Denman Island Local Trust Committee
Regular Business Meeting

Date: **September 16, 2014**
Location: **Denman Seniors Hall**
1111 Northwest Rd, Denman Island, BC

LATE ITEMS, ADDITIONS

AMENDMENTS/ADDITIONS TO ITEMS:

7. APPLICATIONS AND PERMITS

7.2 DE-DP-2014.1 (Comox Valley Regional District -Parks Department)

Staff Report dated September 2, 2014

10. CORRESPONDENCE

10.3 Letter from Denman Conservancy Association dated September 12, 2014

10.4 Letter from Denman Island Residents Association dated September 8, 2014

10.5 Letter from Dr. J. Balke dated September 8, 2014

10.6 Email from Des and Sandy Kennedy dated September 13, 2014

10.7 Email from Kal Holsti dated September 14, 2014

10.8 Letter from Anne Siegel dated September 15, 2014

STAFF REPORT

Date: August 26, 2014 **File No.:** DE-DP-2014.1 (CVRD)

To: Denman Island Local Trust Committee
For meeting of September 16, 2014

From: Marnie Eggen, Planner 2

CC: Rob Milne, Island Planner
Courtney Simpson, Regional Planning Manager

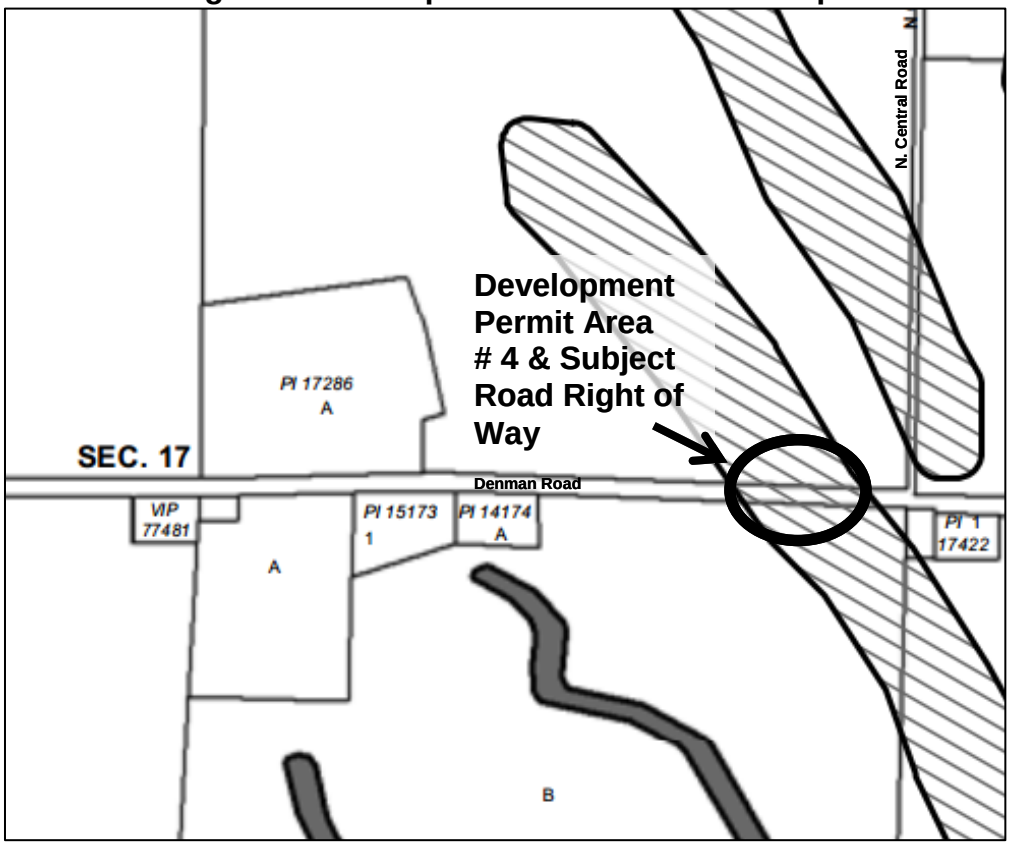
Re: Development Permit Area #4 Application – Denman Road Right of Way just west of North Central Road

Owner: Ministry of Transportation and Infrastructure
Applicant: Comox Valley Regional District (Parks Department)
Location: Denman Road Right of Way just west of North Central Road

THE PROPOSAL:

The applicant proposes to construct the second section of the Denman Cross-Island Trail running alongside Denman Road between Pickles Road and Swan Road. The trail will run along the north side and parallel to Denman Road. The existing shoulder of Denman Road at Graveyard Marsh is too narrow to allow for the construction of a trail alongside the road. To create more width, the applicant is proposing to widen the road shoulder and intrude approximately 1.3 to 2.3 metres into Development Permit Area #4: Streams, Lakes and Wetlands (Major Wetland). The applicant requires a development permit in order to construct the trail because the trail encroaches into the wetland for approximately 152 metres and up to 2.3 metres in width (see Figure 1: Development Permit Area #4 Map).

Figure 1: Development Permit # 4 Area Map



SITE CONTEXT:

The subject area is located on north side of Denman Road, just west of North Central Road. The encroachment into the wetland alongside Denman Road will consist of blast rock fill placed on mineral soils at the edge of the marsh (see Figure 2: Site Plan, Figure 3: Typical Trail Cross Section and Photo 1: View Along Proposed Trail at Graveyard Marsh).

Figure 2: Site Plan

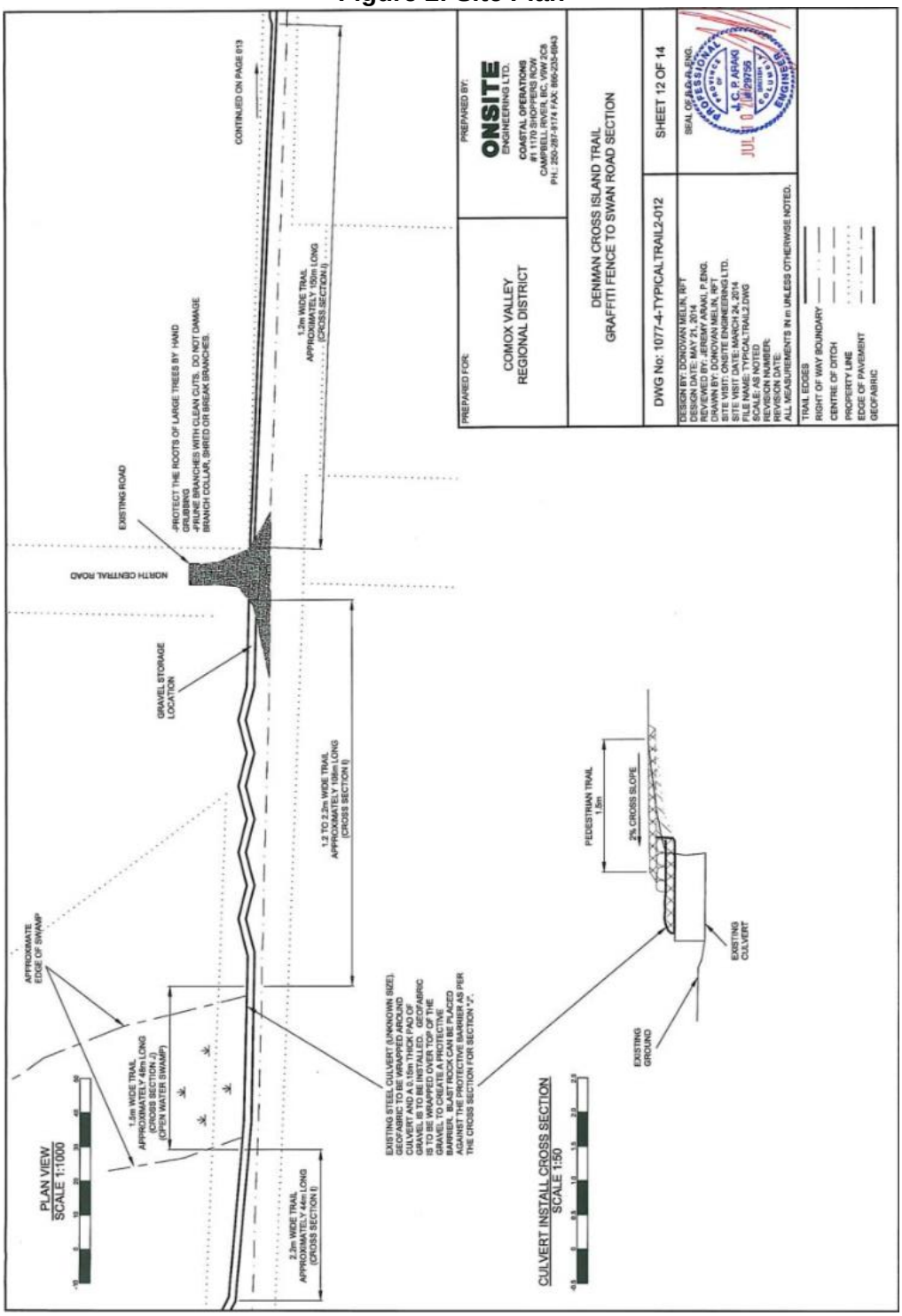


Figure 3: Typical Trail Cross Section

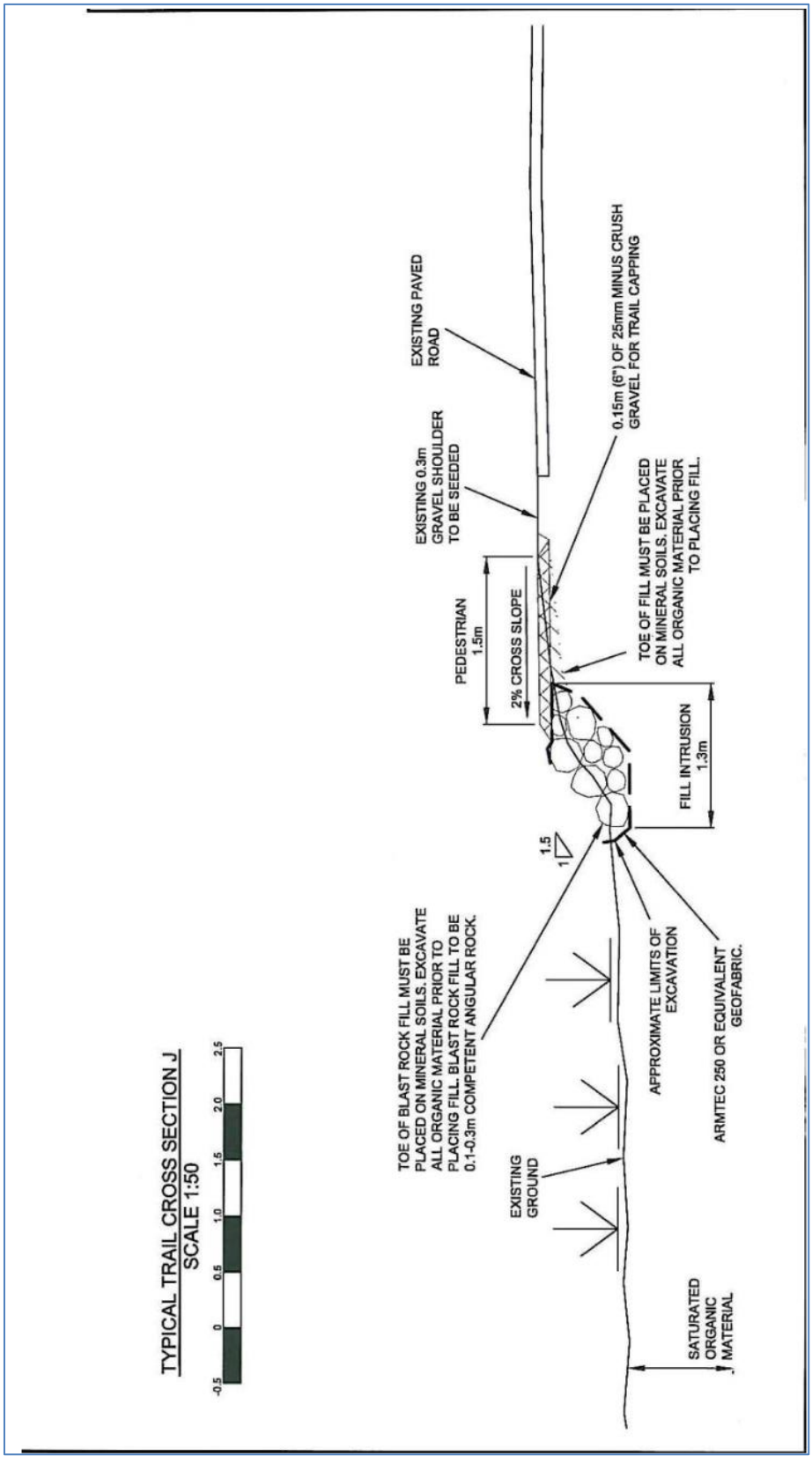


Photo 1: View Along Proposed Trail at Graveyard Marsh

CURRENT PLANNING STATUS OF SUBJECT LANDS:

Trust Policy Statement:

The following directive policies are relevant to this application and are addressed through the Development Permit Area #4: Streams, Lakes and Wetlands, and through the Transportation and Utilities policies in the Denman Island Official Community Plan:

3.3.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address means to prevent further loss or degradation of freshwater bodies or watercourses, wetlands, and riparian zones and to protect aquatic wildlife.

5.5.4 Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address:

- *The location and type of recreational facilities so as not to degrade environmentally sensitive areas,…*

5.5.5 Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws address:

- *The identification and designation of areas of recreational significance,…*

5.5.7 Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the planning for bicycle, pedestrian and equestrian trail systems.

Official Community Plan

The subject road right-of-way is designated Sustainable Resources. The following policies are relevant to this application and are addressed through the Development Permit Area #4, Streams, Lakes and Wetlands, discussed below.

Policy 1 The protection and retention of riparian and aquatic habitat is encouraged.

Policy 2 Adequate setbacks should be maintained to discourage development encroachment on riparian habitat and reduce pollution of this habitat.

The proposed trail is sited within 30 m of the natural boundary of a "Major Wetland," and therefore the applicant must obtain a development permit prior to construction of the trail. The general objectives of Development Permit Area #4 are to protect the biological diversity and habitat values of riparian and aquatic ecosystems, conserve productive fish habitat and prevent the degradation of existing and future water supplies. The Development Permit guidelines are outlined in the Land Use Bylaw (see below).

Land Use Bylaw

The subject road right-of-way is zoned A (1). The LUB contains development guidelines for Development Permit Area #4 which are discussed in more detail in the Staff Comments section below.

Denman Island Local Trust Committee Impact Assessment Bylaw No. 57, 1998:

Under Section 920.01 (c) of the *Local Government Act*, this development permit area is designated a Development Approval Information Area and is subject to Bylaw No. 57:

2. The requirements of this Bylaw apply to:
(b) applicants for a development permit…

However, applicability of the requirements of the Bylaw is at the discretion of an official or staff as per the following sections:

4. The official assigned from time to time to provide staff services to the Denman Island Local Trust Committee is the official for the purposes of this Bylaw.

11. Upon the request of an official and within the time specified in the request, an applicant described in s.2 must provide to the official written Terms of Reference for the preparation of information on the impact of the activity or development that is the subject of the application.

Staff did not request the applicant to provide a Terms of Reference regarding the impact of the proposed trail as it was subject to the Development Permit #4 Guidelines, which requires the applicant to retain a Qualified Environmental Professional (QEP) to conduct a Riparian Area Assessment report (see Staff Comments below). The requirement of a QEP report was considered sufficient, given the scale of the project.

Islands Trust Fund:

This application does not directly affect Trust Fund Board (TFB) interests as it does not directly affect TFB owned property or conservation covenants, does not affect property directly adjacent to TFB owned property or conservation covenants, and does not pertain to Crown Land within 100m of a TFB owned property or conservation covenant.

Regional Conservation Plan:

The Islands Trust Fund Regional Conservation Plan (RCP) identifies areas surrounding the subject road right of way as medium-high importance in terms of habitat value.

Sensitive Ecosystems and Hazard Areas:

Islands Trust Sensitive Ecosystem Mapping identifies the immediate area adjacent to the subject road right-of-way within a swamp and shallow water wetland ecosystem. No hazard areas are mapped.

Archaeological Sites:

According to the Provincial's Remote Access to Archaeological Data (RAAD) there are no archaeological sites within 50 metres of the proposed construction.

Covenants:

The subject area is the road right-of-way for which no covenants can be registered.

Climate Change Mitigation and Adaptation

There is no risk of impact to the development due to sea level rise should this development permit be issued. There are no anticipated impacts on greenhouse gas emissions that would result in issuing this development permit.

Other:

This project falls under Section 9 of the Provincial *Water Act* for "changes in and about a stream." The applicant has submitted a Notification to the Ministry of Forests Lands and Natural Resource Operations for the proposed work.

A *Wildlife Act* permit will be required for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work. An environmental monitor will be responsible for procuring the *Wildlife Act* permit and adhering to any guidelines, requirements or conditions specified in the permit.

COMMUNITY INFORMATION MEETING(S):
A community information meeting is not required for a development permit.

RESULTS OF CIRCULATION:

Notice is not required for a development permit.

STAFF COMMENTS:

Compliance with the Development Permit Guidelines:

The *Local Government Act* regulates local government authority to issue a development permit by stipulating that a development permit must be issued only in accordance with the applicable development permit area guidelines specified in the official community plan or land use bylaw.

As per the *Denman Island Land Use Bylaw, No. 186, 2008*, the following Development Permit Area #4 guidelines apply to this proposal: Guideline 1, 3, 5, 7, 10, and 11. Table 1, below, provides a summary of these guidelines and how the application addresses each one, along with staff comments on how the application measures against these guidelines.

Table 1: How the Proposal Meets the Development Permit Area #4 Guidelines

Development Permit Area # 4 Guidelines	***How Proposal Meets the Guidelines and Staff Comments***
Guideline 1 A development permit is required for the following: *1. Alteration of land by the removal of vegetation, by the construction of skid trails, roads, or stream crossings within 30 metres of the natural boundary of a major stream, lake, or major wetland or within 10 m of the natural boundary of a minor stream or minor wetland on land that:* • *is not classified as managed forest land under the Assessment Act; and* • *is not the subject of a valid and subsisting woodlot license or tree farm license under the Forest Act.*	A development permit is required because land is being altered by the removal of vegetation within 30 metres of the natural boundary of a major wetland.
Guideline 3 Conformity with Riparian Area Regulations *1. When an application is made for a Streams, Lakes and Wetlands development permit for residential, commercial or industrial development, the applicant must, in addition to any other application requirements enacted or imposed by the Local Trust Committee, provide at their expense a copy to the Denman Island Local Trust Committee of the assessment report from a Qualified Environmental Professional (QEP) in accordance with the British Columbia Riparian Area Regulations under the Fish Protection Act.*	An environmental assessment of the proposed trail within the subject wetland was conducted by a QEP (see attachments). As per the assessment, the subject wetland does not meet the criteria for a waterbody requiring protection under the RAR, therefore a RAR assessment report was not undertaken. Staff agree that a RAR assessment report was not necessary given the QEP findings.
2. Despite Guideline 2.1 above, a report from a Qualified Environmental Professional is not required if the proposed work is authorized by Fisheries and Oceans Canada under Section 4 of the Riparian Areas Regulation.	Riparian Areas Regulation is not applicable, see comments above.
3. In general, all development in Streams, Lakes and Wetlands development permit area should be undertaken in a manner that minimizes impact on the riparian area. It is anticipated that a QEP may make recommendations for mitigation measures and designing subdivision proposals in order to lessen the impact on the riparian area. The LTC may impose permit conditions, including a requirement for security in the form of an irrevocable letter of credit, to ensure the protection of riparian areas during construction and land development phases. Conditions may include construction phase requirements for fencing, signs, timing of work and siting of fuelling facilities.	See Guideline 11 below.

