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To:	Comox Valley Regional District Parks Department	Date:	December 13th, 2022
From:	Sylvie Stewart Grantham and Rupert Wong, R.P.Bio.	Pages:	17
Cc:	Comox Valley Regional District Planning Department	Project:	1544

RE: BIOPHYSICAL ASSESSMENT – 1893 Spike Road, Courtenay, BC

This letter report is intended to inform the Comox Valley Regional District (CVRD) of the current biophysical state of the subject property at 1893 Spike Road, Courtenay, BC. The property mainly consists of two expansive wetlands on either side of Spike Road. The existing buildings lie adjacent to Spike Road, with several of them located within the Aquatic and Riparian Habitat Development Permit Areas (ARHDPAs) associated with each wetland. As such, this report was completed to satisfy the requirements of the Comox Valley Regional District (CVRD) Bylaw 337 for a Biophysical Assessment to be conducted by a Registered Professional Biologist that addresses proposed development in the ARHDPA.

This biophysical assessment will utilise methods from the *Riparian Areas Protection Regulation* (RAPR), however, will not be accompanied with a detailed RAPR report because the proposed development is the potential demolition of existing buildings in order to convert the CVRD-owned property to parkland.

The objectives of this biophysical assessment are to:

1. Identify any sensitive habitats and species on the subject property that require protection;
2. Provide mitigation measures to protect these sensitive habitats and species during potential demolition; and
3. Prescribe habitat enhancements where applicable.

This report is divided into the following categories:

1 INTRODUCTION

1.1 SUBJECT PROPERTY

The subject property[1] is located at 1893 Spike Road, in Courtenay, BC, and is approximately 30 hectares in size. Spike Road bisects the property running from the southeast to the northwest, along the former railway grade of the Comox Logging & Railway Company. The property is located in the Comox Valley Regional District (CVRD), approximately centered at Lat/Long coordinates 49°47'18"N 125°7'45"W, and is zoned Rural Agricultural Land Reserve (RU-ALR).

There are several buildings on the property, which include two residences and a number of outbuildings all located along Spike Road. Maturing second growth mixed coniferous/deciduous forest (Photo 1), manicured lawn and fenced livestock pastures (Photo 2) surround the buildings along the road corridor and expansive wetlands on either side of the road (Photos 3, 4, 5, and 6). The CVRD Parks Department recently purchased the subject property in order to convert it into parkland and potentially use the roadway for the continuation of the One Spot Trail (Photo 7).

The site is within the Coastal Western Hemlock Biogeoclimatic zone (CWHxm1), with very dry relative precipitation and maritime continentality. Generally, this zone extends between low to mid-elevations and experiences warm summers and mild, wet winters. Canadian Climate Normals[2] from 1981 to 2010 at nearby station "Black Creek" shows an annual average of 165 cm of precipitation for the area, with the majority falling between the months of October and March.

At the time of the site assessment, on December 1st 2022 there was snow on the ground; however, the Phase 1 Environmental Assessment for this property, conducted in April of 2022, reported that along the Spike road corridor the ground was dry with no standing water observed around the developed area. Rainwater is expected to largely infiltrate down into the unconsolidated surficial materials and runoff appears to be primarily conveyed sub-surface into the wetlands on either side of Spike Road. Some surface flow runoff over the hardpacked gravel road and parking areas is also expected.

The BC interactive iMap identifies aquifer 0411 below the site. This is a fractured sedimentary rock aquifer, of unknown productivity and low vulnerability. Aquifer 0411 covers an area of 731.9 km^2 extending from Courtenay to Campbell River and has 172 registered water wells within the aquifer. Bedrock geology in the area is identified as the upper cretaceous Nanaimo group characterized by sedimentary rocks of boulder, cobble and pebble conglomerate, coarse to fine sandstone, siltstone, shale and coal.

[1]Legal Description: The East 1/2 of the South West 1/4 of Section 19, Township 6, Comox District, Plan 552E, except that part in Plan 205 RW (PID: 008-992-789)

[2] https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=black+creek&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=139&dispBack=1

