification of required relevant mitigation measures and how they will be implemented.

Table 3: Environmental Protection Plan Specifications and Requirements

EPP. A00.00	**General**
EPP. A00.01	The Contractor (delegate QEP) must prepare EPPs for the Project that outline site-specific mitigation that meets the objectives and requirements of this EMP.
EPP. A00.02	Regularly review and update EPP(s) to reflect changes to the Project, the construction schedule and construction methods.
EPP. A00.03	Provide a list of locations of temporary construction access roads and laydown and storage areas. All these areas must be identified and discussed with the Departmental Representative and IEA prior to clearing and use.
EPP. A00.04	Provide a description of protection measures that will be implemented for the Special Management Areas mentioned in Table 1.
EPP. A00.05	Provide a description of any works that will be occurring within 30 m of any waterbody and include protection measures that will be implemented in these areas.
EPP. C00.00	**Vegetation Management, Disturbance or Removal**
EPP. C00.01	Prepare a Vegetation Management Plan that includes clearing plans and staging, protections for special management areas, disposal of wood and vegetation debris and site restoration. See Appendix F.
EPP. C00.02	Prepare an Invasive Plant Management Plan which outlines the measures that will be taken to limit the spread of invasive plants. See Appendix G and H for guidance.
EPP. D00.00	**Soil Management**
EPP. E00.01	Outline Project-specific soil handling procedures in the EPP. Define typical stripping progression for the common soil condition and identify site-specific conditions that will require modifications.
EPP. F00.00	**Water Quality - Erosion and Sedimentation**
EPP. F00.01	Site-specific erosion and sediment controls are to be addressed in an EPP, including inspection and maintenance of erosion and sediment control structures.

EPP- F00.02	Effective erosion and sediment control measures shall be installed before starting construction to reduce the potential for introduction of sediment into watercourses in accordance with Land Development Guidelines for the Protection of Aquatic Habitat (Fisheries and Oceans Canada, 1993) and Standards and Best Practices for Instream Works (BC Ministry of Environment, 2004), unless otherwise specified in the Environmental Requirements.
EPP- J00.00	**Waste: Non-Hazardous Handling and Disposal**
EPP- J00.01	Prepare an EPP that describes waste management for the Project. This plan should include details as per the schedule of waste pickup, transport and disposal facilities for various types of waste expected to be generated during the Project (i.e., temporary washroom facilities, garbage, construction waste, used oil and filters, etc.).
EPP- K00.00	**Fuel and Flammable Storage**
EPP- K00.01	Fueling procedures, potential hazards and proposed controls are to be addressed in this EPP, including equipment to be used, draining procedures, storage/transport and measures to contain leaks.
EPP- L00.00	**Spill Response: Spill of Hazardous Substances**
EPP- L00.01	A project-specific Emergency Response Plan must be approved by the Owner, Departmental Representative and IEA prior to commencing construction. It must define clear protocols in the event of a spill, accident or malfunction. An example spill and emergency response plan is provided in Appendix B.
EPP- L00.02	The Project-specific spill response portion of the plan will detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products in accordance with all applicable federal and provincial legislation. The Plan shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot-poured rubber membrane materials, asphalt cement and sand blasting agents.

6.2 Project Environmental Orientation Records

Prior to mobilization, the Contractor must sign a PEOR (**Appendix A**), which will be provided by the Departmental Representative or the IEA.

- The IEA is responsible for ensuring that the environmental risks and protection requirements related to the work are reviewed with the Contractor and that a record of the discussion is documented in the PEOR.
- Additional PEORs will be required by the Departmental Representative and the IEA if there is a significant change in scope to the EMP and/or the works being performed by the Contractor.
- The Contractor is responsible for understanding the requirements of the EMP and communicating these requirements to all personnel, including subcontractors.
- The IEA and the Contractor will sign the PEOR, acknowledging an understanding of the environmental requirements of the Contract and the associated protection measures.

The PEOR outlines the key environmental issues anticipated to be associated with the works. The IEA is to review the PEOR with the Contractor's Representative, typically at the kick-off meeting,

and all parties are to sign the PEOR as a record of this orientation. The Contractor and the Departmental Representative or their delegate will ensure that

- The contact list appended to the PEOR is kept up to date; and
- A copy of the PEOR is to be kept available on site at all times.

6.3 Frequency of Monitoring

The Contractor's EM(s) shall perform regular site inspections and provide the Contractor with instructions or guidelines to implement appropriate mitigation measures. The frequency of monitoring visits will be agreed upon with the Departmental Representative or the IEA and should provide sufficient oversight of high-risk activities associated with the works. It is anticipated that fulltime monitoring will be required and multiple EMs may be needed onsite to support multiple clearing crews and ensure sufficient monitoring capacity, particularly during times of heavy rainfall. At a minimum, the Contractor's EM shall be present during all environmentally sensitive work (e.g., work in special management areas – see Table 2 and Figure 2), at all times during periods of heavy rainfall (i.e., greater than 25 mm of rain in a 24 hour period), and when responding to environmental incidents. Otherwise, the Contractor's EM shall conduct site visits at least twice weekly, unless otherwise noted or communicated in writing by the Departmental Representative, to assess Project compliance with the accepted EPPs and applicable regulatory requirements.

6.4 Environmental Monitoring Reports

The EM(s) shall provide brief daily environmental monitoring reports and more detailed summaries at the end of each week to the Departmental Representative and the IEA. An example of an appropriate weekly environmental monitoring report is provided in Appendix E. The Appendix E document can be used for reporting or the EM can propose an alternative document that will need to be accepted by the IEA. At a minimum, environmental monitoring reports shall include:

- Dates, times and personnel conducting site visit;
- Local weather for the week, including temperature and precipitation;
- Current site activities and Contractors present;
- Identification of activities that are taking place on site at the time of the site visit and the status of their compliance with respect to the EMP and EPPs;
- Photographs of the site and construction activities;
- Water quality measurements and laboratory data, if applicable;
- Identification of any instances of environmental non-compliance with this EMP, the EPP or environmental incidents / near misses; and,
- Recommended mitigation measures for observed instances of environmental non-compliances or environmental incidents / near misses.

6.5 Environmental Incident Response / Reporting

An environmental incident is one that has caused an impact to the environment. An environmental near miss is an incident that had the potential to cause an impact to the environment. These incidents and near misses include but are not limited to:

- Adverse impact on the quality of air, land or water, on wildlife, on aquatic species or on species at risk;
- Unauthorized release or discharge to the environment;
- Exceedance of compliance requirement limit(s) as documented in a regulatory instrument (i.e., permit, order, licence, authorization, agreements etc.);
- Violation of legislation, related policies or regulations;
- External reporting requirement derived from a commitment, especially if attached to a non-routine or unexpected event;
- Adverse publicity with respect to the environment;
- Alteration of, or damage to, heritage or archaeological resources; and
- Legal or regulatory action with respect to any of the above.

The Contractor must ensure the following:

- All crew members and subcontractors are able to identify environmental incidents and near misses and know how to respond to them.
- All environmental incidents and near misses are to be reported to the Departmental Representative and IEA as soon as feasible but not more than 24 hours after the event.
- Where required to report an incident about confirmed or potential violations of laws, regulations, or local bylaws, the Contractor will immediately notify the Departmental Representative and IEA (if available) before reporting to the appropriate agencies.
- The Contractor will report environmental incidents and near misses, with as much detail as possible, to the Departmental Representative and IEA as soon as it is safe to do so.
- A completed *Environmental Incident Report Form* (Appendix C) must be provided to the Departmental Representative and IEA within 24 hours of the incident.

The Departmental Representative and the IEA will assist with liaising with external agencies, if applicable.

7. Mitigation Requirements

Table 4 lists the environmental management specifications and requirements, and mitigation measures to be applied to all aspects of the Project during construction.

Table 4: Environmental Management Specifications and Requirements

A00.00	**General**
A01.01	All Contractors must address and implement the provisions outlined in the EMP.
A01.02	All activities must comply with applicable laws and regulations, including local bylaws and related orders.
A01.03	All permit and approval conditions, terms and requirements must be implemented.
A01.04	All Contractor EPPs or other management plans must be accepted by the Departmental Representative prior to mobilization.
A01.05	All Contractors must review and sign the PEOR prior to starting work. Draft PEOR forms are appended to the EMP and a signed final version must be on site at all times.
A01.06	Environmental issues must be a component of the regular tailboard meetings.
A01.07	A full-time EM must be employed to evaluate adherence to the EMP, provide on-site advice to contract staff and stop work, as required, if there is major non-compliance with the EMP or if there are unforeseen risks to the environment (e.g., species at risk, accidental spill, amphibian migration etc.).
A01.08	Provide a completed Environmental Incident Report Form (Appendix C), as per incident/spill response plan, within 24 hours of an incident.
A01.09	It is the responsibility of the Contractor/Contractor's EM to report environmental incidents and near misses with as much detail as possible. See Spill Response Plan and PEOR for contact information.
A01.10	"No-Activity-Areas" must be marked (i.e., flagged, fenced, barricaded etc.) in a manner sufficient to prevent inadvertent activity from occurring in these areas. "No-Activity-Area" markings must be removed once the restrictions expire.
A02.01	Train Contractors and Project personnel in the identification of listed and sensitive species and provide on-site guidance (through the EM or other QEPs) on procedures when these species are encountered. Do not touch or handle any wildlife; it is illegal or potentially hazardous to do so. A description of species at risk likely to be encountered during Project construction is provided in Appendix D.
A02.02	Create awareness and education regarding invasive species, learn to identify invasive species, and collaborate with local weed committees to determine threats that could arise. A description of invasive species likely to be encountered during Project construction is provided in Appendix G.
A02.03	Use existing old road surfaces and disturbed areas or areas of low habitat value as much as possible for temporary construction access roads and laydown and storage areas. All these areas must be identified and discussed with the Departmental Representative and IEA prior to clearing and use.