Development Permit Area # 4 Guidelines	*How Proposal Meets the Guidelines and Staff Comments*
Guideline 5 Riparian Reserve and Retention Areas *Subject to Guideline 2, the following guidelines apply to all riparian reserve and retention areas, except for development permits issued under guideline 2.* *1. Some properties or portions of properties may be in more than one development permit area; in this case, the guidelines of all development permit areas may apply.*	The subject area is within DP #4 only.
2. On lots greater than 10 ha the size of riparian reserve and retention areas described in the rest of this guideline and guidelines 4 through 7 inclusive may be reduced, and/or a limited amount of vegetation may be removed from the riparian reserve and retention areas described in the rest of this guideline and guidelines 4 through 7 inclusive, or both, if development approval information in the form of an environmental impact assessment provided by the applicant on the impact of the proposed activity or development discloses that to do so could not reasonably be expected to result in harm to the environment of the area affected in accordance with the objectives of this development permit area. An impact assessment provided under this guideline should include a report prepared by a Registered Professional Biologist that includes the following information: • *detailed mapping identifying environmentally sensitive areas;* • *criteria used to identify the boundaries of environmentally sensitive areas;* • *inventory of fish species and related habitat classification within the site;* • *impact assessment describing affects of the proposed development on the natural environment, ecosystems and biological diversity;* • *guidelines for mitigating habitat degradation, including limits on proposed leave areas; and* • *design details of the proposed mitigating measures.*	An "Environmental Assessment "Graveyard Marsh" Wetland Crossing Denman Cross-Island Trail" dated August 25, 2014 was conducted by a Registered Professional Biologist, "Current Environmental," and addresses the information listed in this guideline (see attachments). Staff suggests this guideline is met.
3. Roads or skid trails should not be constructed in riparian reserve areas or riparian retention areas, except as needed for crossing a stream or wetland. The number of places where roads or skid trails cross a stream or wetland should be minimised.	The proposed trail is exempt from this guideline as it is needed to cross a wetland.
4. A culvert or bridge must be installed wherever a road or skid trail crosses a major stream. *5. A culvert, bridge, or armoured ford should be installed wherever a road or skid trail crosses a minor stream, including intermittent or ephemeral streams.* *6. An armoured ford should only be used for a temporary crossing of a minor stream and only during the dry season, which is June through September inclusive.*	Existing culvert; no new culvert installation proposed.

Development Permit Area # 4 Guidelines	***How Proposal Meets the Guidelines and Staff Comments***
7. There should be no operation of ground-based machinery in the riparian reserve or retention areas, except at stream crossings designated in the permit. *8. Ground-based machinery should not cross:* *9. a major stream, except at a place where a bridge or culvert has been constructed or installed, or* *10. a minor stream, except at a place where a bridge, culvert, or armoured ford has been constructed or installed.* *11. Logs should not be yarded across a stream, except at a stream crossing designated in the permit, and should be yarded in a way that does not contribute to de-stabilization of the stream bank or mobilization of sediment into the stream.* *12. There should be no deposition of slash, debris, or erodible soil into the stream, lake or wetland.* *13. Alterations of the natural drainage or areas within the designated permit area should be minimized.* *14. Trees or other vegetation should be retained or replanted in order to control erosion or protect banks and fish habitat.*	The Environmental Assessment recommends that an 'Environmental Monitor' ensures compliance with measures outlined in the Report. Measures include those in respect of prevention and mitigation strategies of potential impacts on aquatic habitat and wildlife and species at risk, and general construction best management practices addressing: - Sediment Control; - Clearing and Grubbing; - Fuels and Hazardous Materials; - Concrete Leachate Control. Staff suggests that Guideline 5 (#7 - #14) would be met through the implementation of the measures as prescribed in Table 1 and Appendix A of the Environmental Assessment Report. Staff suggests that Table 1 and Appendix A are included as a part of the Development Permit conditions.
Guideline 7. Riparian Areas - Lakes and Major Wetlands *Subject to Guideline 2, in addition to the riparian reserve and retention area requirements in guideline 4, the following guidelines apply to those lakes and major wetlands shown on Schedule E as lakes and major wetlands:* *1. A riparian reserve area shall be maintained for 30 m from:* *i. the natural boundary of the lake or major wetland, or* *ii. the natural boundary of any wetland that is adjacent to a lake.* *2. Except as permitted in Guideline 4(3), there should be no removal of vegetation within the riparian reserve area, except for the construction of footpaths.* *3. On lots less than or equal to 10 ha the riparian reserve area may be reduced in consideration of site constraints providing the relaxation is necessary and is not reasonably expected to have a harmful affect on the natural environment. Applications that do not meet the criteria set out in the Land Development Guidelines for the Protection of Aquatic Habitat (see appendix C) should be accompanied by letters of support from the Department of Fisheries and Oceans and the Ministry of Environment, Lands and Parks.*	Footpaths are exempt from this guideline; therefore, the proposed trail is exempt from meeting Guideline 7.

Development Permit Area # 4 Guidelines	*How Proposal Meets the Guidelines and Staff Comments*
Guideline 10. Wetlands *Subject to Guideline 2, the following guidelines apply to all wetlands shown on Schedule E as major wetlands and minor wetlands:* *1. There should be no operation of ground-based machinery in the wetland.* *2. There should be no cutting of live or dead trees within the wetland, except as required for an approved stream crossing.*	(Guideline 2 lists exempt activities; this proposal is not exempt from meeting Guideline 10) The proposal will likely include the use of ground-based machinery within the wetland since excavation and fill are proposed within the wetland (see Figure 2: Site Plan and Figure 3: Typical Trail Cross Section above). The Environmental Assessment recommends that no machinery access is to occur within the wetland without the consent of the 'Environmental Monitor.' The Environmental Assessment recommends that trees felled during clearing near the wetland will be felled away from the wetland, and any trees that inadvertently fall into adjacent undisturbed vegetation will be salvaged only at the discretion of the 'Environmental Monitor.' In addition, the Environmental Assessment recommends that encroachment into the wetland is to only the areas absolutely necessary. Staff suggests this guideline affords some flexibility, and given the proposal and Environmental Assessment recommendations (as above) to limit ground-based machinery and tree felling, staff suggest this guideline would be met through implementation of Table 1 and Appendix A of the Environmental Assessment. Staff suggests that the measures as listed in Table 1 and Appendix A of the Environmental Assessment are included as a part of the Development Permit conditions.

Development Permit Area # 4 Guidelines	***How Proposal Meets the Guidelines and Staff Comments***
Guideline 11. Security *1. Prior to issuing a development permit, the local trust committee may require security in an amount acceptable to the local trust committee.* *2. On receipt of a written request, as stipulated in the development permit, the local trust committee shall return the security, minus any amount required to correct any damage to the environment caused by a contravention of a condition in the development permit (see Appendix B).* *3. Development permits issued in Development Permit Area No. 4: Streams, Lakes, and Wetlands should contain a condition stating that a letter must be submitted by a time specified in the development permit indicating that the work has been completed in accordance with the terms and conditions of the development permit.*	Staff does not recommend requiring security given that the applicant, the Comox Valley Regional District, is a responsible local government and contributing partner in the Denman Cross-Island Trail project.

SUMMARY:
Staff advises that the some of the guidelines for Development Permit Area # 4 have been met through the "*Environmental Assessment 'Graveyard Marsh' Wetland Crossing Denman Cross-Island Trail*" prepared by Current Environmental, dated August 25, 2014, and the remaining guidelines will be met through the implementation of Table 1 and Appendix A of the "*Environmental Assessment 'Graveyard Marsh' Wetland Crossing Denman Cross-Island Trail*."

RECOMMENDATIONS:

That Development Permit DE-DP-2014.1 (CVRD) be approved and issued in accordance with Schedules 'A', 'B,' 'C' and 'D' attached to the permit.

Prepared and Submitted by:

M. Eggen

September 8, 2014

Marnie Eggen, Planner 2 — Date

Concurred in by:

Courtney Simpson

September 8, 2014

Courtney Simpson, MCIP, RPP
Regional Planning Manager — Date

Attachments:

1. "*Environmental Assessment "Graveyard Marsh" Wetland Crossing Denman Cross-Island Trail*," dated August 25, 2014, prepared by Current Environmental
2. Proposed Development Permit

Attachment No. 1

Environmental Assessment
"Graveyard Marsh" Wetland Crossing
Denman Cross-Island Trail
- Denman Island, BC -

August 25, 2014

Prepared for:

Comox Valley Regional District
600 Comox Road
Courtenay, BC
V9N 3P6

Prepared by:

Current Environmental

Warren Fleenor, R.P. Bio. & Dusty Silvester, R.B.Tech.
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TABLE OF CONTENTS:

1 INTRODUCTION

This document prepared by Current Environmental Ltd. (CEL) describes the outcomes of a review of construction drawings and a ground level reconnaissance to determine the possible impacts to environmentally sensitive attributes on a wetland adjacent to the proposed Denman Cross-Island Trail.

1.1 PROJECT OVERVIEW

The Comox Valley Regional District (CVRD) is proposing the installation of a multi-use pedestrian trail at the project location on the north side and parallel to Denman Road, Denman Island, BC. Denman Road is approximately 5.2 km long and connects the east and west coasts of the island. The west side of Denman Road services the village centre and a BC Ferries terminal with service to Buckley Bay; the east side connects to Fillongley Provincial Park off Beadnell Road and an additional BC Ferries terminal servicing Hornby Island via East Road. The trail will serve to provide safe transit across the island for cyclist, pedestrian, and equestrian users.

1.2 PROJECT DESCRIPTION

A portion of the trail will encroach into a wetland for an approximate 48 m length and 1.3 m width ("project footprint") (Figure 1-2). The depth of the excavation and extent of fill intrusion will be dependent on locating a layer of mineral soil upon which to build the trail foundation. The encroachment will include the excavation of some wetland material adjacent to the road for the installation of geofabric and 0.1 - 0.3 m Ø angular blast rock. The potential impacts, mitigation measures, and other site specific measures described in this document are limited to the project footprint, located within the margins of the wetland, only.

A ground-level reconnaissance of the wetland project footprint was conducted by CEL on August 18, 2014 to assess the occurrence and distribution of valuable ecosystem components including species at risk, and generate recommendations for mitigation measures to reduce the potential for harm to the environment.

1.3 PURPOSE

This Environmental Assessment document describes the potential impacts to the wetland by the proposed trail construction works and makes recommendations for the mitigation of those impacts; it is intended to satisfy the criteria for a Qualified Environmental Professional (QEP) to make recommendations for mitigation measures to lessen the impact on the riparian area as described under Islands Trust's Development Permit No. 4[1]. This document will act as a guide and resource to the contractor undertaking the work, Environmental Monitor, CVRD and Islands Trust staff, and government regulators.

1.4 REGULATORY REQUIREMENTS

It is the responsibility of the Contractor, Environmental Monitor, and consulting team to ensure that all relevant regulatory permits have been obtained prior to the start of work. The following sub-headings discuss specific

[1] Islands Trust. (2008). Denman Island Land Use Bylaw. Bylaw No. 186. Development Permit Area Guidelines.

environmental regulatory requirements; there may be additional operational permits required that are not listed here. The contractor will be responsible for complying with all the terms and conditions of the relevant permits as well as those listed in this document.

1.4.1 Denman Island Land Use Bylaw #186 – Development Permit Area #4

As the proposed work will require the alteration of land within 30 m of the natural boundary of a stream, lake, or wetland, the proposed work must meet the requirements and guidelines of Development Permit #4 of the Denman Island Land Use Bylaw #186[2]. Guideline #3 of this bylaw stipulates that:

> *1. When an application is made for a Streams, Lakes and Wetlands development permit for residential, commercial or industrial development, the applicant must, in addition to any other application requirements enacted or imposed by the Local Trust Committee, provide at their expense a copy to the Denman Island Local Trust Committee of the assessment report from a Qualified Environmental Professional (QEP) in accordance with the British Columbia Riparian Area Regulations under the Fish Protection Act.*
>
> *3. In general, all development in Streams, Lakes and Wetlands development permit area should be undertaken in a manner that minimizes impact on the riparian area. It is anticipated that a QEP may make recommendations for mitigation measures and designing subdivision proposals in order to lessen the impact on the riparian area. The LTC may impose permit conditions, including a requirement for security in the form of an irrevocable letter of credit, to ensure the protection of riparian areas during construction and land development phases.*

The mitigation measures outlined below addresses point number 3 above. **However, note that a Riparian Areas Regulation (RAR) assessment has not been completed for this project.** The justification for the non-submission of the RAR report includes the following:

1. The subject wetland does not meet the criteria for a waterbody requiring protection under the RAR. More specifically, the wetland does not appear to have a surface flow connection to fish bearing waters. Support for this assertion include:
    a. The subject wetland was not identified as being afforded protection under the RAR in the assessment titled *Denman Island Riparian Area Regulation Stream Identification – Chickadee Lake, Valens Brook, Beadnell (Little George) Creek, and Graham Lake Watersheds*[3].
    b. Background information referenced from Department of Fisheries and Oceans (DFO) Mapster v3.1[4], Ministry of Environment Habitat Wizard[5], Comox Valley Regional District

[2] Islands Trust. Denman Island Land Use Bylaw No. 186. Consolidated January 2014.

[3] 2014. Madrone Environmental. Prepared for the Islands Trust. 112 pp.

4 http://pacgis01.dfo-mpo.gc.ca/Mapster30/#/SilverMapster

5 http://www.env.gov.bc.ca/habwiz/

iMap Sensitive Habitat Atlas[6], and Ministry of Environment Sensitive Ecosystem Inventory (SEI)[7] online GIS databases, the subject wetland is isolated from any known surface water connection to downstream fish bearing waters.

c. Water quality at the project site was such that the wetland could not support populations of salmonids through summer months (high temperatures and low dissolved oxygen).
d. Informational interviews with local residents indicate there is no salmonid fish utilization of the subject wetland.

2. The RAR was designed primarily as a tool to prescribe setbacks from fish bearing watercourses. A more appropriate regulation for the proposed work is the BC Water Act Section 9 – Changes in and About a Stream. A notification under this regulation has been submitted for the proposed work.

1.4.2 Water act

Current Environmental will be responsible for submitting a Section 9 Notification under the Provincial *Water Act* for "changes in and about a stream"[8]. The notification will serve to alert the Ministry of Forests Lands and Natural Resource Operations (MFLNRO) to the details of the proposed project and allow Habitat Officers to provide comment as needed.

1.4.3 Wildlife Act

It is very likely that amphibians will be encountered within the wetland project footprint during excavation activity. As such, a *Wildlife Act* permit will be required for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work. The permit will require listing the specific species that are likely to be encountered based on the project location, habitat type, and known distribution of amphibian species on Denman Island.

The Environmental Monitor will be responsible for procuring the permit and adhering to any guidelines, requirements, or conditions specified in the permit.

2 METHODS

The methods used to determine the occurrence and distribution of valuable ecosystem components (VEC) for the reconnaissance level inventory are provided here.

1.2 BACKGROUND/EXISTING INFORMATION

Existing information on VECs on or near the project footprint were obtained from the following sources:

6 http://imap2.comoxvalleyrd.ca/imapviewer/

7 http://www.shim.bc.ca/atlases/sei/seimain.html

8 Under the Water Act, a "stream" is defined as "*includes a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch*."

- Conservation Data Center (CDC);
- Sensitive Ecosystem Inventory (SEI);
- Sensitive Habitat Inventory and Mapping (SHIM);
- Comox Valley Regional District iMap Sensitive Habitat Atlas;
- Islands Trust *MapIT* online ecosystems application;
- Species at Risk Act (SARA) database;
- Species at Risk & Local Government database;
- Ministry of Environment BC Species and Ecosystems Explorer;
- Ministry of Environment Habitat Wizard
- Department of Fisheries and Oceans Mapster v3.1;
- Fish Inventories Data Queries (FIDQ);
- Aerial photographs.

2.1 AQUATIC HABITATS AND SPECIES

Criteria for determining and describing aquatic VECs were based primarily on the BC *Riparian Areas Regulation Assessment Methods v. 3. 3*[9], the Resources Inventory Committee of British Columbia *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures* Version 1.1[10], and from the project biologist's previous experience in dealing with local government and Federal and Provincial agency staff.

As described above, information on known fish utilization of freshwater watercourses was queried using Department of Fisheries and Oceans (DFO) Mapster v3.1[4], Ministry of Environment Habitat Wizard[5], Comox Valley Regional District iMap Sensitive Habitat Atlas[6], and Ministry of Environment Sensitive Ecosystem Inventory (SEI)[7] online GIS databases.

2.2 SPECIES AT RISK

An office-based assessment of Species at Risk occurrences on the subject property was completed using the *CDC Mapped Known Locations of Species and Ecological Communities at Risk*[11], *BC Species and Ecosystems Explorer*[12], and the *Federal Species at Risk Public Registry*[13]. The on-site assessment of Species at Risk was completed concurrent with the other inventory efforts mentioned above and was based primarily on methods outlined in

9 http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/documents/assessment_methods.pdf

10 Resource Information Standards Committee. (1999). Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures. Retrieved from <http://www.ilmb.gov.bc.ca/risc/pubs/aquatic/sitecard/sitecard.pdf>.

11 http://www.env.gov.bc.ca/atrisk/ims.htm
12 http://a100.gov.bc.ca/pub/eswp/
13 http://www.sararegistry.gc.ca/species/default_e.cfm

Environmental Best Management Practices for Urban and Rural Land Development[14]. The field inventory was conducted by CEL on August 18, 2014.

3 RESULTS

The primary VEC's identified in the project footprint include the wetland and species and ecological communities at risk described further in this section.

1.1 GRAVEYARD MARSH

According to Sensitive Ecosystem Inventory (SEI) metadata and the Denman Conservancy Association the subject wetland is known by the common name "Graveyard Marsh". According to the SEI the subject wetland (ID: S57051) has a 36.9 ha area and is categorized as WN:sw:ms:sp (Wetland; shallow water; marsh/swamp). Shallow water marshes are characterized by "permanent, seasonal, or diurnal flooding of nutrient-rich waters"[15]. The wetland crosses under Denman Road via a 600 mm Ø CMP in deteriorated condition. The northern portion resides within the Denman Conservancy Association's Central Park while the southern portion is on a zoned resource parcel A(4). The wetland appears to be landlocked with no known surface water connection to downstream fish-bearing waters.

Based on observations made during the August 18, 2014 site reconnaissance and according to Ministry of Forests wetland classification framework, this wetland falls under the Ws50 Site Association where sites experience prolonged saturation and early-season flooding. Hydrophytic vegetation is dominated by hardhack (*Spirea douglasii*), with limited growth of salmonberry (*Rubus spectabilis*) along the palustrine fringe, and water shield (*Brasenia schreberi*) characteristic of shallow water wetlands. The most common soil types for this site association are humisols and gleysols[16] overlying mineral soils at an unknown depth.