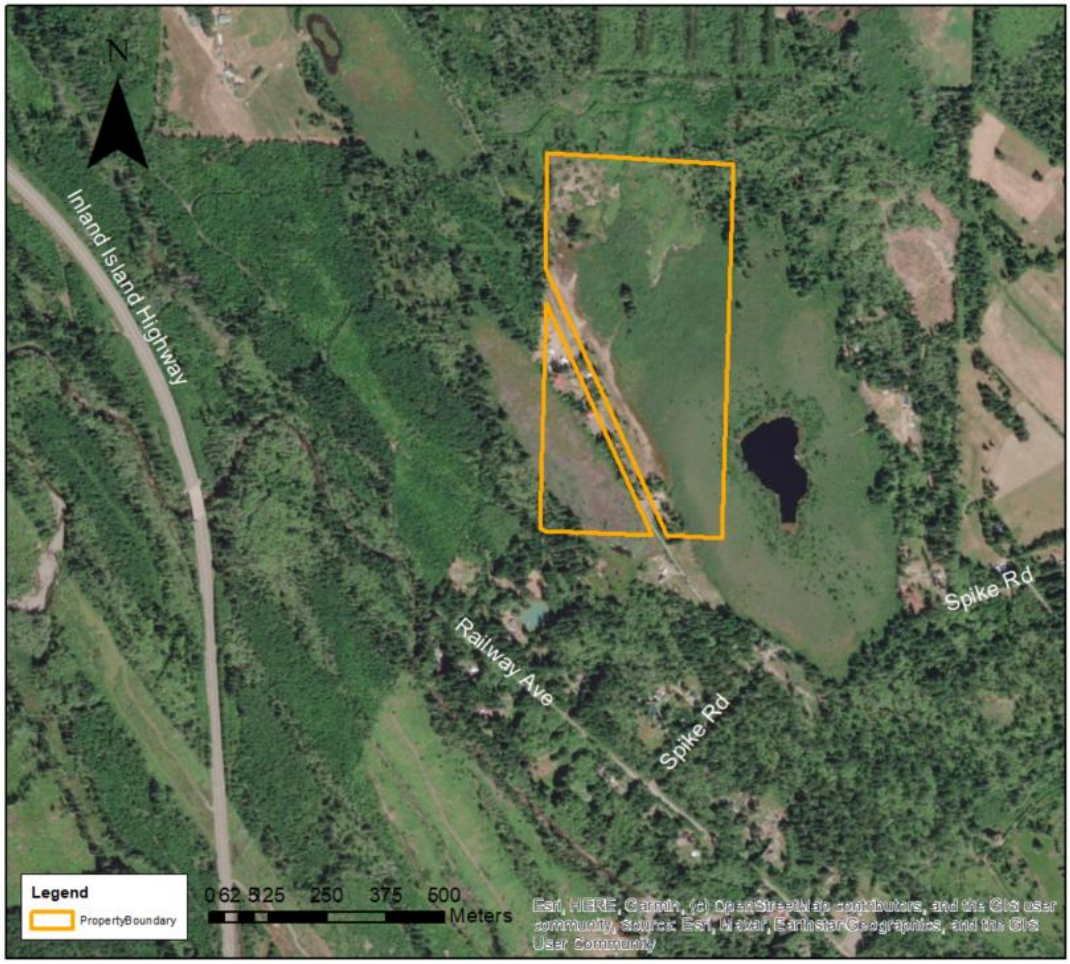

Figure 1. Map of subject property, located at 1893 Spike Road, within the Comox Valley Regional District.

1.2 PROPOSED DEVELOPMENT

The subject property at 1893 Spike Road is mainly composed of wetland habitat, with a road corridor running southeast to northwest in the southern half of the property. Most of the existing buildings and infrastructure stand within this road corridor and therefore, this area of the property is the main focus of this report.

The proposed development plan at the subject property is primarily a re-naturalisation project under the new ownership of the CVRD Parks Department. Currently, existing buildings include a primary and secondary residence, two barn structures, a workshop, greenhouse, and numerous small sheds (Photos 2, 8, and 9). Additional infrastructure on the property includes a horse-riding ring, fencing, wells, and septic systems. The development plan includes the potential demolition of existing buildings onsite, and the subsequent re-naturalisation of the historically developed property, as well as the potential construction of a parking lot, permanent fencing to delineate sensitive habitat and informative signage. The parking lot will be constructed over the footprint of the secondary dwelling (Photo 8), made of gravel and approximately 0.3 acres in size (Figure 2). There are also future potential plans to expand the One Spot trail, a multi-use pathway, through the road corridor that bisects the property.

Of the existing buildings on the subject property, four of them are within the CVRD 30 m ARHDPA, in proximity to wetland habitat, and therefore we will use RAPR methodology to determine the Streamside Protection and Enhancement Area

(SPEA) for each wetland boundary. There is only one encroachment into the 15 m SPEA of the western wetland, however given that the project will restore the area to its natural state, this will not be a constraint to proposed plan.