A02.04	Coordinate with the IEA as to the construction activities and up-to-date schedule so that the requirement for salvage operations and/or pre-clearing surveys (as noted in Table 2) can be identified well in advance and environmental specialists can be scheduled to perform the work.
A02.05	Keep construction equipment and activities within the demarcated Project footprint. Delineate the work zone and clearly mark the limits to active construction and the access and egress locations. Avoid compaction and disturbance of the ground and disturb as little natural vegetation as possible.
B00.00	**Vegetation Management, Disturbance or Removal**
B01.01	Prevent spread of invasive plant species that could be found on site by cleaning equipment before moving into new areas. Remove all weeds and suspect plants from equipment and vehicles to prevent spread of invasive species.
B01.02	Separate cleared material containing invasive species from other cleared material and perform disposal at an appropriate transfer facility (i.e., landfill).
B01.03	Cover loads during transport to help prevent spores or seeds from falling out of the vehicle.
B01.05	While equipment is on site, remove invasive plants that occurs near work areas and trails.
B01.06	Only use clean road material from invasive plant–free borrow pits and quarries. Conduct an inspection of any fill material source to identify any potential invasive species issues.
B01.08	Keep machinery on designated routes to reduce damage to surrounding vegetation.
B01.10	Tree removal or mowing must leave sufficient vegetative cover to preserve soil stability.
B01.11	Store waste wood and cleared material in well-drained sites free of standing water.
B01.12	All seed mixes proposed for re-vegetation must be submitted to the IEA for review as part of the Vegetation Management Plan. Seed mixes deemed inappropriate for the site will not be used.
B01.13	Limit stripping of vegetation and soils to areas required for Project activities.
B01.14	All occurrences of rare or listed "plant species at risk" must be immediately reported to the IEA.
B01.15	Locate vehicle wash areas at least 30 m from the Ordinary High Water Mark of any waterbody.
B01.16	Treat used wash water to prevent seed dispersal and release of contaminants.
B01.18	Ensure excavated material, construction waste, stoke piles or materials are positioned as not to affect vegetation.
B01.19	Do not store machinery within the drip line of trees.

B01.20	Restore bare soil as quickly as possible after disturbance.
B01.21	If wetland areas are disturbed, allow them to re-vegetate naturally as long as weed infestation is not a concern.
B01.22	Retain all large trees (>100 cm DBH, >35 m height) and veteran crown class and minimize impacts to root structures by adjusting the trail alignment so that it avoids the drip line of trees to be retained (unless the trail is elevated).
B01.23	Re-vegetate areas no longer needed for construction with preferred species (i.e., shrub and herb cuttings or plugs and/or purchased seed). If seed is obtained, receive a certificate of seed analysis and check for species listed on the BC Weed Control Act and Regulation, the Coastal Invasive Species Committee list and the Forest and Range Practices Act list of invasive species. The composition of the planted species will not include any wildlife attractant species (e.g., berry-producing shrubs, grass species) or tall shrubs that might impede sightlines.
B01.26	If working within an area of weed infestation, clothing, tools and equipment must be thoroughly cleaned before leaving the site. Capture potentially infested plant and soil debris and dispose of it in an approved spoil pile. Implement the following cleaning procedure for clothing, hand tools and personal equipment: 1) While standing on a tarp, shake and brush off all clothing to remove any plant and soil material; 2) Unroll any pant or shirt cuffs and shake then brush out debris; 3) Brush off cruiser vests, back packs, or other personal equipment; 4) Brush off boots (including tread) with a stiff bristled brush; 5) Use a wash basin to complete removal of all dirt and plant material from boots, equipment and hand tools; 6) Clean brush in wash basin; 7) Dispose of wash water by pouring through a fine filter cloth, then place the filter cloth in a strong black plastic bag; 8) Remove tarp carefully and transfer the dirt and plant material to the black plastic bag, tie securely and dispose at an approved location.
C00.00	**Wildlife Habitat Alteration, Disturbance or Loss**
C01.01	Do not destroy, remove or clear any active bird nests. Cease work at site and contact the IEA if bird nests (active or inactive) are encountered within or near the work area.
C01.02	Should any vegetation (including grasses) trimming or removal be required between March 12 and August 17, a bird nest assessment must be undertaken no earlier than five days prior to the required clearing. A nest search protocol will have to be developed and coordinated with the IEA in advance.
C01.05	Implement Best Management Practices for Raptor Conservation during Urban and Rural Land Development in BC (http://www.env.gov.bc.ca/wld/documents/bmp/raptor_conservation_guidelines_2013.pdf).
C01.06	Minimize the use and ensure proper storage of potential wildlife attractants such as food, garbage, petroleum products or other materials with strong odours.
C01.07	Conduct construction activities in a manner that is sensitive to the wildlife and wildlife habitat.
C01.08	Notify the IEA of any observations of denning sites or burrows at the Project site.
C01.09	All sightings of rare or listed species at risk (wildlife or plants) must be immediately reported to the IEA. Species at risk information is available in Appendix D.
C01.10	Domestic pets (i.e., dogs) are not allowed on the Project.

C01.11	Any wildlife deaths or other wildlife issues arising during construction must be immediately reported to the IEA.
C01.12	Any wildlife sightings (e.g., bear, frogs, slugs, etc.) will be recorded in an incidental wildlife log and provided to the IEA.
C01.13	No feeding, disturbing or harassing of wildlife will occur. If wildlife is encountered, allow birds, mammals, reptiles, and amphibians to passively disperse or, if necessary, contact Departmental Representative and the IEA on advice for physically relocating them to an area outside the work site. Do not physically handle wildlife.
C01.14	To prevent wildlife entrapment, excavations must be fenced (in addition to any safety related actions) if left unattended.
C01.15	Contractor staff will receive training on working in bear, cougar and wolf country to reduce potential conflicts. Project Contractors should liaise with the Owner, Departmental Representative and IEA in order to develop protocols for dealing with wolves and other large carnivores that may be encountered during construction activities.
C01.16	Retain all wildlife trees with high potential to provide habitat to cavity nesting birds and tree roosting bats. These should be verified by a QEP and clearly marked for retention in the field prior to commencing clearing. If valuable wildlife trees are also danger trees, contact a QEP for best management practices.
C01.17	Fell trees directionally onto the trail corridor and not into wetlands, ponds and/or known amphibian habitat.
C01.18	Construction activities should be restricted to daylight hours as much as possible. Artificial lighting should not be used within or near amphibian habitat.
C01.19	Note the following Northern Red-legged Frog life cycle events: breeding congregation (approximately January to April), juvenile dispersal from their natal ponds (rainy nights from late July to early October with peaks typically happening in August and early September) and migration to breeding ponds (late September to December). Since work activities will be scheduled during some of these periods, surveys and salvage will be required prior to clearing activities. In addition, exercise heightened caution to avoid impacts on amphibians and monitor continuously when clearing in identified high suitability frog habitat.
D00.00	**Soil Management**
D01.01	Excavated soils must be stockpiled within the area approved for Project use and at least 15 m away from any drainage features, drains, ditches and 30 m from any waterbody or water course. If soil must be stockpiled closer than outlined, a Project-specific plan is to be submitted for review by the IEA and the Departmental Representative before soil is stockpiled.
D01.02	Surface organic matter (organic soils and litter-fibre-humus) will be stripped and stored separately from the upper mineral horizon (topsoil) and subsequent horizons (subsoil). Surface organic matter, topsoil and subsoil will not be admixed into a single stockpile.
D01.03	Subsoil is to be stripped and stored separate from topsoil in a manner to prevent mixing. Subsoil must not be placed directly on top of topsoil or vegetation.
D01.04	Excavated soil must be staged on plastic sheeting and, when inactive, covered and weighted down at the edge. Soil from different areas should not be intermixed; excavated soils from different locations/stages of construction should be stockpiled separately so that they can be readily distinguished from previously placed soil.
D01.05	Ensure any sediment mobilization resulting from soil stockpiling or tracking from equipment/vehicles is cleaned up immediately.

D01.06	Minimize soil exposure duration by restoring disturbed areas as soon as possible following construction activity.
D01.08	Excess soil shall not be removed to any non-approved location. If soil is transported to non-approved locations, the Contractor will bear the responsibility and costs associated with subsequent removal to an approved location and confirmation that all soils have been successfully removed.
D01.10	Soil will not be removed from the site without IEA review. The proposed disposal site for surplus soil shall be submitted for IEA review a minimum of 14 days prior to proposed disposal; disposal to sites deemed inappropriate by the IEA will not be permitted.
D01.11	Notify the IEA immediately of suspected soil/fill contamination; chemical, petroleum or unusual odour; unusual debris such as metal, plastic, glass or demolition waste; dark or unusual staining. (Typically stained soils are darker and may have a “wet” appearance but should not be confused with naturally occurring organic soils. Stained soils may have a distinct oily feel and typically are accompanied by odors.) Segregate suspect soils and stockpile separately according to stockpile procedures outlined in this document.
E00E01	**Soil and Sediment Erosion/ Compaction**
E01.01	Excavated soils must be stockpiled within the area approved for Project use and at least 15 m away from any drainage features, drains, ditches and 30 metres from any waterbody or water course. If soil must be stockpiled closer than outlined, a project specific plan is to be submitted for review by the IEA before soil is stockpiled.
E01.02	Excavated soil must be staged on plastic sheeting (i.e. ”poly”) and when inactive covered and weighted down at the edge. Soil from different areas should not be intermixed; excavated soils from different locations/stages of construction should be stockpiled separately, or so that they can be readily distinguished from each other.
E01.03	Ensure any sediment mobilization resulting from soil stockpiling or tracking from equipment/vehicles is cleaned up immediately.
E01.04	Do not transport soil off the Project area; use stripped soil for grading parking lot edges and reclamation of disturbed areas.
E01.06	Vehicles and equipment mitigations must prevent rutting from being deep enough to cause pooling or mixing of soil layers.
E01.07	Effective sediment and erosion control measures are to be installed before starting work to prevent the entry of sediment into any surface water feature (i.e., stream, pond, wetland, drain, or ditch).
E01.08	Contingency supplies of sediment and erosion control materials shall be maintained at each construction site and workers shall be sufficiently trained in their appropriate installation and maintenance.
E01.09	Sediment and erosion control measures shall be: inspected regularly at a frequency commensurate with the risk, nature, location, and seasonality of the work and adapted or revised, as appropriate, repaired as necessary in a timely manner, commensurate with the risk, nature, location, and seasonality of the work, maintained until construction is completed and the affected areas are sufficiently stabilized and revegetated so there is minimal risk of erosion or sedimentation at the site as a result of construction activities.