3.1 AQUATIC HABITATS AND WILDLIFE USE

The relatively deep and year-round water found in the study area wetland provides suitable *breeding* habitat for amphibians. In addition, these wetted areas provide critical hydration and rearing/foraging habitat for native amphibian species that may include Pacific Chorus Frogs (*Pseudacris regilla*), Northwestern (*Ambystoma gracile*) and Long-toed Salamanders (*Ambystoma macrodactylum*), Roughskin Newts (*Taricha granulosa*), and provincially listed Red-legged Frogs (*Rana aurora*). No direct amphibian observations were made during the August 18, 2014 site reconnaissance.

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14 BC Ministry of Water, Land and Air Protection. Draft 2004. Section 6. Special Wildlife and Species at Risk. Accessed from <http://www.for.gov.bc.ca/hfd/library/documents/bib96812.pdf>.

15 AXYS Environmental Consulting Ltd. (2004). Sensitive Ecosystem Inventory of East Vancouver Island and Gulf Islands. Attribute Definitions. Accessed from: http://a100.gov.bc.ca/appsdata/acat/documents/r2124/VI_SEI_Data_Dictionary_1130978051098_bf70e627bdd341179d6fadfdf56e484d.pdf .

16 Mackenzie, W., & J. Moran. (2004). Wetlands of British Columbia: a guide to identification. Ministry of Forests. Forest Science Program. Land Management Handbook.No. 52.

Ideal breeding conditions for many amphibian species found in this region include slower moving or standing water with depths > 50 cm where emergent vegetation is abundant, such as that found within portions of the project area. Note that adults migrate from aquatic breeding sites to terrestrial foraging grounds that may include the riparian area around the project site.

3.2 SPECIES AT RISK

A desktop survey using the Conservation Data Centre's (CDC)[11] online mapping application (Figure 3) showed the occurrence of the provincially listed Taylor's Checkerspot (*Euphydras editha taylori*): a red-listed species (i.e. extirpated, endangered, or threatened) known to occur in the larvae stage associated with host plant patches in seasonally wet areas and wetlands on Denman Island. According to Page et al. (2009)[17], the occurrence of larvae often coincides with Taylor's preferred food plants (in order of frequency) are *Veronica serpyllifolia* (58%), *Veronica scutellata* (26%), *Plantago lanceolata* (11%), *Plantago major* (3%), and *Centaurium erythraea* (1%). Appendix B contains the CDC's species report.

Although the CDC mapping resource did not show any occurrences of red-legged frogs in the area, they are known to occur on Denman Island. Red-legged Frogs commonly use moist, lower elevation forests that include aquatic breeding and terrestrial foraging habitat such as the riparian area and subject wetland. As mentioned, the study area offers suitable breeding habitat for this species. Breeding occurs in the spring, and by July-August the year's clutch transforms from the tadpole to adult stage. Adults migrate from aquatic breeding sites to terrestrial foraging grounds that may include the riparian forests of the study area.

Other Blue listed amphibians that could possibly be encountered on site considering the proximity to potential breeding habitat in the study area wetland include the Western Toad (*Anaxyrus boreas*) and the Wandering Salamander (*Aneides vagrans*).

Should any species at risk be encountered during project work, the EM and contractor will make all attempts possible to avoid interfering with the species. As described above in Section 1.4.3 a *Wildlife Act* permit will be required for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work.

4 ENVIRONMENTAL MONITORING

A key element of work in and around the Graveyard Marsh wetland is the involvement of an Environmental Monitor (EM). An EM is to be contracted to oversee works to ensure that environmental impacts are minimized through implementation and maintenance of appropriate mitigation measures.

The amount of time the EM will need to dedicate to the project will vary significantly with the timing and method of construction and the diligence and experience of the contractor. The EM should be on site during all critical

17 Page, N., P. Lilley, J. Heron, N. Kreker. (2009). Distribution and habitat characteristics of Taylor's Checkerspot on Denman Island and adjacent areas of Vancouver Island (2008). Report prepared for B.C. Ministry of Environment and Parks Canada Agency by Raincoast Applied Ecology. Pp. 32.

construction phases when work is in close proximity to surface waters and/or there is a potential risk to the environment.

It is expected that the EM will be onsite throughout clearing/grubbing, excavation, and trail foundation construction phases of the project when soil disturbance is most active. Additional site visits will be conducted during and/or immediately following intense precipitation events (i.e. ≥ 25 mm in a 24hr. period). Once construction has proceeded beyond soil disturbances below the high water mark, site visits may become less frequent at the discretion of the EM and to be discussed with the project team including municipal authorities.

4.1 AUTHORITY OF THE ENVIRONMENTAL MONITOR

The environmental monitor will have the authority to halt construction and direct construction personnel and equipment to implement mitigation measures necessary to protect environmental resources before resuming work.

4.2 RESPONSIBILITIES OF THE ENVIRONMENTAL MONITOR

The responsibilities of the EM are as follows:

1. Monitor construction activities to ensure compliance with measures outlined in this Environmental Assessment document and federal, provincial, and municipal regulations and directives;
2. Ensure adequate environmental mitigation supplies (spill kits, filter fabric, etc.) are on hand and readily available;
3. Ensure the project crew is familiar with the requirements of outlined in this Environmental Assessment document and that emergency response procedures are understood;
4. Maintain a log of construction activities, mitigation measures, and observed impacts or enhancements noted during the course of the project construction;
5. Communicate on a frequent basis with the Construction Supervisor to ensure ongoing implementation of mitigation requirements, to discuss any environmental management issues, and to address upcoming issues that could cause project delays;
6. Liaise with municipal staff, DFO, MELP, Streamkeeper groups, and other parties as needed regarding environmental aspects of the project;
7. Contact appropriate environmental agency personnel in the event of a significant environmental impact.

A pre-construction meeting between the Contractor and EM is to occur prior to the commencement of construction. This meeting is to ensure key construction personnel aware of the environmental scope of work, the directives of the Environmental Assessment, general environmental concerns, contingency measures, implementation of any pre-work mitigation measures, and any rules and regulations applicable to the construction area.

5 POTENTIAL IMPACTS AND MITIGATION MEASURES

Potential impacts that may result from implementation of work components and their recommended prevention and mitigation strategies are described below in Table 1.

Table 1. Summary of work components, potential impacts, and management recommendations.

Graveyard Marsh Pedestrian Trail Constraints		
Work Component	**Potential Impacts**	**Prevention and Mitigation Strategies**
Aquatic Habitat	General Considerations	□ Retain a Qualified Environmental Professional (QEP) to act as Environmental Monitor (EM) to advise contractor on methods and implement mitigation measures to reduce impacts. □ Do not undertake any work that may cause impacts to waterbodies resulting in being out of compliance with water quality standards listed in the Appendix A, Section 1 - "Sediment Control". □ Adhere to General Construction BMPs and Mitigation Measures listed in the Appendix. □ Complete work in an incremental fashion (See Appendix A Section 1.2).
	Wildlife Passage	□ Although no salmonids are known to utilize the wetland in the project footprint, consideration should be given to maintaining passage through the culvert enclosures as this would help maintain passage for other aquatic species such as amphibians. □ Guidelines for fish passage culverts are provided in *Fish-stream Crossing Guidebook*[18] and *Culverts and Stream Passage*[19]
	1. Unnecessary Encroachment 2. Erosion and Sediment Release	□ The extent of the work area should be clearly delineated prior to work and encroachment limited to only the areas absolutely necessary. □ The wetted portion of the work area will be isolated at the discretion of the EM using a combination of available methods outlined in Appendix A. □ It is recommended that some turbid water generated from excavation be pumped out of the wetland for release into a nearby suitable vegetated area with the capacity to absorb sediment laden water and effectively

18 MFLNRO & DFO. (2012). Fish-stream Crossing Guidebook. Accessed from <http://www.for.gov.bc.ca/HFP/Fish/Fish-Stream%20Crossing%20Print.pdf>.

19Ministry of Transport and Infrastructure. (2013). Culverts and Fish Passage. <http://www.th.gov.bc.ca/publications/eng_publications/environment/references/3824_CulvertFishPassage_InfoSheet.pdf>

		filter it before release back to the aquatic environment. Pumps may be used to achieve a "zero net flow" at the point of excavation to minimize the migration of turbid water (Section 1.2; Appendix A). If deemed necessary, the EM may isolate the work area using up- and downstream floating silt curtains, meter bags, poly sheeting, and sand bags, or a combination thereof. Using reasonable effort, maintain compliance with water quality standards listed in Appendix A: "Sediment Control". It should be recognized that these standards may not be entirely achievable given the challenges of site isolation and considering the lack of fish presence. Construction of the trail corridor should consider guidelines for the protection and management of wetlands during linear development activities in *Wetland Guidelines: Road and Utility Corridors*[20]
Wildlife and Species at Risk	Disturbance to Taylor's Checkerspot	Avoid impacts to food plants *Veronica serpyllifolia*, *Veronica scutellata*, *Plantago lanceolata*, *Plantago major*, and *Centaurium erythraea*. If unavoidable, these plants should be transplanted to adjacent areas under the supervision of the EM. Time works outside of March-April larval stages.
	Disturbance to amphibians	Retain a Qualified Environmental Professional (QEP) to conduct an amphibian survey prior to any clearing activity and monitor suitable habitat for presence of amphibians including blue-listed Red legged Frog throughout the development process. Minimize disturbance to vegetation, particularly near the wetland. Time works outside March-July amphibian breeding period. Obtain a *Wildlife Act* permit for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work. Adhere to *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia*.

20 Ministry of Environment. (2009). Wetland Ways. Chapter Nine: Road an Utility Corridors. Accessed from <http://www.env.gov.bc.ca/wld/documents/bmp/wetlandways2009/Wetland%20Ways%20Ch%209%20Corridors.pdf>.

We trust this assessment satisfies your project requirements. Please call with any questions.

Current Environmental Ltd.

Warren Fleenor R.P.Bio. & Dusty Silvester, R.B.Tech.

6 DISCLAIMER

This report was prepared exclusively for the Comox Valley Regional District by Current Environmental Ltd. The quality of information, conclusions and estimates contained herein is consistent with the level of effort expended and is based on: i) information available at the time of preparation; ii) data collected by the author, technical personnel and/or supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the Comox Valley Regional District only, subject to the terms and conditions of its contract or understanding with Current Environmental Ltd. Use or reliance on this report by any third party is at that party's sole risk.

7 PHOTOS

Photo 1. Wetland vegetation upstream from the project location.

Photo 2. Water upstream of the culvert. Note deteriorated condition of the culvert.

Photo 3. View along proposed trail alignment.

8 FIGURES

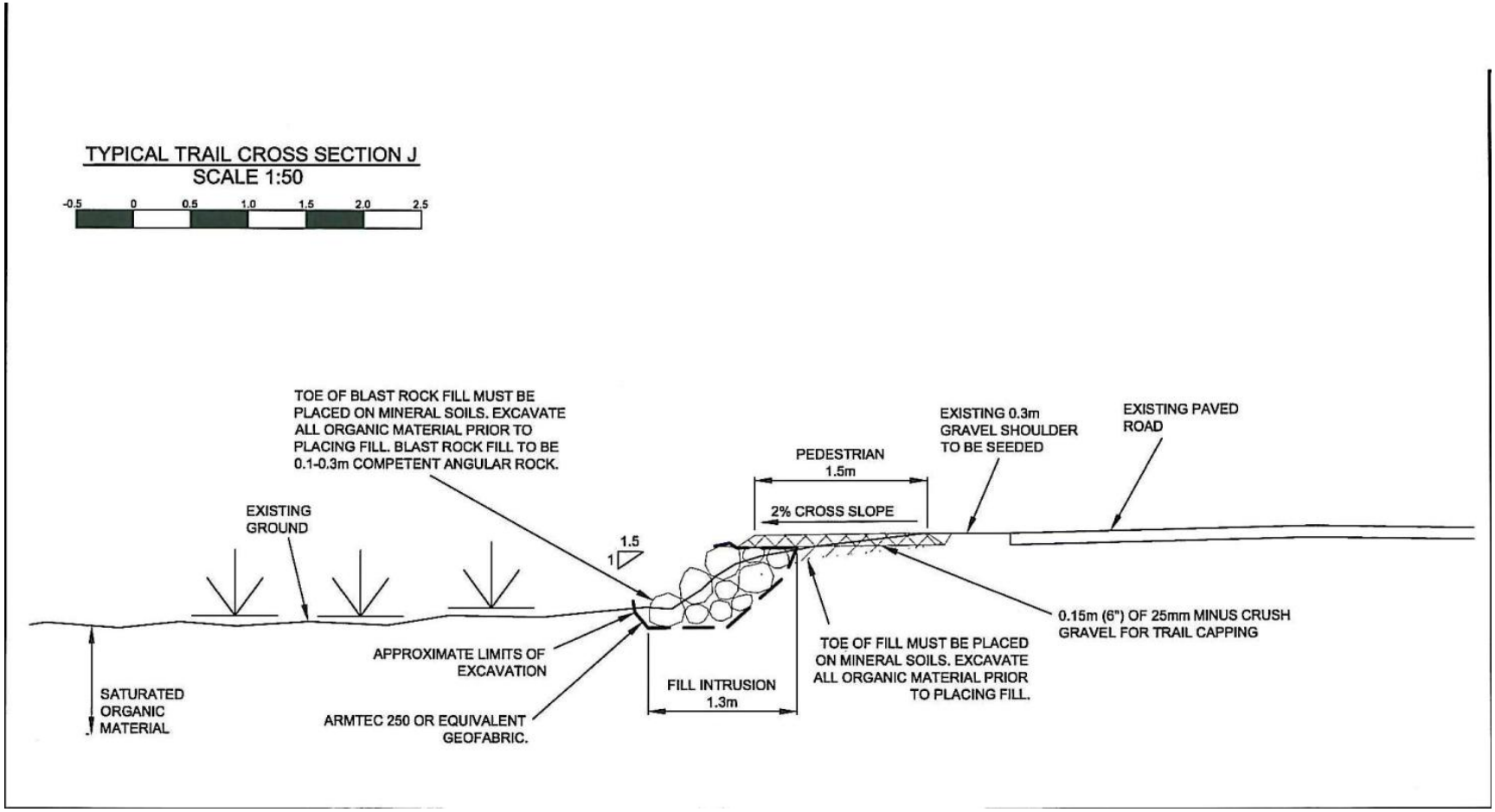


Figure 1. Typical cross section of project design components for the pedestrian trail at the Graveyard Marsh project footprint. Adapted from Onsite Engineering Ltd.

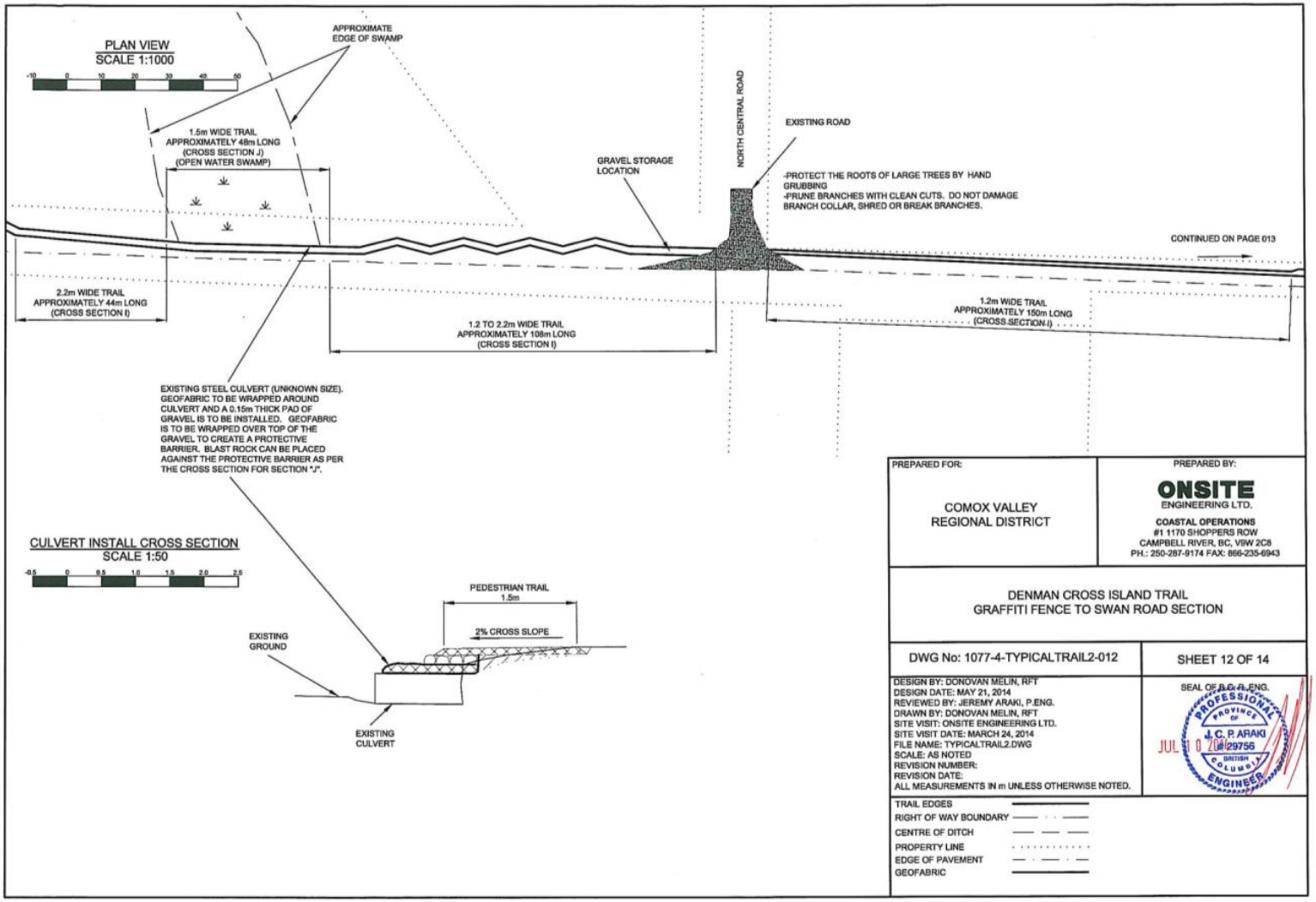


Figure 2. Site plan of project design components near North Central Road for the pedestrian trail at the Graveyard Marsh project footprint. This Environmental Assessment document is limited in scope to the 48 m x 1.5 m "open water swamp". Adapted from Onsite Engineering Ltd.

