ENVIRONMENTAL ASSESSMENT AND PROTECTION PLAN

1915 CUMBERLAND ROAD

-

CITY OF COURTENAY, BC

July 5, 2021

Prepared for:

Tomas Nielsen and Tamara White (BC 1265024 BC Ltd.)

Prepared by:

Dusty Silvester, R.P.Bio.
Current Environmental Ltd.
558 England Ave.
Courtenay, BC V9N 2N3

current ENVIRONMENTAL

CONTENTS

1 INTRODUCTION

The current landowners, Tomas Nielsen and Tamara White (the "Proponent"), are proposing to rezone, subdivide, and develop an approximate 1.2 ha property[1] located at 1915 Cumberland Road and currently zoned R1-A within the City of Courtenay, BC. This report is in support of the re-zoning phase of development and the conceptual lot layout discussed in this document may be subject to change during the future subdivision process. The proposed lot layout for this development is provided in Figure 1. Due to the potential existence of environmentally sensitive areas (ESA) on the subject property, Current Environmental Ltd. (CEL) has been retained to provide an environmental inventory and impact assessment[2] to facilitate project planning and to assist with securing approval from regulatory agencies. A Ministry of Forests Land and Natural Resource Operations (MFLNRO) *Water Sustainability Act* (WSA) Section 11 Approval (File #1005012) has been obtained for changes in and around water that are described in Section 6.1.

1.1 OBJECTIVES

This document is provided in support of a rezoning application with the City of Courtenay for the subject property. Specifically, the objectives of this assessment are to:

a. Complete an assessment of fish and wildlife habitat and utilization, plant communities, and other Environmentally Sensitive Areas (ESA's) on the subject property.

b. Determine appropriate setbacks from identified fish habitat using the detailed *Riparian Areas Protection Regulation* (RAPR) assessment methodology and City of Courtenay Arden Corridor Local Area Plan (LAP).

c. Support interdisciplinary project planning and design.

d. Outline recommendations for enhancement and compensation measures as part of a conceptual site development plan that will help avoid or minimize potential impacts and optimize ecological function on the site after development.

1.2 PROPOSED DEVELOPMENT

The Proponent's proposed rezoning and conceptual development plan includes the creation of 20 single family units and one common lot representing a variety of architectural forms and character while maintaining and enhancing some existing environmentally sensitive habitats (Figures 1 & 2). Access to the site will include a strata road connecting Larsen Road from the west with Cumberland Road to the east. The strata road will also afford the City of Courtenay and opportunity to install sanitary gravity main improvement (20-year horizon) to service a portion of the west Courtenay catchment area between 1st Street and Cumberland Road. An existing 1,093 ft^2 residence is present in the eastern half of the property with driveway access to Cumberland Road -the residence will be decommissioned during the development phase.

Establishing driveway access off Larsen Road will require extending an existing 200 mm dia. PVC storm pipe at the end of pavement on Larsen Road approximately 30 m east, enclosing a portion of non-fish bearing ditch (Figure 1; Photo 1). A recommended natural preservation area included within the development plan includes a 15 m

[1] Lot 1 Plan VIP32210 District Lot 96 Land District 15 (PID: 000-715-891)

[2] A Construction Environmental Management Plan (CEMP) will be generated once a final lot layout and design has been produced.

vegetation retention buffer around a 485 m^2 constructed Habitat/Stormwater (SW) Pond (Figure 1). The Habitat Pond is intended to offset the removal of 150 m^2 existing seasonally wetted area within the new driveway prism that is currently isolated from the Larsen Rd. ditch channel (Figure 1). Because the wet area is isolated from the ditch it is not applicable for review under the *Riparian Areas Protection Regulation* (RAPR) and has been deemed "not environmentally sensitive". Furthermore, FLNRO Approval #1005012 for the construction of a Habitat/SW pond is intended to create a feature with increased habitat benefits on the landscape (Section 6.1).

A remaining 215 m^2 portion of the existing wet area will be maintained within a proposed 15 m setback surrounding the Habitat Pond (Figure 1) pursuant to conditions in FLNRO Approval #1005012. The 35 m^2 eastern end of the wet area will be enclosed in storm runoff diversion on a development lot east of the habitat pond protection area in the western corner of the lot (Figure 1).

The Larsen roadside ditch running parallel to the eastern edge of the Larsen Road ROW is considered non-fish bearing as a result of a 135 m length of enclosed portion of the Tributary 10 channel within a 525 mm Ø CSP running between 2105 & 2007 Cumberland Road. FLNRO Approval #1005012 allows for the 30 m enclosure of this ditch.

Existing aquatic areas (isolated wet area) on the property totals 0.04 ha (3.3 % of the 1.2 ha site; Table 1 ID# 2) that will be included within intersected areas of the proposed protected area (15.8 % of total site; ID# 3) developable areas for driveway, common lot, and development lots (0.97 ha combined or 80.8% of the site; ID# 4, 5, & 6). The proposed development includes the dedication of approximately 0.19 ha of forested land including the WSA approved Habitat/SW pond that will also address required tree retention numbers under the City's Tree Management within an area of environmental protection (Table 1).

Table 1. Areas of proposed protection and property development.

ID	TOTAL AREAS	AREA (HA)	% OF TOTAL
1	Lot	1.20	100
2	Aquatic (isolated wet area)	0.04	3.3
3	Protected (proposed new pond & riparian)	0.19	15.8
4	Common Lot	0.06	5.0
5	Development Lots	0.77	64.2
6	Driveway	0.14	11.7

Recommended avoidance, minimization, and restoration measures will be addressed in a Construction Environmental Management Plan (CEMP) to accompany a future subdivision application once the lot and infrastructure layout has been finalized.

2 BACKGROUND

The following documents have been produced in support of the re-zoning application package with the City of Courtenay and have been used to assist in setting the scope of this assessment:

- Current Environmental Ltd. (Dec. 18, 2020). BC MFLNRO Change Approval and Notification (Changes In and About a Stream). Application Form.
- MFLNRO Change Approval Letter (April 8, 2021). Changes In and About a Stream. File # 1005012
- Tilia Arboriculture Consulting. (May 31, 2021). Arborist's Tree Inventory and Assessment.
- Wedler Engineering. (July 4, 2017). Site Plan – Proposed Constructed Wetland (REV B). (Figure 1)

Pursuant to the City of Courtenay's OCP[4], the BC Ministry of Environment's *Develop with Care*[22] methodology was used during 2021 ground-level reconnaissance. The following ecosystem elements were considered during all previous assessments and form the basis of this impact assessment:

a) Presence and locations of watercourses and wetlands;
b) Legislated setbacks from watercourses and wetlands;
c) Presence of other terrestrial and aquatic ESA's;
d) The occurrence of rare or endangered species.

3 STUDY AREA

The subject property comprises a total area of 1.2 ha located in the City of Courtenay between Larsen Road in the west and Cumberland Road in the east approximately centered at UTM coordinates 10N 354688.0 m E 5504320.3 m N (Figures 1 & 2). The subject property is surrounded by residential properties to the north and west along Burgess Road and Krebs Cres. With a community park across Larsen Road to the west, an undeveloped parcel to the south and Cumberland Road to the southeast.

The site resides in the Coastal western hemlock (very dry maritime eastern variant) CWHxm1 biogeoclimatic zone. This zone is restricted to elevations between sea level and 700 m in areas subject to the rainshadow of Vancouver Island and the Olympic Range, and is characterized by warm, dry summers; and mild, wet winters.[3]

In general, the subject property, which is generally flat with gentle slopes from the north and south into a central depression in the northern half of the property (Figure 2). The entire property has undergone historical modifications associated with historical clearing and residential occupation. Overall, the study area can be characterized into two distinct regions with regard to Environmentally Sensitive Areas (ESA's): the maintained residential area in the southeast, and the undeveloped forested area in the northwest. These distinct areas are detailed as follows:

1. Maintained Residential Area (0.48 ha): A 1,093 ft^2 residence with driveway access off Cumberland Road is located within a cleared area surrounded by fruit trees, grassy areas, and a number of

[3] Ministry of Forests and Range. (2009). CWHxm1 - Moist Maritime Coastal Douglas fir Subzone. Biogeoclimatic Ecosystems Classification Program. Research Branch. Retrieved from <http://www.for.gov.bc.ca/rco/research/eco/bec_web/docs/CWHxm1.htm>.

accessory buildings. The forested stand that had inhabited this area has long ago been removed and no environmentally sensitive areas remain present.

2. Undeveloped Forested Area (0.72 ha): The forest stand in the northern half of the property is a young 3rd growth forest regenerating through natural succession (planting does not appear to have occurred) dominated by deciduous red alder and black cottonwood. Most of the stand is approximately 40 years old with some older cottonwood present in and around a central wet area.