2 METHODOLOGY

2.1 BACKGROUND REVIEW

Background information on Environmentally Sensitive Areas (ESAs) located within or in proximity to the subject property was obtained from the following sources:

1) Comox Valley Regional District (CVRD) iMap;[3]
2) BC Conservation Data Center (CDC) *Species and Ecosystem Explorer;*[4]
3) Federal Species at Risk Public Registry;[5]
4) Fisheries Information Database Query (FIDQ) database,[6] and the BC Habitat Wizard;[7]
5) Sensitive Ecosystem Inventory (SEI);
6) Wildlife Tree Stewardship Atlas (WiTS);[8]
7) Great Blue Heron (GBHE) Management Team Atlas;[9]
8) Aerial photographs.

2.2 FIELD ASSESSMENT

Field assessment of the property was completed during a site visit on December 1st, 2022. Due to the size of the property, and the objectives of the CVRD Parks Department, the assessment focused on the area currently developed. The site assessment involved delineating the High Water Mark (HWM) of the wetland and the Streamside Protection and Enhancement Area (SPEA) as per RAPR methodology, and noting any other Environmentally Sensitive Areas (ESAs) on the subject property that may be impacted by the proposed potential demolition. The following sections provide additional detail on specific inventory methods.

2.2.1 Aquatic Habitats and Species

Criteria for delineating the HWM of the wetland and for determining the riparian setback or SPEA were based on the BC RAPR Assessment Methods[10] (updated 2019). Under the RAPR, the HWM of a wetland is "identified by changes in vegetation structure, loss of obligate hydrophytes, and absence of wetland soil characteristics." During the site visit, the HWM was identified by a distinct transition in vegetation structure, however due to snow cover, other indicators couldn't be determined. Additional methodologies employed for the classification and delineation of the wetland were based primarily on standards adapted from *Wetlands of British Columbia – A Guide to Identification,*[11] *The Canadian Wetland*

[3] Comox Valley Regional District (2022). CVRD iMap 2.2. Accessed from <https://mapviewer.imaptoo.ca/secure/>
[4] B.C. Conservation Data Centre: CDC iMap. 2017. Ministry of Environment, Victoria, B.C. Accessed from < http://maps.gov.bc.ca/ess/hm/cdc/>
[5] Government of Canada. (2022). *Species at Risk Public Registry*. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>
[6] https://a100.gov.bc.ca/pub/fidq/welcome.do
[7] https://maps.gov.bc.ca/ess/hm/habwiz/
[8] Wildlife Tree Stewardship (WiTS) Atlas (2022). Community Mapping Network. Accessed from <http://www.cmnmaps.ca/wits/>
[9] Great Blue Heron (GBHE) Management Team (2022). The Community Mapping Network. Accessed from <http://cmnmaps.ca/GBHE/>
[10] https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/rapr_assessment_methods_manual_for_web_11.pdf
[11] MacKenzie, W.H. & J.R. Moran. 2004. *Wetlands of British Columbia – A Guide to Identification.* Government of BC, Land Management Handbook 52. Accessed from <https://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh52.htm>.

Classification System[12] and *Indicator Plants of Coastal British Columbia*.[13] In addition to the site visit, previous photos taken during the Phase 1 assessment as well as aerial photos were referenced to help delineate the wetland as there were limitations with snow covering the ground. No fish sampling was conducted as a part of this assessment.

2.2.2 Terrestrial Habitats and Species

Survey methods for terrestrial elements or Environmentally Sensitive Areas (ESAs) were directed in part by those outlined in *Develop with Care – Environmental Guidelines for Urban and Rural Land Development in British Columbia*[14] and the *Field Manual for Describing Terrestrial Ecosystems.*[15] Vegetation on the subject property was identified with the assistance of *Plants of Coastal British Columbia*[16] and *E-Flora BC: Electronic Atlas of the Flora of BC.*[17]

2.2.3 Species and Ecosystems at Risk and Raptor Nesting

An office-based assessment of Species at Risk occurrences on the subject property was completed using the *CDC BC Species and Ecosystems Explorer*, the *Federal Species at Risk Public Registry*, the *Wildlife Tree Stewardship Atlas* and the *Great Blue Heron Atlas*. 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 *Develop with Care – Environmental Guidelines for Urban and Rural Land Development in British Columbia.*

3 RESULTS

The following sub-sections describe the findings of the background review and site visit conducted on December 1st, 2022. Discussion on how these findings influence the proposed development are provided in the Discussion/Recommendations section of the report.