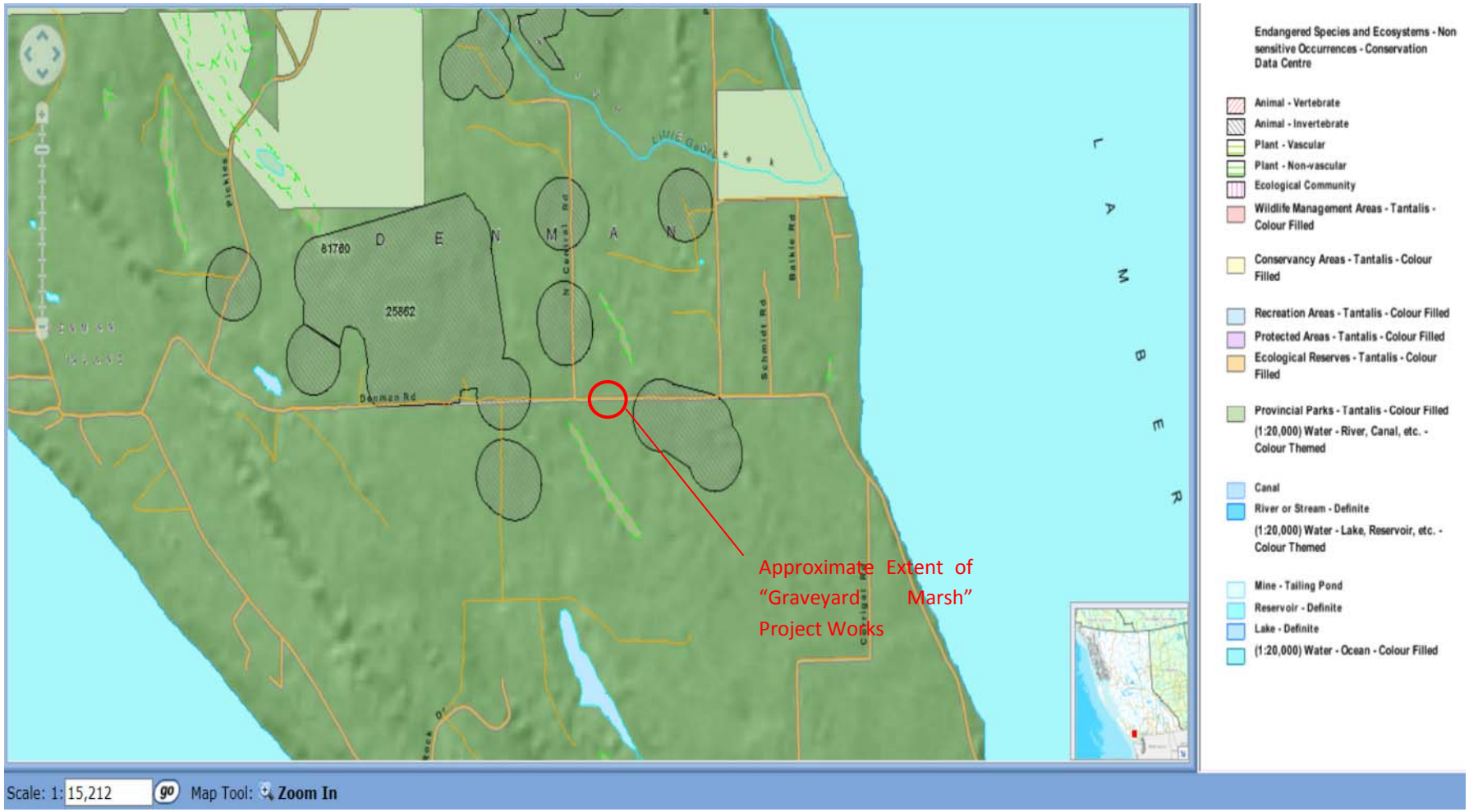


Figure 3. Conservation Data Centre map of known species at risk occurrences showing the approximate extent of confirmed Taylor's Checkerspot butterfly on Denman Island near the approximate extent of project works in the Graveyard Marsh.

9 APPENDIX A – GENERAL CONSTRUCTION BMP$_S$ AND MITIGATION MEASURES

9.1 GENERAL CONSTRUCTION GUIDELINES

The following general guidelines are highly recommended. They will reduce project costs associated with environmental protection such as EM fees and delays.

- Commence land clearing during dry weather.
- Complete land clearing in an incremental manner to minimize exposure of saturated soils.

1.1 IDENTIFICATION AND DELINEATION OF SENSITIVE AREAS

Prior to construction, the EM should clearly mark the boundaries of the work area identified on the final site plan. All delineated sensitive areas are to be mapped; maps are to be distributed to all crew personnel, particularly machine operators. ***No machinery access or spoil material storage of any kind is to occur within the wetland area without the consent of the Environmental Monitor.***

1.2 SEDIMENT CONTROL

There are no known occurrences of fish within the project footprint; therefore, compliance with the *Fisheries Act* does not directly apply. However, other sensitive species occurrences such as amphibians are likely near the work area and water quality monitoring should focus on monitoring sediment generation and release downstream in the wetland. Water samples should be tested onsite for turbidity with handheld meters. Water quality monitoring should be done as determined by the EM on the basis of visual monitoring of water clarity, with turbidity measurements taken if deemed necessary, as well as following precipitation events in excess of 25 mm. At a minimum, water quality monitoring sites should be established up and downstream of the work area.

As a guideline, the BC Water Quality Guidelines (BCWQG) (2001) for protection of aquatic life the stipulate an acceptable increase of 8 NTU when background levels are between 8 and 80 NTU, and a 10% increase when background levels exceed 80 NTU. In the event the established limit is exceeded the EM should be consulted to determine whether additional impact mitigation measures are required.

The implementation and maintenance of sediment control measures and related equipment and supplies are the responsibility of the construction contractor, and will be designed, constructed, and maintained as required by the Environmental Monitor. Construction activities will not commence until proper sediment control measures are in place. Regular inspection of sediment control measures during construction will ensure these are functioning and maintained as required.

Specific measures to control sediment during construction will include:

- All work is to be completed from the top of bank (Denman Road) and no machinery is to enter the wetland margins at any time without the permission of the Environmental Monitor.
- As much as possible, complete the work in an incremental manner; As long as possible maintain a vegetation/soil “plug” between flowing water and the site of active excavation.

- Where there is a potential for silt runoff in the proximity of the wetland, control devices will be installed prior to construction activities commencing.
- Floating silt curtains, filter fabric dams, rock check dams, settling ponds, geotextiles, french drains, interception ditches, and silt fencing will be used as needed on a site-specific basis to control erosion. Silt fencing is not an acceptable mitigation technique to control erosion in flowing waterbodies; however, it is useful for containing slumping areas and for use as baffles to slow water velocities.
    - A possible method to mitigate the potential largescale migration of sediment laden waters from the worksite involves the following:
        - Install a larger (3 or 4 “) trash pump upstream of the proposed work.
        - Using the larger pump, “forward” the clean water around the worksite and discharging to the wetland downstream from the worksite (~ 20 m).
        - If necessary, once excavation commences, use an additional pump to pump dirty water to an appropriate settling/filtration area.
        - If dirty water is migrating upstream to the intake of the larger pump, temporarily shut the pump down. This pump should be operated to try and achieve a “zero flow” situation at the point of excavation.
        - Ensure the intakes on all pumps are screened to avoid mechanical harm to small organisms.
        - Ensure discharge points are armoured with poly sheeting or wood and rocks to avoid erosion.
        - This technique will require some trial and error on behalf of the EM and Contractor.
- Permanent erosion control berms and settling basins will be constructed where required during and/or after development and incorporated into the natural drainage where practicable under the discretion of the EM.
- Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting a watercourse. This will be at the discretion of the EM.
- The wetland is not to be traversed by machinery at any time without the consent of the EM.
- Silt laden waters that may enter the wetland will be pumped to well vegetated areas for filtration. Discharge hoses are to be placed so as not to cause erosion. This is usually accomplished by laying poly sheeting and using large rocks or wood to dissipate discharge flows.
- Soil stockpiles will be placed a minimum of 30 m from the wetland and in a location where erosion back into the waterbody cannot occur and will not impede any drainage.

- Soil stockpiles with the potential to erode into the wetland is to be covered with poly sheeting. Other techniques, such as terracing or surface roughening can greatly reduce surface erosion on steeper slopes.
- Construction design will incorporate work around an existing culvert and existing drainage will be maintained. If any drainage modifications are required they will be installed under the supervision of the EM.
- Clearing will take place immediately prior to excavation and earthworks to minimize the length of time that soils are exposed. Vegetation in adjoining areas will not be disturbed.
- Permanent exposed soil areas and erosion-prone slopes that may potentially erode into the wetland are to be revegetated or hydroseeded immediately, or covered with geotextile.
- Site re-vegetation measures are typically required to stabilize soils and stream banks and reduce erosion and the establishment of weed species. The measures, including hydroseeding, are to be implemented as directed by the EM as construction is completed in each area.

9.2 CLEARING AND GRUBBING

- All areas to be cleared will be walked by the Environmental Monitor and Construction Supervisor to identify any environmental resources that need to be protected (e.g. delineating work area and any sensitive species).
- Grubbing and stripping limits will be marked in the field prior to the commencement of work. Only those areas designated on engineered site plans will be cleared. Clearing activities will not remove any vegetation outside the authorized clearing limits.
- The grubbing and stripping of unstable or erodible soil will be limited to that which is absolutely necessary to satisfy the engineering requirements of the project. Where construction can be completed without grubbing and stripping, none shall occur.
- Vegetation identified for protection will be left intact and root systems undisturbed.
- The installation of appropriate surface drainage control should occur concurrent with clearing activities.
- Grubbing will be suspended during and immediately after intense rainstorms that have resulted in excessive run-off.
- During clearing near the wetland, trees will be felled away from the wetland. “Leaners” or felled trees that inadvertently fall into adjacent undisturbed vegetation will be salvaged only at the discretion of the EM.
- All stockpiles of grubbed material within the specified clearing limits will be located so as not to obstruct the access or work of others or natural drainage patterns.

9.3 FUELS AND HAZARDOUS MATERIALS

The accidental release of petroleum, oils, hydraulic fluids, lubricants, concrete additives, anti-freeze or other hazardous materials onto land surfaces or into waterbodies may result in degradation of habitat quality and could be a threat to human health.

Environmental protection procedures for handling and storage of fuels and hazardous materials shall include the following items:

- A large spill kit will be on hand at all times during construction.
- Smaller spill kits are to be maintained on all machinery.
- All identified spills will be cleaned up immediately, and contaminated soils and vegetation will be removed for appropriate disposal.
- Refueling of equipment is to occur only at designated fueling stations and located at least 30 m from all watercourses.
- All fuel, chemicals, and hazardous materials will be clearly marked.
- Fire extinguishers are to be located on all machinery.
- If accidental mixing of fuels, chemicals, and hazardous materials does occur, the waste product will be removed to an approved disposal/recycling facility.
- Aboveground storage tanks will be constructed on stable foundations, designed to minimize uneven settling and corrosion. The framework of the storage tank will be such that the allowable stress of the tank itself will not be exceeded.
- Fuel tanks within the containment area will be located off the ground.
- Pumps and jerry cans are to be placed on poly sheeting and sorbent pads to contain spills.
- All equipment maintenance with the potential for accidental spills (e.g., oil changes, lubrications) will be done on a designated area at least 30 m from any waterbodies. Tarps should be laid down prior commencement of work to facilitate clean up.
- Used oil, filters, and grease cartridge lubrication containers and other products of equipment maintenance will be collected and kept in a secure receptacle for later disposal.
- In the event of a spill, the following guidelines should be followed:
    - Spills need to be immediately reported to the EM and the construction supervisor. Spills to the receiving environment are to be reported to the BC Provincial Emergency Program (1-800-663-3456) if they exceed the reportable limits (e.g. 100 liters of fuel or oil).
    - The Construction Superintendent and Environmental Monitor will be responsible for coordinating clean-up and collecting all pertinent information.

- Deploy on-site personnel to build containment dykes, or pump spilled contaminant into storage drums.
- Apply sorbent pads and booms as necessary.
- Dispose of all contaminated debris, cleaning materials, and absorbent material by placing in an approved disposal site.
- Debrief all site personnel on the incident and take additional precautions to ensure that similar accidents will not recur.

- There are to be regular, documented inspections of impact mitigation measures, fire prevention and spill recovery supplies and any equipment working in and around watercourses.

9.4 CONCRETE LEACHATE CONTROL

Although there is no planned use of concrete required for the completion of project components, it is sometimes required to support construction in unforeseen circumstances; accordingly, this section is provided preemptively should such a circumstance occur.

Uncured concrete in the freshwater environment has the potential to mix with surrounding water and raise the pH to a level that is deleterious to aquatic life. Elevated pH in water or groundwater resources may be generated if during installation the concrete is allowed to mix directly with surface water or ground water that is released into the freshwater environment.

- Work-crew awareness organized through a pre-work meeting will inform all workers of the need to contain concrete leachate, and direct the works in a manner that ensures concrete is not released into the freshwater environment.
- Ensure that all work involving the use of concrete, cement, grout, mortars, and other Portland cement or lime-containing construction materials shall be conducted in a fashion that ensures sediments, concrete debris, and concrete fines are not deposited, either directly or indirectly (e.g. by way of waste storage, etc.), into the ground water or freshwater environment.
- Any water contacting freshly poured or decommissioned concrete or lime-containing construction materials, such as the water that may be used for equipment washing, etc., shall be prevented from entering, directly or indirectly into the ground water or freshwater environment unless this water has been tested (to an accuracy of within +/- 0.2 pH units) and found to have a pH of between 6.5 less than 9.0 pH units.

Ensure that no wash-down water from concrete equipment including hand tools or delivery trucks occurs on site. All washing of concrete equipment should occur off site at a suitable location to ensure containment of leachates.

10 APPENDIX B – BC CONSERVATION DATA CENTRE: OCCURRENCE REPORT

BC Conservation Data Centre: Occurrence Report (25862)

August 22, 2014

Euphydryas editha taylori
Edith's Checkerspot, *taylori* subspecies

Field definition document available at http://www.env.gov.bc.ca/atrisk/ims.htm

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	6647	**Status:**	
Shape ID:	25862	Global:	G5T1
Type:	Invertebrate Animal	Provinicial:	S1
		COSEWIC:	E (MAY 2011)
Taxonomic Class:	insects	BC List:	Red
		SARA Schedule:	1
Data Sensitive:	N		

Locators

Survey Site: DENMAN ISLAND, NORTH

Directions: Pickle's Clearcut: From Denman Road, turn north onto Pickles Road, for approximately 5 kilometres the road opens into an old clearcut (harvested approximately 1994). There is an old logging landing and an old impassable spur road branches to the left. The population starts approximately 30 metres down the old spur road (J. Heron, pers. comm.). Old Clearcut: From Denman Road, turn north onto Pickles Road and drive approximately 1.5km north. Take the road heading west for approximately 500m, the site is in an old clearcut (harvested approximately 1999).

Survey Information

First Obs. Date: 2005-05-12 **Last Obs. Date:** 2008-07

Occurrence Data: 2008: Denman Island continues to support a large, stable population, composed of interconnected subpopulations, of Taylor's Checkerspots (Page *et al.* 2009). A total of 340 adult Taylor's Checkerspot observations were recorded in 2008. The flight season was slightly longer in 2008 than 2007 and began around May 10 and extended into mid June (Page *et al.* 2009).
In March and April 2008, 552 post-diapause Taylor's Checkerspot larvae were observed at 38 sites in the NorthWest and East Populations. Most larvae were in groups from 2-153 individuals; they were associated with host plant patches in seasonally wet areas or wetlands (Page *et al.* 2009). The five food plants observed in use (in order of frequency) were *Veronica serpyllifolia* (58%), *Veronica scutellata* (26%), *Plantago lanceolata* (11%), *Plantago major* (3%), and *Centaurium erythraea* (1%) (Page *et al.* 2009).
In July 2008, 356 pre-diapause Taylor's Checkerspot larvae were observed. Foodplants observed in use were *Veronica scutellata, Veronica serpyllifolia, Veronica beccabunga* and *Plantago major* (Page *et al.* 2009).

2007: 622 adult Taylor's Checkerspot observations were made on Denman Island between May and June 2007. Taylor's Checkerspots were found in

sparsely vegetated roads and landings; dry meadows and wet meadows. The flight season peaked around May 23; this is substantially later than the flight season estimated based on the capture date of collected specimens (which estimate a peak around May 5) (Page et al. 2007).
2006: 15 live larvae, 2 exuviae and 1 dead larva observed (J. Heron, pers. comm. 2006).
2005: Taylor's Checkerspot discovered on Denman Island! Between two and 20+ butterflies observed within the clearcut (harvested in early 1990's) within a two week period. The foodplants available where the species was observed were rose spp., snowberry and introduced *Plantago* spp (J. Balke, pers. comm. 2005).

Occurrence Rank and Occurrence Rank Factors

Rank:	AC Excellent, good, or fair estimated viability	**Rank Date:**	2008-07
Rank Comments:			
Condition of Occurrence	Settlement Lands site: The clearcut in which the butterfly has been observed is adjacent to a conservation area (within one hundred metres) that is primarily older growth forest; and a large marsh (approximately 200 metres) with some remaining older growth forest (not within a conservation area). On the northwest side of the road, is a small patch of clearcut and beyond is a large wet and open swale that is farmed in the summer months. Post-diapause larvae were found in disturbed and undisturbed habitats. Currently occupied larval habitats were found to be threatened by habitat loss, primarily due to ongoing wetland and forest succession, as well as due to inappropriate levels of disturbance. As the conifer trees (mainly western hemlock *Tsuga heterophyla*) grow in the older clearcuts (e.g. harvested in early 1990's), the trees will eventually shade out the foodplants. The growth of the forest will take water/resources from the wet depression in which the available foodplants occur and the main subpopulation of the butterfly appears to cluster. Eventually, the subpopulation at these types of sites will likely be extirpated by natural forest succession.		
Size of Occurrence:	2008: Denman Island continues to support a large, stable population, composed of interconnected subpopulations, of Taylor's Checkerspots (Page *et al.* 2009). The occurrence includes 4 sub-populations as well as another group of sightings 1.5km south of these sub-populations which suggests the EO may include an even larger area. The total are occupied by Taylor's Checkerspot is 32.6ha with the NW (12.9ha) and E (11.9ha) subpopulations accounting for 76% of the total area occupied (Page *et al.* 2009).		
Landscape Context:	This is the only known population of Taylor's Checkerspot. The subpopulations on Denman Island are linked by open habitats, such as linear wetlands, road corridors, and recently-logged areas (Page et al. 2009). Recolonization from outside of Denman Island is unlikely. Previously there had been a population on Hornby Island, however recent surveys confirm that it is extirpated (Guppy and Fischer 2001; Miskelly 2003; Page et al. 2007, 2009). Given the distance between the two islands, it is not believed that the Denman Island population was a recolonization from Hornby Island. Suitable habitat for Taylor's Checkerspot is rare in the Courtney-Comox area, but in 2008 a single Taylor's Checkerspot was observed on a BC		

Hydro/Terasen Gas utility corridor approximately 5.5 km north of Buckley Bay; it is suspected that this individual, the first observe

Description

General Description:	In 2007, sites included sparsely vegetated roads and landings; dry meadows dominated by sweet vernalgrass (*Anthoxanthum odoratum*) and hairy-cat's ear (*Hypochaerus radicata*) with varying amounts of tree and shrub cover; and wet meadows with common rush (*Juncus effusus*), slough sedge (*Carex obnupta*) and other wetland plants including *Veronica* species (Page et al. 2007).
Vegetation Zone:	
Habitat:	TERRESTRIAL: Grassland/Herbaceous; Roadside; Woodland

Documentation

References:	Balke, J. Personal communication. Heron, J. Personal communication. Page, N., J.Heron, C.Webb and N.Kroeker. 2007. Surveys of Taylor's Checkerspot and other butterflies on Denman and Hornby Islands (2007). Report prepared for BC Ministry of Environment and Parks Canada Agency. 12pp. + appendices. Page, N., P.Lilley, J.Heron, N.Kroeker. 2009. Distribution and habitat characteristics of Taylor's Checkerspot on Denman Island and adjacent areas of Vancouver Island (2008). Report prepared for B.C. Ministry of Environment and Parks Canada Agency by Raincoast Applied Ecology. 32pp + appendices.

Version

Version Date:	02-MAR-09

Mapping Information

Estimated Representation Accuracy:	High
Confidence Extent:	?