4 REGULATORY REQUIREMENTS

The primary regulatory jurisdictions over environmentally related aspects of the Project include the City of Courtenay, Department of Fisheries and Oceans (DFO), and the BC Ministry of Forest Lands and Natural Resource Operations (MFLNRO) agencies.

The protection of ESAs and the mitigation of environmental impacts are to be of primary importance during construction of the Project. Pertinent regulations that will govern construction activities in proximity to ESAs include:

1. City of Courtenay OCP ESA DPA[4] & Arden LAP[5]
2. Federal *Fisheries Act*
3. Federal *Species at Risk Act* (SARA)
4. Federal *Migratory Bird Convention Act*
5. BC *Wildlife Act*
6. BC *Fisheries Protection Act*
7. BC *Water Sustainability Act*

If implemented correctly, Best Management Practices (BMPs) and mitigation measures outlined in this document and the future project CEMP[2] will ensure the protection of ESAs and compliance with the abovementioned regulations.

4.1 CITY OF COURTENAY OCP ESA DPA (INC. *RIPARIAN AREAS PROTECTION REGULATION*), ARDEN LAP, & TREE MANAGEMENT BYLAW

City of Courtenay environmental legislation that applies to the subject property during the current re-zoning application process includes Environmental Development Permit Area (OCP Bylaw No. 2387) and more specifically the Arden Corridor Environmental Development Permit (AC-EDP) detailed in the Arden Local Area Plan (LAP).

According to the City's OCP (Section 4.10.4) Environmentally Sensitive Areas (ESA) that reside on the subject property could include areas such as wetlands, riparian forest, and wildlife habitats. The City has identified a number of tools for the protection of these areas that include:

- Development permits

4 City of Courtenay. (2016). Official Community Plan. Appendix "A" to Bylaw No. 2387. Section 8 - Environmental Development Permit Area. Accessed from <http://www.courtenay.ca/assets/Departments/Development~Services/Bylaw_2387_OCP.pdf.pdf>
5 http://www.courtenay.ca/assets/Departments/Development~Services/LAP_Arden%20Corridor.pdf

- Tree Protection and Management Bylaw
- Acquisition/dedication of applicable lands
- Conservation covenants
- Joint ownership/management
- Increased buffer areas or leave strips
- Amenity provisions through zoning

Of these tools the Arden Corridor Environmental Development Permit Area (AC-EDP) requirement will be applied to the forthcoming re-zoning and subdivision phases. The AC-EDP recognizes that assessments of watercourses and wetlands are co-enabled under the *Riparian Areas Protection Regulation* (RAPR) of the BC *Fisheries Protection Act* (see below) and accepts the RAPR as a minimum standard for stream and riparian protection[6]. This EAPP is intended to meet the AC-EDP requirement for an impact assessment and Detailed Assessment under *Develop with Care 2012 Bio-Inventory Terms of Reference* prepared by a R.P.Bio. A RAPR assessment will not be pursued until after changes approved under *WSA* Section 11 Approval (File #1005012; Appendix B) have been completed, specifically the enclosure of a 30 m portion of the RAPR applicable Larsen Road Ditch (Section 6.1).

The Arden Local Area Plan (LAP) builds on the RAPR's minimum standard by applying a blanket 30 m setback on all watercourses and wetlands. The LAP does, however, allow for trail systems to be within the 30 m LAP setback providing that it remains outside the RAPR setbacks for watercourses and wetlands. Additional discussion of the RAPR as it applies to the subject property is provided in Section 6.2.

The City of Courtenay *Tree Protection and Management Bylaw* (No. 2850)[7] regulates the removal, retention, and replacement of trees associated with development. The development work proposed in this EAPP will require consideration and application of the regulation during all design, planning, and implementation phases. As referenced in Section 2, an Arborist's Tree Inventory and Assessment was created by Tilia Arboriculture Consulting Inc. on May 31, 2021 (Appendix A).

4.2 FEDERAL FISHERIES ACT

An updated version of the Federal *Fisheries Act* was introduced on June 21, 2019 with additional provisions coming into force on Aug. 28, 2019.

The Federal *Fisheries Act*[8] is intended to ensure works are carried out in a manner that avoids resulting in the harmful alteration, disruption, or destruction of fish habitat and prevent pollution of water frequented by fish as described in the following notable sections:

1. No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat. (Section 35);
2. A prohibition against depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any

[6] A detailed RAPR assessment has not been created for the project and will accompany any future subdivision applications.
[7] http://www.courtenay.ca/assets/City~Hall/Bylaws/Land~Use/2850_Tree_Protection_Bylaw.pdf
8 Fisheries Act. Last Amended August 28, 2019. Accessed from <http://laws-lois.justice.gc.ca/eng/acts/f-14/>.

other deleterious substance that results from the deposit of the deleterious substance may enter any such water (Section 36(3));

3. Provisions for flow and passage (Section 20 and 21);
4. A framework for regulatory decision-making (Section 6 and 6.1).

These provisions are intended to reduce threats to habitat (degradation or loss), flow alteration, aquatic invasive species, overexploitation of fish, and pollution of many kinds that may adversely affect water quality and fish health.

When conducting a project near water it is the responsibility of the person or proponent conducting the work to ensure they avoid causing a "*harmful alteration, disruption or destruction* [HADD] *of fish habitat"* in compliance with the *Fisheries Act*. The DFO document entitled "*Measures to Protect Fish and Fish Habitat*"[9] applies to all project types and replaces all previous DFO "*Operational Statements*". "Standards, codes of practice, and guidelines for projects near water"[10] are intended to assist compliance with fish and fish habitat protection provisions of the *Fisheries Act* by incorporating measures to avoid causing the death of fish and HADD of fish habitat.

Measures to Protect Fish and Fish Habitat under the Fisheries Act

Projects may either be submitted for review to DFO agency staff ("Request for Review" process) or if below trigger thresholds for review, a self-assessment by a Qualified Environmental Professional (QEP). Successful self-assessment occurs when "measures to protect fish and fish habitat" can be effectively implemented and no formal project review by DFO is required. Since the subject property is located within a non-fish bearing area of the watershed a DFO RFR will not be required.

4.3 SPECIES AT RISK ACT

The *Species at Risk Act* (SARA) is a federal law with three main goals:

1. Prevent endangered or threatened species from becoming extinct or extirpated;
2. Help in the recovery of endangered, threatened and extirpated species; and
3. Manage species of special concern to help prevent them from becoming endangered or threatened.

For those species listed as extirpated, endangered or threatened under the Species at Risk Act (SARA), it is illegal to:

1. Kill, harm, harass, capture or take an individual;
2. Possess, collect, buy, sell or trade an individual or any part of an individual; and
3. Damage or destroy the residence of one or more individuals.

4.4 MIGRATORY BIRD CONVENTION ACT (MBCA)

The *Migratory Bird Convention Act* (MBCA) protects individuals and populations of migrating birds, including their eggs and nests. Among a number of prohibitions, this act requires there be no disturbance to the nests or eggs of migratory birds without a permit from the Minister, and there be no addition of substances "in waters or an area

9 Measures to Protect Fish and Fish Habitat. <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>.
10 DFO Projects Near Water. <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>

frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds."[11]

4.5 BC WILDLIFE ACT

Section 34 of the provincial *Wildlife Act*[12] specifies that:

> A person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys
>
> (a) a bird or its egg,
>
> (b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
>
> (c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

Raptor nests covered under the *Act* are protected year-round whether they are active or not, while breeding birds' nests are only protected while inhabited by a bird or its egg.

In order to ensure the protection of nesting birds and their eggs pursuant to the BC *Wildlife Act* no works with the potential to disrupt trees/vegetation should be undertaken during the passerine bird nesting window from Mar. 1 - Aug. 31[13] without being preceded by a bird nesting survey completed by a QEP.

4.6 BC WATER SUSTAINABILITY ACT

Section 11 of the Provincial *Water Sustainability Act* (*WSA*) requires an Approval be granted by the Ministry of Forests Lands and Natural Resource Operations (MFLNRO) for "changes in and about a stream" defined as[14]:

> (a) any modification to the nature of the stream including the land, vegetation, natural environment or flow of water within the stream, or
>
> (b) any activity or construction within the stream channel that has or may have an impact on a stream or a stream channel.

Notifications are relevant to low-risk changes, such as culvert upgrades, that will have a minimal impact on the environment and third parties; while larger, more complex works, such as enclosing 30 m of the Larsen Road ditch and replacing the seasonally wetted area with a constructed habitat/SW pond has triggered an Approval. As mentioned, Approval under the WSA has been granted for the project with letters appended to this assessment (Appendix B). Best Management Practices (BMPs) outlined in the *Users' Guide to Working in and Around Water*[15] should be implemented as the Project aims to meet and/or exceed provincial and federal requirements for habitat protection.

