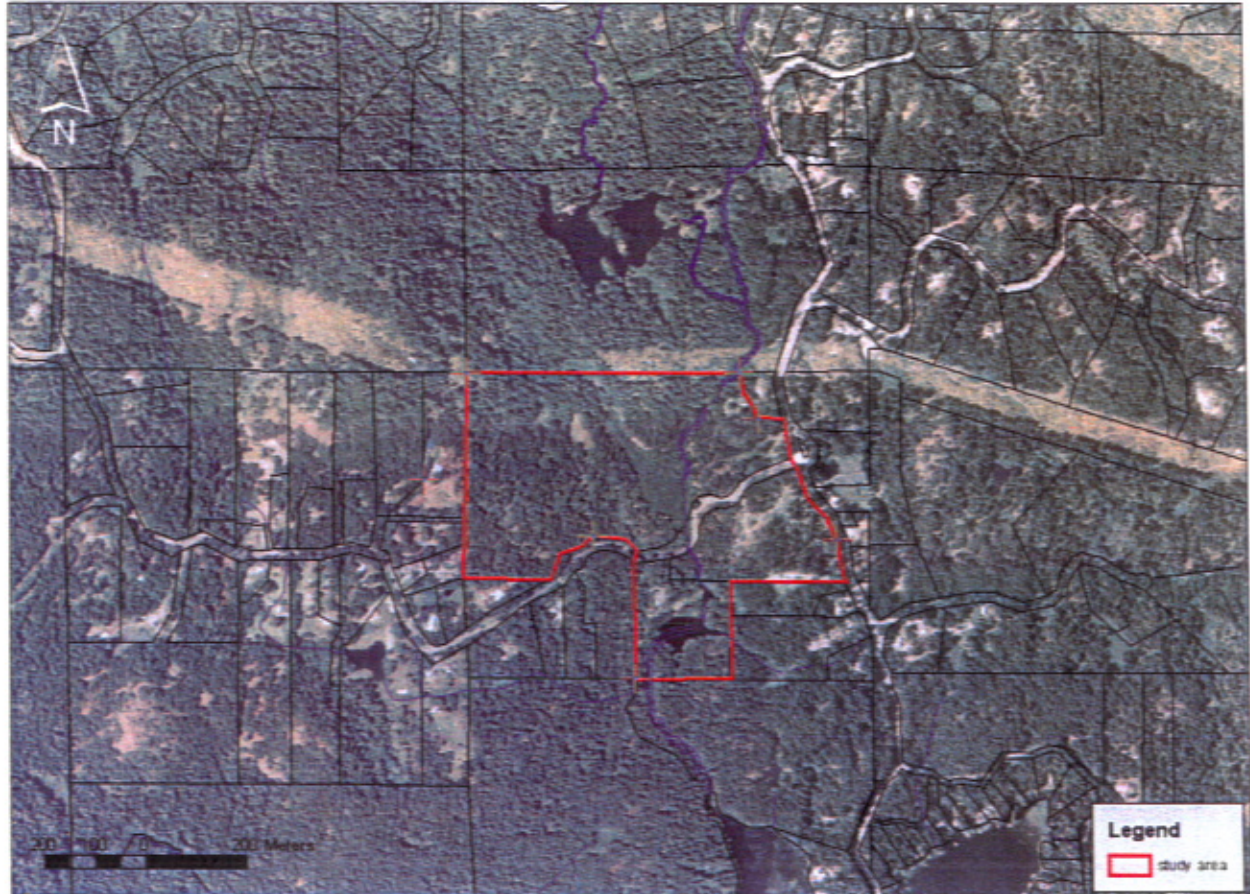


Figure 1. Site Overview

York Environmental Overview Assessment Map



1.3 METHODOLOGY

1.3.1 Identification and Review of Environmental Data

Prior to actual on site investigations of vegetation, wildlife and aquatic communities within the delineated site, a detailed office based investigation on all three environmental components (aquatic resources, wildlife and vegetation) to be studied were initiated. For the most part, this involved researching government databases, including the Department of Fisheries and Oceans (DFO) and the Ministry of Environment (MoE), as well as related reports. Please find below a detailed lists of material used and interpreted for our assessments on vegetation, wildlife, and aquatic habitat.