August 22, 2014

PROPOSED

DENMAN ISLAND LOCAL TRUST COMMITTEE

DEVELOPMENT PERMIT DE-DP-2014.1

To: BC Ministry of Transportation and Infrastructure

1. This permit applies to a portion of the Denman Road right-of-way dedicated by Plan 14174, beginning approximately 40 metres West of North Central Road and extending Westward approximately 152 metres, located as shown on Schedule 'A' attached to and forming part of this permit.

2. Whereas the subject area as described above lies within "Development Permit Area #4: Streams, Lakes and Wetlands (Major Wetland)" designated under the Denman Island Official Community Plan Bylaw No. 185, and whereas this development permit issued under the Denman Island Land Use Bylaw No. 186 authorizes the construction of a trail substantially in accordance with Schedules 'B,' 'C,' and 'D' attached to and forming part of this permit, and is subject to the following requirements and conditions:

    a. Except as prescribed in Table 1 and Appendix A of Schedule 'D,' *Environmental Assessment "Graveyard Marsh" Wetland Crossing Denman Cross-Island Trail*, dated August 25, 2014 attached to and forming part of this permit, the following shall not be permitted within the Development Permit Area located as shown on Schedule 'A' attached to and forming part of this permit:

        i. the operation of ground-based machinery;

        ii. yarding logs across the wetland;

        iii. depositing slash, debris, erodible soil into the wetland;

        iv. cutting of live or dead trees within the wetland; or

        v. the alteration of the natural drainage.

    b. Trees or other vegetation shall be retained or replanted, within the Development Permit Area located as shown on Schedule 'A' attached to and forming part of this permit, substantially in accordance with Table 1 and Appendix A of Schedule 'D,' *Environmental Assessment "Graveyard Marsh" Wetland Crossing Denman Cross-Island Trail*, dated August 25, 2014, attached to and forming part of this permit.

This permit does not relieve the applicant from complying with the provisions of *the Denman Island Official Community Plan Bylaw No. 185, 2008* and the *Denman Island Land Use Bylaw No. 186, 2008* nor does it provide permission to construct any works without other lawfully required approvals and permits.

AUTHORIZING RESOLUTION PASSED BY THE DENMAN ISLAND LOCAL TRUST COMMITTEE THIS___ DAY OF _____, 2014.

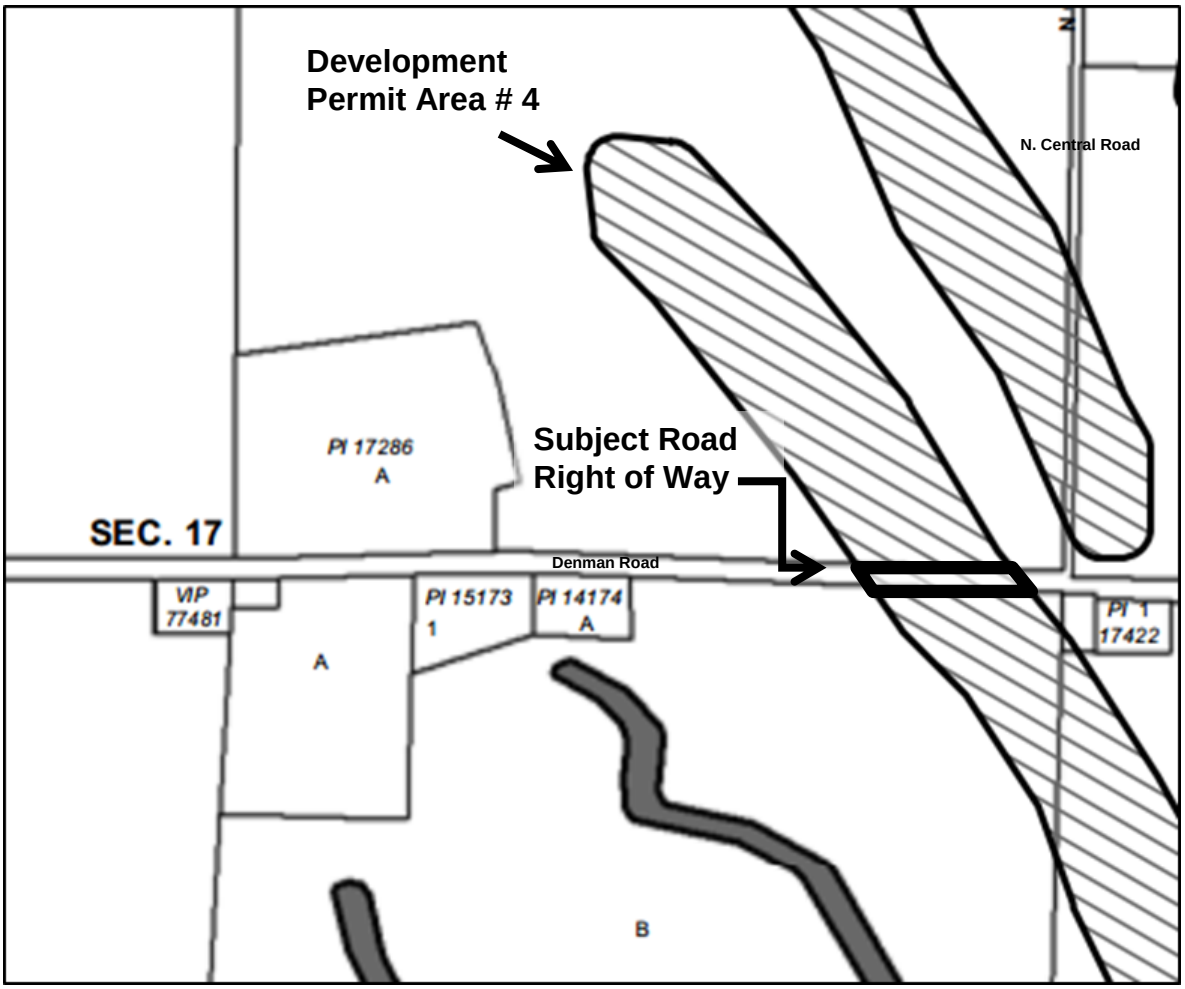
_____ _____

Deputy Secretary, Islands Trust Date Issued

IF THE DEVELOPMENT HEREIN IS NOT COMMENCED BY THE ___ DAY OF _____, 2016 THIS PERMIT AUTOMATICALLY LAPSES.

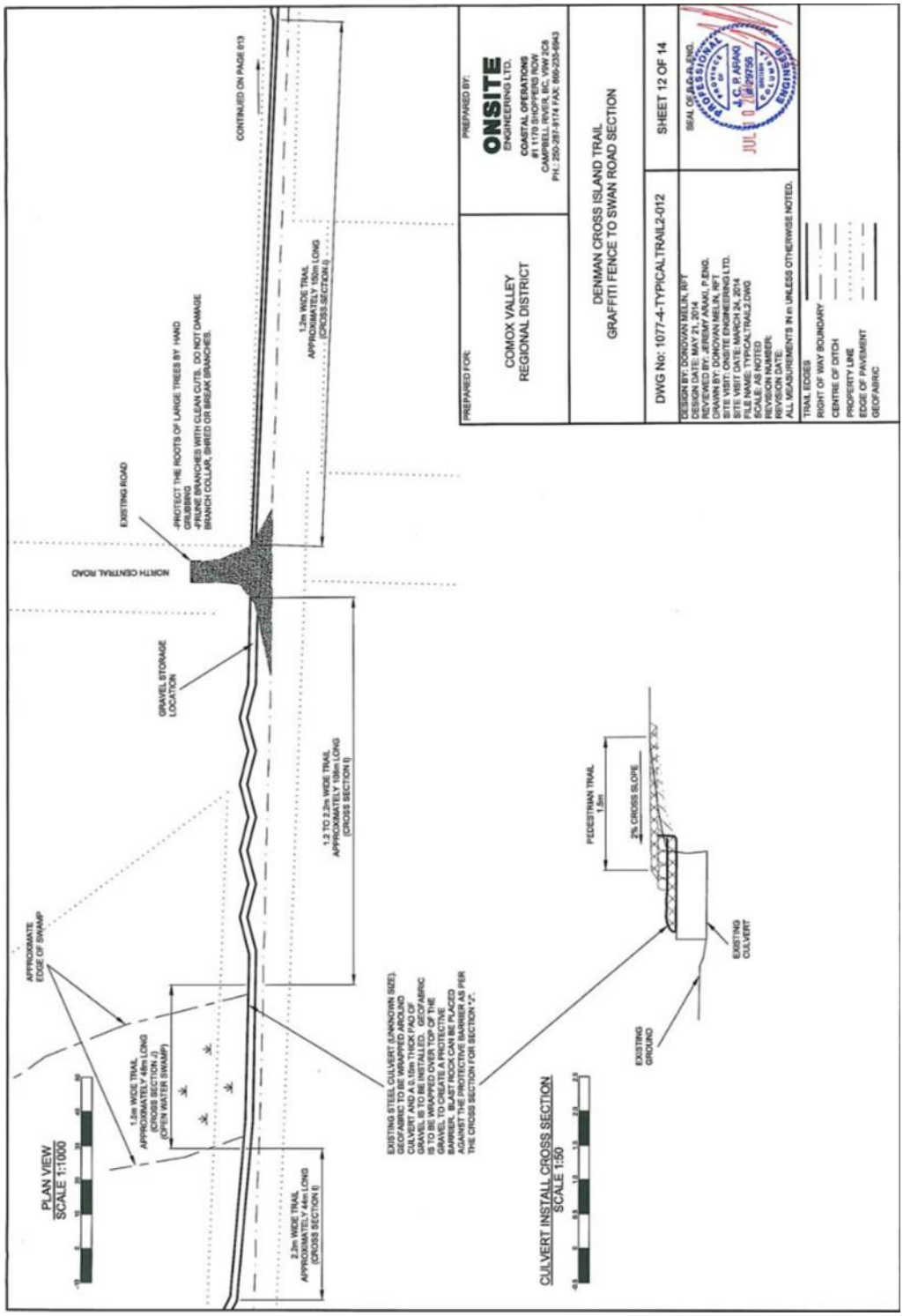
DENMAN ISLAND LOCAL TRUST COMMITTEE
DEVELOPMENT PERMIT DE-DP-2014.1

"Schedule A" Development Permit Area



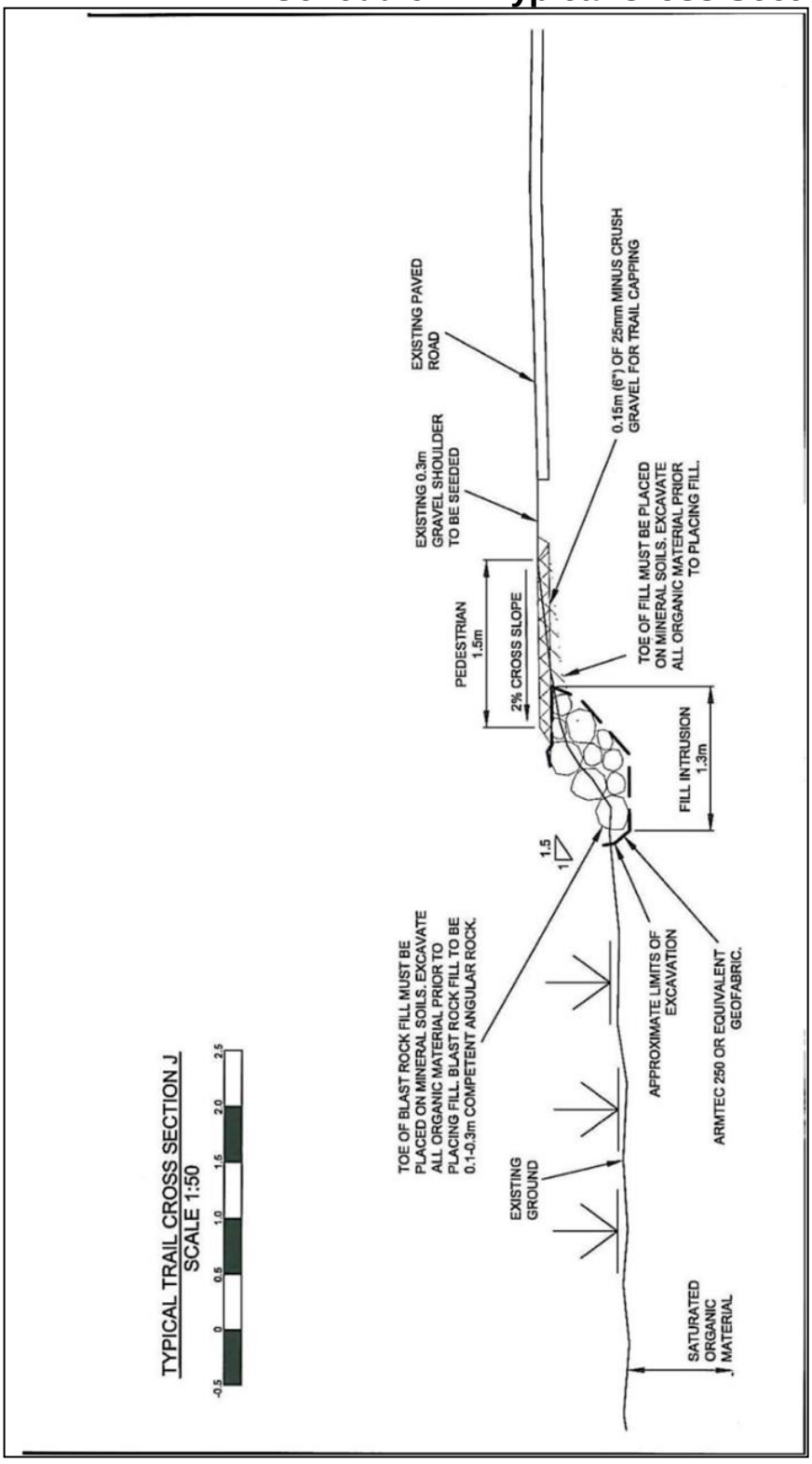
DENMAN ISLAND LOCAL TRUST COMMITTEE
DEVELOPMENT PERMIT DE-DP-2014.1

"Schedule B" Site Plan



DENMAN ISLAND LOCAL TRUST COMMITTEE
DEVELOPMENT PERMIT DE-DP-2014.1

"Schedule C" Typical Cross Section



DENMAN ISLAND LOCAL TRUST COMMITTEE
DEVELOPMENT PERMIT DE-DP-2014.1

"Schedule D" – Environmental Assessment "Graveyard Marsh" Wetland Crossing Denman Cross-Island Trail

Environmental Assessment
"Graveyard Marsh" Wetland Crossing
Denman Cross-Island Trail
- Denman Island, BC -

August 25, 2014

Prepared for:

Comox Valley Regional District
600 Comox Road
Courtenay, BC
V9N 3P6

Prepared by:

Current Environmental

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TABLE OF CONTENTS:

1 INTRODUCTION

This document prepared by Current Environmental Ltd. (CEL) describes the outcomes of a review of construction drawings and a ground level reconnaissance to determine the possible impacts to environmentally sensitive attributes on a wetland adjacent to the proposed Denman Cross-Island Trail.

1.1 PROJECT OVERVIEW

The Comox Valley Regional District (CVRD) is proposing the installation of a multi-use pedestrian trail at the project location on the north side and parallel to Denman Road, Denman Island, BC. Denman Road is approximately 5.2 km long and connects the east and west coasts of the island. The west side of Denman Road services the village centre and a BC Ferries terminal with service to Buckley Bay; the east side connects to Fillongley Provincial Park off Beadnell Road and an additional BC Ferries terminal servicing Hornby Island via East Road. The trail will serve to provide safe transit across the island for cyclist, pedestrian, and equestrian users.

1.2 PROJECT DESCRIPTION

A portion of the trail will encroach into a wetland for an approximate 48 m length and 1.3 m width ("project footprint") (Figure 1-2). The depth of the excavation and extent of fill intrusion will be dependent on locating a layer of mineral soil upon which to build the trail foundation. The encroachment will include the excavation of some wetland material adjacent to the road for the installation of geofabric and 0.1 - 0.3 m Ø angular blast rock. The potential impacts, mitigation measures, and other site specific measures described in this document are limited to the project footprint, located within the margins of the wetland, only.

A ground-level reconnaissance of the wetland project footprint was conducted by CEL on August 18, 2014 to assess the occurrence and distribution of valuable ecosystem components including species at risk, and generate recommendations for mitigation measures to reduce the potential for harm to the environment.

1.3 PURPOSE

This Environmental Assessment document describes the potential impacts to the wetland by the proposed trail construction works and makes recommendations for the mitigation of those impacts; it is intended to satisfy the criteria for a Qualified Environmental Professional (QEP) to make recommendations for mitigation measures to lessen the impact on the riparian area as described under Islands Trust's Development Permit No. 4[1]. This document will act as a guide and resource to the contractor undertaking the work, Environmental Monitor, CVRD and Islands Trust staff, and government regulators.

1.4 REGULATORY REQUIREMENTS

It is the responsibility of the Contractor, Environmental Monitor, and consulting team to ensure that all relevant regulatory permits have been obtained prior to the start of work. The following sub-headings discuss specific

[1] Islands Trust. (2008). Denman Island Land Use Bylaw. Bylaw No. 186. Development Permit Area Guidelines.

environmental regulatory requirements; there may be additional operational permits required that are not listed here. The contractor will be responsible for complying with all the terms and conditions of the relevant permits as well as those listed in this document.

1.4.1 Denman Island Land Use Bylaw #186 – Development Permit Area #4

As the proposed work will require the alteration of land within 30 m of the natural boundary of a stream, lake, or wetland, the proposed work must meet the requirements and guidelines of Development Permit #4 of the Denman Island Land Use Bylaw #186[2]. Guideline #3 of this bylaw stipulates that:

> *1. When an application is made for a Streams, Lakes and Wetlands development permit for residential, commercial or industrial development, the applicant must, in addition to any other application requirements enacted or imposed by the Local Trust Committee, provide at their expense a copy to the Denman Island Local Trust Committee of the assessment report from a Qualified Environmental Professional (QEP) in accordance with the British Columbia Riparian Area Regulations under the Fish Protection Act.*
>
> *3. In general, all development in Streams, Lakes and Wetlands development permit area should be undertaken in a manner that minimizes impact on the riparian area. It is anticipated that a QEP may make recommendations for mitigation measures and designing subdivision proposals in order to lessen the impact on the riparian area. The LTC may impose permit conditions, including a requirement for security in the form of an irrevocable letter of credit, to ensure the protection of riparian areas during construction and land development phases.*

The mitigation measures outlined below addresses point number 3 above. **However, note that a Riparian Areas Regulation (RAR) assessment has not been completed for this project.** The justification for the non-submission of the RAR report includes the following:

1. The subject wetland does not meet the criteria for a waterbody requiring protection under the RAR. More specifically, the wetland does not appear to have a surface flow connection to fish bearing waters. Support for this assertion include:
    a. The subject wetland was not identified as being afforded protection under the RAR in the assessment titled *Denman Island Riparian Area Regulation Stream Identification – Chickadee Lake, Valens Brook, Beadnell (Little George) Creek, and Graham Lake Watersheds*[3].
    b. Background information referenced from Department of Fisheries and Oceans (DFO) Mapster v3.1[4], Ministry of Environment Habitat Wizard[5], Comox Valley Regional District

[2] Islands Trust. Denman Island Land Use Bylaw No. 186. Consolidated January 2014.

[3] 2014. Madrone Environmental. Prepared for the Islands Trust. 112 pp.