E01.10	Effective erosion and sediment control measures shall be installed before starting construction to reduce the potential for introduction of sediment into watercourses in accordance with Land Development Guidelines for the Protection of Aquatic Habitat (Fisheries and Oceans Canada 1993) and Standards and Best Practices for Instream Works (BC Ministry of Environment 2004), unless otherwise specified in the Environmental Requirements.
E01.11	Sediment control systems including ditches, retention ponds and settling ponds shall be designed by a Qualified Environmental Professional. Erosion and sediment control structures (e.g. straw bales, vegetation matting) shall be certified weed free.
E01.12	Control runoff and manage stormwater (for example rainfall or snow melt) and direct it away from construction areas where excavation, spoil placement, and staging activities occur.
E01.13	Avoid soil handling or equipment movement during periods of intense rainfall (saturated soil conditions), work with the Departmental Representative and IEA to determine when rainfall warrants stop work.
E01.14	Ensure all drainage features in the Project area are protected from the release or inflow of sediment-laden water related to the Project.
E01.15	Implement erosion and sediment control measures and practices to prevent sediment laden water from flowing off-site onto areas outside to the Pacific Rim National Park Reserve.
F00.00	**Water Quality - Erosion and Sedimentation**
F01.02	Precipitation is high (400 to 500 mm per month on average) and heavy rainfall events (50 to 100 mm in 24 hours) are frequent in the Project areas in the winter months. Erosion and sediment control measures will be inspected within 24 hours after each rainfall event of more than 15 mm of rain and maintained/repaired as necessary. The frequency of inspection should be increased when rainfall exceeds 25 mm in 24 hours.
F01.04	Any water discharged or rainfall runoff from the site that flows into the environment (e.g., waterbody, watercourse, drain, ditch or ground) must comply with BC Working Water Quality Guidelines and the BC Approved Water Quality Guidelines. The Contractor is responsible for conducting all water quality sampling and analysis to determine its chemical composition.
F01.06	Turbidity-related water quality change associated with a Project in discharge watercourse/waterbody can vary from background of no more than 8 Nephelometric Turbidity Units (NTUs) at any one time for a duration of 24 hours in all waters during clear flows or in clear waters.
F01.07	Turbidity-related water quality change associated with a Project in discharge watercourse/waterbody can vary from background of no more than 2 NTUs at any one time for a duration of 30 days in all waters during clear flows or in clear waters.
F01.08	Turbidity-related water quality change associated with a Project in discharge watercourse/waterbody can vary from background of no more than 5 NTUs at any time when background is 8 NTUs - 50 NTUs during high flows or in turbid waters.
F01.09	Turbidity-related water quality change associated with a Project in discharge watercourse/waterbody can vary from background of no more than 10% when background is >50 NTUs at any time during high flows or in turbid waters.
F01.11	pH of discharged water must be between 6.5 and 9 units.

F01.14	Any water discharged from the Project site, including construction water and stormwater, is to be managed for the full duration of the execution of the work. Discharges include those to the environment (e.g., waterbody, watercourse, ground) and to managed watercourses (e.g., storm and sanitary drains, ditches).
F01.16	Any artesian conditions (e.g., flowing groundwater) encountered during construction must be immediately reported to the IEA, who will provide direction on site-specific mitigation.
F01.17	Discharge of water will comply with all applicable drainage/sewer use bylaws, permits or surface water protection regulations.
F01.18	Perform construction activities in a manner that prevents the release of oil, fuel, coolant, waste and other pollutants into soil, groundwater, manholes, ditches, rivers, streams, lakes or other watercourses (flowing or dry). Wastes and other pollutants include, but are not limited to, refuse, garbage, sewage effluent, contaminated soil, sediment, concrete wash, site runoff (if it exceeds the BC Approved and Working Water Quality Guidelines), hydrocarbon or coolant spills, construction waste and chemicals.
F01.23	Sediment control systems including ditches, retention ponds and settling ponds shall be designed by a QEP. Erosion and sediment control structures (e.g., straw bales, vegetation matting) shall be certified weed-free.
F01.25	Any water discharged from the site, including construction water and stormwater, is to be managed for the full duration of the execution of the work. Discharges include those to the environment (e.g., waterbody, watercourse, ground) and to managed watercourses (e.g., storm and sanitary drains, ditches).
H00.00	**Fish and Aquatic - Habitat Alteration, Disturbance or Loss**
H01.01	No instream works are permitted. Any work required within 30 m of a stream or wetland needs to be described in an EPP and must be submitted to the IEA for review and may require regulatory approval. Plans deemed unacceptable by the IEA will not be implemented.
H01.03	Follow all of Fisheries and Oceans Canada's Measures to Avoid Causing Harm to Fish and Fish Habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html).
H01.04	Follow the Ministry of Environment's A User's Guide to Working In and Around Water (http://www.env.gov.bc.ca/wsd/water_rights/cabinet/working_around_water.pdf).
H01.08	Sufficient vegetation to ensure bank stability, maintain ground cover and prevent erosion must be retained within 30 m of the high water mark of waterbodies. Trees must be felled away from watercourses. If selective clearing of trees and shrubs within 30 m of watercourses or wetland is required, submit details as part of the vegetation management plan to the IEA for review.
H01.09	No debris, soil or other deleterious material will be allowed to enter watercourses or wetlands. Any debris inadvertently introduced into watercourses will be removed and reported to the IEA.
H01.10	Avoid machinery crossing (fording) a stream or watercourse by using existing road crossings and strategically locating access points from Highway #4 and other existing roads to eliminate the need to ford by accessing the streams from either bank. If fording or temporary access structures are required, seek advice from the IEA.
H01.11	Clearly flag or otherwise delineate riparian areas throughout all phases of construction.

H01.11	When working during periods of heavy and/or prolonged rainfall, isolate the area of work and install appropriate sediment controls to prevent the release of sediment-laden water or any other deleterious substances into surface water.
H01.12	During grade construction conducted close to any watercourse, waterbody or wetland, ensure materials are not pushed, allowed to fall or eroded into the water or wetlands.
H01.13	Isolate work area from any flowing water that may be present. Temporarily divert flows around the work area.
H01.15	Fell trees away from watercourses and wetlands.
H01.15	Do not obtain rocks from below the ordinary high water mark of any watercourse or waterbody.
H01.16	No debris, soil or other deleterious material will be allowed to enter watercourses or wetlands. Any debris inadvertently introduced into watercourses will be removed and reported to the IEA.
H01.16	Prohibit crushing of gravel used for construction within 30 m of any watercourse or waterbody.
H01.17	Operate machinery on land above the high water mark to minimize disturbance to the banks and bed of any watercourse or waterbody.
H01.18	Do not remove coarse woody debris from any waterbodies.
H01.18	Prevent the transport of sediment through the installation of appropriate erosion and sediment control when work involves the disturbance of soils or the use of erodible materials (e.g., sands, topsoil).
H01.19	Avoid the use of ground-based machinery within 15 m of waterbodies top-of-bank and use handheld equipment for felling timber.
H01.19	Fishing is prohibited in all freshwater streams in PRNPR.
H01.21	Avoid the use of chemicals, including equipment fueling and fuel storage, within 30 m of a stream.
J00.00	**Waste: Non-Hazardous Handling and Disposal**
J01.01	Ensure all waste, litter, debris, and other construction related materials are removed from the site and disposed of in an appropriate manner.
J01.02	Food and other wildlife attractants (e.g., garbage, petroleum products or other materials with strong odours) must be secured in appropriate facilities or vehicles.
J01.03	All litter, waste and garbage must be in wildlife-proof containers or otherwise confined to prevent dispersal by wind or wildlife.
J01.04	Separate and store recyclable and waste materials in appropriately labelled, covered containers prior to transport to a permitted recycling and disposal facilities (e.g., metal, general waste, and wood waste bins).
J01.05	Contain and remove solid wastes regularly to maintain a clean and tidy environment and prevent attraction of wildlife.