- Aerial photos, reports and site boundaries (Natural Areas Atlas - CRD).
- Concept Sketch 5m contour Planning Map
- BC Conservation Data Centre – Rare Wildlife (Appendix A) and Vascular Plants (Appendix B) of the South Vancouver Island Forest District - <http://a100.gov.bc.ca/pub/eswp/>
- BC Conservation Data Centre – Rare Plant Communities Tracking List of the South Vancouver Island Forest District - <http://a100.gov.bc.ca/pub/eswp/> (Appendix C)
- FISS (fish information summary system) databases
- BC Conservation Data Center <http://a100.gov.bc.ca/pub/eswp/>
- Sensitive Ecosystem Inventory
<http://viewer.crdatlasc.ca/public#/Home>

1.4 FIELDWORK

Fieldwork related to the detailed biophysical assessment was conducted between February and March of 2011. For all aspects of our assessment including vegetation, aquatic habitat and wildlife, transects and delineated site boundaries were laid down over the study area to ensure maximum coverage (Appendix D, Biophysical Assessment Map). Upon completion, a total of 5 biophysical assessment transects measuring 50m in width were assessed thoroughly as well as a complete site walkthrough resulting in over 85% coverage of the delineated site. In addition, various biophysical assessments of the site were conducted including but not limited to a vegetation survey, an amphibian survey, small mammal survey, large mammal survey, raptor and blue heron survey, fish and fish habitat survey, and bird inventory. Specific methods relevant to each survey including a breakdown of field equipment are discussed in greater detail in Section 2 of this report.

2.0 BIOPHYSICAL ASSESSMENT - METHODS & RESULTS

2.1 VEGETATION

2.1.1 Biogeoclimatic Zones

The subject property lies within the Moist Maritime subzone of the Coastal Douglas Fir zone (CDFmm), which occurs along a small portion of south eastern Vancouver Island, several islands in the Georgia Strait and a narrow strip of the adjacent mainland.

Elevation limits of the CDFmm normally range from sea level to approximately 150m. The CDFmm experiences warm, dry summers and mild, wet winters. Forests on zonal sites are dominated Douglas-fir, accompanied frequently by western red cedar, grand fir, arbutus, Garry oak and red alder. Major understory species include salal, dull Oregon-grape, ocean-spray, bracken fern, sword fern, trailing blackberry, western trumpet honeysuckle and Oregon beaked moss. Typical vegetation of CDFmm is presented in Table 1.

Table 1. Vegetation Typically Occurring Within the Moist Maritime Coastal Douglas-fir Subzone (CDFmm)

Douglas-fir	<i>Pseudotsuga menziesii</i>
Garry oak	<i>Quercus garryana</i>
Arbutus	<i>Arbutus menziesii</i>
Bigleaf maple	<i>Acer macrophyllum</i>
Western red cedar	<i>Thuja plicata</i>
Grand fir	<i>Abies grandis</i>
Western flowering dogwood	<i>Cornus nuttallii</i>
Shore pine	<i>Pinus contorta</i> var. <i>contorta</i>
Western yew	<i>Taxus brevifolia</i>
Salal	<i>Gaultheria shallon</i>
Dull Oregon-grape	<i>Berberis nervosa</i>

Baldhip rose	<i>Rosa gymnocarpa</i>
Ocean-spray	<i>Holodiscus discolor</i>
Western trumpet honeysuckle	<i>Lonicera ciliosa</i>
Snowberry	<i>Symphoricarpos spp.</i>
Hairy honeysuckle	<i>Lonicera hispidula</i>
Falsebox	<i>Paxistima myrsinites</i>
Labrador tea	<i>Ledum groenlandicum</i>
Indian-plum	<i>Oemleria cerasiformis</i>
Salmonberry	<i>Rubus spectabilis</i>
Red elderberry	<i>Sambucus racemosa</i>
Sword fern	<i>Polystichum munitum</i>
Bracken fern	<i>Pteridium aquilinum</i>
Alaska oniongrass	<i>Melica subulata</i>
Big-leaved sandwort	<i>Moehringia macrophylla</i>
Pacific sanicle	<i>Sanicula crassicaulis</i>
Purple peavine	<i>Lathyrus nevadensis</i>
Broad-leaved shootingstar	<i>Dodecatheon hendersonii</i>
Nodding trisetum	<i>Trisetum cernuum</i>
Vanilla leaf	<i>Achlys triphylla</i>
Three-leaved foamflower	<i>Tiarella trifoliata</i>
Lady fern	<i>Athyrium filix-femina</i>
Skunk cabbage	<i>Lysichitum americanum</i>
False lily-of-the-valley	<i>Maianthemum dilatatum</i>
Electrified cat's tail moss	<i>Rhytidiadelphus triquetrus</i>
Oregon beaked moss	<i>Kindbergia oregana</i>
Step moss	<i>Hylocomium splendens</i>
Lichen	<i>Cladonia spp.</i>
Palm tree moss	<i>Leucolepis menziesii</i>
Sphagnum moss	<i>Sphagnum spp.</i>

2.1.2 Vegetation Communities

The information required for the environmental inventory was obtained through a review of secondary source information and a five-day field program. This information was used as the basis for assessing potential impacts and identifying appropriate mitigation measures.