4 http://pacgis01.dfo-mpo.gc.ca/Mapster30/#/SilverMapster

5 http://www.env.gov.bc.ca/habwiz/

iMap Sensitive Habitat Atlas[6], and Ministry of Environment Sensitive Ecosystem Inventory (SEI)[7] online GIS databases, the subject wetland is isolated from any known surface water connection to downstream fish bearing waters.

c. Water quality at the project site was such that the wetland could not support populations of salmonids through summer months (high temperatures and low dissolved oxygen).
d. Informational interviews with local residents indicate there is no salmonid fish utilization of the subject wetland.

2. The RAR was designed primarily as a tool to prescribe setbacks from fish bearing watercourses. A more appropriate regulation for the proposed work is the BC Water Act Section 9 – Changes in and About a Stream. A notification under this regulation has been submitted for the proposed work.

1.4.2 Water act

Current Environmental will be responsible for submitting a Section 9 Notification under the Provincial *Water Act* for "changes in and about a stream"[8]. The notification will serve to alert the Ministry of Forests Lands and Natural Resource Operations (MFLNRO) to the details of the proposed project and allow Habitat Officers to provide comment as needed.

1.4.3 Wildlife Act

It is very likely that amphibians will be encountered within the wetland project footprint during excavation activity. As such, a *Wildlife Act* permit will be required for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work. The permit will require listing the specific species that are likely to be encountered based on the project location, habitat type, and known distribution of amphibian species on Denman Island.

The Environmental Monitor will be responsible for procuring the permit and adhering to any guidelines, requirements, or conditions specified in the permit.

2 METHODS

The methods used to determine the occurrence and distribution of valuable ecosystem components (VEC) for the reconnaissance level inventory are provided here.

1.2 BACKGROUND/EXISTING INFORMATION

Existing information on VECs on or near the project footprint were obtained from the following sources:

6 http://imap2.comoxvalleyrd.ca/imapviewer/

7 http://www.shim.bc.ca/atlases/sei/seimain.html

8 Under the Water Act, a "stream" is defined as "*includes a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch*."

- Conservation Data Center (CDC);
- Sensitive Ecosystem Inventory (SEI);
- Sensitive Habitat Inventory and Mapping (SHIM);
- Comox Valley Regional District iMap Sensitive Habitat Atlas;
- Islands Trust *MapIT* online ecosystems application;
- Species at Risk Act (SARA) database;
- Species at Risk & Local Government database;
- Ministry of Environment BC Species and Ecosystems Explorer;
- Ministry of Environment Habitat Wizard
- Department of Fisheries and Oceans Mapster v3.1;
- Fish Inventories Data Queries (FIDQ);
- Aerial photographs.

2.1 AQUATIC HABITATS AND SPECIES

Criteria for determining and describing aquatic VECs were based primarily on the BC *Riparian Areas Regulation Assessment Methods v. 3. 3*[9], the Resources Inventory Committee of British Columbia *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures* Version 1.1[10], and from the project biologist's previous experience in dealing with local government and Federal and Provincial agency staff.

As described above, information on known fish utilization of freshwater watercourses was queried using Department of Fisheries and Oceans (DFO) Mapster v3.1[4], Ministry of Environment Habitat Wizard[5], Comox Valley Regional District iMap Sensitive Habitat Atlas[6], and Ministry of Environment Sensitive Ecosystem Inventory (SEI)[7] online GIS databases.

2.2 SPECIES AT RISK

An office-based assessment of Species at Risk occurrences on the subject property was completed using the *CDC Mapped Known Locations of Species and Ecological Communities at Risk*[11], *BC Species and Ecosystems Explorer*[12], and the *Federal Species at Risk Public Registry*[13]. The on-site assessment of Species at Risk was completed concurrent with the other inventory efforts mentioned above and was based primarily on methods outlined in

9 http://www.env.gov.bc.ca/habitat/fish_protection_act/riparian/documents/assessment_methods.pdf

10 Resource Information Standards Committee. (1999). Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures. Retrieved from <http://www.ilmb.gov.bc.ca/risc/pubs/aquatic/sitecard/sitecard.pdf>.

11 http://www.env.gov.bc.ca/atrisk/ims.htm
12 http://a100.gov.bc.ca/pub/eswp/
13 http://www.sararegistry.gc.ca/species/default_e.cfm

Environmental Best Management Practices for Urban and Rural Land Development[14]. The field inventory was conducted by CEL on August 18, 2014.

3 RESULTS

The primary VEC's identified in the project footprint include the wetland and species and ecological communities at risk described further in this section.

1.1 GRAVEYARD MARSH

According to Sensitive Ecosystem Inventory (SEI) metadata and the Denman Conservancy Association the subject wetland is known by the common name "Graveyard Marsh". According to the SEI the subject wetland (ID: S57051) has a 36.9 ha area and is categorized as WN:sw:ms:sp (Wetland; shallow water; marsh/swamp). Shallow water marshes are characterized by "permanent, seasonal, or diurnal flooding of nutrient-rich waters"[15]. The wetland crosses under Denman Road via a 600 mm Ø CMP in deteriorated condition. The northern portion resides within the Denman Conservancy Association's Central Park while the southern portion is on a zoned resource parcel A(4). The wetland appears to be landlocked with no known surface water connection to downstream fish-bearing waters.

Based on observations made during the August 18, 2014 site reconnaissance and according to Ministry of Forests wetland classification framework, this wetland falls under the Ws50 Site Association where sites experience prolonged saturation and early-season flooding. Hydrophytic vegetation is dominated by hardhack (*Spirea douglasii*), with limited growth of salmonberry (*Rubus spectabilis*) along the palustrine fringe, and water shield (*Brasenia schreberi*) characteristic of shallow water wetlands. The most common soil types for this site association are humisols and gleysols[16] overlying mineral soils at an unknown depth.

3.1 AQUATIC HABITATS AND WILDLIFE USE

The relatively deep and year-round water found in the study area wetland provides suitable *breeding* habitat for amphibians. In addition, these wetted areas provide critical hydration and rearing/foraging habitat for native amphibian species that may include Pacific Chorus Frogs (*Pseudacris regilla*), Northwestern (*Ambystoma gracile*) and Long-toed Salamanders (*Ambystoma macrodactylum*), Roughskin Newts (*Taricha granulosa*), and provincially listed Red-legged Frogs (*Rana aurora*). No direct amphibian observations were made during the August 18, 2014 site reconnaissance.

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14 BC Ministry of Water, Land and Air Protection. Draft 2004. Section 6. Special Wildlife and Species at Risk. Accessed from <http://www.for.gov.bc.ca/hfd/library/documents/bib96812.pdf>.

15 AXYS Environmental Consulting Ltd. (2004). Sensitive Ecosystem Inventory of East Vancouver Island and Gulf Islands. Attribute Definitions. Accessed from: http://a100.gov.bc.ca/appsdata/acat/documents/r2124/VI_SEI_Data_Dictionary_1130978051098_bf70e627bdd341179d6fadfdf56e484d.pdf .

16 Mackenzie, W., & J. Moran. (2004). Wetlands of British Columbia: a guide to identification. Ministry of Forests. Forest Science Program. Land Management Handbook.No. 52.

Ideal breeding conditions for many amphibian species found in this region include slower moving or standing water with depths > 50 cm where emergent vegetation is abundant, such as that found within portions of the project area. Note that adults migrate from aquatic breeding sites to terrestrial foraging grounds that may include the riparian area around the project site.

3.2 SPECIES AT RISK

A desktop survey using the Conservation Data Centre's (CDC)[11] online mapping application (Figure 3) showed the occurrence of the provincially listed Taylor's Checkerspot (*Euphydras editha taylori*): a red-listed species (i.e. extirpated, endangered, or threatened) known to occur in the larvae stage associated with host plant patches in seasonally wet areas and wetlands on Denman Island. According to Page et al. (2009)[17], the occurrence of larvae often coincides with Taylor's preferred food plants (in order of frequency) are *Veronica serpyllifolia* (58%), *Veronica scutellata* (26%), *Plantago lanceolata* (11%), *Plantago major* (3%), and *Centaurium erythraea* (1%). Appendix B contains the CDC's species report.

Although the CDC mapping resource did not show any occurrences of red-legged frogs in the area, they are known to occur on Denman Island. Red-legged Frogs commonly use moist, lower elevation forests that include aquatic breeding and terrestrial foraging habitat such as the riparian area and subject wetland. As mentioned, the study area offers suitable breeding habitat for this species. Breeding occurs in the spring, and by July-August the year's clutch transforms from the tadpole to adult stage. Adults migrate from aquatic breeding sites to terrestrial foraging grounds that may include the riparian forests of the study area.

Other Blue listed amphibians that could possibly be encountered on site considering the proximity to potential breeding habitat in the study area wetland include the Western Toad (*Anaxyrus boreas*) and the Wandering Salamander (*Aneides vagrans*).

Should any species at risk be encountered during project work, the EM and contractor will make all attempts possible to avoid interfering with the species. As described above in Section 1.4.3 a *Wildlife Act* permit will be required for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work.

4 ENVIRONMENTAL MONITORING

A key element of work in and around the Graveyard Marsh wetland is the involvement of an Environmental Monitor (EM). An EM is to be contracted to oversee works to ensure that environmental impacts are minimized through implementation and maintenance of appropriate mitigation measures.

The amount of time the EM will need to dedicate to the project will vary significantly with the timing and method of construction and the diligence and experience of the contractor. The EM should be on site during all critical

17 Page, N., P. Lilley, J. Heron, N. Kreker. (2009). Distribution and habitat characteristics of Taylor's Checkerspot on Denman Island and adjacent areas of Vancouver Island (2008). Report prepared for B.C. Ministry of Environment and Parks Canada Agency by Raincoast Applied Ecology. Pp. 32.

construction phases when work is in close proximity to surface waters and/or there is a potential risk to the environment.

It is expected that the EM will be onsite throughout clearing/grubbing, excavation, and trail foundation construction phases of the project when soil disturbance is most active. Additional site visits will be conducted during and/or immediately following intense precipitation events (i.e. ≥ 25 mm in a 24hr. period). Once construction has proceeded beyond soil disturbances below the high water mark, site visits may become less frequent at the discretion of the EM and to be discussed with the project team including municipal authorities.

4.1 AUTHORITY OF THE ENVIRONMENTAL MONITOR

The environmental monitor will have the authority to halt construction and direct construction personnel and equipment to implement mitigation measures necessary to protect environmental resources before resuming work.

4.2 RESPONSIBILITIES OF THE ENVIRONMENTAL MONITOR

The responsibilities of the EM are as follows:

1. Monitor construction activities to ensure compliance with measures outlined in this Environmental Assessment document and federal, provincial, and municipal regulations and directives;
2. Ensure adequate environmental mitigation supplies (spill kits, filter fabric, etc.) are on hand and readily available;
3. Ensure the project crew is familiar with the requirements of outlined in this Environmental Assessment document and that emergency response procedures are understood;
4. Maintain a log of construction activities, mitigation measures, and observed impacts or enhancements noted during the course of the project construction;
5. Communicate on a frequent basis with the Construction Supervisor to ensure ongoing implementation of mitigation requirements, to discuss any environmental management issues, and to address upcoming issues that could cause project delays;
6. Liaise with municipal staff, DFO, MELP, Streamkeeper groups, and other parties as needed regarding environmental aspects of the project;
7. Contact appropriate environmental agency personnel in the event of a significant environmental impact.

A pre-construction meeting between the Contractor and EM is to occur prior to the commencement of construction. This meeting is to ensure key construction personnel aware of the environmental scope of work, the directives of the Environmental Assessment, general environmental concerns, contingency measures, implementation of any pre-work mitigation measures, and any rules and regulations applicable to the construction area.

5 POTENTIAL IMPACTS AND MITIGATION MEASURES

Potential impacts that may result from implementation of work components and their recommended prevention and mitigation strategies are described below in Table 1.

Table 1. Summary of work components, potential impacts, and management recommendations.

Graveyard Marsh Pedestrian Trail Constraints		
Work Component	**Potential Impacts**	**Prevention and Mitigation Strategies**
Aquatic Habitat	General Considerations	□ Retain a Qualified Environmental Professional (QEP) to act as Environmental Monitor (EM) to advise contractor on methods and implement mitigation measures to reduce impacts. □ Do not undertake any work that may cause impacts to waterbodies resulting in being out of compliance with water quality standards listed in the Appendix A, Section 1 - "Sediment Control". □ Adhere to General Construction BMPs and Mitigation Measures listed in the Appendix. □ Complete work in an incremental fashion (See Appendix A Section 1.2).
	Wildlife Passage	□ Although no salmonids are known to utilize the wetland in the project footprint, consideration should be given to maintaining passage through the culvert enclosures as this would help maintain passage for other aquatic species such as amphibians. □ Guidelines for fish passage culverts are provided in *Fish-stream Crossing Guidebook*[18] and *Culverts and Stream Passage*[19]
	1. Unnecessary Encroachment 2. Erosion and Sediment Release	□ The extent of the work area should be clearly delineated prior to work and encroachment limited to only the areas absolutely necessary. □ The wetted portion of the work area will be isolated at the discretion of the EM using a combination of available methods outlined in Appendix A. □ It is recommended that some turbid water generated from excavation be pumped out of the wetland for release into a nearby suitable vegetated area with the capacity to absorb sediment laden water and effectively

18 MFLNRO & DFO. (2012). Fish-stream Crossing Guidebook. Accessed from <http://www.for.gov.bc.ca/HFP/Fish/Fish-Stream%20Crossing%20Print.pdf>.

19Ministry of Transport and Infrastructure. (2013). Culverts and Fish Passage. <http://www.th.gov.bc.ca/publications/eng_publications/environment/references/3824_CulvertFishPassage_InfoSheet.pdf>

		filter it before release back to the aquatic environment. Pumps may be used to achieve a "zero net flow" at the point of excavation to minimize the migration of turbid water (Section 1.2; Appendix A). If deemed necessary, the EM may isolate the work area using up- and downstream floating silt curtains, meter bags, poly sheeting, and sand bags, or a combination thereof. Using reasonable effort, maintain compliance with water quality standards listed in Appendix A: "Sediment Control". It should be recognized that these standards may not be entirely achievable given the challenges of site isolation and considering the lack of fish presence. Construction of the trail corridor should consider guidelines for the protection and management of wetlands during linear development activities in *Wetland Guidelines: Road and Utility Corridors*[20]
Wildlife and Species at Risk	Disturbance to Taylor's Checkerspot	Avoid impacts to food plants *Veronica serpyllifolia*, *Veronica scutellata*, *Plantago lanceolata*, *Plantago major*, and *Centaurium erythraea*. If unavoidable, these plants should be transplanted to adjacent areas under the supervision of the EM. Time works outside of March-April larval stages.
	Disturbance to amphibians	Retain a Qualified Environmental Professional (QEP) to conduct an amphibian survey prior to any clearing activity and monitor suitable habitat for presence of amphibians including blue-listed Red legged Frog throughout the development process. Minimize disturbance to vegetation, particularly near the wetland. Time works outside March-July amphibian breeding period. Obtain a *Wildlife Act* permit for the "live capture, temporary possession, transport and release" of any amphibian species encountered during the progress of work. Adhere to *Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia*.

20 Ministry of Environment. (2009). Wetland Ways. Chapter Nine: Road an Utility Corridors. Accessed from <http://www.env.gov.bc.ca/wld/documents/bmp/wetlandways2009/Wetland%20Ways%20Ch%209%20Corridors.pdf>.

We trust this assessment satisfies your project requirements. Please call with any questions.

Current Environmental Ltd.

Warren Fleenor R.P.Bio. & Dusty Silvester, R.B.Tech.

6 DISCLAIMER

This report was prepared exclusively for the Comox Valley Regional District by Current Environmental Ltd. The quality of information, conclusions and estimates contained herein is consistent with the level of effort expended and is based on: i) information available at the time of preparation; ii) data collected by the author, technical personnel and/or supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the Comox Valley Regional District only, subject to the terms and conditions of its contract or understanding with Current Environmental Ltd. Use or reliance on this report by any third party is at that party's sole risk.

7 PHOTOS

Photo 1. Wetland vegetation upstream from the project location.

Photo 2. Water upstream of the culvert. Note deteriorated condition of the culvert.

Photo 3. View along proposed trail alignment.

8 FIGURES

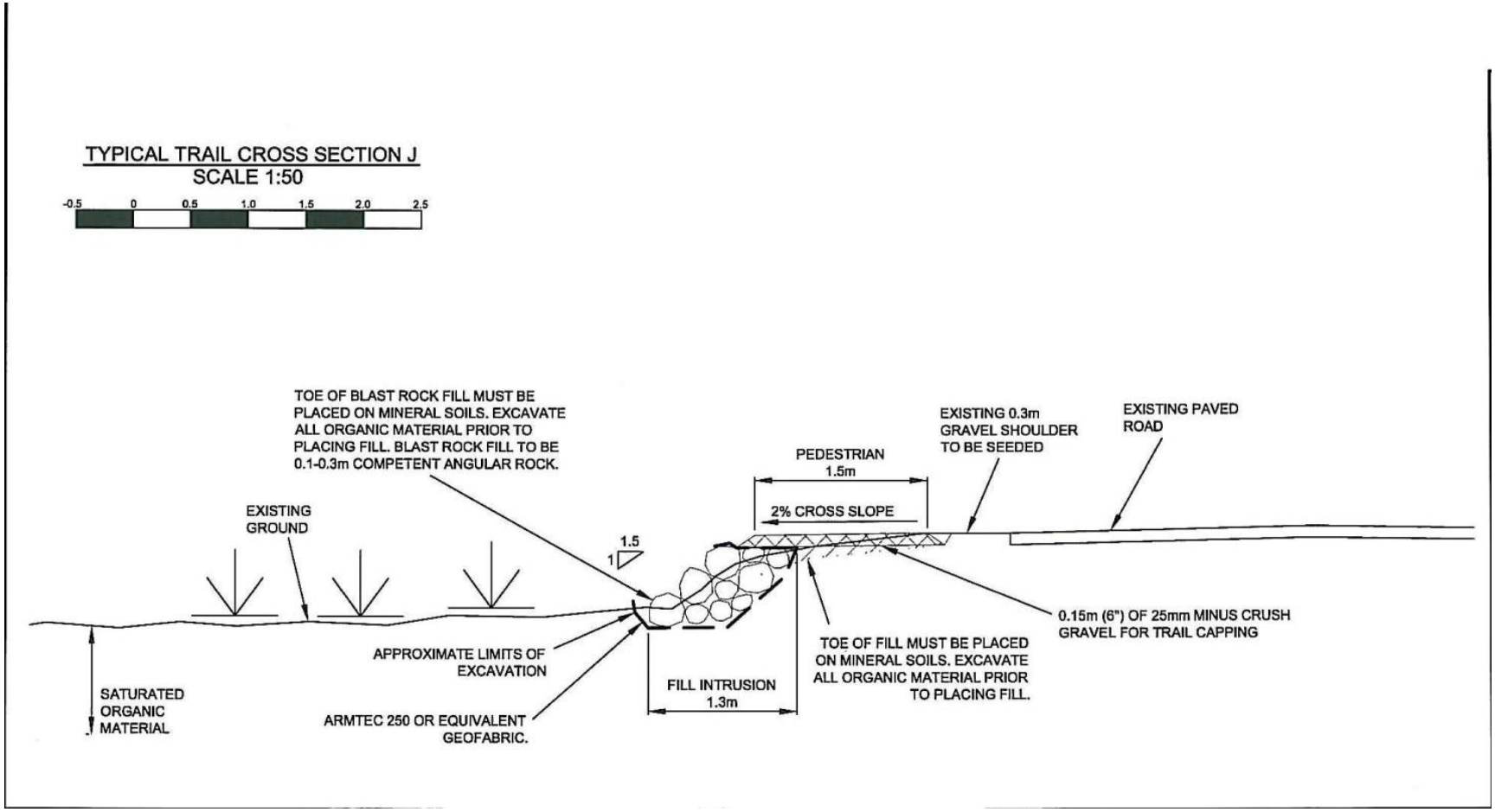

Figure 1. Typical cross section of project design components for the pedestrian trail at the Graveyard Marsh project footprint. Adapted from Onsite Engineering Ltd.