J01.06	Clean up the site upon completion of the work daily to ensure that all wastes from construction operations are either removed or managed appropriately.
J01.07	Contractor shall arrange for disposal of construction-related wastes in a manner acceptable to local governments having jurisdiction, including verification that local landfills have capacity to meet the Contractor's disposal requirements.
J01.08	Provide sanitary facilities for the use of workers. Sanitary facilities shall be secured so they do not fall over and shall be located at least 30 m from the ordinary high water mark of any waterbody. Sanitary facilities shall be secured and emptied at a frequency sufficient to prevent potential overflow and spills
J01.09	The Contractor shall keep records of the types and quantities of waste generated, along with their handling, transport, disposal date and disposal facility. The Contractor shall make the records available for inspection upon request.
J01.10	Regularly inspect construction site for general cleanliness and adherence to the EMP and ensure that there are no attractants to wildlife.
J01.11	Where possible, sweep up loose material or debris. Ensure appropriate, off-site disposal of any material thought to pose a risk of contamination to soils, surface water or groundwater.
J03.00	**Hazardous Materials - Generation, Handling and Disposal**
J03.02	Disposal of hazardous waste generated on site must be in compliance with the BC Environmental Management Act, the BC Hazardous Waste Regulation and the Transportation of Dangerous Goods Act. Disposal of hazardous waste will be performed under the supervision of the Contractor's QEP and reviewed with the IEA before implementation.
J03.04	Ensure that all relevant personnel are adequately trained for the handling and transport of hazardous materials, dangerous goods and controlled products.
J03.05	Absorbent materials or soils saturated (>3% by mass) with oils or fuels are classified as hazardous waste. Soils and/or other materials contaminated by petroleum products or other undesirable materials must be cleaned up in accordance with the BC Environmental Management Act and its regulations.
J03.10	Workplace Hazardous Materials Information System (WHMIS) documentation must be kept on site for all hazardous material utilized on site. The Contractor must remove all residual material and ensure that any disposal of this material is conducted at permitted recycling or disposal facilities.
J03.13	Notify the EM immediately if a hydrocarbon sheen or odour is observed in groundwater seepage into the excavations.
K00.00	**Fuel and Flammable Storage**
K01.01	Supply, construct, operate and maintain all necessary equipment and facilities for storage, transfer and refueling, including environmental protection materials and equipment in accordance with the requirements of the BC Fire Code – Part 4 and the BC Summary of Environmental Standards and Guidelines for Fuel Handling, Transportation and Storage.
K01.02	Plastic containers used to carry petroleum products shall be designed for that sole purpose, will be listed with the Canadian Standards Association (CSA) or Underwriters Laboratory Certified (ULC) or as a registered product and will not more than five years old.

K01.03	Store containers with a volume capacity of 23 litres (5 gallons) or less in equipment boxes or storage areas capable of containing any leaks in the event of a spill.
K01.04	Ensure that there is appropriate containment for petroleum storage, transfer and refueling facilities that will contain any spillage or leakage.
K01.06	Cover temporary fuel storage and containment areas to prevent the accumulation of rainwater.
K01.07	Ensure that fuel/oil storage containers are not placed within 30 m of any watercourse. If fuel/oil storage within 30 m of a watercourse is necessary, submit a spill prevention plan to the IEA for consideration with respect to EMP satisfaction.
K01.08	Employ an oil spill containment boom if heavy oil–filled equipment is to be used over or adjacent to a waterbody.
K01.09	Ensure personnel undertaking the work are present and fully alert at all times during fluid transfers.
K01.10	Place drip trays, plastic sheets or absorbent pads underneath vehicles and equipment that are not in use and left on site overnight to capture any drips or leaks that may occur. Secondary equipment is to be covered with a tarp, equipped with a roof, or with a "rain-drain" or equivalent hydrocarbon filter.
K01.16	Plan, design and construct fuel storage and handling facilities in accordance with A Field Guide to Fuel Handling, Transportation and Storage (BC Ministry of Water, Land and Air Protection, 2002) and Standards and Best Practices for Instream Works (BC Ministry of Environment, 2004)
K01.17	Verify that containers do not leak and are sealed with a proper fitting cap or lid.
K01.18	Label containers according to the Transportation of Dangerous Goods Act Regulations.
K01.19	Store fuels separately from corrosive materials.
K01.20	Prohibit smoking in the vicinity of fuel storage and dispensing facilities in accordance with the Occupational Health and Safety Regulations.
K01.22	Ensure hazardous or toxic products, equipment and fuel are stored no closer than 100 m from streams, wetlands, waterbodies or wetted areas. Spoil and stockpiles should be no less than 30 m from these features.
K01.23	Refuel, wash and clean tools and equipment at least 100 m away from any waterbodies to prevent the release of wash water that may contain deleterious substances into surface water.
K01.24	Although not anticipated, if potentially hazardous materials (e.g., cement-based products, sealants or paints) are used on site, ensure raw material, mixed compounds and wash water are not released to any watercourse or soil. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand and double-lined fuel tanks can prevent spills into the environment.
K01.25	Ensure that machinery and construction materials such as gravel, mud, soil and water arrive on site in a clean condition and that equipment is maintained free of fluid leaks, invasive and noxious species and soils from off site.

L00.00	**Spill Response: Spill of Hazardous Substances**
L01.01	Report all spills and leaks, regardless of volume, to the Departmental Representative and IEA as soon as possible.
L01.02	Keep fully stocked emergency spill response kits appropriate to the type of work being conducted and volume of fluids present on site. Spill kits shall be located in each piece of equipment at all times. On site spill response materials shall include an adequate inventory of sorbent pads, socks and booms to sufficiently respond to petroleum leaks and spills from construction-related activities.
L01.03	A site-specific Spill Response Plan must be on-site and consistent with the Spill Response for Contractors appended to this EMP (Appendix B). In the event of a spill, the site-specific Spill Response Plan will be implemented.
L01.04	Ensure all crew members and Contractors are trained in their respective duties and are knowledgeable about spill response procedures.
L01.05	Complete a daily inspection of equipment. Large and small equipment, including their hydraulic fittings, must be in sound mechanical condition and free from leaks.
L01.06	The contents and size of spill containment kits for vehicles and fuel dispensing stations and how they will be deployed in the event of a spill shall be consistent with requirements outlined in Table 9.3 of A Field Guide to Fuel Handling, Transportation and Storage (BC Ministry of Water, Land and Air Protection, 2002). Equipment containing ethylene glycol (antifreeze) or other water-soluble chemical shall carry an appropriate number of water-soluble chemical absorbent pads in addition to absorbent pads used for petroleum products.
L01.07	Inspections to compare current contents of spill kits with required contents must occur at Project start-up and whenever a new piece of equipment comes on site.
L01.10	If potentially hazardous materials (e.g., cement-based products, sealants or paints) are used, ensure raw material, mixed compounds and wash water are not released to any watercourse or soils. Measures such as collection, drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
L01.11	Spill kits shall be provided at re-fueling, lubrication and repair locations that are capable of dealing with 110% of the largest potential spill and shall be maintained in good working order. Site staff shall be informed of the location of the spill response kit(s) and be trained in their use.
L01.13	Hazardous or toxic products shall be stored no closer than 100 m from streams, wetlands, waterbodies or waterways.
L01.14	Timely and effective action shall be taken to stop, contain and clean-up all spills as long as it is safe to do so. The IEA shall be notified immediately of any spill. In the event of a major spill, all other work shall be stopped and all personnel shall be devoted to spill containment and clean-up.
M00.00	**Air Emissions**
M01.02	Optimize trucking loads to reduce the number of trips between the source and destination.

M01.04	Any plan to use oils or other dust suppressants on site must be submitted to the IEA for review before implementation. Materials unacceptable to the IEA will not be applied to the site.
M01.05	Ensure that all equipment is maintained in good working order and has properly functioning emission controls.
M01.06	Minimize engine idling.
M01.07	Implement speed limits for all equipment.
M01.08	Use modern machinery and commercially available low sulphur fuels.
M01.09	With materials that may emit dust, cover loads when hauling.
M01.11	Load trucks so that loads do not spill during movement.
N00.00	**Visual Impacts/Noise Concerns**
N01.01	The Contractor shall comply with local noise bylaws, or exemptions must obtained prior to the start of any work.
N01.02	Ensure that all equipment has properly functioning noise control equipment (e.g., mufflers) designed for the equipment being operated.
N01.03	Avoid unnecessary engine revving and use of engine brakes.
N01.08	Free swinging tailgates are not allowed on vehicles.
N01.09	Maintain equipment in good working order.
N01.10	Minimize vehicle idling to the extent feasible.
S00.00	**Disturbance to Heritage Resources/Archaeological Sites**
S10.04	All Contractors are responsible for protecting archaeological resources identified during the course of work. Because it is not always possible to identify all archaeological resources within an area, Contractors should be made aware of the potential presence of undiscovered archaeological resources that are protected under the Heritage Conservation Act.
S10.05	In the event of a chance archaeological find, suspend work and immediately notify the Departmental Representative and IEA for instructions on how to continue. Evidence of past human occupation can include such things as human bones, pit houses, stone tools, rock paintings, shell deposits (middens) or culturally modified trees.

S10.06	If suspected human remains are found, the Contractor shall: stop work immediately and notify the Departmental Representative, who will notify the Police; not disturb the site; stake or flag off the affected location to prevent additional disturbance; treat the remains with full dignity and respect; do not allow any employee or bystander to touch or photograph the remains; cover any exposed bones with plastic sheeting, blankets or other clean coverings until the Police arrive; assign an employee to watch over the remains until the Police arrive; and not backfill the area.
S10.08	Contractor needs to be familiar with and follow all requirements listed in Appendix K – Chance Find Protocol and Appendix L – Heritage Protection Plan
T00.00	**Site Restoration**
T01.01	All areas of soil disruption and trail rutting or compaction must be promptly repaired and reclaimed.
T01.02	Minimize activities that cause soil compaction and rutting (e.g., minimize vehicle traffic and use of equipment on exposed soils, use existing roadways or disturbed areas to travel within site, use equipment of low bearing weight or low pressure tires or tracked vehicles within sensitive areas etc.).
T01.03	Compacted soils must be rehabilitated similar to the productive capacity of the area.
T01.04	Remove sediment control measures when no longer required.
T01.05	Restore disturbed areas to a stable vegetated condition as soon as possible.
T01.06	Decommission and remove temporary structures used during construction within the construction season that they are deemed to be no longer required.
T01.07	Upon completion of construction activities, remove surplus materials and wastes from the work sites and dispose of at appropriate facilities.
T01.08	Install and maintain appropriate sediment control measures until such time that natural vegetation becomes established.
T01.09	To the extent possible, restore surface soil adjacent to the stream channel using low impact equipment under dry soil conditions.
T01.10	Where possible, re-establish ground cover to allow adequate vegetative growth prior to the onset of rainfall and snowfall events. If this is not possible, alternate erosion measures must be provided.
T01.11	Restore riparian management areas disturbed during work to a stable vegetated condition as soon as possible.
T01.12	Upon completion of restoration activities, remove all remaining sediment and erosion control measures, unless they are necessary to protect areas where vegetation is naturally establishing.
T01.13	Remove all equipment, supplies and materials associated with the work.

