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June 30th, 2021

Craig Little
Little Island Holdings Ltd.
995 Chapman Road
Cobble Hill, BC V0R 1L7
crlittle@shaw.ca

Dear Mr. Little,

RE: 3450 Trans - Canada Highway, Cobble Hill, BC – Overview Ecological Assessment

Background and Objectives

Little Island Holdings Ltd. (hereafter referred to as the 'Client') is the owner and developer of 1.91 hectares of land located at 3450 Trans-Canada Highway (PID: 000-033-057), Cobble Hill, BC (hereafter referred to as the 'subject property'). The subject property is currently zoned RR-2 – Rural Residential 2 as per the Cowichan Valley Regional District (CVRD) Zoning Bylaw No. 3520. As part of the due diligence process, the Client retained Madrone Environmental Services Ltd. (Madrone) to conduct an overview Ecological Assessment (EA) because the intention is to rezone the property to C-3 – Rural Service Commercial 3.

The proposed rezoning occurs in the CVRDs South Cowichan Rural Development Permit Area – Electoral Area C. Specifically, *Section 24* of the CVRD's South Cowichan Official Community Plan (OCP) Bylaw No. 3510 – Schedule A applies. One of the purposes in establishment of *Section 24* is stated as the "protection of the natural environment, its ecosystems and biological diversity". This document will address the multiple components in *Section 24* related to this purpose, including *Sub-Sections*:

- 24.4.1A – General Guidelines (particularly involving invasive plant species management)
- 24.4.5A – Habitat Protection Guidelines
- 24.4.10A – Riparian Protection Guidelines
- 24.4.12A – Sensitive Ecosystem Guidelines

Other DPA requirements related to rainwater management and landscaping have not been included in Madrone's scope of work for this assessment. This project is currently at the rezoning stage and no plans for further development have been finalized.

Proposed Development

Currently, the proposal involves rezoning the property from RR-2 – Rural Residential 2 to C-3 – Rural Service Commercial 3. At this time no other development is planned, but after the rezoning process is complete, future construction/development plans will be made.

Desktop Assessment

Sensitive and Rare Ecosystems¹

An ecosystem is defined as a portion of landscape with relatively uniform dominant vegetation; a sensitive ecosystem is one that is fragile and/or rare. Sensitive ecosystems are particularly valuable in that they provide critical habitat for Species at Risk, are often associated with a high level of biodiversity, and can provide wildlife travel corridors. Due to historical pressures associated with anthropogenic modifications to the land, numerous ecosystems that occur within the Coastal Douglas Fir moist maritime (CDFmm) biogeoclimatic subzone, in which the subject property is located, are considered rare and susceptible to disturbance.

To gain an insight on the known distribution of sensitive ecosystems, the Sensitive Ecosystem Inventory (SEI) mapping for eastern Vancouver Island was examined to determine the extent of sensitive ecosystems throughout the general study area. This review of the SEI mapping database did not reveal any occurrence of listed sensitive ecosystems on or near the subject property.

Rare Element Occurrences

The Ministry of Environment and Climate Change Strategy's (ENV) Conservation Data Centre (CDC) maintains a database of potentially occurring red and blue-listed animal and plant species in BC. This database (using the mapping function) was checked to determine whether any rare plants, animals or ecosystems are documented as occurring on or near the subject property.

Based on the background research conducted, an Element Occurrence (EO) polygon associated with one provincially red-listed (Endangered) moth was shown to overlap with the subject property:

¹ <https://catalogue.data.gov.bc.ca/dataset/sensitive-ecosystems-inventory-sei-project-boundaries>

CDC EO Polygon ID: 72597^{2,3}

The Edwards' Beach Moth (*Anarta edwardsii*) was red-listed (Critically Imperiled) in 2009. Federally, under both the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Species at Risk Act (SARA), this species is still considered Endangered. The first and only observation of this species noted in the CDC EO was from 1935 and it was in Mill Bay. Currently there are only two known populations with one being in the Pacific Rim National Park and the other on the Saanich Peninsula and adjacent Gulf Islands.