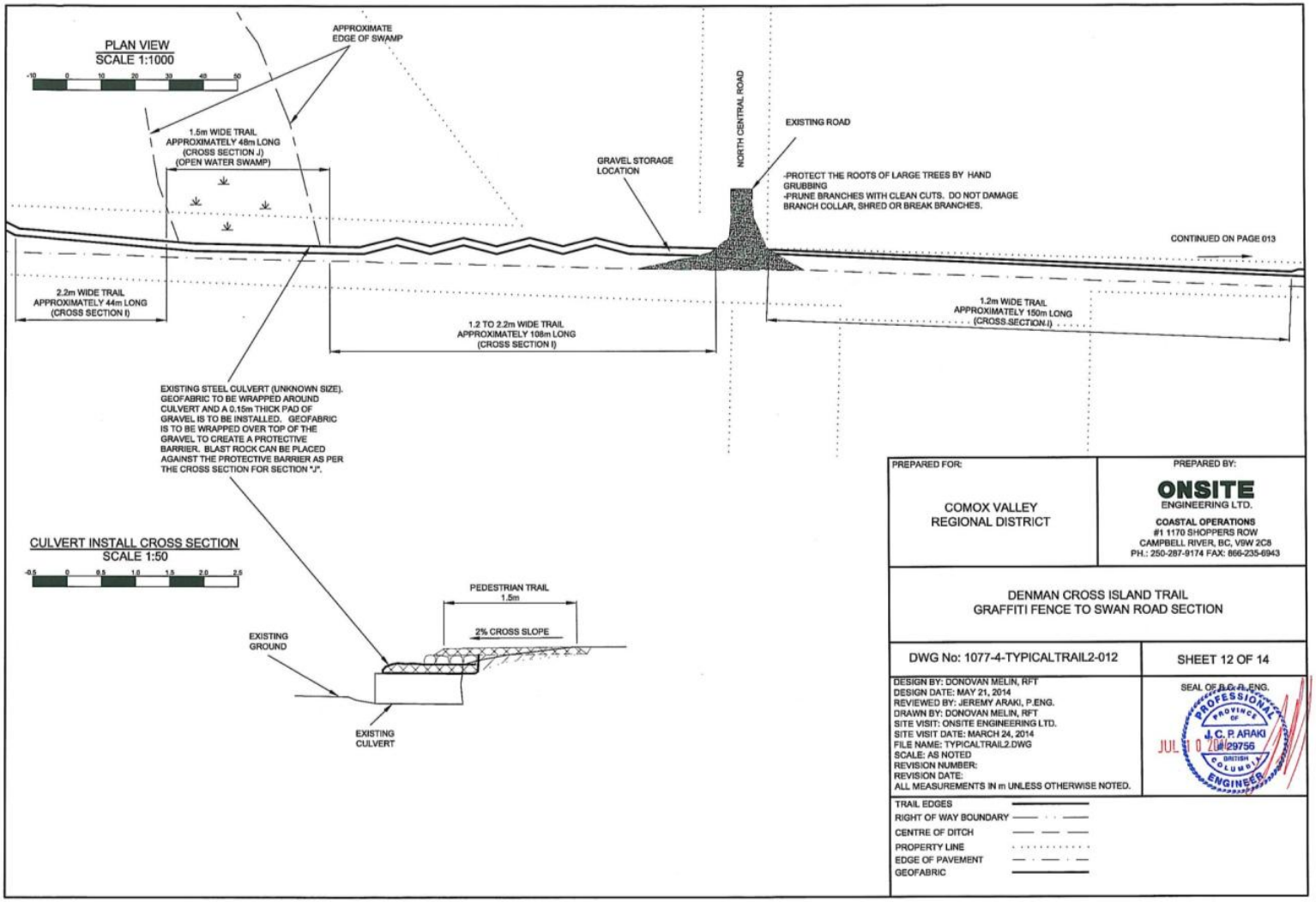

Figure 2. Site plan of project design components near North Central Road for the pedestrian trail at the Graveyard Marsh project footprint. This Environmental Assessment document is limited in scope to the 48 m x 1.5 m "open water swamp". Adapted from Onsite Engineering Ltd.

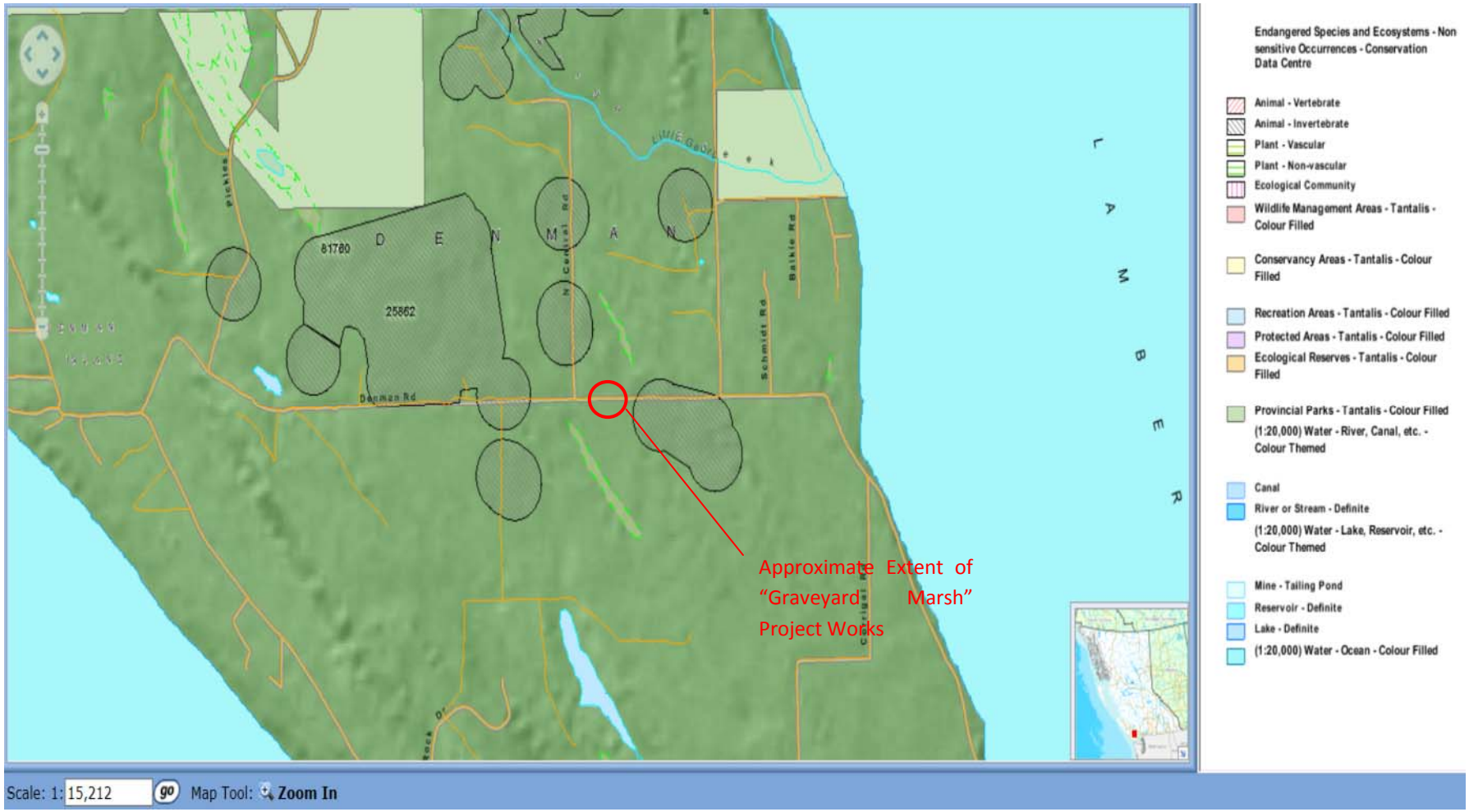

Figure 3. Conservation Data Centre map of known species at risk occurrences showing the approximate extent of confirmed Taylor's Checkerspot butterfly on Denman Island near the approximate extent of project works in the Graveyard Marsh.

9 APPENDIX A – GENERAL CONSTRUCTION BMP$_S$ AND MITIGATION MEASURES

9.1 GENERAL CONSTRUCTION GUIDELINES

The following general guidelines are highly recommended. They will reduce project costs associated with environmental protection such as EM fees and delays.

- Commence land clearing during dry weather.
- Complete land clearing in an incremental manner to minimize exposure of saturated soils.

1.1 IDENTIFICATION AND DELINEATION OF SENSITIVE AREAS

Prior to construction, the EM should clearly mark the boundaries of the work area identified on the final site plan. All delineated sensitive areas are to be mapped; maps are to be distributed to all crew personnel, particularly machine operators. ***No machinery access or spoil material storage of any kind is to occur within the wetland area without the consent of the Environmental Monitor.***

1.2 SEDIMENT CONTROL

There are no known occurrences of fish within the project footprint; therefore, compliance with the *Fisheries Act* does not directly apply. However, other sensitive species occurrences such as amphibians are likely near the work area and water quality monitoring should focus on monitoring sediment generation and release downstream in the wetland. Water samples should be tested onsite for turbidity with handheld meters. Water quality monitoring should be done as determined by the EM on the basis of visual monitoring of water clarity, with turbidity measurements taken if deemed necessary, as well as following precipitation events in excess of 25 mm. At a minimum, water quality monitoring sites should be established up and downstream of the work area.

As a guideline, the BC Water Quality Guidelines (BCWQG) (2001) for protection of aquatic life the stipulate an acceptable increase of 8 NTU when background levels are between 8 and 80 NTU, and a 10% increase when background levels exceed 80 NTU. In the event the established limit is exceeded the EM should be consulted to determine whether additional impact mitigation measures are required.

The implementation and maintenance of sediment control measures and related equipment and supplies are the responsibility of the construction contractor, and will be designed, constructed, and maintained as required by the Environmental Monitor. Construction activities will not commence until proper sediment control measures are in place. Regular inspection of sediment control measures during construction will ensure these are functioning and maintained as required.

Specific measures to control sediment during construction will include:

- All work is to be completed from the top of bank (Denman Road) and no machinery is to enter the wetland margins at any time without the permission of the Environmental Monitor.
- As much as possible, complete the work in an incremental manner; As long as possible maintain a vegetation/soil “plug” between flowing water and the site of active excavation.

- Where there is a potential for silt runoff in the proximity of the wetland, control devices will be installed prior to construction activities commencing.
- Floating silt curtains, filter fabric dams, rock check dams, settling ponds, geotextiles, french drains, interception ditches, and silt fencing will be used as needed on a site-specific basis to control erosion. Silt fencing is not an acceptable mitigation technique to control erosion in flowing waterbodies; however, it is useful for containing slumping areas and for use as baffles to slow water velocities.
    - A possible method to mitigate the potential largescale migration of sediment laden waters from the worksite involves the following:
        - Install a larger (3 or 4 “) trash pump upstream of the proposed work.
        - Using the larger pump, “forward” the clean water around the worksite and discharging to the wetland downstream from the worksite (~ 20 m).
        - If necessary, once excavation commences, use an additional pump to pump dirty water to an appropriate settling/filtration area.
        - If dirty water is migrating upstream to the intake of the larger pump, temporarily shut the pump down. This pump should be operated to try and achieve a “zero flow” situation at the point of excavation.
        - Ensure the intakes on all pumps are screened to avoid mechanical harm to small organisms.
        - Ensure discharge points are armoured with poly sheeting or wood and rocks to avoid erosion.
        - This technique will require some trial and error on behalf of the EM and Contractor.
- Permanent erosion control berms and settling basins will be constructed where required during and/or after development and incorporated into the natural drainage where practicable under the discretion of the EM.
- Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting a watercourse. This will be at the discretion of the EM.
- The wetland is not to be traversed by machinery at any time without the consent of the EM.
- Silt laden waters that may enter the wetland will be pumped to well vegetated areas for filtration. Discharge hoses are to be placed so as not to cause erosion. This is usually accomplished by laying poly sheeting and using large rocks or wood to dissipate discharge flows.
- Soil stockpiles will be placed a minimum of 30 m from the wetland and in a location where erosion back into the waterbody cannot occur and will not impede any drainage.

- Soil stockpiles with the potential to erode into the wetland is to be covered with poly sheeting. Other techniques, such as terracing or surface roughening can greatly reduce surface erosion on steeper slopes.
- Construction design will incorporate work around an existing culvert and existing drainage will be maintained. If any drainage modifications are required they will be installed under the supervision of the EM.
- Clearing will take place immediately prior to excavation and earthworks to minimize the length of time that soils are exposed. Vegetation in adjoining areas will not be disturbed.
- Permanent exposed soil areas and erosion-prone slopes that may potentially erode into the wetland are to be revegetated or hydroseeded immediately, or covered with geotextile.
- Site re-vegetation measures are typically required to stabilize soils and stream banks and reduce erosion and the establishment of weed species. The measures, including hydroseeding, are to be implemented as directed by the EM as construction is completed in each area.

9.2 CLEARING AND GRUBBING

- All areas to be cleared will be walked by the Environmental Monitor and Construction Supervisor to identify any environmental resources that need to be protected (e.g. delineating work area and any sensitive species).
- Grubbing and stripping limits will be marked in the field prior to the commencement of work. Only those areas designated on engineered site plans will be cleared. Clearing activities will not remove any vegetation outside the authorized clearing limits.
- The grubbing and stripping of unstable or erodible soil will be limited to that which is absolutely necessary to satisfy the engineering requirements of the project. Where construction can be completed without grubbing and stripping, none shall occur.
- Vegetation identified for protection will be left intact and root systems undisturbed.
- The installation of appropriate surface drainage control should occur concurrent with clearing activities.
- Grubbing will be suspended during and immediately after intense rainstorms that have resulted in excessive run-off.
- During clearing near the wetland, trees will be felled away from the wetland. “Leaners” or felled trees that inadvertently fall into adjacent undisturbed vegetation will be salvaged only at the discretion of the EM.
- All stockpiles of grubbed material within the specified clearing limits will be located so as not to obstruct the access or work of others or natural drainage patterns.

9.3 FUELS AND HAZARDOUS MATERIALS

The accidental release of petroleum, oils, hydraulic fluids, lubricants, concrete additives, anti-freeze or other hazardous materials onto land surfaces or into waterbodies may result in degradation of habitat quality and could be a threat to human health.

Environmental protection procedures for handling and storage of fuels and hazardous materials shall include the following items:

- A large spill kit will be on hand at all times during construction.
- Smaller spill kits are to be maintained on all machinery.
- All identified spills will be cleaned up immediately, and contaminated soils and vegetation will be removed for appropriate disposal.
- Refueling of equipment is to occur only at designated fueling stations and located at least 30 m from all watercourses.
- All fuel, chemicals, and hazardous materials will be clearly marked.
- Fire extinguishers are to be located on all machinery.
- If accidental mixing of fuels, chemicals, and hazardous materials does occur, the waste product will be removed to an approved disposal/recycling facility.
- Aboveground storage tanks will be constructed on stable foundations, designed to minimize uneven settling and corrosion. The framework of the storage tank will be such that the allowable stress of the tank itself will not be exceeded.
- Fuel tanks within the containment area will be located off the ground.
- Pumps and jerry cans are to be placed on poly sheeting and sorbent pads to contain spills.
- All equipment maintenance with the potential for accidental spills (e.g., oil changes, lubrications) will be done on a designated area at least 30 m from any waterbodies. Tarps should be laid down prior commencement of work to facilitate clean up.
- Used oil, filters, and grease cartridge lubrication containers and other products of equipment maintenance will be collected and kept in a secure receptacle for later disposal.
- In the event of a spill, the following guidelines should be followed:
    - Spills need to be immediately reported to the EM and the construction supervisor. Spills to the receiving environment are to be reported to the BC Provincial Emergency Program (1-800-663-3456) if they exceed the reportable limits (e.g. 100 liters of fuel or oil).
    - The Construction Superintendent and Environmental Monitor will be responsible for coordinating clean-up and collecting all pertinent information.

- Deploy on-site personnel to build containment dykes, or pump spilled contaminant into storage drums.
- Apply sorbent pads and booms as necessary.
- Dispose of all contaminated debris, cleaning materials, and absorbent material by placing in an approved disposal site.
- Debrief all site personnel on the incident and take additional precautions to ensure that similar accidents will not recur.

- There are to be regular, documented inspections of impact mitigation measures, fire prevention and spill recovery supplies and any equipment working in and around watercourses.

9.4 CONCRETE LEACHATE CONTROL

Although there is no planned use of concrete required for the completion of project components, it is sometimes required to support construction in unforeseen circumstances; accordingly, this section is provided preemptively should such a circumstance occur.

Uncured concrete in the freshwater environment has the potential to mix with surrounding water and raise the pH to a level that is deleterious to aquatic life. Elevated pH in water or groundwater resources may be generated if during installation the concrete is allowed to mix directly with surface water or ground water that is released into the freshwater environment.

- Work-crew awareness organized through a pre-work meeting will inform all workers of the need to contain concrete leachate, and direct the works in a manner that ensures concrete is not released into the freshwater environment.
- Ensure that all work involving the use of concrete, cement, grout, mortars, and other Portland cement or lime-containing construction materials shall be conducted in a fashion that ensures sediments, concrete debris, and concrete fines are not deposited, either directly or indirectly (e.g. by way of waste storage, etc.), into the ground water or freshwater environment.
- Any water contacting freshly poured or decommissioned concrete or lime-containing construction materials, such as the water that may be used for equipment washing, etc., shall be prevented from entering, directly or indirectly into the ground water or freshwater environment unless this water has been tested (to an accuracy of within +/- 0.2 pH units) and found to have a pH of between 6.5 less than 9.0 pH units.

Ensure that no wash-down water from concrete equipment including hand tools or delivery trucks occurs on site. All washing of concrete equipment should occur off site at a suitable location to ensure containment of leachates.

10 APPENDIX B – BC CONSERVATION DATA CENTRE: OCCURRENCE REPORT

BC Conservation Data Centre: Occurrence Report (25862)

August 22, 2014

Euphydryas editha taylori
Edith's Checkerspot, *taylori* subspecies

Field definition document available at http://www.env.gov.bc.ca/atrisk/ims.htm

This is a summary report. For a complete record contact the CDC (cdcdata@gov.bc.ca).

Identifiers

Occurrence ID:	6647	**Status:**	
Shape ID:	25862	Global:	G5T1
Type:	Invertebrate Animal	Provinicial:	S1
		COSEWIC:	E (MAY 2011)
Taxonomic Class:	insects	BC List:	Red
		SARA Schedule:	1
Data Sensitive:	N		

Locators

Survey Site: DENMAN ISLAND, NORTH

Directions: Pickle's Clearcut: From Denman Road, turn north onto Pickles Road, for approximately 5 kilometres the road opens into an old clearcut (harvested approximately 1994). There is an old logging landing and an old impassable spur road branches to the left. The population starts approximately 30 metres down the old spur road (J. Heron, pers. comm.). Old Clearcut: From Denman Road, turn north onto Pickles Road and drive approximately 1.5km north. Take the road heading west for approximately 500m, the site is in an old clearcut (harvested approximately 1999).