8. References

Amec Foster Wheeler. 2016. Pacific Traverse Trail: Biophysical Assessment. Draft report prepared for PWGSC and PCA. Burnaby, BC.

Parks Canada Agency. 2016. Pacific Traverse Trail: Detailed Impact Assessment. Draft Report. Victoria, BC.

Appendix A: Project Environmental Orientation Record

[redacted]

Project Environmental Orientation Record (PEOR)

Project Title: Pacific Traverse Trail_____ Date:__October, 2016_____

Project Numbers:__VE52602 _____ PEOR Version:____Draft 01

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The Project Environmental Orientation Record (PEOR) shall be completed as a component of the Project kick-off or orientation.

- Additional PEORs must be completed if there is a significant change in scope, a new phase of work commences, or if new Contractors mobilize to site.
- Contact information is included in this PEOR. This contact information is to be completed by all parties as a component of the PEOR review.
    - Any changes in contact information will require the issuing of an amended PEOR to be signed by all parties.

By signing the PEOR, the parties listed on the contact sheet indicate they have been advised of, and understand, the environmental requirements, and that they will communicate the environmental requirements to all personnel including, but not limited to, subcontractors and replacement crew leaders.

1.0 Project Description and Location	
Project Description: Construction of a paved multi-use trail that runs the entire length of Pacific Rim National Park. This PEOR pertains to the specific works as described in the document entitled *Pacific Traverse Trail Clearing and Grubbing, Pacific Rim National Park Reserve, British Columbia*.	
Project Location: Pacific Traverse Trail (PTT) is entirely located within Pacific Rim National Park Reserve (PRNPR) Long Beach Unit, on the west coast of Vancouver Island between the communities of Tofino and Ucluelet, BC.	
2.0 Application of EMP, Permits and Approvals	**Reviewed (Yes/NA)**
All Contractors must address and implement the provisions outlined in the Environmental Management Plan (EMP).	
All activities must comply with applicable Laws, Regulations, including local bylaws and related orders	
All permit and approval conditions/terms/requirements must be implemented	
Contractor Environmental Protection Plans or other management plans must be implemented.	
3.0 Review Environmental Incident Response and Spill Response Plan	
Review Environmental Incident Response and Spill Response Plan	
Review Spill Kits requirements and locations	

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4.0 Environmental Management Plan Review

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EMP-#	PEOR Summary	Status (Yes/No/NA)
A00.00	**General**	
A01.06	Environmental issues must be a component of the regular tailboard meetings.	
A01.07	Contractor's EM role is to ensure compliance with EMP, provide on-site advice and stop work as required.	
A01.09	Report environmental incidents and near misses as soon as possible	
A01.10	No-Activity-Areas must be marked	
A02.01	Identify species at risk	
A02.02	Identify invasive species and limit the spread	
A02.04	Coordinate salvage operations and/or preclearing surveys with IEA	
A02.05	Reduce footprint to the greatest extent possible	
B00.00	**Vegetation Management, Disturbance or Removal**	
B01.01	Clean equipment before moving into new areas to prevent the spread of invasive species.	
B01.05	Remove invasive plants before vehicle access	
B01.18	Ensure excavated material are positioned as not to affect vegetation	
B01.19	Do not store machinery within the drip-line of trees.	
B01.22	Retain all large trees (>100 cm DBH, >35 m height) and veteran crown class, including minimizing impacts to root structures by adjusting the trail alignment so that it avoids the drip line of trees to be retained (unless the trail is elevated).	

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C00.00	**Wildlife - Habitat Alteration, Disturbance or Loss**	
C01.01	Do not destroy, remove or clear any active bird nests. Cease work at site and contact the IEA if bird nests (active or inactive) are encountered within or near the work area.	
C01.06	Reduce and ensure proper storage of potential wildlife attractants, such as food, garbage, petroleum products, or other materials with strong odours.	
C01.07	Conduct construction activities in a manner that is sensitive to the wildlife and wildlife habitat.	
C01.12	Any wildlife sightings (e.g. bear, frogs, slugs, etc) will be recorded in an incidental wildlife log and provided to the IEA.	
C01.13	No feeding, disturbing, or harassing of wildlife will occur.	
C01.16	Retain all wildlife trees with high potential to provide habitat to cavity nesting birds and tree roosting bats. These should be verified by a QEP and clearly marked for retention in the field prior to commencing clearing.	
C01.17	Fell trees directionally onto the trail corridor and not into wetlands, ponds and/or known amphibian habitat.	
C01.18	Construction activities should be restricted to daylight hours as much as possible. Artificial lighting should not be used in the vicinity of amphibian habitat.	
C01.19	Determine appropriate timing to conduct work within timing windows or to avoid critical breeding or migration seasons to protect wildlife	
D00.00	**Soil Management**	
D01.01	Excavated soils must be stockpiled within the area approved for that purpose and Project use	
D01.02	Surface organic matter, topsoil and subsoil will not be admixed into a single stockpile.	
D01.03	Subsoil is to be stripped and stored separate from topsoil	
E00E01	**Soil and Sediment Erosion/ Compaction**	
E01.02	Excavated soil must be staged on plastic sheeting and cover when inactive	
E01.03	Ensure any sediment mobilization resulting from soil stockpiling or tracking from equipment/vehicles is cleaned up immediately.	
E01.06	Vehicles and equipment mitigations must prevent rutting	

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E01.07	Effective sediment and erosion control measures are to be installed	
E01.08	Contingency supplies of sediment and erosion control materials shall be maintained at each construction site and workers shall be sufficiently trained in their appropriate installation and maintenance.	
E01.09	Sediment and erosion control measures shall be: inspected regularly at a frequency commensurate with the risk, nature, location, and weather	
E01.10	Effective erosion and sediment control measures shall be installed in riparian areas before starting clearing to reduce the potential for introduction of sediment into watercourses	
E01.13	Avoid soil handling or equipment movement during periods of intense rainfall	
F00.00	**Water Quality - Erosion and Sedimentation**	
F01.02	Erosion and sediment control measures will be inspected within 24 hours after a significant rainfall/weather event	
F01.04	Comply with BC Working Water Quality Guidelines (BCWWQG), and the BC Approved Water Quality Guidelines (BCAWQG)	
H00.00	**Fish and Aquatic - Habitat Alteration, Disturbance or Loss**	
H01.01	No works instream works are permitted. Works within 30 metres of a stream and wetlands require approval.	
H01.08	Sufficient vegetation to ensure bank stability, maintain ground cover and prevent erosion must be retained within 30 m of the high water mark of waterbodies.	
H01.09	No debris, soil or other deleterious material will be allowed to enter watercourses or wetlands	
H01.10	Contact IEA, if any requirement to cross streams	
H01.11	Clearly flag or otherwise delineate riparian areas throughout all phases of construction	
H01.15	Fell trees away from watercourses and wetlands.	
H01.19	Avoid the use of ground-based machinery within 15 m of waterbodies top-of-bank	
H01.21	Avoid the use of chemicals including equipment fueling and fuel storage within 30 m of a stream.	

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J00.00	**Waste: Non-Hazardous Handling and Disposal**	
J01.01	Ensure all waste, litter, debris, and other construction related materials are removed from the site and disposed of in an appropriate manner.	
J01.02	Food must be secured in appropriate facilities or vehicles.	
J01.03	All litter, waste and garbage must be in containers or otherwise confined to prevent dispersal by wind or wildlife.	
J01.09	The Contractor shall keep records of the types and quantities of waste generated, their handling, transport, disposal date and disposal facility.	
K00.00	**Fuel and Flammable Storage**	
K01.02	Plastic containers used to carry petroleum products shall be designed for that sole purpose	
K01.04	Ensure that there is appropriate containment for petroleum storage, transfer and refueling facilities that will contain any spillage or leakage.	
L00.00	**Spill of Hazardous Substances**	
L01.01	Report all spills and leaks, regardless of volume, to the Departmental Representative and IEA as soon as possible.	
L01.02	Keep fully stocked emergency spill response kits appropriate to the type of work being conducted and volume of fluids present on site	
L01.05	Complete a daily inspection of equipment.	
L01.11	Spill kits shall be provided at re-fuelling, lubrication and repair locations that are capable of dealing with 110% of the largest potential spill	
M00.00	**Air Emissions**	
M01.06	Minimize engine idling.	
N00.00	**Visual Impacts/Noise Concerns**	
N01.09	Maintain equipment in good working order.	

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S00.00	**Disturbance to Heritage Resources/Archaeological Sites**	
S10.05	In the event of a chance archaeological find, suspend work and immediately notify the Departmental Representative and IEA	
S10.08	Contractor need to be familiar with and follow all requirements listed in Appendix K – Chance Find Protocol and Appendix L – Heritage Protection Plan	
T00.00	**Site Restoration**	
T01.01	All areas of soil disruption and trail rutting or compaction must be promptly repaired and reclaimed.	
T01.05	Restore disturbed areas to a stable vegetated condition as soon as possible.	