In 2017, the federal government developed a recovery strategy for the Edwards' Beach Moth population. This included identification and delineation of critical habitat based on known occurrences and estimated dispersal. The populations in the Pacific Rim National Park and on southern Vancouver Island/Gulf Islands were used as a central point to develop the recovery strategy.

Although this EO overlaps with the property, there is no potential for the moth to occur on the subject property. This critical habitat for this species is identified as being those that are made up of:

- coastal sand habitat such as sand spits, dunes, and beaches.
- coastal salt marsh habitat.
- sparsely-vegetated upper beach communities, beachgrass meadow communities, and patchy shrub communities.

Wildlife Tree Stewardship Atlas⁴

At this time there are no proposed development-related activities as the project is at the rezoning stage. However, if development occurs in the future there is potential for indirect noise-related disturbance to sensitive life phases of nesting birds. As such, the Wildlife Tree Stewardship Atlas (WiTS) was accessed to determine the known distribution of Wildlife Trees (e.g., raptor nests) on or around the subject property.

The nearest documented WiTS waypoints to the subject property are Bald Eagle (*Haliaeetus leucocephalus*) nests (BAEA-102-051 and BAEA-102-064). Nest site BAEA-102-051 is located approximately 2.40 km northeast of the assessment area, near the western shoreline of the Saanich Inlet. The nest documented as BAEA-102-064 is about 2.45 km southeast of the property. The latest documentation of nest activity at either site was a 2012 survey commenting that adults were perched adjacent to each nest tree and flying nearby. No updates have been made to this database regarding these nests since the 2012 observation; therefore, current nest status is unknown.

² B.C. Conservation Data Centre. 2009. Conservation Status Report: *Anarta edwardsii*. B.C. Minist. of Environment. Available: <https://a100.gov.bc.ca/pub/eswp/> (accessed June 28, 2021)

³ Environment and Climate Change Canada. 2017. Recovery Strategy for the Edwards' Beach Moth (*Anarta edwardsii*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. 2 parts, 16 pp. + 23 pp.

⁴ <http://cmnmaps.ca/WITS/>

Due to the distance, and occurrence of other residential activities between BAEA-102-051 and BAEA-102-064 and the subject property, noise levels from potential future construction activities on the subject property will not pose any negative impacts to either of these Bald Eagle nest locations. Even if more intrusive industrial activities (*i.e.*, blasting) were required as part of potential future development, the distance between the property and each nest tree is such that there would be no impact. With each nest tree being between 2.40 and 2.50 km away, they are beyond the 1 km blasting buffers that are implemented as part of the provincial Best Management Practices (BMPs) during blasting.

Field Assessment

While the desktop assessment of known sensitive elements provided background level information, the assessed databases by no means represent exhaustive lists of all features. A site visit was conducted on May 28th, 2021 as a follow-up to the desktop research. During this assessment, the subject property was assessed to determine whether any specific sensitive elements occurred, and to determine potential for negative impacts to documented nearby sensitive features (*i.e.*, Edwards' Beach Moth habitat).

As part of the assessment, vegetation assemblages and aquatic habitat was observed and documented, along with a visual survey of nearby trees with potential to provide nesting habitat for bird species listed in Section 24.4.5A of Bylaw No. 3510: "Eagle", "Hawk", Osprey (*Pandion haliaetus*), "Owl", Peregrine Falcon (*Falco peregrinus*) and Great Blue Heron (*Ardea herodias fannini*).

Site Description

The subject property is relatively flat, and approximately half of the site was previously cleared and has been exposed to anthropogenic disturbances. The southern most portion of the property is largely a gravel parking area. Multiple old, condemned structures occur in the east-central portion of the property. The disturbed area in the middle of the site is dominated by Scotch Broom (*Cytisus scoparius*) and Himalayan Blackberry (*Rubus armeniacus*) – both invasive species.