---

11 Migratory Bird Convention Act. <https://www.ec.gc.ca/Nature/default.asp?lang=En&n=7CEBB77D-1>&<http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>
12 BC Wildlife Act. Accessed from: <http://www.bclaws.ca/EPLibRAPRies/bclaws_new/document/ID/freeside/00_96488_01#section34>.
13 Develop with Care. (2014). Section 4 - Environmentally Valuable Resources. Table 4.2: Breeding season least risk window. pg. 4-26. Accessed from < http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/DWC-Section-4.pdf>.
14 http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water
15 https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/working_around_water.pdf

5 SCOPE OF ASSESSMENT/METHODS

This EAPP has been completed based on the following methods and resources:

1. "Office-based"/background, review of existing technical reports specific to environmentally related resources in the project area;
2. Field verification, assessment, and mapping of proposed project areas and inventoried Environmentally Sensitive Areas (ESA's);
3. Assessment of potential environmental impacts associated with proposed project works;
4. Recommendations to avoid, minimize, restore and offset environmental impacts.

5.1 BACKGROUND INFORMATION REVIEW

The following resources were consulted prior to field work to help identify known ESA's and to direct field assessment activities:

1. Office-based resources to determine fish presence and habitat suitability of identified watercourses included information researched on the Provincial Ministry of Environment (MoE) *Fisheries Information Database Query* (FIDQ) database, and the MoE BC *Habitat Wizard*[16] online resources.
2. MoE BC Conservation Data Center (CDC) *Species and Ecosystem Explorer*[17];
3. SARA and COSEWIC (Committee on the Status on Endangered Wildlife in Canada) online database[18];
4. BC Geographic Warehouse iMapBC 2.0 online mapping application[19];
5. Sensitive Ecosystem Inventory (SEI) mapping of East Vancouver Island[20];
6. Wildlife Tree Stewardship Atlas (WiTS)[21];
7. Geo-referenced orthophotos of the study area.

5.2 FIELD METHODOLOGY

A series of reconnaissance-level field surveys were completed on May 25 & Dec. 2, 2020, to observe the seasonal character and wildlife usage patterns of the subject lot. In general, broad, initial observations around the entire project area were conducted to help highlight areas of special concern that may warrant closer investigation including aquatic and terrestrial habitats and species. No species at risk were identified on the subject lot during ground-level reconnaissance.

Aquatic Habitats & Species

16 https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/habitatwizard
17 https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer
18 http://www.sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1;http://www.cosewic.gc.ca/eng/sct1/index_e.cfm
19 https://www2.gov.bc.ca/gov/content/data/geographic-data-services/web-based-mapping/imapbc
20 https://www.cmnbc.ca/atlasgallery/sensitive-ecosystems-inventory-sei/
21 https://www.cmnbc.ca/atlasgallery/wildlife-tree-stewardship/

Criteria for determining and describing aquatic ESAs and proposing a suitable location for proposed habitat/SW pond construction based on existing identified features were based primarily on measures in BC MOE *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia*[22], the Resources Inventory Committee of British Columbia *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures* Version 1.1[23], the City of Courtenay *Official Community Plan*[4], BC *Fisheries Protection Act - Riparian Areas Protection Regulation Assessment Methodology*[24], and from the project biologist's previous experience in dealing with local government, Federal, and Provincial agency staff.

Terrestrial Habitats & Species

Survey methods for terrestrial elements or ESA's included those outlined in *Environmental Best Management Practices for Urban and Rural Land Development in British Columbia*[25], and the *Field Manual for Describing Terrestrial Ecosystems*[26].

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*[27], *BC Species and Ecosystems Explorer*[28], and the *Federal Species at Risk Public Registry*[29]. 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 *Environmental Best Management Practices for Urban and Rural Land Development*[30].

6 RESULTS

Potential ESA's reviewed for the subject property are: aquatic habitats that include an isolated seasonally wet depression and nearby Larsen Road ditch, the latter of which ultimately connects downstream to Trib. 10 of Piercy Creek (Section 6.1); riparian areas that include maturing riparian forest areas adjacent to the Larsen Road ditch (Section 6.2); terrestrial habitats and species (Section 6.3); and species at risk (Section 6.4).

6.1 AQUATIC HABITATS AND SPECIES

Isolated Wet Depression

22 https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/best-management-practices/develop-with-care
23 https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/recce2c.pdf
24 http://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/RAR_assessment_methods.pdf
25 https://www.env.gov.bc.ca/wld/documents/bmp/urban_ebmp/EBMP%20PDF%203.pdf
26 https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/conservation-data-centre/field_manual_describing_terrestrial_ecosystems_2nd.pdf
27 https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/known-locations-of-species-and-ecosystems-at-risk/cdc-imap-theme
28 https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer
29 https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html
30 BC Ministry of Water, Land and Air Protection. Draft 2004. Section 6. Special Wildlife and Species at Risk. Accessed from <https://www.env.gov.bc.ca/wld/documents/bmp/urban_ebmp/urban_ebmp.html>.

The property is gently sloping from both north and south towards its approximate center where water accumulates in a shallow, approximately 415 m^2 depression with an estimated max. depth of 10 cm (Photo 2). Sections of the depression appear to show characteristics of succeeding back to a forest stand as they do not support any hydrophytic vegetation and are composed of bare soils and an accumulation of organic material (Photo 3). The reaches of Tributary 10 between Cumberland Road and the subject property are non-fish bearing from a point 230 m downstream of the Larsen Road culvert location because of storm water infrastructure having enclosed the stream channel in a 525 mm storm sewer pipe for approximately 135 m.

Habitat qualities of the 415 m^2 wet depression with some wetland-type characteristics are considered relatively low for the following reasons:

a. Wet season observed depths are minimal and non-contiguous at 5 cm on Dec. 2nd (Photo 2) (10 cm bankful depth) and are considered representative of a typical winter.
b. There was no observed connection between the wetland and the nearby non-fish bearing ditch on Dec. 2nd (Photo 2), and it is suspected that the wet depression is present in part because of water impounded by spoilage that appears to have been sidecast onto the edge of the property during establishment of the Larsen Road ditch.
c. The presence of shallow seasonal water, disconnection from the Larsen Road ditch under most conditions except extreme weather events, and the non-fish bearing status of the ditch show that there is limited value to amphibians and fish in the wet depression's current configuration.
d. Ground level assessments of the depression in May and December 2020 did not show presence or utilization by wildlife, including amphibians, and habitat values are considered low for this feature.

A recommended natural preservation area within the development plan includes a 15 m vegetation protection area around a 485 m^2 constructed Habitat/Stormwater (SW) Pond (Figure 1). The Habitat Pond is intended to offset the removal of 150 m^2 existing seasonally wetted area within the new driveway prism that is currently isolated from the Larsen Rd. ditch channel. Because the wet area is isolated from the ditch it is not applicable for review under the *Riparian Areas Protection Regulation* (RAPR) although changes to it are subject to the Water Sustainability Act (Appendix B). As well, it has been determined to have little to no habitat function, will be modified under Section 11 Approval, and has been deemed "not environmentally sensitive". As a result, it is recommended that the 415 m^2 isolated wet area be exempt from the City of Courtenay *Arden Corridor Environmental Development Permit Area* (AC-EDP) under Section 9.6.6 - #3.4. Furthermore, FLNRO Approval #1005012 for the construction of a habitat/SW pond is intended to create a feature with increased habitat benefits on the landscape.

Larsen Road Ditch

A vegetated ditch with approx. 1.2 m width drains stormwater infrastructure from the Krebs Cres. development area via a 200 mm ø PVC storm pipe onto the northwest end of Larsen Road ditch adjacent to the subject property (Photo 1). The ditch flows in a southwesterly direction for approx. 160 m before connecting with an old, temporary stormwater pond (Photo 4) originally intended to detain stormwater for the duration of construction of the upstream residential area that was completed in the late 1990s. The City has maintained the detention pond since that time including removal of an outlet culvert structure in 2019 that was notified under the WSA (Tracking #100291457). Additional inputs from a larger wetland complex to the west of the detention pond enters near its outflow into a ditched and straightened channel that flows southeast along the northern boundary of 2115 and 2105

Cumberland Road. A described above, all nearby channels west of Cumberland Road are non-fish bearing from a point 230 m downstream of the Larsen Road culvert location because of storm water infrastructure having enclosed the stream channel in a 525 mm storm sewer pipe for approximately 135 m.

6.2 RIPARIAN AREAS

Since the isolated wet depression located on the subject property does not have a surface flow connection to fish bearing waters it is not subject to review under the RAPR; however, the WSA does apply which has called for the acquisition of a *WSA* Approval for its replacement with the 485 m^2 habitat/SW pond described in Section 6.1.