Project Environmental Orientation Record (PEOR)

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The undersigned has been briefed on the environmental risk and protection requirements of the work as detailed above.

Signed:	_____	Amec Foster Wheeler Independent Environmental Auditor (IEA)	Date: _____
For work undertaken by Contractor:			
Signed:	_____	Contractor's Representative	Date: _____
For all work: Counter-signed:	_____	Departmental Representative	Date: _____

Additional Comments:

PLEASE RETURN A COPY OF THE COMPLETED, SIGNED OR UPDATED FORM TO Independent Environmental Auditor (IEA)**)**

PEOR Reviewed by: Crew Leader (Crew leaders will review/sign this PEOR with replacement crew leaders)

(Print name and Company)	**Signature**	**Date**

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CONTACTS – Construction Team			
This contact list will be finalized prior to work initiation and must be updated as necessary. All updates to be submitted to the Departmental Representative.			
Contact	**Name**	**Office Number**	**Cellular Number**
Contractor Representative			
Contractor's Environmental Monitor(s)			
Departmental Representative			
Owners Representative			
Independent Environmental Auditor (IEA)			
Police		**911**	
Ambulance		**911**	
Fire		**911**	
Emergency Management BC (EMBC)	**BC Government**	**1-800-663-3456**	**24hr/7days**

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Notes:

Appendix B: Example Spill Response for Contractors

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Spill Response

For Contractors

The Six Steps of Spill Response are presented as a general guideline only and are not intended to be a comprehensive list of requirements. Circumstances may dictate another sequence of action.

All Spills are to be reported to the Departmental Representative and Independent Environmental Auditor as soon as feasible.

1 Ensure Safety	
• Check to ensure equipment/area is not energized • Prioritize critical issues • Assess the risk • Use appropriate personal protective equipment (PPE)	• Follow safe work procedures • Consult MSDS & appropriate safety standards • Eliminate ignition sources
2 Stop the Flow	
• Act quickly • Close valves, shut off pumps, plug leaks, upright containers	• Carry out any emergency repairs
3 Secure the Area	
• Limit and/or prevent access • Essential personnel only	
4 Contain the Spill	
• Identify spill pathways • Protect drains, sewers, culverts, waterways and ditches, as required • Contain spilled product with sorbents, booms, earth and/or sod	• Identify all potential spill sources and extent of the spilled material • Monitor containment measures • Stabilize the spill and get assistance
5 Notify/Report	
• See details on page 2	
6 Clean Up	
• Obtain guidance from your Environmental Monitor, Departmental Representative of IEA. You will be given further instruction on what to do as far as clean up, and what to do with oil samples	

External Reporting

- Spills of any quantity to water must be reported immediately to EMBC (Emergency Management BC, formerly PEP)
  EMBC 24 hr line 1-800-663-3456
- Spills larger than quantities listed in table below must be reported immediately to EMBC
- When you call EMBC they require the same information as is on the Environmental Incident Report Form (Appendix C); if you have completed that form have it handy
- Spills to sewers must be reported to the local Municipal Authority and/or Regional District
- If the spill occurs during transport (load, carry, unload), additional TDG reporting applies, contact Departmental Representative and IEA immediately

Externally Reportable Quantities For Commonly Used Substances	
Substance	**Quantity**
Class 2.1 Flammable Gas (e.g. propane, acetylene, hydrogen)	10 kg
Class 2.2 Non-Flammable or Non-Toxic Gas (e.g. SF6, CO2, halon, refrigerants)	10 kg
Class 2.3 Toxic Gas (e.g. ammonia, chlorine)	5 kg
Class 3 Flammable Liquids (e.g. diesel, solvent, gasoline)	100 Litres
Class 8 Corrosive Liquids (e.g. acids, caustics, mercury)	5 kg
Pesticides and Herbicides	5 kg
Oil and Waste Oil	100 Litres
Leachable toxic waste (e.g. antifreeze)	25 kg
PCBs—Contact env. support	Any amount
Asbestos	25 kg
Other Substances	Contact EM, IEA and Departmental Representative

Environmental Contacts or See Site-specific Spill Plan

Phone and report the spills as soon as possible to the following individuals. See the Project Environmental Orientation Record (PEOR – Appendix A) for contact information:

1. Contractor Crew Lead or Contractor Construction Manager
2. Contractor Environmental Monitor
3. Independent Environmental Auditor
4. Departmental Representative

Appendix C: Environmental Incident Report Form

Contractor Environmental Incident Report Form

Where Contractor's performance of work causes an environmental incident (e.g. impact to the environment or near-miss incident), the Contractor's representative shall as soon as practicable, notify Departmental Representative and Independent Environmental Auditor of the incident, and submit an environmental incident report within 24 hours.

Complete this incident report form or your own environmental incident report as long as it contains the same information.

Incident Date:	Incident Time: AM ☐ PM☐

Incident Information

Incident Location:	
Brief Incident Description:	
Immediate Corrective Actions Taken (if needed):	
Weather Conditions & Temperature:	
Equipment Type: Serial Number (if available):	Material Released: Amount:
Area of Impact (Select all that apply) ☐ Air ☐ Soil ☐ Asphalt or Concrete ☐ Drainage System ☐ Surface Water or Ditch ☐ Watercourse ☐ Inside Building or Engineered Containment	Did you report this incident to any external agency? Yes☐ No ☐ If YES, to whom:

Contractor Information

Contractor Company Name:	
Name of Contractor's Representative:	
Address:	
Telephone #:	

Additional relevant information:

Photos:

Appendix D: Species At Risk Identification Tool

[redacted]

Species at Risk Identification Tool

The following has been prepared to aid with identification of species at risk that are most likely to be encountered during Project construction. Note that all photos are from the E-Fauna database (2016), with the following exceptions: Northern Red-legged Frog (Steve Ogle), Ermine (Flickr), and Keen's Myotis (Flickr). Descriptions are from the BC CDC (2016).

AMPHIBIANS

Western Toad

Western Toad (*Anaxyrus boreas*) can vary considerably in size and colouration. Adults have a prominent parotoid gland, an oval shaped raised area behind the eyes and bumpy skin, which differentiates them from frogs. They can range from the size of a fingernail to almost the size of a fist. They are known to disperse widely from breeding ponds across upland areas. When handled, they may urinate profusely or secrete poison.

Northern Red-legged Frog

Adult Northern Red-legged Frogs (*Rana aurora*) are easily distinguished by the translucent red colour on the underside of their back legs. Their eyes are gold and look sideways. Juveniles have distinct dorsolateral folds (ridges down either side of their backs). Red-legged Frogs are known to disperse fairly widely from breeding ponds and often occur in moist to wet coniferous or deciduous forests.

Wandering Salamander

Wandering Salamanders are small (up to 180 mm total length), lungless salamanders with dark colouration and gold blotches and flecks over its body, most concentrated on the tail, top of the leg bases and the snout. The underside is a paler gray than the back. Hind feet are as wide as they are long and toes are distinctively blunt or squared. The outer fifth toe of the hind foot is roughly the same length as the fourth toe. The tail is circular in cross section.

BIRDS

Band-tailed Pigeon

This species is differentiated from more common pigeons by its yellow bill and legs. The eye is black and they have a distinctive white collar at the back of the neck. In flight, a pale grayish tail band is distinctive. This species is likely to be observed in small groups along forest edges.

Common Nighthawk

This species is most likely to be observed flying over open areas or roosting in open fields, beaches and other open habitat. The white wing bands are distinctive in flight and immediately recognizable. While roosting, colouration is highly camouflaged and they are extremely difficult to see. This species is unlikely to occur within the Project area, though some use of bogs and gravelled roadsides is possible.

Marbled Murrelet

Marbled Murrelets are a small seabird that nests on large, moss covered branches of old-growth trees. May be seen, or more likely heard, flying to and from upland nesting habitat and the sea around dawn and dusk. This species is observed fairly commonly on near shore waters off of PRNPR. Non-breeding Marbled Murrelet (October to March) is shown in the larger image, with black and white colouration and a distinctive white collar. Breeding Marbled Murrelet (April to September) is entirely dark brownish (inset).

Northern Goshawk

The Northern Goshawk is a large hawk found in coniferous forest and forest clearings. It has a wing span up to 1 m. Fine barring on its chest and white “eyebrows” are diagnostic. It has a long tail when perched and long, narrow, somewhat pointy wings when flying. It exhibits a steady flight with powerful wingbeats.

Northern Pygmy Owl

The Northern Pygmy Own is a small owl with a wingspan up to 31 cm. It is commonly active during the day, usually in open forests. A long tail, bold dark streaks on the underparts and spotted wing pattern are diagnostic. Falls eye-spots are present on back of head.

Western Screech-Owl

This species is a small owl with a wingspan up to 51 cm. It is strictly nocturnal; in the day, it typically roosts in old woodpecker holes and other cavities. A large head, dark bill with prominent dark streaks and weak cross bars on chest are diagnostic. Pacific population may be brown or grey in colour.

MAMMALS

Ermine (aka, Short-tailed Weasel)

This species is a dark brown weasel with lighter underside. It has a tail with a black tip. Males are almost twice as large as females, with bodies between 19 and 34 cm in length.

Keen's Myotis

This species is a small bat (total length of up to 8.5 cm) with glossy brown upperparts with indistinct dark shoulder spots. Its underparts are buffy grey. Ears are black and wing membrane is dark brown to black. May be found roosting in tree cavities and bark crevices.

Little Brown Myotis

The Little Brown Myotis is a small bat (total length up to 4 to 5.1 cm) with cinnamon to dark brown colouring above and buffy to pale grey below. Hairs on back have long glossy tips. If the ear is lain forward, it approximately reaches the nostril. May be found roosting in hollow trees.