Survey Information

First Obs. Date: 2005-05-12 **Last Obs. Date:** 2008-07

Occurrence Data: 2008: Denman Island continues to support a large, stable population, composed of interconnected subpopulations, of Taylor's Checkerspots (Page *et al.* 2009). A total of 340 adult Taylor's Checkerspot observations were recorded in 2008. The flight season was slightly longer in 2008 than 2007 and began around May 10 and extended into mid June (Page *et al.* 2009).
In March and April 2008, 552 post-diapause Taylor's Checkerspot larvae were observed at 38 sites in the NorthWest and East Populations. Most larvae were in groups from 2-153 individuals; they were associated with host plant patches in seasonally wet areas or wetlands (Page *et al.* 2009). The five food plants observed in use (in order of frequency) were *Veronica serpyllifolia* (58%), *Veronica scutellata* (26%), *Plantago lanceolata* (11%), *Plantago major* (3%), and *Centaurium erythraea* (1%) (Page *et al.* 2009).
In July 2008, 356 pre-diapause Taylor's Checkerspot larvae were observed. Foodplants observed in use were *Veronica scutellata, Veronica serpyllifolia, Veronica beccabunga* and *Plantago major* (Page *et al.* 2009).

2007: 622 adult Taylor's Checkerspot observations were made on Denman Island between May and June 2007. Taylor's Checkerspots were found in

sparsely vegetated roads and landings; dry meadows and wet meadows. The flight season peaked around May 23; this is substantially later than the flight season estimated based on the capture date of collected specimens (which estimate a peak around May 5) (Page et al. 2007).
2006: 15 live larvae, 2 exuviae and 1 dead larva observed (J. Heron, pers. comm. 2006).
2005: Taylor's Checkerspot discovered on Denman Island! Between two and 20+ butterflies observed within the clearcut (harvested in early 1990's) within a two week period. The foodplants available where the species was observed were rose spp., snowberry and introduced *Plantago* spp (J. Balke, pers. comm. 2005).

Occurrence Rank and Occurrence Rank Factors

Rank:	AC Excellent, good, or fair estimated viability	**Rank Date:**	2008-07
Rank Comments:			
Condition of Occurrence	Settlement Lands site: The clearcut in which the butterfly has been observed is adjacent to a conservation area (within one hundred metres) that is primarily older growth forest; and a large marsh (approximately 200 metres) with some remaining older growth forest (not within a conservation area). On the northwest side of the road, is a small patch of clearcut and beyond is a large wet and open swale that is farmed in the summer months. Post-diapause larvae were found in disturbed and undisturbed habitats. Currently occupied larval habitats were found to be threatened by habitat loss, primarily due to ongoing wetland and forest succession, as well as due to inappropriate levels of disturbance. As the conifer trees (mainly western hemlock *Tsuga heterophyla*) grow in the older clearcuts (e.g. harvested in early 1990's), the trees will eventually shade out the foodplants. The growth of the forest will take water/resources from the wet depression in which the available foodplants occur and the main subpopulation of the butterfly appears to cluster. Eventually, the subpopulation at these types of sites will likely be extirpated by natural forest succession.		
Size of Occurrence:	2008: Denman Island continues to support a large, stable population, composed of interconnected subpopulations, of Taylor's Checkerspots (Page *et al.* 2009). The occurrence includes 4 sub-populations as well as another group of sightings 1.5km south of these sub-populations which suggests the EO may include an even larger area. The total are occupied by Taylor's Checkerspot is 32.6ha with the NW (12.9ha) and E (11.9ha) subpopulations accounting for 76% of the total area occupied (Page *et al.* 2009).		
Landscape Context:	This is the only known population of Taylor's Checkerspot. The subpopulations on Denman Island are linked by open habitats, such as linear wetlands, road corridors, and recently-logged areas (Page et al. 2009). Recolonization from outside of Denman Island is unlikely. Previously there had been a population on Hornby Island, however recent surveys confirm that it is extirpated (Guppy and Fischer 2001; Miskelly 2003; Page et al. 2007, 2009). Given the distance between the two islands, it is not believed that the Denman Island population was a recolonization from Hornby Island. Suitable habitat for Taylor's Checkerspot is rare in the Courtney-Comox area, but in 2008 a single Taylor's Checkerspot was observed on a BC		

Hydro/Terasen Gas utility corridor approximately 5.5 km north of Buckley Bay; it is suspected that this individual, the first observe

Description

General Description:	In 2007, sites included sparsely vegetated roads and landings; dry meadows dominated by sweet vernalgrass (*Anthoxanthum odoratum*) and hairy-cat's ear (*Hypochaerus radicata*) with varying amounts of tree and shrub cover; and wet meadows with common rush (*Juncus effusus*), slough sedge (*Carex obnupta*) and other wetland plants including *Veronica* species (Page et al. 2007).
Vegetation Zone:	
Habitat:	TERRESTRIAL: Grassland/Herbaceous; Roadside; Woodland

Documentation

References:	Balke, J. Personal communication. Heron, J. Personal communication. Page, N., J.Heron, C.Webb and N.Kroeker. 2007. Surveys of Taylor's Checkerspot and other butterflies on Denman and Hornby Islands (2007). Report prepared for BC Ministry of Environment and Parks Canada Agency. 12pp. + appendices. Page, N., P.Lilley, J.Heron, N.Kroeker. 2009. Distribution and habitat characteristics of Taylor's Checkerspot on Denman Island and adjacent areas of Vancouver Island (2008). Report prepared for B.C. Ministry of Environment and Parks Canada Agency by Raincoast Applied Ecology. 32pp + appendices.

Version

Version Date:	02-MAR-09

Mapping Information

Estimated Representation Accuracy:	High
Confidence Extent:	?

August 22, 2014

From: John & Donna Millen [millenj@telus.net]
Sent: September 12, 2014 11:39 AM
To: David Graham; Laura Busheikin; Peter Luckham
Cc: northinfo
Subject: Denman Crown Land parcels not wanted by BC Parks

Dear Denman Island Local Trust Committee,

Please find attached a letter from the Denman Conservancy Association for consideration at you meeting on Tuesday 16th September.

yours faithfully,

John Millen
Denman Island

www.denmanconservancy.org

Denman Conservancy Association
P.O. Box 60, Denman Island, B.C. V0R 1T0

Denman Island Local Trust Committee
Denman Island, BC

September 12, 2014

Denman Crown Land parcels not wanted by BC Parks

Denman Conservancy Association is very concerned that BC Parks is proposing the administration and control of three Crown land parcels on Denman Island, which are currently under protected status within BC Parks, be transferred to the Ministry of Forests, Lands and Natural Resources. Our concern is that these parcels may not retain their protected status and that transfer to another body that could ensure their protection has not been proposed.

This land was transferred to BC Parks as part of a large land exchange that resulted in a very significant rezoning of Denman Island land by the Local Trust Committee. DCA considers the conservation of this Crown land is a public commitment made to the Denman Island community, achieving significant conservation goals in the protection of BC's coastal Douglas-fir forests and rare species. These three Crown parcels have considerable ecological value.

Valens Brook - McFarlane Crown 40 acres
This parcel has Denman's second largest salmon spawning creek running through it and consists largely of approximately 100 year-old Douglas-fir forests. Many rare species are present and the ecological communities are also significant. Valens Brook is already surrounded by a large number of private residences drawing water from the watershed and adding wastewater to the area. Thus, conservation and protection of blocks of forestland along the creek are seriously needed.

In terms of potential recreation, first, for some time this land has been proposed as a major contribution to the future Valens Brook Greenway that has begun as the Islands Trust Fund's Valens Brook Nature Reserve further south on the creek. The greenway would contribute to the protection of the salmon creek and provide a wildlife corridor and future walking trail. Second, this parcel is situated in a large R1 zoned area of Denman that has no access to other nearby green-space.

Morrison Marsh North
Wetlands on gulf islands are highly ecologically significant. Denman is fortunate to have a number of lakes and wetlands although many have an uncertain future in agricultural zoning. Morrison Marsh is a very important wetland and is home to numerous wildlife and wetland plant species. Many over-wintering migratory waterfowl use the marsh while others nest during the breeding season. The southern portion of this marsh is in the Morrison Marsh Nature Reserve of the Islands Trust Fund and the rest of the marsh is surrounded by a large number of private lots. Adding the northern marsh portion to the existing reserve would contribute to the conservation of this wetland.

Quarry
The Denman quarry is immediately adjacent to a coastal bluff that is in a conservation covenant held by the Denman Conservancy Association. This adjacent land is part of the Canadian Ecological Gifts Program for ecologically sensitive lands that 'protect nature and leave a legacy for future generations'. The quarry bluff section has Garry oak trees and other rare species. The quarry may have 'dangerous cliff areas' but it is also a very scenic and remarkable site.

The continued protection of these three parcels of Crown Land is important for Denman Island. The three parcels have already been through a formal process to achieve their conservation status in exchange for upzoning other large portions of Denman Island. To maintain the integrity of the Local Trust Committee's rezoning process it is necessary that the three parcels continue to have conservation status.

DCA asks that the Local Trust Committee do everything in its power to maintain the conservation status of these three Crown parcels. Transfer of their ownership to a conservation organization, such as the Islands Trust Fund is needed.

John Millen, director
For Denman Conservancy Association

Denman Island Residents Association
P. O. Box 17, Denman Island, B. C. V0R 1T0

September 8, 2014

Denman Island Local Trust Committee

Dear Committee Members,

It has come to our attention that an important matter that has been on the LTC's radar for almost three years has yet to be dealt with. I am referring to the guest accommodation services issue which I believe is covered under Bylaw 186. As a first step in dealing with this matter DIRA respectfully requests that the LTC extend the moratorium on enforcement of the tourism- related prohibitions of bylaw 186 until December 31, 2015. We also request the extension be made before the end of its 2014 term.

DIRA recognizes the important contribution of guest accommodation providers to the social and economic integrity of our island community. Providers of this service house friends and relatives of island residents, as well as transient workers for B.C. Ferries and B.C. Hydro. They also provide accommodation for participants in island events, retreats, and festivals; as well as for patrons of local artists, artisans, restaurants, recreation businesses, and growers and producers. Since the winter of 2011, the Denman community has affirmed its support for the suppliers of guest accommodations through letters, emails, well-attended facilitated workshops, and petitions signed by over 200 island residents. A Denman WORKS!-funded survey estimated that tourism contributes over $500,000 to the island community annually.

Provisions of Bylaw 186 restrict guest services, as was initially brought to the LTC's attention by Denman WORKS! and the Hornby Denman Tourist Services Society in 2011. In May of 2012, the Denman LTC resolved not to enforce the most stringent anti-tourism sections of the bylaw for the duration of the year. One of these prohibits providing cooking facilities for guests, who otherwise have no access to late afternoon and evening meals. The other prohibits use of auxiliary buildings to accommodate paying guests. This moratorium has been extended for two more years since then, and this has caused no problems or complaints from the community.

Denman's bylaws respecting visitors are some of the most restrictive of any of the Gulf Islands. A quick review of other islands makes this quite apparent.

1. Quadra's LUB defines dwelling unit as having a single set of cooking facilities, but includes "used as a residence" in the definition, so if the guest suite isn't used as a residence, then it isn't a "dwelling unit." (Denman's OCP includes this in its definition too, but Courtenay Simpson assured us that that doesn't matter, as the stove is a dwelling unit regardless of how the space around it is or isn't used). Quadra allows an auxiliary dwelling unit on larger rural properties. It

doesn't forbid use of an auxiliary dwelling unit for guest accommodation.
2. Mayne OCP recommends ensuring that tourist accommodations are adequately provisioned.
3. Galiano LUB allows auxiliary dwelling units on rural lots, and doesn't forbid use of an auxiliary dwelling unit for guest accommodation.
4. Thetis LUB defines short-term vacation rental as less than 30 days. Short-term vacation rental is permitted in a guest cottage.
5. Cortez LUB states that a second set of cooking facilities may be permitted in a home occupation or B & B.
6. Saltspring LUB allows a seasonal cottage or auxiliary building. Guest accommodations may be conducted in them, and cooking facilities are allowed.
7. Hornby's LTC is developing a revised OCP which includes the provisions:
"Where a dwelling is permitted on a parcel by land use regulations, the rental of that dwelling as a vacation home rental should be permitted…" and,
"Vacation home rental that do not comply with limitations imposed by land use regulations may be considered on application for Temporary Use Permit."

This brief review of various Gulf Island bylaws makes it very evident that Denman is lagging behind in this area, an area that is an economic generator for many on the island. Over 200 community residents have requested amendment of the anti-tourism bylaws, and various island residents have spent considerable time, energy, and money to bring this about. In support of their efforts DIRA requests that the moratorium be extended until the end of 2015 to allow time for a new LTC to consider this matter.

Thank you for your attention in this matter.

Sincerely

Frank Frketich
President, DIRA

Denman Island Trust Committee
Denman Island, BC

September 8, 2014

Transfer of three Denman land parcels from BC Parks to the Ministry of Forests Lands and Natural Resources.

This letter is to express concern about the proposed moved of three Crown land parcels on Denman Island[1] from protected status within BC Parks to the Ministry of the Environment to the Ministry of Forests, Lands and Natural Resources. While the explanation for the proposed transfer may be compatible with the mandate of BC Parks, it is very alarming that these parcels are not retaining protected status under the Ministry of the Environment or that apparently no attempt is being made to facilitate a transfer to another body that could ensure their protection.

The conservation of these pieces was part of a public commitment made to the Denman community. A few years ago a heated development controversy on Denman successfully resulted in a very public community-supported settlement. This success was widely proclaimed as a great triumph for land development achieving significant conservation goals and the protection of BC's coastal Douglas-fir forests and rare species. The conservation objectives promised in the settlement need to be fulfilled.

Also disturbing was the statement that these pieces had "low to moderate ecological values and low recreational values". While in terms of enhancing an existing provincial park, these pieces may not address BC Parks needs, but in terms of ecological assessment these pieces have considerable ecological value.

Valens Brook - McFarlane Crown 40 acres
This parcel has Denman's second largest salmon spawning creek running through it and consists largely of approximately 100 year-old Douglas-fir forests. Many rare species are present and the ecological communities are also significant. The creek is already surrounded by a large number of private residences drawing water from the watershed and adding wastewater to the area. Thus, conservation and protection of blocks of forestland along the creek are seriously needed.

In terms of potential recreation, first, for some time this land has been proposed as a major contribution to the future Valens Brook Greenway that has begun as the Islands Trust Fund's Valens Brook Nature Reserve further south on the creek. The greenway would contribute to the protection of the salmon creek and provide a wildlife corridor and future walking trail. Second, this parcel is situated in a large R1 zoned area of Denman that has no access to other nearby green-space.

Morrison Marsh North
Wetlands on gulf islands are highly ecologically significant. Denman is fortunate to have a number of lakes and wetlands although many have an uncertain future in agricultural zoning. Morrison

[1] The three parcels under discussion are:
- Denman Island Quarry
- Valens Brook – McFarlane Crown
- Morrison Marsh

Currently these parcels are zoned conservation and have no densities for buildings under the Denman Islands Trust regulations.

Marsh is a very important wetland and is home to numerous wildlife and wetland plant species. Many over-wintering migratory waterfowl use the marsh while others nest during the breeding season. The southern portion of this marsh is in the Morrison Marsh Nature Reserve of the Islands Trust Fund and the rest of the marsh is surrounded by a large number of private lots. Adding the northern marsh portion to the existing reserve would contribute to the conservation of this wetland.

Quarry

The Denman quarry is immediately adjacent to a coastal bluff that is in a conservation covenant held by the Denman Conservancy Association. This adjacent land is part of the Canadian Ecological Gifts Program[2] for ecologically sensitive lands that 'protect nature and leave a legacy for future generations'. The quarry bluff section has Garry oak trees and other rare species. The quarry may have 'dangerous cliff areas' but it is also a very scenic and remarkable site.

The conservation of these three pieces is important for Denman Island and establishing a suitable mechanism for their transfer to a conservation organization, such as the Islands Trust Fund is needed. It is understood that these pieces have already been through a formal process to achieve their conservation status so that a direct/continuing transfer process to establish their protection, recognizing that their actual ecological value is high, would be appropriate.

Thank you for your consideration of this material and I look forward to the continued protection of these parcels.

Sincerely,

Dr. J. Balke R.P. Bio.

[2] http://www.ec.gc.ca/pde-egp/ Ecological Gifts Program

From: Des and Sandy Kennedy [desandsandydi@gmail.com]
Sent: September 13, 2014 9:58 AM
To: David Graham; Laura Busheikin
Subject: Crown Lands

Des Kennedy
1670 Pickles Road
Denman Island, BC
V0R 1T0

13 September 2014

Dear David and Laura,

I've received a copy of Don Cadden's August 15 letter advising you that BC Parks/MOE is abandoning interest in three Denman Crown parcels.
This is disheartening news to say the least and I hope that both the Denman community and the LTC will unite in an effort to ensure that the conservation status of these lands is maintained in perpetuity.
Unfortunately I'm away this coming week and will miss your deliberations on the matter.
I appreciate whatever influence the LTC can exert to ensure that the community's long-held desire to have these lands remain in conservation status will be upheld.

Sincerely,

Des Kennedy

From: Kal Holsti [tapioh2002@yahoo.ca]
Sent: September 14, 2014 10:58 AM
To: Laura Busheikin
Subject: Crown land status change

Hello, Laura Busheikin,

I have read Jenny Balke's letter to you as well as the BC Parks plan to abandon the status of the four land parcels on Denman. I strongly support Jenny's stand on the issue and wish to express it to the Denman Trustees.

Best regards, Kal Holsti

From: Anne Siegel [mailto:anisiegel@yahoo.ca]
Sent: September-15-14 2:33 PM
To: Laura Busheikin; David Graham; Rob Milne
Cc: Christine Stewart; Connie Treen; Bryan Treen; Sharon Clarke; Bill Engleson
Subject: development variance permit Lot 2 Section 12 Denman Island DE-DVP-2014.1 (Servo)

Re: development variance permit Lot 2 Section 12 Denman Island DE-DVP-2014.1 (Servo)

To Rob Milne, Laura and David-
I am writing to you re: development variance permit Lot 2 Section 12 Denman Island DE-DVP-2014.1 (Servo)

I am aware that the variance permit does not pertain to or take into account the **very real and important questions of availability of water, position of wells and the affect that each additional well drilled into the same aquifer has on neighboring wells.** Nevertheless, I am sending you my concerns in the hope that any further subdivision in our neighborhood is accompanied with very serious consideration to these factors.

Over the twenty-five years that I have owned my house at 2031 Westcliffe Road, Denman Island (Lot A, Section 12A, Denman Island), the neighboring lots have been subdivided up and developed as per RR1 guidelines with no consultation or consideration to the environmental impact on the aquifer that feeds the entire neighborhood. The result has been that the flow of water in existing wells has been drastically depleted. Subsequently, the present summer water flow is barely adequate for many residents' needs.

The very least that I am asking is that for any further development application, the Trust demand that the applicant test for water in the driest portion of the summer. Testing for water in the rainy season has absolutely no bearing on the real impact that additional wells create. **I would also like to see that further consultation with neighbours on this issue is part of the subdivision process.**

Yours sincerely, Annie Siegel
2031 Westcliffe Rd.
Denman Island
250-335-1027