3.1 AQUATIC HABITATS AND SPECIES

Aquatic habitat on the subject property consists of two expansive wetlands on either side of the Spike Road corridor. The wetland in this area is characterized by pockets of standing water throughout the undulating terrain, with thick vegetation consisting of hardhack (*Spiraea douglasii*), common rush (*Juncus effusus)* and slough sedge (*Carex obnupta*) (Photos 3, 5 and 6). It was difficult to identify many species in the wetland due to snow cover during the site visit, and lack of access.

Fish presence sampling was not conducted as part of this assessment, as fish habitat in the assessed wetlands appear poor due to minimal surface water connectivity, and thick hydrophytic vegetation; fish utilization is therefore considered unlikely. The wetland likely provides adequate breeding, foraging and refuge habitat for amphibian and bird species.

[12] National Wetlands Working Group. 1997. *The Canadian Wetland Classification System*. Eds. Warner, B.G. & C.D.A. Rubec. Accessed from <https://www.gret-perg.ulaval.ca/fileadmin/fichiers/fichiersGRET/pdf/Doc_generale/Wetlands.pdf>.
[13] Klinka et al. 1989. *Indicator Plants of Coastal British Columbia*. University of BC Press: Vancouver, BC.
[14] BC Ministry of Forests, Lands, and Natural Resource Operations. (2014). *Develop With Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia.* <https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/develop-with-care>
[15] BC Ministry of Environment. (2010). *Field Manual for Describing Terrestrial Ecosystems, 2nd Edition.* <https://www2.gov.bc.ca /assets/gov/environment/plants-animals-and-ecosystems/conservation-data-centre/field_manual_describing_terrestrial_ ecosystems_2nd.pdf>
[16] Pojar, J. and A. MacKinnon. (1994). *Plants of Coastal British Columbia (Revised, 2004).* Lone Pine Publishing.
[17] University of British Columbia. (2022). *E-Flora BC: Electronic Atlas of the Flora of BC.* <https://ibis.geog.ubc.ca/biodiversity/eflora/index.shtml>

3.2 TERRESTRIAL AND RIPARIAN HABITATS AND SPECIES

Terrestrial vegetation on the subject property was limited to pockets of maturing second growth mixed coniferous/deciduous forest species (approximately 30-70 years old), interspersed with manicured lawn and pastures along Spike Road. Tree and shrub species included coastal Douglas-fir (*Pseudotsuga menziesii menziesii*), western redcedar (*Thuja plicata*), western white pine (*Pinus monticola*), western hemlock (*Tsuga heterophylla*), grand fir (*Abies grandis*), red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), red huckleberry (*Vaccinium parvifolium*), salal (*Gaultheria shallon*), Nootka rose (*Rose nutkana*) Pacific crabapple (*Malus fusca*), Oregon grape (*Mahonia aquifolium*) and hardhack (*Spiraea douglasii*). Sword fern (*Polystichum munitum*) and bracken fern (*Pteridium aquilinum*) were dominant ground cover species. There is also some presence of invasive Scotch broom (*Cytisus scoparius)* in some of the cleared grassy areas (Photo 10).

The subject property contains a significant number of wildlife trees and snags within the wetlands, which provide quality habitat for cavity nesting birds. During the site visit on December 1st, 2022, avian species identified by either sound or sight were limited to the common raven (*Corvus corax*) and an unidentified diurnal raptor. Smaller mammalian species such as ermine and other mustelid species, bats, mice, and voles are likely to use the site, although evidence of use was not observed during the site visits due to snow cover.

3.3 SPECIES AND ECOSYSTEMS AT RISK AND RAPTOR NESTING

There are no known species or ecosystems at risk located on the subject property or in proximity. According to the Great Blue Heron Atlas, there are no known colonies within 5 km of the subject property. The Wildlife Tree Stewardship Atlas indicates no known Bald Eagle nests are located within 2 km of the subject property.

4 DISCUSSION/RECOMMENDATIONS

The main ESAs that will require protection if demolition of existing buildings occurs on the subject property are the wetlands on either side of Spike Road. The following sections provide guidance on protecting these ESAs.

4.1 STREAMSIDE PROTECTION AND ENCHANCEMENT AREA (SPEA)

In accordance with RAPR methods that were referenced for the purpose of this biophysical assessment, the wetland to the west of Spike Road has a prescribed SPEA of 15 m, while the wetland to the east has a variable SPEA. Because the western boundary of the eastern wetland is drawn from the southeast to the northwest, the vegetation along the southern boundary will provide shade to the wetland habitat and is therefore considered a Zone of Sensitivity (ZoS). To address this sensitive habitat, the SPEA incorporates the 30 m shade ZoS due south of the HWM of the wetland, which results in an overall SPEA of slightly larger than 15 m in some areas along the eastern wetland (Figure 2).