Townsend's Big-eared Bat

This species is a medium-sized bat (total length 9 to 12 cm) with very large ears (30 to 39 mm) joined across the forehead. Upperparts are slate or grey with cinnamon to brown-black tips. There are two large fleshy lumps on the nose.

INVERTEBRATES

Dromedary Jumping-slug

This species is a relatively large slug (up to approximately 6 cm when fully extended) with a pronounced hump and part of the internal shell visible through a slit in the mantle. Its tail is laterally flattened and tipped with a horn-like protuberance. It is typically greyish in colour overall with cream-coloured mottling on its sides. It is most likely active during warm wet weather.

Warty Jumping-slug

This species is similar to the Dromedary Jumping-slug but considerably smaller (up to approximately 3 cm when fully extended). It is distinguished by numerous dense bumps (papillae) that cover the mantle. The body is whitish or grey with dark markings. The tentacles on the head are a dark bluish in colour.

Edwards' Beach Moth

This species is a medium-sized moth (wingspan of 32 to 38 mm) with drab brown-grey colouring over the head, thorax, abdomen and antennae. A line formed by a series of small black spots is notable on the edge of the forewing. Hindwings are bright white. Adults of this species may be found mid-May through July along beach and dune-like habitat with sparse vegetation.

Sand-verbena Moth

This species is a medium-size moth (wingspan of 35 to 40 mm) with dark brown wings and distinct black and pale yellow lines running parallel to the wing margins. Adults may occur between mid-May and early July on beaches and dune-like habitat where sand verbena is present.

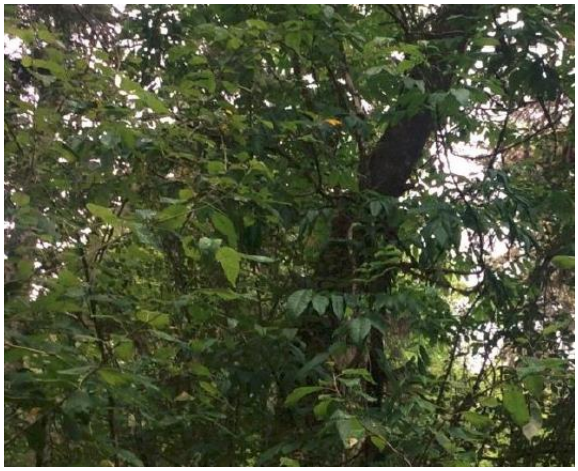
VEGETATION

California Wax-myrtle

California wax-myrtle is an evergreen shrub or small tree (2 to 6 m tall) with spreading stems. Leaves are alternate, 5 to 8 cm long and can have smooth to coarsely toothed margins. Leaves are aromatic with an oblong shape and are typically sharply pointed. It produces small (4 to 8 mm) winged nutlets, which are strongly warty and waxy.

Oregon Ash

Oregon ash is a deciduous tree up to 25 m tall with rough, grey-brown bark. Bark becomes deeply furrowed with maturity. Leaves are opposite and compound with five to seven leaflets. Each leaflet is 12 to 30 cm in size and is distinctly paler beneath. It produces winged fruit in clusters (3 to 5 cm long), each containing one seed.



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Appendix E: Example Environmental Monitoring Report

[redacted]

Environmental Field Report

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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Project No.:		**Report No.:**	
Site Visit Date :		**Arrival Time:**	
Monitor Name:		**Departure Time:**	
Site Location:			
Date Submitted:			
Submitted To:			
Weather:			
Contractors on Site:			

Field Inspection Table:

EMP-#	EM Report Summary	Status (Yes/No/NA)	Environmental Field Report Notes/Photos
A00.00	**General**		
A01.06	Environmental issues must be a component of the regular tailboard meetings.		
A01.09	Report environmental incidents and near misses as soon as possible		
A01.10	No-Activity-Areas must be marked		
A02.01	Identify species at risk		
A02.02	Identify invasive species and limit the spread		
A02.05	Reduce footprint to the greatest extent possible		
B00.00	**Vegetation Management, Disturbance or Removal**		
B01.01	Clean equipment before moving into new areas to prevent the spread of invasive species.		
B01.05	Remove invasive plants before vehicle access		
B01.18	Ensure excavated material are positioned as not to affect vegetation		

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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B01.19	Do not store machinery within the drip-line of trees.		
B01.22	Retain all large trees (>100 cm DBH, >35 m height) and veteran crown class, including minimizing impacts to root structures by adjusting the trail alignment so that it avoids the drip line of trees to be retained (unless the trail is elevated).		
C00.00	**Wildlife - Habitat Alteration, Disturbance or Loss**		
C01.06	Reduce and ensure proper storage of potential wildlife attractants, such as food, garbage, petroleum products, or other materials with strong odours.		
C01.07	Conduct construction activities in a manner that is sensitive to the wildlife and wildlife habitat.		
C01.12	Any wildlife sightings (e.g. bear, frogs, slugs, etc) will be recorded in an incidental wildlife log and provided to the IEA.		
C01.13	No feeding, disturbing, or harassing of wildlife will occur.		
C01.17	Fell trees directionally onto the trail corridor and not into wetlands, ponds and/or known amphibian habitat.		
C01.19	Determine appropriate timing to conduct work within timing windows or to avoid critical breeding or migration seasons to protect wildlife		
D00.00	**Soil Management**		
D01.01	Excavated soils must be stockpiled within the area approved for that purpose and Project use		
D01.02	Surface organic matter, topsoil and subsoil will not be admixed into a single stockpile.		
E00E01	**Soil and Sediment Erosion/ Compaction**		
E01.02	Excavated soil must be staged on plastic sheeting and cover when inactive		
E01.03	Ensure any sediment mobilization resulting from soil stockpiling or tracking from equipment/vehicles is cleaned up immediately.		
E01.06	Vehicles and equipment mitigations must prevent rutting		
E01.07	Effective sediment and erosion control measures are to be installed		
E01.08	Contingency supplies of sediment and erosion control materials shall be maintained at each construction site and workers shall be sufficiently trained in their appropriate installation and maintenance.		

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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E01.09	Sediment and erosion control measures shall be: inspected regularly at a frequency commensurate with the risk, nature, location, and weather		
E01.10	Effective erosion and sediment control measures shall be installed in riparian areas before starting clearing to reduce the potential for introduction of sediment into watercourses		
E01.13	Avoid soil handling or equipment movement during periods of intense rainfall		
F00.00	**Water Quality - Erosion and Sedimentation**		
F01.02	Erosion and sediment control measures will be inspected within 24 hours after a significant rainfall/weather event		
F01.04	Comply with BC Working Water Quality Guidelines (BCWWQG), and the BC Approved Water Quality Guidelines (BCAWQG)		
H00.00	**Fish and Aquatic - Habitat Alteration, Disturbance or Loss**		
H01.01	No works instream works are permitted. Works within 30 metres of a stream and wetlands require approval.		
H01.08	Sufficient vegetation to ensure bank stability, maintain ground cover and prevent erosion must be retained within 30 m of the high water mark of waterbodies.		
H01.09	No debris, soil or other deleterious material will be allowed to enter watercourses or wetlands		
H01.11	Clearly flag or otherwise delineate riparian areas throughout all phases of construction		
H01.15	Fell trees away from watercourses and wetlands.		
H01.21	Avoid the use of chemicals including equipment fueling and fuel storage within 30 m of a stream.		
J00.00	**Waste: Non-Hazardous Handling and Disposal**		
J01.01	Ensure all waste, litter, debris, and other construction related materials are removed from the site and disposed of in an appropriate manner.		
J01.02	Food must be secured in appropriate facilities or vehicles.		
J01.03	All litter, waste and garbage must be in containers or otherwise confined to prevent dispersal by wind or wildlife.		
J01.09	The Contractor shall keep records of the types and quantities of waste generated, their handling, transport, disposal date and disposal facility.		

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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K00.00	**Fuel and Flammable Storage**		
K01.04	Ensure that there is appropriate containment for petroleum storage, transfer and refueling facilities that will contain any spillage or leakage.		
L00.00	**Spill of Hazardous Substances**		
L01.01	Report all spills and leaks, regardless of volume, to the Departmental Representative and IEA as soon as possible.		
L01.02	Keep fully stocked emergency spill response kits appropriate to the type of work being conducted and volume of fluids present on site		
L01.05	Complete a daily inspection of equipment.		
L01.11	Spill kits shall be provided at re-fuelling, lubrication and repair locations that are capable of dealing with 110% of the largest potential spill		
M00.00	**Air Emissions**		
M01.06	Minimize engine idling.		
N00.00	**Visual Impacts/Noise Concerns**		
N01.09	Maintain equipment in good working order.		
S00.00	**Disturbance to Heritage Resources/Archaeological Sites**		
S10.05	In the event of a chance archaeological find, suspend work and immediately notify the Departmental Representative and IEA		
S10.08	Contractor need to be familiar with and follow all requirements listed in Appendix K – Chance Find Protocol and Appendix L – Heritage Protection Plan		
T00.00	**Site Restoration**		
T01.01	All areas of soil disruption and trail rutting or compaction must be promptly repaired and reclaimed.		
T01.05	Restore disturbed areas to a stable vegetated condition as soon as possible.		

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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Notes and Drawings:

Project Title:_____ Date:_____

Project Numbers:_____ Prepared by:_____

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Photos:

Appendix F: Best Management Practises for Coarse Woody Debris Disposal

Best Management Practices for Woody Vegetation Debris Disposal

This appendix will discuss what should be done with the mulch and coarse woody debris along the trail. Amec Foster Wheeler will prepare this document and submit it for review once Parks Canada Agency has decided on what they want the Contractor to do with the mulch.