The Larsen Road ditch, however, does have a surface water connection downstream to Trib. 10, although a portion of it is piped underground as described in the preceding section. According to RAPR methodologies this non-fish bearing ditch would receive a 2 m Streamside Protection and Enhancement (SEPA) setback under the RAPR while the City's Arden Corridor DPA (AC-LAP) establishes a 5 m setback whether the ditch is fish bearing or not; the latter more conservative regulation will be adhered to.

Approximately 0-3 m from the stream boundary of the Larsen Road ditch has been cleared by the City during Larsen Road ROW maintenance, leaving an approximate 2 m strip along the setbacks eastern edge to be maintained (Photo 1). The project's tree management plan (Appendix A) has accounted for protection and maintenance of all trees on the property including those within proximity to the Larsen Road ditch.

Riparian vegetation along the ditch channel varies between hydrophytic species in the ditch bottom including horsetail and slough sedge to drier riparian vegetation on its banks dominated by salmonberry and grasses with swordfern near the forested edge to the east. Tree species located near the 5 m AC-EDP setback edge include red alder and cottonwood.

6.3 TERRESTRIAL HABITATS AND SPECIES

As introduced in Section 3, the property can be divided into two distinct areas with the eastern approx. 1/3 being maintained as a residential area including structures and lawns, while the western 2/3 is a young, forested stand of rad alder and cottonwood. According to City rezoning application requirements, an arborists report meeting criteria from the *Tree Management Bylaw* has been provided by Tilia Arboriculture Consulting Inc. (Appendix A). The isolated wet area central to the western 1/3 of the property supports more mature cottonwoods while a small number of conifers, including grand fir and Douglas fir, are scattered along the edges of the property.

The understory of the forested area is relatively sparse with some sword fern and salmonberry. The lack of understory growth may be related to the relatively young age of the stand causing shading and the thick mat of litter fall from deciduous trees suppressing growth of shrub and ground cover species.

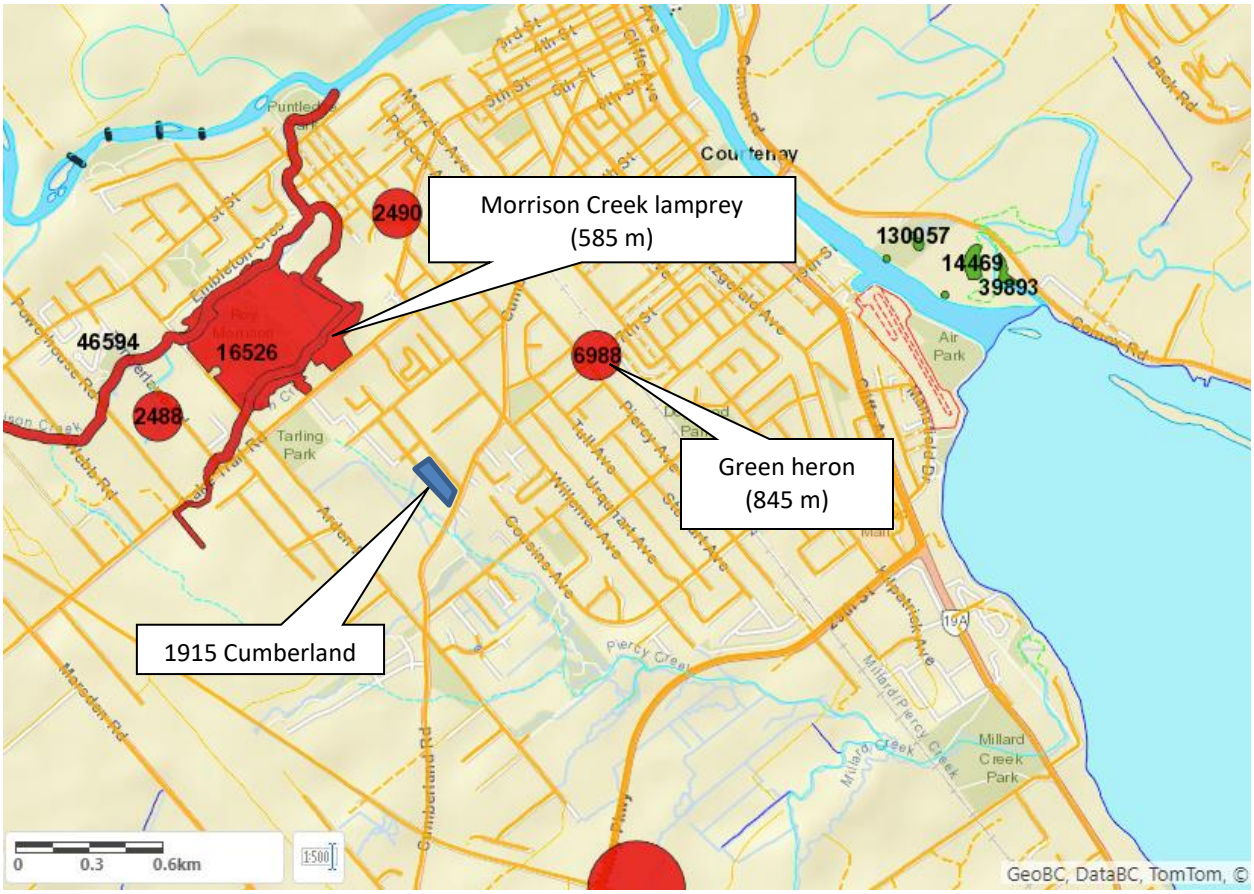
Based on the homogeneity and young age of the stand (approx. 40 years) it is likely that the entirety of the property was cleared of mature forest at once and was allowed to regenerate on its own without trees having been planted. This factor accounts for a lack of wildlife trees or snags that often accompany older stands that have succeeded through at least one generation of growth, as well as recumbent woody debris being largely absent that often provides habitat for amphibians. As a result, there was no presence of cavity nesting habitat observed for primary or secondary cavity nesters such as passerine birds or small mammals and little to no habitat to support amphibian breeding or rearing on the property. The density of the canopy during the spring/summer season, however, could provide good nesting habitat for canopy nesting species and highlights the need for a pre-clearing nest survey should the property be scheduled for additional clearing at a future date (Mar. 1 -Aug 31).

6.4 SPECIES AT RISK

The BC Conservation Data Center (CDC) maintains an active database of species and ecological communities at risk for each Forest District in British Columbia. Detailed records are maintained for species and ecological communities that are of special concern (blue list) or at risk of extirpation and extinction (red list). According to the CDC online mapping resource[31] (Inset 1) the closest known occurrence of a Species at Risk (SAR) is the red-listed Morrison Creek Lamprey (*Lampetra richardsoni var. marifuga*), an endemic species in the Morrison Creek watershed: it is not known to reside in the Millard/Piercy watershed, is located 585 m to the northwest and will not be a constraint to the subject property.

During ground-level reconnaissance in May and Dec. 2020 there was no other species at risk identified.

31 http://maps.gov.bc.ca/ess/hm/cdc/



Inset 1. Known mapped occurrences of species at risk near the Project according the BC Provincial Conservation Data Centre (CDC) database.

7 CONCLUSIONS AND SUMMARY OF RECOMENDATIONS

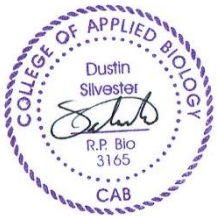
1) The development features a layout of 20 units, a common lot, and a protected Habitat/SW pond with surrounding native vegetation buffer. Access off Larsen Road will require enclosing 30 m of the existing roadside ditch and will cross an approximate 150 m^2 of existing isolated wet area that has already been authorized by the Province of BC under a *WSA* Approval (File #1005012; Appendix B).
2) Proposed development includes the dedication of approximately 0.19 ha of forested land including the WSA approved Habitat/SW pond representing protection of 15.8% of the lot area that will also address required tree retention numbers under the City's Tree Management within an area of environmental protection.
3) The ditch running parallel to the eastern edge of the Larsen Road ROW is considered non-fish bearing as a result of a 135 m length of enclosed portion of the Tributary 10 channel located downstream within a 525 mm Ø CSP running between 2105 & 2007 Cumberland Road.
4) A DFO Request for Review is not required as the Larsen Road ditch has been determined to be non-fish bearing.
5) Development of a 485 m^2 Habitat/SW Pond is intended to offset the removal of 150 m^2 existing seasonally wetted area within the new driveway prism that is currently isolated from the Larsen Rd. ditch channel. Because the wet area is isolated from the ditch it is not applicable for review under the *Riparian Areas Protection Regulation* (RAPR). The existing isolated wet area has been determined to have little to no habitat function and has been deemed "not environmentally sensitive". It is recommended that the 415 m^2 isolated wet area that will be modified under Section 11 Approval be exempt from the City of Courtenay *Arden Corridor Environmental Development Permit Area* (AC-EDP) under Section 9.6.6 - #3.4.
6) Rainwater features (decentralized source controls, detention/infiltration facilities, constructed wetlands, etc.) will provide water quality treatment and will also help maintain natural hydrologic processes on the site. Arden LAP criteria[4] for rainwater detention will be adhered to.
7) Correspondence with the Millard Piercy Watershed Stewards (MPWS) has been initiated through the WSA Section 11 Approval process and will be maintained throughout the ongoing planning and design process (Appendix C).
8) In order to ensure the protection of nesting birds and their eggs pursuant to the BC *Wildlife Act*, no works with the potential to disrupt trees/vegetation should be undertaken during the passerine bird nesting window from Mar. 1 - Aug. 31 without being preceded by a bird nesting survey completed by a Qualified Environmental Professional (QEP).
9) Provincial Tree Replacement Criteria will be utilized wherever danger trees require removal from the proposed habitat protection area surrounding the Habitat/SW pond in the southwest corner of the site (i.e., mature cottonwoods #7251, 7254, 7273, and 12079 described in the Arborist's Report in Appendix A).
10) The arborist's *Tree Protection and Management Bylaw* report (Appendix A) recommends that some trees within the proposed 0.19 ha protected area be monitored "every 6 moths once development activities begin, and annually for 5 years post-development" to assess tree health and provide mitigation recommendations as needed.
11) Temporary tree protection zone (TPZ) fencing will be installed along the edge of retained trees bordering the new driveway alignment according to specifications and under review of an arborist according to the criteria setout in Appendix A.
12) The management of all potential construction-related impacts to environmental resources will be accomplished through the implementation of the Construction Environmental Management Plan (CEMP) expected to be a requirement of a future subdivision application package.