In the northwest corner of the lot there is a pond that is about 20 m wide and 30 m long. It was not possible to gain an exact depth of the pond, but based on visibility, it appeared the water was about 1-2 m deep at the time of the assessment. The substrate in the pond is composed entirely of organic materials (decomposing wood and leaf debris). Adjacent to the pond the riparian zone is composed of a young, mixed species (coniferous and deciduous) forest. Tree species include Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*) and red alder (*Alnus rubra*). Salmonberry (*Rubus spectabilis*) and willows (*Salix spp.*) are the most abundant shrub species. Herb growth is abundant and composed mostly of skunk cabbage (*Lysichiton americanus*), sedges (*Carex spp.*) and common horsetail (*Equisetum arvense*).

An inlet drainage flows from the property to the north and into the pond. At the southern end of the pond, an outlet drainage directs water subsurface through a series of pipes for the entire length of the property. The flow of water then discharges into the roadside ditch adjacent to Chapman Road. The flow of water continues under Chapman Road and down the Trans-Canada Highway.

The northern and western-most sections of the property are covered mostly by Douglas-fir and western redcedar, but several bigleaf maple (*Acer macrophyllum*) and arbutus (*Arbutus menziesii*) specimens exist. A small pocket of several Garry oak (*Quercus garryana*) trees was also observed immediately adjacent to the eastern boundary of the lot. Shrubs observed in the north and west include salal (*Gaultheria shallon*), dull Oregon grape (*Mahonia nervosa*), trailing blackberry (*Rubus ursinus*), baldhip rose (*Rosa gymnocarpa*) and salmonberry in low-lying depressions. Sword fern (*Polystichum munitum*) and bracken fern (*Pteridium aquilinum*) are also common throughout the forested areas.

While traversing the site, an abundance of wildlife sign was observed, particularly in the northern and western pieces of the property. Woodpecker activity was noted as being prevalent throughout these areas, and multiple wildlife trees were observed. These trees contain cavities that could be used for breeding by primary and secondary cavity nesting birds (e.g., woodpeckers and/or owls). Based on the fact the assessment occurred during the breeding window for birds, there was also an abundance of other birds vocalizing and flying throughout the site. Table 1 represents a list of birds detected during the field visit.

TABLE 1 LIST OF BIRD SPECIES OBSERVED DURING THE FIELD ASSESSMENT ON APRIL 21ST AND 22ND, 2021

Common Name	Latin Name
American Robin	<i>Turdus migratorius</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Dark-Eyed Junco	<i>Junco hyemalis</i>
Hairy Woodpecker	<i>Leuconotopicus villosus</i>
Northern Flicker	<i>Colaptes auratus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Pacific Wren	<i>Troglodytes pacificus</i>
Red Crossbill	<i>Loxia curvirostra</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Turkey Vulture	<i>Cathartes aura</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>

Considerations regarding South Cowichan Official Community Plan Bylaw No. 3510 – Schedule A

OCP Section 24.4.1A – General Guidelines

This section applies to a development permit requirement stating:

“the eradication of invasive weeds, such as English Ivy, Scotch Broom, Gorse, Himalayan Blackberry, Morning Glory and Purple Loosestrife, and other non-native invasive weeds listed by the Coastal Invasive Plant Committee and the BC Landscape and Nursery Association, will be a requirement of the development permit.”

Scotch Broom and Himalayan Blackberry were observed and are concentrated in the central portion of the subject property. Because there is no land alteration planned as part of the rezoning phase, the removal of invasive plant species is not necessary at this time. As development plans (i.e., construction or land clearing) are made and future work progresses, there will then be a requirement to remove invasive species. Invasive plant disposal recommendations and long-term invasive plant management requirements have been included in the Discussion and Recommendations Section of this report for the purpose of providing information to help guide future development plans.