There is one building that extends a maximum of 3.45 m into the prescribed SPEA of the western wetland, however given that this project will likely include demolition, and the area would be restored to its natural state, this encroachment is not considered a constraint to proposed plans. No other development or vegetation clearing shall occur within the SPEA on the subject property, both during demolition and long-term. Re-naturalizing and enhancing the SPEA will help preserve aquatic habitat by providing nutrients, litter and insect drop, bank stabilization, and by helping to filter runoff water from upland developed areas. The proposed parking lot development is outside of the SPEA, and will be composed of gravel, therefore no significant leaching of harmful substances is to be expected.

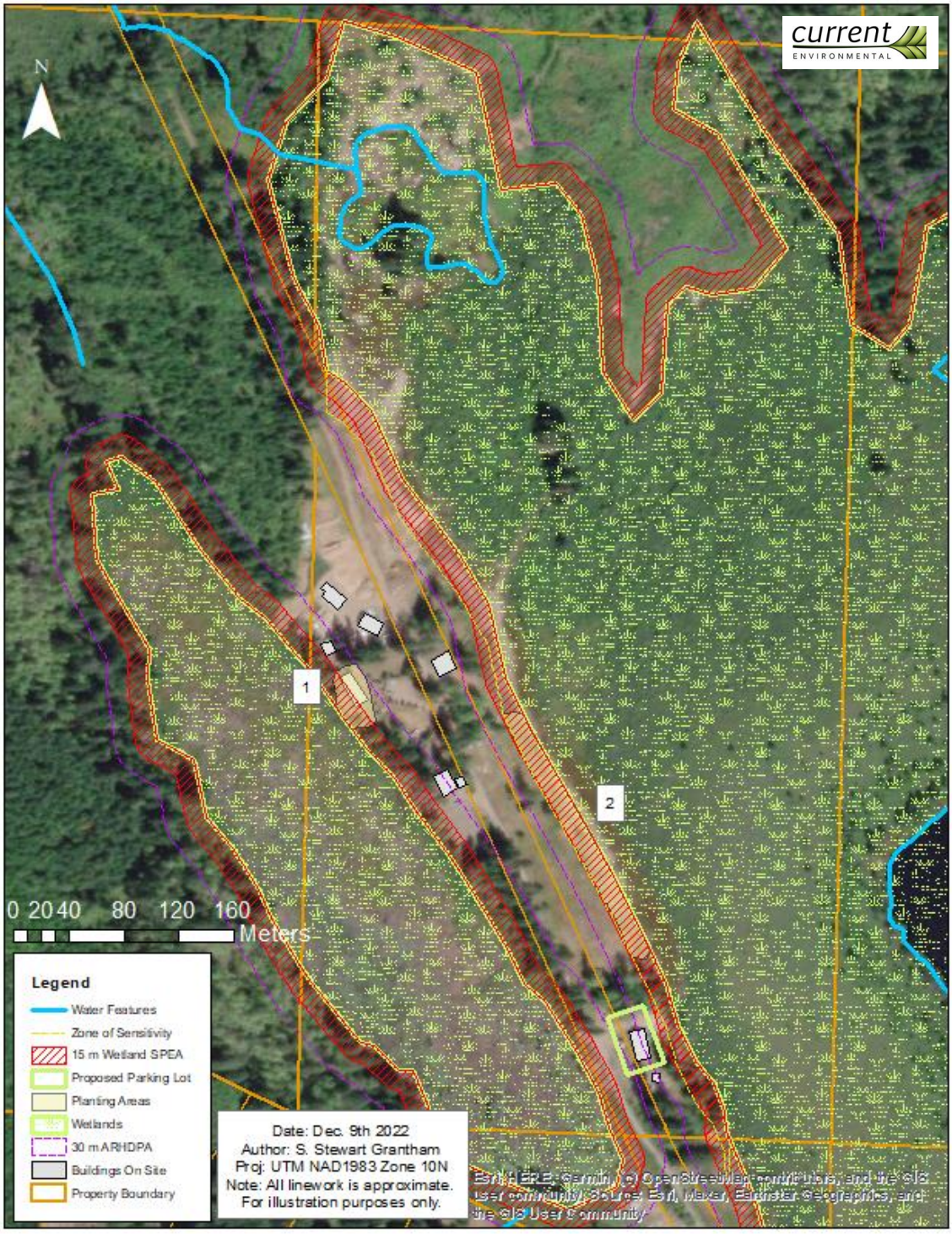

Figure 2. Site map of 1893 Spike Rd, showing the 30 m ARHDPA, the wetland SPEA, the shade zone of sensitivity, proposed site for a parking lot and recommended planting areas (labelled areas 1 and 2).