Appendix G: Invasive Plant Species Identification Tool

Invasive Plant Species Identification Tool

The following has been prepared to aid with identification of invasive species occurring within the LSA and most likely to be encountered during Project construction. Note that all the photos are from the Invasive Species Council of British Columbia (2016). The descriptions are from Klinkenberg (2013).

Canada Thistle

Canada thistle is a perennial herb from deep roots. The alternate, lance-shaped stem leaves (up to 20 cm long), which are attached directly to the stem, are spiny-toothed, green on top and densely white hairy on the underside of the leaf. The flower heads are numerous, small and occur at the ends of the branches in an open inflorescence. The flowers are pink to purple. Canada thistle produces seeds (achenes).

English Ivy

English ivy is an evergreen climbing shrub with stems up to 30 m tall. The alternate, evergreen leaves are 4 to 10 cm long, leathery, glossy, and broadly egg-shaped to triangular. The leaves occur on long stalks and are entire to 3-5 lobed. One to several greenish-yellow in colour flowers occur in a cluster at the end of the stem (terminal). English ivy produces bluish-black berries.

Himalayan Blackberry

This species is a thicket-forming shrub, 2 to 5 m or more long. It can be erect to sprawling and trailing along the ground, in which case the ends root. The stems are 5-angled with stout, flattened, hooked prickles. Alternate, evergreen, egg-shaped leaves have double saw-toothed edges and sharp pointed tips. The leaves (5 to 20 cm long) are green and smooth on top and greyish-wooly beneath with prickles on the midveins. On first-year stems, 5-leaflets are common, and 3-leaflets are common on flowering stems. Five to 20 white to pinkish flowers occur in terminal or axillary clusters. Himalayan blackberry produces black berries.

Orange Hawkweed

Orange hawkweed is a perennial herb, 10 to 60 cm tall with erect, long bristly-hairy stems, which exude a milky juice when broken. Basal leaves are 4 to 20 cm long, long bristly-hairy above and narrowly oval in shape (oblanceolate to elliptic). Stem leaves are small or absent. Several too many orange-red flowers occur at the end of the stem (terminal). This species produces small dark ribbed seeds (achenes).

Oxeye Daisy

This perennial herb is 20 to 80 cm tall, with solitary or several sparingly branched erect stems and a sage-like odour. Leaves are basal, alternate, lobed or toothed, egg-shaped to spoon-shaped, and on short stems (stalked) measuring 4 to 15 cm long. Stem leaves are small, not stalked and nearly entire (not lobed or toothed). Flowers are terminal at the end of the stem, with white petals and yellow flowers in the centre. Oxeye daisy produces black, ribbed seeds (achenes).

St. John's-wort

This perennial herb has branched erect stems and ranges in height from 0.1 to 1.0 m tall. Stem leaves, 1 to 3 cm long, are lance-shaped (lanceolate) or narrowly oval with glandular dots and black marginal dots. Up to 100 or more yellow flowers occur on the terminal ends of the branches. St. John's-wort produces dark brownish seeds (achenes).

Scotch Broom

Scotch broom is a tall shrub, up to 3 m, with green, erect, branched 5-angled stems. Stalked lower leaves are composed of three leaflets; upper branches, have simple egg-shaped to oblong leaflets, pointed at the tip, hairy when young and 5 to 20 mm long. Yellow pea-like flowers occur solitary or in twos. Scotch broom produces black, flattened pods when dry spiral ejecting five to 12 seeds.

Tansy Ragwort

This biennial or short-lived perennial herb has a solitary or branched erect stem, which is sparsely to densely white wooly-hairy. Stalked basal leaves are 4 to 20 cm long, deeply lobed (pinnate) and slightly woolly hairy when young; stem leaves are similar but reduced in size and not stalked. Several to numerous flowers occur in clusters at the end of the branches, with yellow petals and smaller yellow flowers in the centre. Tansy ragwort produces seeds (achenes).

Yellow Iris

This perennial herb has mostly basal narrow, long (50 to 90 cm) leaves with pointed tips. Two to 12 flowers can occur on each stem; the flowers are pale to deep yellow. Yellow iris produces numerous seeds (capsules).

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Appendix H: Best Management Practices for the Prevention of Invasive Plant Species

Best Management Practices for the Prevention of Invasive Species

The following procedures are provided for forestry and construction crew members and vehicles to prevent the spread of invasive species within the PRNPR.

All equipment entering the site will be cleaned prior to entering the park:

Before entering the work area:

- Vehicles will be inspected and cleaned (including the tires, wheel wells, bumpers and undercarriage) before entering the park each day (refer to Table 1).
- Large equipment will be inspected and cleaned before entering the site each day.
- Hand tools, will be inspected and cleaned of all dirt, and vegetative plant material before entering the site each day. The dirt and vegetative plant material can be brushed into black plastic bags and transported to a designated disposal site.

Before leaving the site or moving to a new site:

- Set-up a portable vehicle washing station on site; for additional information (for additional information refer to www.fs.fed.us/eng/pubs/pdf/05511203.pdf; and http://nwipc.org/documents/private/atv_reportaf.pdf).
- Vehicles will be inspected and cleaned (including the tires, wheel wells, bumpers and undercarriage) at a designated portable washing sites before leaving the park each day.
- Large equipment will be inspected and cleaned at a designated portable washing site before leaving the site each day.
- Hand tools, will be inspected and cleaned of all dirt and vegetative plant material before leaving the site each day. The dirt and vegetative plant material can be brushed into black plastic bags and transported to a designated disposal site.

Personnel entering the site will be weed free:

- Boots and clothing of workers will be clean; boots need to be washed or have the dirt removed before entering the site and leaving the site each day (Refer to Table 1).

Table 1: Procedures and Equipment for the Prevention of Invasive Plant Species

Vehicles and Equipment	The following procedures are to be completed:
	• Before entering the park
	• Before leaving the park
	• Before travelling to a different section of the trail

Procedure	Vehicles must be rinsed thoroughly using an on-site portable washing station, commercial on-site washing station or a commercial truck and vehicle wash.
	Vehicles parts to be washed include:
	• undercarriage
	• front and rear wheel wells
	• soil accumulation behind bumpers
	• grills
	• tires (roll forward when washing tires)
	• floor mats
	• truck boxes or trailers

If using an on-site washing station the water, soil and plant parts need to be collected and disposed of safely.

Personnel	Before entering your vehicle, exiting the park and moving to another trail, follow the guidelines below:
Equipment	• stiff bristled brush
	• boot washing tub (e.g. large ziplock/rubbermaid container)
	• clean water
	• fine filter cloth
	• strong black garage bags (for disposal of water, soil and plant parts)
	• small tarp

Procedure	While standing on the tarp:
	• shake then brush off all clothing to remove any plant material and mud
	• unroll any pant or shirt cuffs and shake then brush out any debris
	• brush off cruiser vests, back packs to remove plant material
	• brush off boots (including the bottom of the boots) with stiff bristled brush
	• use the foot wash to complete removal of all dirt and plant material
	• brush dirt and plant material off all hand held tools
	• wash all hand held tools in the foot bath
	• clean brush in foot bath to remove any debris

	• dispose of wash water by pouring it through a fine filter cloth, then place the filter cloth in a strong black plastic bag,
	remove the tarp carefully and transfer the dirt and plant material to the black plastic bag, tie securely and dispose at a contaminated site depot.
	leave the site

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Appendix I: Salvage Protocols for Amphibian Species

Salvage Protocol for Amphibian Species

Content for this appendix is currently being developed by Amec Foster Wheeler with support from Parks Canada Agency staff. This content will be provided for review separately once available.

Appendix J: Salvage Protocol for Jumping-slugs

[redacted]

Salvage Protocol for Jumping-slugs

Content for this appendix is currently being developed by Amec Foster Wheeler with support from Parks Canada Agency staff. This content will be provided for review separately once available.

Appendix K: Chance Find Protocol for Cultural Resources

Chance Find Protocol for Cultural Resources

CRM General Mitigations

- Cultural Resource Management (CRM) Advisor, or designated Park staff member, will provide an on-site 'tail-gate' orientation on cultural resources to the crew at the start of the project, prior to work commencing.
- Site visits may be requested by the CRM Advisor to view the on-going work, and will be scheduled with the Park project manager.
- The contractor must communicate with the archaeologist (Millennia Research Ltd.) to ensure they will be on-site when required.

Chance Finds

As archaeological testing is by nature sampling (not 100 percent coverage) there could be a chance, however low, that cultural features or artifact concentrations are encountered. If significant features, as outlined below, are encountered, work must stop immediately. Immediately contact the Parks Canada project manager, who will then immediately contact the Park Cultural Resource Management Advisor (or Resource Conservation Manager, if not available). If possible, obtain a GPS coordinate obtained and photographs.

- If any cultural or archaeological material (e.g., black greasy shell-bearing sediment, fire-cracked rock, bones) is encountered during any of the work for the entire project, the work will stop immediately and the Park CRM Advisor or on-site archaeologist, if available, will be contacted immediately for archaeological assessment. The crew should be educated on what midden looks like.
- If any cultural material (e.g., wood, metal, ceramic, glass objects) are encountered during any of the work for the entire project, the work will stop immediately and the Park CRM Advisor or on-site archaeologist, if available, will be contacted for archaeological assessment.
- If any bones that are, or are suspected, to be human, are encountered during any of the work for the entire project, the work will stop immediately and the Park CRM Advisor or Park Project Liaison will be contacted.

Appendix L: Heritage Protection Plan

Heritage Site Protection Plan

Content for this appendix is being prepared by Amec Foster Wheeler, in part, and the first draft will be provided for review by November 3. Parks Canada Agency will need to confirm how they want specific sites protected and Millennia Research Ltd. will need to add additional site information to this plan as it becomes available.