OCP Section 24.4.5A – Habitat Protection Area Guidelines

This section applies to development within 60 metres of an “Eagle”, “Hawk”, Osprey, “Owl” or Peregrine Falcon nest, and within 100 metres of a Great Blue Heron nest. It states in *Subsection 1* that development should be sited to maximize separation between a proposed development and the nest or perch trees. *Subsection 2* describes situations where there are ‘no appropriate alternatives’ but to locate development adjacent to a nest tree. In such cases, restoration measures may be required to minimize the impacts of the development on the habitat. No observations of a nest structure for any of the aforementioned species were made on, or directly adjacent to, the subject property. Furthermore, habitat suitability was extremely limited throughout the general study area, meaning that potential use by any of the listed species at any point in the future is unlikely.

OCP Section 24.4.10A – Riparian Protection Area Guidelines

To address Riparian Protection Guidelines, the provincial Riparian Areas Protection Regulation (RAPR) methodology is applied. Under the Riparian Areas Protection Regulation (RAPR), any development activity within a Riparian Assessment Area (RAA) - 30 m from the edge of a “stream” - including lakes, wetlands, ponds, creeks, rivers and ditches- is subject to a RAPR assessment by a QEP. The regulation applies to “development” along streams, as governed by local government regulation, or the approval of residential, commercial, industrial or ancillary activities under Part 26 of the *Local Government Act*.

There are some instances where development inside the 30 m RAA does not require the completion of an assessment under the RAPR. For example, waterbodies that do not support salmonids, game fish or regionally significant fish species are not considered “streams” under the RAPR methodology. In addition, a QEP can use professional judgment when classifying watercourses that are poorly defined and where connectivity to fish habitat by surface flow is not obvious. These types of watercourses are also exempt from the RAPR process, as per Section 1.4.2 of the RAPR guidelines.

In conducting a review of online resources, it was revealed that a stream flows through the subject property and continues south towards Mill Bay. During the field assessment however, no stream was noted to be flowing through the property. A pond was located in the northwest corner of the site, and the outlet drainage was piped subsurface. The flow of water remains subsurface through piping for the entire length of the property and discharges into the ditch adjacent to Chapman Road. It appears that this alteration of flow was done many years ago. Based on these observations, the RAPR process would not apply to the pond or drainage that has been directed underground through piping because they do not meet the definition of a stream outlined in the RAPR assessment methodology. The factors supporting this conclusion are:

- there is poor connectivity by surface flowing water to known fish habitat.
- the flow of water is underground.
- The pond and watercourse do not support salmonids, game fish or regionally significant fish species.

Although the RAPR process does not apply, it is still important to afford protection to the pond. The pond has no fisheries values, but it does represent important wildlife values and will be used by multiple species for foraging and breeding (especially amphibians). The immediate riparian zone is also likely used by various species of migratory birds for breeding. At the time of the assessment there was an abundance of bird activity within the area immediately adjacent the pond. To protect the ecological integrity of the pond ecosystem, it is recommended to incorporate a 15 m no development buffer zone (measured from the High Water Mark - HWM) around the pond. This recommendation is based on general recommendations made in CVRD OCPs to continually identify and protect Ecologically Sensitive Areas. Incorporating a 15 m buffer allows for the pond to be protected, but also allows for future development to take place on the property. This 15 m no development zone includes no deposition of soil, rock or any other materials.

OCP Section 24.4.12A – Sensitive Ecosystem Guidelines

These guidelines apply to lands that have been identified within or are within 15 metres of a sensitive ecosystem as identified by the Sensitive Ecosystem Inventory by the province. The desktop background research revealed no polygons in the Sensitive Ecosystem Inventory within 15 metres of the subject property boundary.