4.2 LANDSCAPING PLAN

There will be no removal, or very limited removal of vegetation in order to complete the potential demolition, and therefore no required replanting of native species within the SPEA. However, there are some areas of the subject

property that are historically developed that overlap with the SPEA, and therefore since this property is being converted to parkland, it is recommended that some replanting occur to avoid encroachment by people and colonization of invasive plant species into sensitive habitat. These overlapping areas are limited to two locations, disturbed area 1 is on the western wetland boundary, where the main residence currently sits. This structure does extend into the SPEA and therefore, in the wake of potential demolition, will leave the sensitive wetland habitat vulnerable to encroachment by people and invasive species. Additionally, there are some mature standing trees nearby the structure that should be carefully avoided when heavy machinery is in the vicinity in the case that demolition occurs. Attention should also be drawn to their expansive root systems underground, estimated as the area within the dripline of the tree, which should also be avoided during potential demolition. Species prescribed for replanting at this location include a variety of shade tolerant and intolerant plants to thrive in this partially forested area. Disturbed area 2 is on the eastern wetland boundary, where there is currently a partially built fence and limited vegetation providing shade. Once the fence is removed, it is recommended that native species are planted along this wetland boundary to stabilize the banks, and provide nutrients, shade, and habitat for the wetland. Species prescribed include shade intolerant trees and shrubs that can thrive in this environment.

On other site that may be demolished within the subject property, once the building materials have been removed there will be large areas of exposed and bare soil. The majority of the existing buildings are outside of the SPEA, however given that this property is being converted to parkland, native species could be replanted on these plots in order to avoid invasive species encroachment. If project planners decide to replant these areas, plant prescriptions could be extrapolated from disturbed areas 1 and 2 to fit the size and conditions of the plots. Alternatively, at a minimum these bare plots could be seeded with a native grass mix to minimize sediment erosion.

Trees and shrubs can be purchased from a native plant nursery in 1-gallon pots and planted by the property owner or with hired labour. Suggested species and numbers are provided in Table 1 below. The total number of shrubs and trees recommended for planting these two areas is 83 in 1-gallon sized pots (28 trees and 55 shrubs). Projected costs to complete this planting plan is included in Table 3; however, the property owner can choose to complete the planting themselves.

It is also recommended to incorporate a simple split rail fence, or similar barrier, along the SPEA in areas that appear accessible, to discourage the public from walking through revegetated areas before they've had a chance to fully colonise the area. This seems particularly pertinent for disturbed area 1, where the main residence will be removed within the SPEA.

Table 1. Recommended plant list for disturbed area 1 within the western wetland SPEA.

Recommended Plant List				
Common Name	**Scientific Name**	**Quantity**	**Distance from other plants**	**Notes**
Douglas-fir	*Pseudotsuga menziesii*	2	6 m	Shade tolerant/intolerant. Occurs in moderately dry to slightly dry soils, in water shedding sites.
Western white pine	*Pinus monticola*	3	6 m	Shade tolerant/intolerant. Occurs in fresh to moist soils.
Western hemlock	*Tsuga heterophylla*	5	6 m	Very shade tolerant. Can occur in water shedding or receiving sites.
Grand fir	*Abies grandis*	2	6 m	Shade tolerant/intolerant. Occurs in water shedding sites.
Sword Fern	*Polystichum munitum*	5	1 m	Shade tolerant/intolerant. Often dominant on water collecting sites.

Salmonberry	*Rubus spectabilis*	5	1 m	Shade tolerant/intolerant. Tolerates very moist to wet soils.
Thimbleberry	*Rubus parviflorus*	5	1 m	Shade tolerant/intolerant. Thrives in open canopy forest and early-seral communities.
Nootka rose	*Rose nutkana*	5	1 m	Shade tolerant/intolerant. Occurs on fresh to very moist soils. Thrives on floodplains.
Note: Plants can be purchased from a local native plant nursery such as Streamside Native Plants				

Table 2. Recommended plant list for disturbed area 2 within the eastern wetland SPEA.