2.1.2.1 Methodology

2.1.2.1.1 Office Study

The office study included a review of available maps and plans related to the site. This information was used to assist in aerial photograph interpretation of vegetation, drainages, landform and any other prominent features located on the property. The study area consisted of the proposed lot plus 30m on either side. Maps and aerial photographs reviewed included:

- Air Photo Mosaic (CRD, 2011)
- 1:20,000 TRIM Mapsheet 92B.043
- Concept Sketch 5m contour Planning Map

In addition to map and aerial photograph interpretation, an Element Occurrence Report (EOR) was requested from the B.C. Conservation Data Centre, and a review of environmental databases from the Ministry of Environment (MoE). Internet addresses for these databases are as follows:

Ministry of Environment:

- BC Conservation Data Center: Rare Vascular Plant Tracking List: South Island Forest District (Appendix B)
<http://a100.gov.bc.ca/pub/eswp/>
- BC Conservation Data Center: Rare Plant Community Tracking List: South Island Forest District (Appendix C).
<http://a100.gov.bc.ca/pub/eswp/>

2.1.2.1.2 Field program

Cascadia Biological Services conducted field reconnaissance of the site in February and March 2011 during which time the following tasks were completed.

The vegetation of the site was examined and 20 m x 20 m vegetation quadrats within each of the different plant communities were established. The placement of these quadrats was decided based on a general reconnaissance of the site while a global positioning unit (GPS) was used to accurately plot each quadrat on a map (*Appendix D – Biophysical Assessment Map*). The following information was recorded:

- Complete list of plant species within the quadrat
- Presence of rare and endangered species

Overall, a total of 3 distinct vegetation communities (the fourth one identified on maps is a disturbed ecosystem and therefore not included in write up below) were assessed resulting in the following quadrats listed below:

Quadrat #1 – Riparian Ecosystem (19% of total area)

Quadrat #2 – Rocky outcrop (8% of total area)



- Quadrat #3 – Douglas fir (Fd) Ecosystem (63% of total area)
- Quadrat #4 – Disturbed Ecosystem (10% of total area)

These 3 ecosystem types above were delineated for further study based on overall size and importance within the study area.

2.1.3 Assessment Results

Vegetation communities within the delineated site consisted primarily of shrubs, coniferous and deciduous species in varying forest stages. The dominant age class representing all woodland communities would be between 35-70 year old second growth. The age classification however limits the value of these plant communities in the conservation framework. Of the vegetative species encountered, none were red listed on the *Conservation Data Centre: Rare Vascular Plant/Vegetative Communities Tracking List – South Island Forest District (Appendix C)*. Please refer to Appendix D, Biophysical Assessment Map for quadrat locations. For a complete list of plants identified in the delineated study area, refer to Tables 2-4 as well as select pictures below. Please note that this list is a summary of plant species identified in our quadrat assessments and is indicative of the site during late winter and by no means, represents the site as a whole due to seasonal variability in plant species. As areas of special concern (rocky outcrops, woodland etc.) where sometimes identified immediately outside of the established quadrats, plants species identified during these assessments have been included into the nearest quadrat location.

Table 2 - Quadrat #1- Riparian Ecosystem (intermittent stream)

Canopy Closure - % 80 (seasonal)

<p>Pseudotsuga menziesii ssp menziesii (Douglas fir) Alnus rubra (Red Alder) Thuja plicata (Western Redcedar) Prunus emarginata (Bitter Cherry) Polystichum munitum (Sword Fern) Gaultheria shallon (Salal) Mahonia nervosa (Dull Oregon-Grape) Acer macrophyllum (Bigleaf Maple) Kindbergia oregana (Oregon Beaked Moss) Isoetes myosuroides (Cat-Tail Moss) Brachythecium frigidum (Golden Short-Capsuled Moss) Pteridium aquilinum (Bracken Fern) Holodiscus discolor (Ocean Spray) Leptarrhena pyrolifolia (Leatherleaf Saxifrage) Hylocomium splendens (Step Moss) Hypnum subimponens (Curly Hypnum)</p>



Plate #1 – Typical view of wetted area and riparian vegetation



Plate #2 – Typical view of wetted area and riparian vegetation

The riparian ecosystem makes up approximately 19% of the study area. The ecosystem within the subject property consists of seven wetlands and a series of creeks that form and are tributaries to the Millstream Creek mainstem. All waterbodies and associated riparian habitat within the property are considered fish habitat under the Riparian Areas Regulations (RAR).