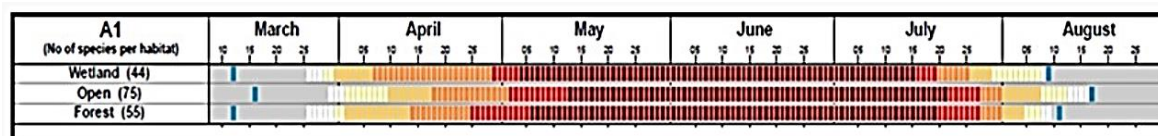
Discussion and Recommendations

Protection of Breeding Birds

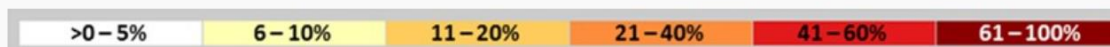
The provincial *Wildlife Act* (Section 34C) affords protection to nesting birds, and it is illegal to possess, take, injure, molest or destroy the nest of a bird when the nest is occupied by a bird or its eggs. In addition to Section 34C of the provincial *Wildlife Act*, migratory birds are also afforded protection under the federal *Migratory Birds Convention Act* (Section 6). It is illegal to destroy or take a nest, egg, or nest shelter of a migratory bird. Migratory birds covered under the *Migratory Bird Convention Act* include a number of species known to visit and likely to breed in terrestrial habitats within the subject property. With the exception of raptors, common black bird species, and some game birds, all birds and their nests are protected under the *Migratory Bird Convention Act*, including Species at Risk.

The breeding season for bird species that may breed on the subject property (i.e., ‘forested’ and ‘open’ habitat) has the potential to extend from March 30th to August 17th, as identified in the nesting calendar for zone A1 where the subject property is located (see below). The blue markers in the Table below, taken from Environment Canada, show extreme dates predicted for some atypical parts of the nesting zone where nesting could occur earlier or later (i.e., between March 16th and March 30th or between August 17th and August 18th).

TABLE 2: NESTING CALENDAR - ZONE A1 MIGRATORY BIRD NESTING PERIODS, AS PER ENVIRONMENT CANADA



Legend for calendars: Number of species in percentage (Blue markers show extreme dates predicted for some atypical parts of the nesting zone where nesting could be earlier or later)



[Long description for nesting calendars in zone A](#)

The figure presents a set of 15 calendars showing the proportion in percentage of federally protected species that are predicted to be actively nesting on a given date from March to September for three habitat types: wetlands, open and forest and for five nesting zones: A1, A2, A3, A4 and A5. On each day, the percentage of species is shown according to one of the following six categories: 0 percent, less than 5 percent, 6 to 10 percent, 11 to 20 percent, 21 to 40 percent, 41 to 60 percent and 61 to 100 percent. In addition, markers show extreme dates predicted for some atypical parts of the nesting zone where nesting could occur earlier or later.

For nesting zone A1, within the species used, there are 55 species known to nest in forest habitats. The percentages of species actively nesting are: less than 5 percent from March 26 to 30 and from August 8 to 9, 6 to 10 percent from March 31 to April 1 and from August 5 to 7, 11 to 20 percent from April 2 to 13 and from August 1 to 4, 21 to 40 percent from April 14 to 24 and from July 28 to 31, 41 to 60 percent from April 25 to May 5 and from July 20 to 27, 61 to 100 percent from May 6 to July 19. The markers are on March 12 and August 11. The rest of the calendar dates are zero percent.

To avoid potential impacts to nesting birds or their habitats, and to comply with current legislation requirements, development activities that lead to the loss of potential nest sites (i.e., the clearance of any vegetation, including ground cover) must be suspended between March 30th and August 17th. If activities

cannot be suspended during this period, the specific disturbance footprints would need to be checked for nest sites, as per applicable nest-search protocols, prior to disturbance to prevent impacts to nesting birds. These restrictions would not apply to development in areas of the property that are currently un-vegetated (i.e., areas covered by gravel).

Invasive Plant Management

Scotch Broom and Himalayan Blackberry are present in the central portion of the subject property adjacent to the old buildings and throughout areas that were previously disturbed. When land clearing and construction occur in the future, this area of plant establishment will be removed by heavy machinery as part of site preparation activities. This vegetation is considered ground cover and, therefore, removal must comply with breeding bird protection protocols. In recognition of expected long-term management of invasive species on the property in areas that are beyond the footprints associated with proposed buildings, roads, and parking areas (e.g., landscaped parts of the property), the following invasive plant management will be required in the future:

Scotch Broom

Larger Scotch broom plants (i.e., larger than the diameter of a pencil) should be cut, although care must be taken to make the cut below the soil/root interface to avoid vigorous re-sprouting of the plant. If larger plants are pulled out of the ground, soil disturbance will bring more broom seeds to the surface and will encourage seed germination. Smaller broom plants (i.e., less than the diameter of a pencil) can be pulled out of the ground, but soil disturbance must be kept to a minimum.