a) Best Management Practices (BMPs) outlined in the project CEMP and *Users' Guide to Working in and Around Water* will be implemented as the Project aims to meet and/or exceed provincial and federal requirements for habitat protection.

8 CLOSURE

We trust that this report will satisfy the requirements for a biophysical assessment of environmentally sensitive areas pursuant to the City of Courtenay OCP. If there are any questions or comments please contact the undersigned.

Current Environmental Ltd.



Dusty Silvester, R.P.Bio.

9 DISCLAIMER

This report was prepared exclusively for Tomas Nielsen and Tamara White (BC 1265024 BC Ltd.) & the City of Courtenay by Current Environmental. 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 authors 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 Tomas Nielsen and Tamara White (BC 1265024 BC Ltd.) & the City of Courtenay only, subject to the terms and conditions of its contract or understanding with Current Environmental. Other use or reliance on this report by any third party is at that party's sole risk.

10 FIGURES

(next page)

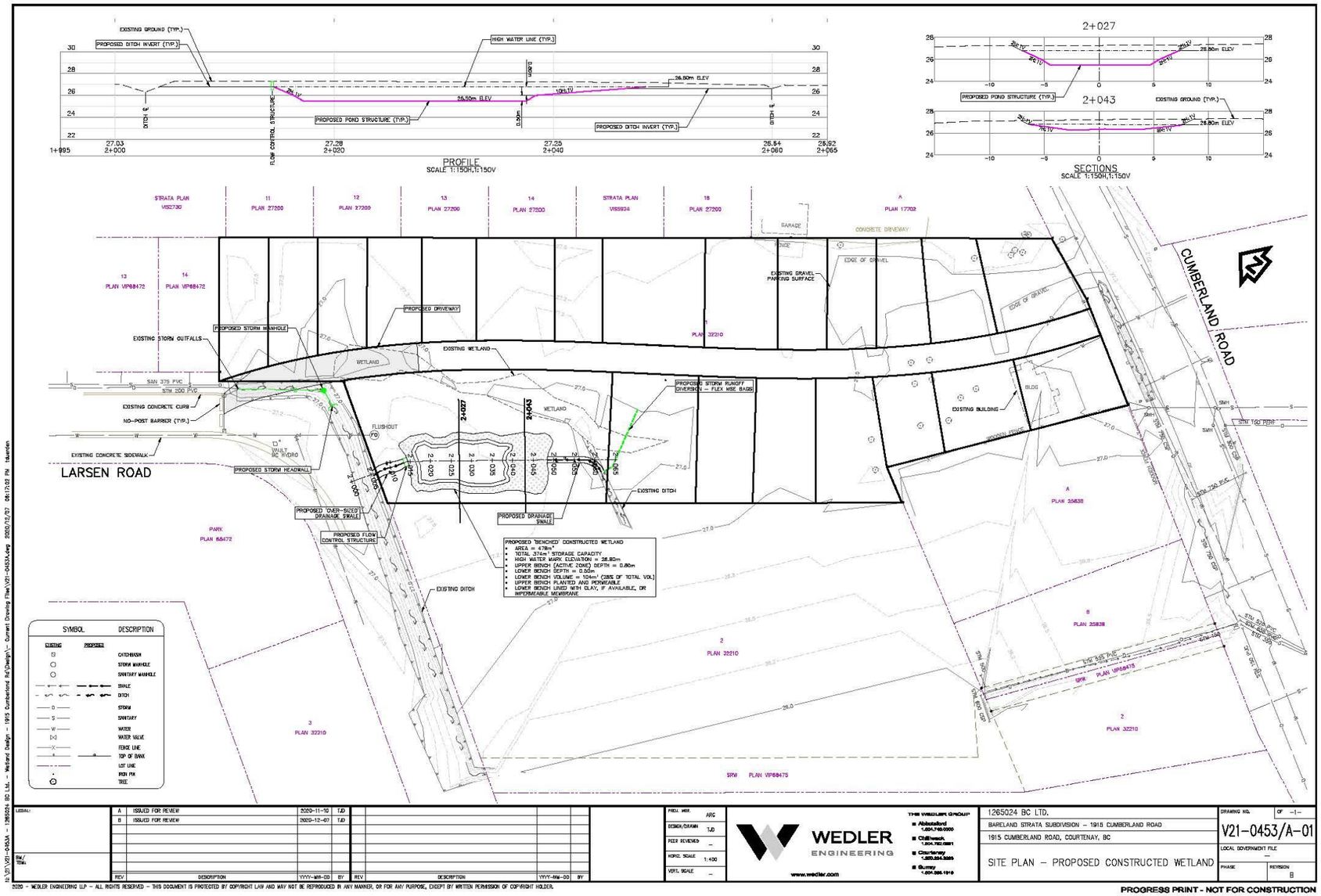


Figure 1. Proposed lot layout for re-zoning of 1915 Cumberland Road showing location and orientation of a habitat/SW pond within a dedicated tree retention and environmental protection area.