Recommended Plant List				
Common Name	**Scientific Name**	**Quantity**	**Distance from other plants**	**Notes**
Red alder	*Alnus rubra*	10	6 m	Shade intolerant. Thrives in primary succession on floodplains and alongside water collecting sites
Grand fir	*Abies grandis*	3	6 m	Shade tolerant/intolerant. Occurs in water shedding sites.
Douglas-fir	*Pseudotsuga menziesii*	3	6 m	Shade tolerant/intolerant. Occurs in moderately dry to slightly dry soils, in water shedding sites.
Red flowering currant	*Ribes sanguineum*	10	1 m	Shade intolerant. Occurs on very dry to moderately dry soils. Thrives in open canopy forests on water shedding sites.
Oceanspray	*Holodiscus discolor*	5	1 m	Shade tolerant/intolerant. Occurs on very dry to moderately dry soils, on water-shedding sites.
Pacific ninebark	*Physocarpus capitatus*	5	1 m	Shade tolerant/intolerant. Occurs on moist to wet soils. Thrives in open canopy forests and on water collecting sites.
Hardhack	*Spiraea douglasii*	5	1 m	Shade intolerant. Occurs on very moist to wet soils. Thrives in open canopy forests on water collecting sites.
Nootka rose	*Rose nutkana*	5	1 m	Shade tolerant/intolerant. Occurs on fresh to very moist soils. Thrives on floodplains.
Salmonberry	*Rubus spectabilis*	5	1 m	Shade tolerant/intolerant. Tolerates very moist to wet soils. Thrives on water collecting sites.
Thimbleberry	*Rubus parviflorus*	5	1 m	Shade tolerant/intolerant. Thrives in open canopy forest and early-seral communities.
Note: Plants can be purchased from a local native plant nursery such as Streamside Native Plants				

Table 3. Projected costs of planting plan.

Projected Costs for Planting Plan			
Item	**Cost/Item**	**Number of Items**	**Subtotal**
1 gal potted native plants*	$11.00/plant	88	$968
Landscaper	$22/hour	8	$176
		Total:**	**$1144**
*Plant costs based on Streamside Native Plants ** These estimated costs do not represent a quote by Current Environmental for the purchase, installation, or execution of the landscape plan.			

4.3 DRAINAGE PLAN

Pursuant to CVRD Bylaw No. 337, an assessment of water quality and quantity impacts including recommendations to "ensure the pre-development or natural hydrologic regime is maintained or restored by the development" is required. Given that this project is potentially a demolition of existing buildings to be replaced with vegetation, it can be expected that over time the drainage patterns will re-naturalise. The proposed parking lot will be made of gravel, and therefore permeable to surface water and considering that there is currently a residential dwelling built on that site, significant impacts to the drainage pattern are not expected. There are no trees or significant vegetation to be removed for the proposed project and most of the existing buildings are outside of the SPEA. Therefore, since the overall area of impervious surfaces will likely decrease, the natural drainage patterns are expected to reform, and it can be concluded that there is no expected drainage risk to the wetland as a result of this project.

4.4 MITIGATION MEASURES DURING POTENTIAL DEMOLITION

If development on the subject property approaches the demolition phase, it will be important to implement mitigation measures that will prevent any harm to the adjacent sensitive habitats. One important mitigation measure will be to set up temporary fencing or wooden stakes with flagging tape, to delineate the edge of the SPEA for the wetland to prevent accidental encroachment during demolition. This delineation will also serve to orient the native species replanting zone within the SPEA. Additional mitigation measures to be followed during demolition are provided in Appendix A.

If the demolition phase of this development is to be used as a training exercise for the CVRD Fire Department, there are some precautions that need to be taken into consideration to avoid causing harm to adjacent sensitive habitats. Some considerations are listed as follows:

1. Take caution when burning near forested areas, and when mature standing trees are in proximity. This includes the ground several metres around the tree to protect root systems.
2. Ensure there are no harmful substances in structures being burned or in fire retardants used, to avoid release of deleterious substances to sensitive habitats when using water to douse flames. Take into consideration where water will flow when it's used to extinguish flames, nearby forested areas and permeable ground will absorb water efficiently.
3. Confirm that no avian or bat species have roosted in barn structures roofs/rafters prior to demolition. If there are developed habitats in structures being demolished, this impact can be offset by the enhancement of habitat elsewhere on the property (eg: bat boxes).

5 CONCLUSION

Based on the results on this assessment, proposed potential demolition on the subject property may proceed without causing a net impact to the adjacent wetland habitat for the following reasons:

1) The majority of proposed works will occur outside of the prescribed SPEA. While there is one encroachment on the western wetland setback, as a result of the proposed demolition the plot will be returned to its natural state, and therefore positive impacts on surrounding sensitive habitat are expected.