When cutting broom, the best time to carry out the removal process is when plants are in full flower (timing of which is based on annual climatic variation). Broom is less likely to regenerate from a cut stem (e.g., if the cut is inadvertently made too high) if it is cut when plant energy is being used to sustain flowers, as opposed to being stored in roots. Broom generally flowers in mid to late spring, although specific timing depends upon seasonal variations.

Whether cutting, pulling, or removing broom via heavy machinery (e.g., backhoes, excavators), it should not be removed when the plant has gone to seed, as seeds will be inadvertently spread during the removal process. Extracted broom plants should be removed from treated areas, as dead broom can continue to release chemicals that suppress growth of native plants.

Himalayan Blackberry

In order to remove seedlings and mature plants, hand pulling and weed wrenches should be used. Removal should be carried out when the plant is flowering before seeds set. At this time, the plant is more susceptible, as energy reserves are being directed to flowering stems. To minimize re-sprouting, as much of the root system as possible must be removed. Plants that are older and established should be cut using tools such as

machetes and brush cutters and the roots removed by hand digging. Any roots that re-sprout in subsequent years should also be removed.

Depending on timing of flowering, cutting would typically take place during early to mid-summer. If cut too early in the year, new tips will begin to grow, resulting in the need for follow-up treatments.

Disposal Methods

Broom and blackberry cuttings and roots should be carried in tarps or garbage bags to prevent plant material from inadvertently being deposited on the ground. Any dropped material (broom seeds or blackberry canes) could sprout into a new plant. If the plants being removed have seeds, they should be placed head-first in a heavy plastic bag for transportation. Plant material should be transported to a composting facility with the ability to grind the debris. Alternatively, plant cuttings can be disposed of at the appropriate section of a landfill. Another option is to compost on site, after first killing the weeds by bagging or tarping:

- Bagging – for plants with soft tissue, place plants in heavy-duty plastic bags, seal the bags and set them out in the sun for several weeks.
- Tarping – pile the plant material on a sheet of plastic and completely cover it with a tarp. Fasten the tarp edges to the ground and leave the material to bake in the sun for several weeks, until the plants are non-viable.
- After bagging or tarping, place plant material in larger compost piles and allow it to compost fully.
- Composting in place is not an option if the plant material contains seeds.

Maintaining Tree Coverage

Because this proposal is for rezoning, no other development plans have been finalized. However, as strategies for future construction are put together, the project should be planned to retain as many trees along the northern and western boundaries of the property as possible. By retaining trees, it will help to meet landscaping requirements that will be laid out by the CVRD. Trees are not only valuable from an ecological perspective, but also provide ecosystem services that are important to humans such as temperature regulation, wind buffering, soil stabilization and aesthetic value.

Closing

The Proposed rezoning of 3450 Trans-Canada Highway (PID: 000-033-057), Cobble Hill, BC is subject to CVRD Bylaw 3510: South Cowichan Official Community Plan – Schedule A and has undergone an overview EA to help address *Section 24* of the aforementioned bylaw, specifically sections *24.4.1A*, *24.4.5A*, *24.4.10A* and *24.12A*.

Section 24.4.1A applies to the presence of Scotch Broom and Himalayan Blackberry on the subject property. Removal of these invasive plant species is not required at this time, but this will occur as part of future site clearing/grading processes. When this removal takes place, it will address the requirements for eradication of invasive plant species on the property. Recommendations for the long-term management and disposal of invasive plants have been provided to prevent further establishment post-construction in landscaped segments of the property.