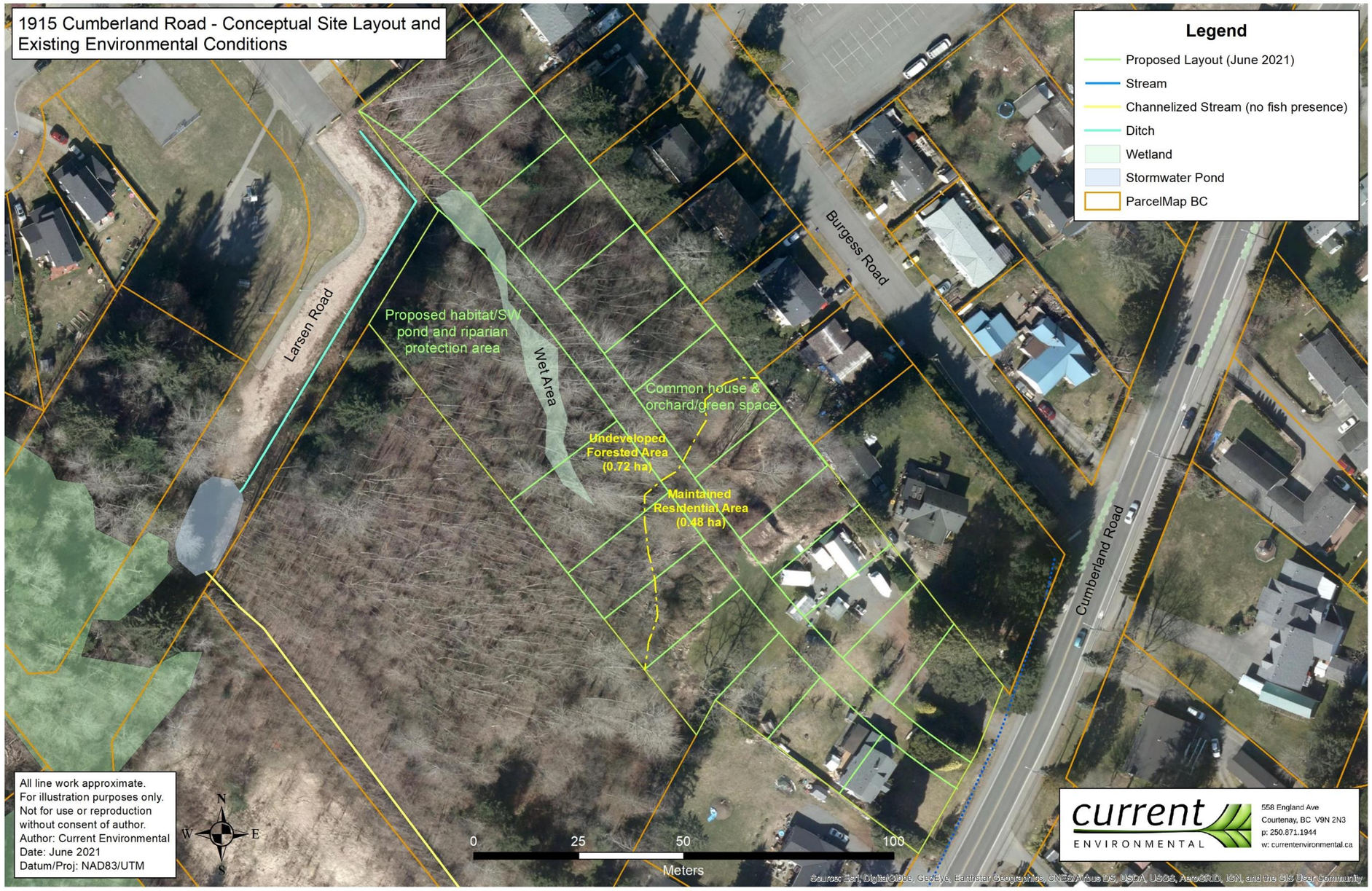


Figure 2. Site plan showing existing environmental conditions and conceptual lot layout on the subject property.

11 PHOTOS

Photo 1. Downstream view (south) of the existing Larsen Road ditch taken from the approximate downstream end of proposed 30 m pipe enclosure showing the ditch that will be retained with a 5 m LAP setback.

Photo 2. Isolated wet area near the western edge of the property looking east representing winter conditions (Dec. 2020) showing minimal water accumulated and a presence of hydrophytic vegetation.

Photo 3. View north of an unvegetated patch of seasonally wetted area connected to the isolated wet area in the western half of the property during spring conditions (May 2020).

Photo 4. View south of a stormwater pond within the Larsen Road ROW associated with development of the residential area west of the subject lot in the 1990s.

APPENDIX A – TILIA ARBORICULTURE CONSULTING

TREE PROTECTION AND MANAGEMENT BYLAW REPORT

ASSIGNMENT

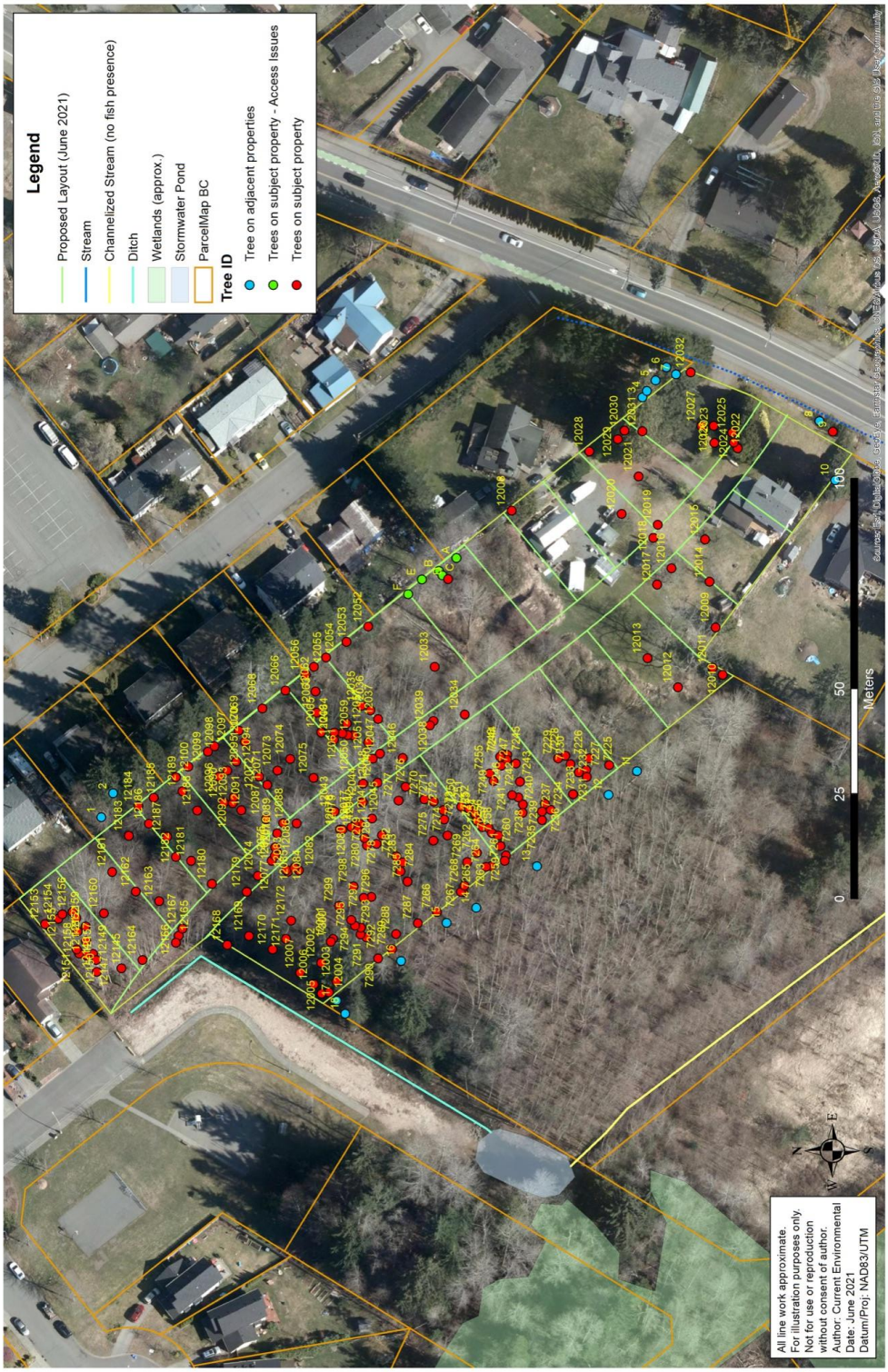
Tomas Nielsen (owner) has retained Tilia Arboriculture Consulting to provide services regarding the trees at 1915 Cumberland Road, Courtenay (subject property) in relation to proposed development at the property. Specific assignment details can be found in the May 12th, 2021 Scope of Work document.

INVENTORY

During the week of May 17-21, 2021 an inventory of trees greater than 20cm DBH (diameter at breast height) was conducted. A total of 221 trees were tagged. Information was also recorded for 6 trees on the subject property that could not be tagged due to heavy brush, and for 18 trees on adjacent properties that have a root zone that reaches on to the subject property. No trees listed as a protected species by the City of Courtenay Tree Protection and Management Bylaw were observed. The list of inventoried trees is provided in APPENDIX A (pages 10-17).

Tree locations are shown on the map on page 2. A file containing the map has been attached NOTE: *Due to GPS accuracy tree locations are approximate and are to be used for reference only.* Red points are trees located on the subject property, blue points are trees on adjacent properties with root zones that reach on to the subject property, and green points are trees on the subject property that could not be tagged due to access issues.

The site is composed primarily of young to mature red alder (*Alnus rubra*) and cottonwood (*Populus trichocarpa*). The mature cottonwoods are found mostly in the existing wetland area. Several mature grand fir (Abies grandis) and Douglas fir (*Pseudotsuga menziesii*) are notable, primarily along the edges of the property. The residential yard area of the subject property also contained several other species, notably apple (*Malus* sp.) and black walnut (*Juglans nigra*).