2) As per Section 4.4 and Appendix A, any potential adverse effects during proposed demolition can be mitigated to result in no, negligible or minor harmful effects on aquatic habitats. If mitigation measures are not implemented as intended harmful alterations may result.

3) A post-construction site visit and letter report are recommended to ensure that the measures to protect the wetland setback area made in this report are adhered to and that no harmful alteration, disruption, or destruction of protected Environmentally Sensitive Areas result from demolition that may occur on the subject property.

4) In areas where historic development (buildings, fenced, cleared land, etc.) overlaps with the prescribed wetland SPEA, it is recommended that replanting of native species occurs in the wake of demolition. A landscaping plan has been included for reference.

6 CLOSURE

We trust that this report satisfies the requirements of a Biophysical Assessment for the proposed development project at 1893 Spike Road, Courtenay, BC pursuant to CVRD Bylaw 337. Please contact the undersigned with any questions or concerns.

Sincerely,

Sylvie Stewart Grantham, B.Sc. AND Rupert Wong, R.P.Bio.

CURRENT ENVIRONMENTAL

PHOTOS

Photo 1. Forested habitat along the edge of western wetland, mixed conifer and deciduous stand.

Photo 2. Main residential structure on the subject property.

Photo 3. Multiple snag trees that make quality perches and habitat for cavity nesting birds at the edge of the western wetland.

Photo 4. Many dead standing trees that make good wildlife trees in the eastern wetland.

Photo 5. Looking east towards the eastern wetland with small ditch along the boundary and remnants of a wooden fence.

Photo 6. Looking west at the western wetland from Spike Road.

Photo 7. End of One Spot Trail that may be further developed along the road that bisects the subject property.

Photo 8. Existing building at southern end of the property, with parking area out front and storage to the left holding various materials.

Photo 9. Smaller Secondary structures on the property.

Photo 10. Scotch broom growth in cleared area, photo taken on March 30th 2022 during the Phase 1 Assessment.

APPENDIX A: MITIGATION MEASURES DURING POTENTIAL DEMOLITION

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 is an offence under the Federal *Fisheries Act* and 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:

1) A spill kit of appropriate capacity will be on hand at all times heavy machinery or gas-powered tools are in use during construction.

2) All identified spills will be cleaned up immediately, and contaminated soils and vegetation will be removed for appropriate disposal.

3) Refueling of equipment is to occur only at designated fuelling stations and located at least 30 m from the wetland.

4) All fuel, chemicals, and hazardous materials will be clearly marked.

5) Pumps and jerry cans are to be placed on poly sheeting and sorbent pads to contain spills.

6) 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 the wetland. Tarps should be laid down prior to commencement of work to facilitate clean up.

7) In the event of a spill, the following guidelines should be followed:

    a. Spills to the receiving environment are to be reported to Emergency Management BC (1-800-663-3456) if they exceed the reportable limits (e.g. 100 liters of fuel or oil) and deleterious substance spills of any volume into water are to be reported to Fisheries and Oceans Canada (DFO) at 1-800-465-4336.
    b. Apply sorbent pads and booms as necessary.
    c. Dispose of all contaminated debris, cleaning materials, and absorbent material by placing in an approved disposal site.

Sediment and Erosion Control:

Specific measures to control sediment during construction will include:

1) Maintain/do not disturb vegetation within the prescribed 15 m SPEA for the wetland.

2) Where there is a potential for silt runoff in the proximity of existing waterbodies, control devices will be installed prior to construction activities commencing.

3) Filter fabric dams and silt fencing will be used as needed on a site-specific basis to control erosion. Filtration should be accomplished using filter fabric keyed into substrates and banks, and elevated using stakes or straw bales. Silt fencing is not an acceptable mitigation technique to control erosion in flowing ditches; however, it is useful for containing slumping areas and for use as baffles to slow water velocities.

4) Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting nearby waterbodies.

5) Soil stockpiles will be placed a minimum of 30 m from any waterbody and in a location where erosion back into the marine environment cannot occur and will not impede any drainage.

6) Soil stockpiles with the potential to erode into waterbodies are to be covered with poly sheeting. Other techniques, such as terracing or surface roughening can greatly reduce surface erosion on steeper slopes.

7) Permanent exposed soil areas and erosion-prone slopes that may potentially erode into waterbodies are to be seeded or covered with geotextile.

8) 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.