Section 24.4.5A does not apply, based on observations made during the field assessment conducted on May 28th, 2021. No nests for bird species mentioned in *Section 24.4.5A* were observed on the subject property, or in adjacent areas. General suitability of habitat for nesting by the focal species is low in the study area. This regulation, however, addresses a specific list of birds that have unique nesting requirements and sensitivities. Nests of all breeding birds are protected under the *Wildlife Act* and the *Migratory Birds Convention Act*. For the subject property, vegetation clearing (including invasive species) between March 30th and August 17th would warrant surveys by a Qualified Environmental Professional (QEP) for nest sites, as per applicable nest-search protocols, prior to disturbance to prevent impacts to nesting birds.

Section 24.4.10A does not apply as the pond and its outlet drainage are not subject to the provincial RAPR process. However, based on the fact the pond will provide habitat for various species of wildlife, protection measures should be applied. To adequately protect the pond, a 15 m no development zone should be applied, extending from the HWM.

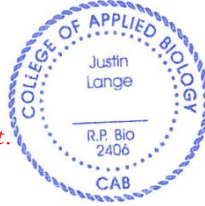
Section 24.12A applies to any sensitive ecosystems on the subject property or within 15 metres of its boundaries. A search of the Sensitive Ecosystem Inventory (SEI) database maintained by the Ministry of Environment did not reveal any SEI polygons on the property, or within 15 metres of the property boundaries.

A background search for sensitive features using applicable databases revealed one EO polygon that overlaps with the subject property concerning the Edwards' Beach Moth. Based on habitat preferences of this species and current condition of the subject property, there will be no impacts to the moth as this proposal is for rezoning. Furthermore, Madrone also anticipates that there will be no impacts to the moth when land clearing and/or construction occurs in the future.

I appreciate you contacting me to conduct an overview EA to support your proposal to rezone your property located at 3450 Trans-Canada Highway. If you have any questions regarding this assessment and its conclusion, please do not hesitate in contacting the undersigned.

Yours sincerely,

**This is a digitally signed duplicate of the
official manually signed and sealed document.*



Justin Lange, B. Sc., R.P.Bio.
Senior Aquatic/Terrestrial Biologist.

MADRONE ENVIRONMENTAL SERVICES LTD.



APPENDIX A

Site Photos



Looking south at the entrance to the subject property. This access extends off Chapman Road and leads to the area that is used by employees for parking.



A photo showing the western portion of the parking area.



Looking upstream (northwest) at the inlet drainage of the pond that is located in the northwest corner of the property. This piece of the drainage is located on the adjacent property to the northwest. Note that this feature has characteristics (skunk cabbage and organic substrate) that are typical of a swamp ecosystem.



Looking west at the pond that is positioned in the northwest corner of the lot.



Looking south over the pond. The red arrow marks the approximate location of the outlet drainage.



Looking upstream at the drainage that flows out of the pond. This section of the channel is about 5 m below the pond.



A photo of the culvert that conveys water from the outlet drainage subsurface. From this point the flow of water is entirely underground until it reaches the roadside ditch adjacent to Chapman Road.



Looking upstream at the section of ditch that runs along Chapman Road, west of the property entrance. As can be seen in the photo the channel is fully overgrown with grasses and Himalayan blackberry.



Looking down at the point near the property entrance where the ditch continues.



Looking southeast (downstream) at the ditch that runs immediately adjacent to the Trans-Canada Highway.



Looking down at the point where the ditches running along Chapman Road and the Trans-Canada Highway converge. From this point, the flow of water is conveyed under Chapman Road and continues south along the highway.



A photo showing a group of Garry oak trees that are located in the east-central portion of the property, immediately adjacent to the Trans-Canada Highway. These trees should be conserved.



Old buildings located in the east-central portion of the property. The southern half of the property has been subject to a significant amount of disturbance.



A representative photo of invasive plant growth that exists on the property. The majority of these invasive species occur in the central portion of the property.



Above and Below: Representative photos of the mature forested ecosystems that span the northern and southwestern boundaries of the property. No invasive species occur in these forested areas.