Legend
Proposed Layout (June 2021)
Stream
Channelized Stream (no fish presence)
Ditch
Wetlands (approx.)
Stormwater Pond
ParcelMap BC
Tree ID
Tree on adjacent properties
Trees on subject property - Access Issues
Trees on subject property
0
25
50
Meters
All line work approximate.
For illustration purposes only.
Not for use or reproduction
without consent of author.
Author: Current Environmental
Date: June 2021
Datum/Proj: NAD83/UTM

Photos of the site are shown below

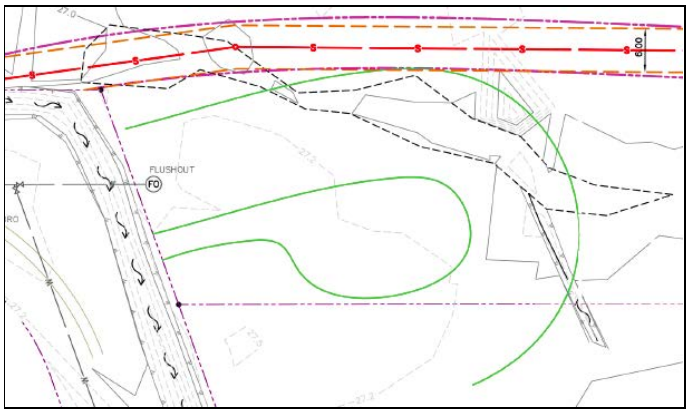
Top left: Looking NW from yard of subject property
Top right: Looking SE from end of Larsen Rd
Bottom Left: Looking SE towards Cumberland Rd from driveway
Bottom Right: Looking NE from Larsen Rd

Apples in yard area.

Walnuts in yard area

RISK ASSESSMENT

On May 21, 2021 an ISA (International Society of Arboriculture) Level 2 (Basic) tree risk assessment was conducted by Lana Tutt of Tilia Arboriculture Consulting on all inventoried trees inside the buffer zone, left, from a screenshot of drawing V21-0453/A-01. The outer



green line represents the buffer zone boundary.

Limitations and Time Frame

Limitations of tree risk assessment arise from uncertainties related to trees, defects and the loads to which they are subjected. Tree risk assessment limitations include:

- Considers only known significant targets and visible or detectable tree conditions.
- Represents the condition of the tree(s) and site at the time of inspection.
- The time frame of this assessment is one year. This is the length of time for which the assessor is deciding whether a specific failure is likely to occur. The time frame should not be considered a guarantee period for the risk assessment.
- Any tree(s), whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts.
- Only those trees specified in the scope of work were assessed, and assessments were performed within the additional limitations specified below.

Additional limitations include:

- The boundaries of the buffer around the proposed constructed wetland area have not been surveyed and marked, therefore the boundaries used for the purposes of this report are to be considered approximate.
- Tree canopies could not always be fully viewed due to the density of the forested stand and foliage which can obscure visibility of a tree's structure.

Targets

Targets are described in the table below.

Target	Occupancy Rate
Users of park/playground area	Frequent
Sidewalk/road area	Occasional

Users of informal trail through property	Occasional

Consideration was also given to a future target resulting from proposed development activities that will take place outside of the buffer zone. However, because the exact location and nature of these targets are currently unknown they were not classified as a formal target for this risk assessment.

Observations, Discussion and Recommendations

APPENDIX B (page 18) lists the risk assessment data and mitigation recommendations.

Development activities on the site are anticipated to alter the water profile, particularly in the low lying wet area that coincides with the buffer zone. This change, as well as other development activities will be a stressor on trees in the buffer zone in the future, and can result in a decline in tree health. Trees with existing issues will be particularly susceptible to further decline, therefore it is recommended to monitor retained trees every 6 months once development activities begin, and annually for 5 years post-development.

There are several mature cottonwoods along the edge of the buffer zone, particularly tag #s 7251, 7254, 7273, and 12079, that have been recommended for an advanced (Level 3) risk assessment. These mature cottonwoods have evidence of significant basal decay, and conducting an advanced risk assessment will help determine the extent of the decay and whether these trees are viable to retain on the new forest edge. Under current site conditions the lack of targets results in a low risk rating for these trees, but future development activities will change the target profile and increase the risk rating to moderate.

It is recommended that all tree work be completed by an International Society of Arboriculture (ISA) Certified Arborist to assure work is completed at or above industry standards.

Top Left: 7251
Top Right: 7254
Bottom Left: 7273
Bottom Right
Top/Bottom: 12079

TREE PROTECTION

Based on communication with Dusty Silverster of Current Environmental it is understood that the project's tree retention area boundaries are currently conceptual. The dimensions and location of the constructed wetland will influence the location of the driveway, and the driveway "will effectively delineate the edge of the protected area." Given this information the following is recommended:

- When placement of the constructed wetland and driveway have been finalized and staked/flagged on site, the arborist shall be contacted to assess which trees can be safely retained around these elements. Risk mitigation measures may be provided for trees recommended for retention if necessary.
- Tree Protection Zone (TPZ) fencing shall be installed around retained trees. Given that the driveway will delineate the edge of the tree retention area, TPZ fencing shall be installed wherever the maximum extent of ground disturbance required for driveway construction will end. Consideration should be given to minimizing the space required for driveway construction as much as possible.
    - TPZ fencing shall also be installed around trees on adjacent properties with root zones that will be affected by development activities. APPENDIX C (page 22) contains a table with TPZ information for trees on adjacent properties.
    - TPZ fencing design and material specifications can be found in Schedule B of the City of Courtenay Tree Protection and Management Bylaw No. 2850, available on the City of Courtenay website. This information is also included in APPENDIX D (page 24) of this report.
- The arborist shall be contacted to inspect TPZ fencing prior to development activity beginning.
- The arborist shall be contacted to monitor retained trees every 6 months once development activities begin, and annually for 5 years post-development. Subsequent recommendations regarding tree health or risk mitigation may be made at that time.

Tree Protection Zone (TPZ) Information

Tree protection involves the use of physical protective barriers to preserve and protect the health and structure of retained trees by avoiding damage to roots, trunks, or crowns. TPZ fencing is installed prior to any development or construction activity on a site, and remains in place for the entire duration of these activities, including landscaping. The successful implementation of a TPZ relies on the awareness and participation of all site workers. Educate all site workers about tree protection during pre-construction meetings.

The following list describes activities that are not permitted within a Tree Protection Zone (TPZ):

- Stockpiling of construction materials or debris
- Parking vehicles or equipment
- Construction offices or workers' break sites
- Pile soil and/or mulch
- Trench for utilities installation or repair, or for irrigation system installation
- Change soil grade by cutting or filling
- Damage roots by grading, tearing, or grubbing (tree stumps within the TPZ are to be retained)
- Compact soil with equipment, vehicles, material storage, and/or foot traffic
- Contaminate soil from washing out equipment (especially concrete) and vehicle maintenance
- Install impervious parking lots, driveways, and walkways
- Attach anything to trees using nails, screws, and/or spikes
- Wound or break tree trunks or branches through contact with vehicles and heavy equipment
- Wound trunks with string weed trimmers and lawn mowers
- Cause injury by fire or excessive heat

APPENDIX A

Tag #	Species	DBH (cm) (A = approx.)	Notes
12145	Cottonwood	31	
12146	Cottonwood	37	
12147	Cottonwood	35	
12148	Cottonwood	34	
12149	Cottonwood	24	
12150	Cottonwood	32	
12151	Alder	21	
12152	Alder	20	
12153	Cherry	24	
12154	Alder	25	Almost dead
12155	Alder	27	
12156	Cottonwood	49	
12157	Cottonwood	44+20	2 stem group
12158	Cottonwood	38+39	2 stem group
12159	Cottonwood	A 45+38	2 stem group
12160	Alder	21	5 stem group
12161	Alder	20	3 stem group
12162	Alder	25+23	2 stem group
12163	Alder	20	2 stem group
12164	Alder	20	4 stem group
12165	Alder	20	
12166	Alder	21	
12167	Alder	20	
12168	Alder	27	
12169	Alder	31+23	2 stem group
12170	Alder	32	
12171	Alder	41+25	2 stem group
12172	Alder	38	

12173	Alder	27+25	2 stem group
12174	Cottonwood	79	
12175	Cottonwood	75	
12176	Alder	34	
12177	Alder	22	
12178	Alder	35	
12179	Alder	22	
12180	Alder	25	
12181	Grand fir	26	
12182	Grand fir	29	
12183	Alder	36	
12184	Grand fir	66	Along fence line
12185	Grand fir	104	Along fence line
12186	Alder	21	4 stem group
12187	Alder	21+22	2 stems
12188	Alder	22	
12189	Alder	37	
12100	Cherry	30	
12099	Grand fir	100	
12098	Grand fir	109	
12097	Cherry	22	4 stem group
12096	Alder	33	
12095	Alder	29+22	2 stem group
12094	Alder	39	
12093	Alder	30	
12092	Alder	20	
12091	Alder	27+22+22	3 stem group
12090	Alder	22	
12089	Alder	23	
12088	Alder	25	
12087	Alder	27+22	4 stem group
12086	Alder	23+22+20	3 stem group

12085	Alder	20	
12084	Cottonwood	33	
12083	Cottonwood	61	
12082	Cottonwood	39	
12081	Cottonwood	49	
12080	Cottonwood	25	
12079	Cottonwood	A 60+40+20	4 stems, 1 dead
12078	Cottonwood	39	
12077	Cottonwood	42	
12076	Alder	25+24	2 stem group
12075	Alder	21+25+20	3 stem group
12074	Alder	25+21+23	3 stem group
12073	Alder	24+29	2 stem group
12072	Alder	30	
12071	Alder	29+23	2 stems
12070	Cherry	28+22	2 stem group
12069	Cherry	29+28+28+20	4 stem group
12068	Grand fir	110	
~~12067~~	LOST TAG, NO #12067		
12066	Grand fir	150	
12065	Alder	27+28+25	3 stem group
12064	Alder	26	
12063	Alder	37	
12062	Alder	48+29	2 stems
12061	Alder	34	
12060	Alder	32	
12059	Alder	31	
12058	Alder	30	
12057	Alder	A 55	
12056	Grand fir	80	
12055	Grand fir	49	
12054	Grand fir	81	

12053	Grand fir	77	
12052	Douglas fir	A 80+80	2 stems
12051	Alder	34+25	2 stem group
12050	Alder	30	
12049	Alder	40	
12048	Alder	28+25+18	2 stem group
12047	Alder	24	
12046	Alder	29	
12045	Alder	34+29	2 stems
12044	Alder	31	
12043	Alder	25+24	2 stems
12042	Cottonwood	42+45	2 stems
12041	Cottonwood	45	
12040	Cottonwood	73	
12039	Alder	38+38	2 stems
12038	Alder	31+30+21	3 stems
12037	Alder	40	
12036	Alder	32+33	2 stem group
12035	Alder	40+21+20+18	4 stem group
12034	Alder	A 45+42+30	3 stems
12033	Cottonwood	A 67	
12032	Douglas fir	50	
12031	Grand fir	66	
12030	Douglas fir	45	
12029	Douglas fir	100	
12028	WR Cedar	129	
12027	WR Cedar	21	Hedging
12026	Douglas fir	25	Hedging
12025	Cypress	32	Multistem
12024	Cypress	30	Multistem
12023	Cypress	A 30	
12022	Cypress	A 30	Multistem

12021	Apple	22+30	
12020	Apple	38	
12019	Apple	35	
12018	Apple	45	
12017	Apple	47	
12016	Apple	22	
12015	Apple	30	
12014	Apple	A 35	
12013	Walnut	60	
12012	Walnut	67	
12011	WR Cedar	24	
12010	WR Cedar	34	
12009	WR Cedar	30	
12008	WR Cedar	A 55	3 stem group, ownership unclear
12007	Alder	32	
12006	Grand fir	50	
12005	Grand fir	75	
12004	Alder	31	
12003	Alder	24	
12002	Alder	21	
12001	Alder	20	
7300	Alder	23+32	2 stems
7299	Alder	29+34	
7298	Cottonwood	A 75	
7297	Cottonwood	86	Codominant
7296	Alder	33	
7295	Alder	22	
7294	Alder	28	
7293	Alder	31	
7292	Alder	22	
7291	Alder	30	
7290	Alder	25	

7289	Alder	24	
7288	Alder	31	
7287	Alder	21	
~~7286~~	LOST TAG, NO #7286		
7285	Alder	26	
7284	Alder	25	
7283	Alder	33+23	2 stems
7282	Alder	27	
7281	Cottonwood	69	
7280	Cottonwood	41	
7279	Alder	22	
7278	Cottonwood	36	
7277	Cottonwood	71	
7276	Cottonwood	59	
7275	Cottonwood	69	
7274	Cottonwood	65	
7273	Cottonwood	A 55	1 dead codominant stem
7272	Cottonwood	58	
7271	Cottonwood	72+25	
7270	Cottonwood	70	
7269	Alder	22	
7268	Alder	30	
7267	Alder	23	
7266	Alder	32	
7265	Alder	25	
7264	Cottonwood	61	
7263	Alder	29	
7262	Cottonwood	42	Next to smaller dead cottonwood
7261	Alder	25	1 dead codominant
7260	Alder	31	
7259	Alder	54	Codominant
7258	Alder	28+23	2 stems

7257	Alder	25	
7256	Alder	21	
7255	Alder	25+21+30	3 stem group
7254	Cottonwood	66	
7253	Alder	27	
7252	Cottonwood	50	
7251	Cottonwood	A 65	
7250	Cottonwood	73	
7249	Alder	23	
7248	Alder	24	
7247	Alder	20	
7246	Alder	30	
7245	Alder	28	
7244	Alder	A 23+23	Codominant
7243	Alder	28	
7242	Alder	28	
7241	Alder	23	
7240	Alder	28	
7239	Alder	33	
7238	Alder	23+28	2 stems
7237	Alder	24	
7236	Alder	32	
7235	Alder	28	
7234	Alder	29	
7233	Alder	28	
7232	Alder	26+25	2 stems
7231	Alder	21+21	2 stems
7230	Alder	21	
7229	Alder	23+15	2 stems
7228	Alder	25+19+20+20	4 stems
7227	Alder	26	
7226	Alder	23	

7225	**Alder**	**A 25+23**	**2 stems**

APPENDIX A Continued

Inventoried trees that could not be tagged due to access			
NOTE: Shown as green on map			
GPS Label	Species	DBH (cm) (A = approx.)	Notes
A	Cherry	A 35	
B	Cherry	A 45	
C	Cherry	A 30	
D	Cherry	A 20	
E	Cherry	A 20 x 5	5 stem group
F	Alder	A 50	

APPENDIX B

NOTE: Mitigation measures requiring attention are shown in yellow or red. Yellow indicates pruning related measures and red indicates further assessment.

Tag #	Species	DBH (cm) (A = approx.)	Along buffer edge ?	Along adjacent property edge?	Risk rating	Notes	Mitigation	Residual Risk Rating
12168	Alder	27	Yes		Low	Codominant with 1 dead stem. Not within group, isolated. Low condition. Retention not recommended.		
12169	Alder	31+23			Low	Slightly enlarged swelling area in lower main stem of 1 of the 2 trees.	Reassess in 2022	Low
12170	Alder	32			Low	2 open cavities. Only retain if group is retained.		
12171	Alder	41+25			Low	Smaller of 2 stems has several cavities but tree is small and well protected by other stem.		
12172	Alder	38			Low	Looks to have a broken top but not a serious concern.		
12174	Cottonwood	79	Yes		Low			
12084	Cottonwood	33	Yes		Low			
12083	Cottonwood	61	Yes		Moderate	Small dead stem at base partially grown into main stem.	Lower dead stem to 3m and leave as habitat. Reassess in 2022.	Low
12082	Cottonwood	39	Yes		Low			
12081	Cottonwood	49	Yes		Low	Small weeping cavity in lower main stem. Good response growth around wound.	Reassess in 2022	Low
12080	Cottonwood	25	Yes		Low	Suppressed under taller canopy. Small crown. Only retain if surrounding group is also retained.		

12079	Cottonwood	A 60+40+20	Yes		Moderate	4 stems with 1 dead stem grown into largest stem. Included bark between largest and second largest stem. Second largest stem has phototropic lean. Currently low risk but moderate once development activities begin.	Level 3 risk assessment	To be determined
12078	Cottonwood	39	Yes		Low	2 stems, 1 dead stem. Good reaction wood around base of dead stem. Phototropic lean in upper crown. Protected from edge by neighboring trees.	Lower dead stem to 3m and retain as habitat. Reassess in 2022.	Low
12077	Cottonwood	42	Yes		Low			
12042	Cottonwood	42+45	Yes		Low			
12041	Cottonwood	45	Yes		Low			
12040	Cottonwood	73	Yes		Low	Large crown, some deadwood	Crown clean recommended	Low
12007	Alder	32	Yes		Low			
12006	Grand fir	50	Yes		Low			
12005	Grand fir	75	Yes	Yes	Low	Low condition with sparse growth in crown	Reassess in 2022	Low
12004	Alder	31	Yes	Yes	Low			
12003	Alder	24			Low			
12002	Alder	21			Low			
12001	Alder	20			Low			
7300	Alder	23+32			Low	Evidence of early canker on mid-trunk area of larger stem. Tree is well protected.	Reassess in 2022	Low
7299	Alder	29+34			Low			
7298	Cottonwood	A 75			Low	Small dead snag (3m tall) grown into main stem slightly.	Reassess in 2022	Low
7297	Cottonwood	86			Low	Large codominant stems with included bark. Protected by other large nearby cottonwoods.	Reassess in 2022	Low
7296	Alder	33			Low			
7295	Alder	22			Low			
7294	Alder	28			Low			

7293	Alder	31			Low			
7292	Alder	22			Low	Moderate canker area on lower/mid trunk	Reassess in 2022	Low
7291	Alder	30			Low	Area of early canker on lower/mid trunk	Reassess in 2022	Low
7290	Alder	25			Low			
7289	Alder	24	Yes	Yes	Low	Possibly just outside of property line. Outside barbed wire fence but very close.		
7288	Alder	31	Yes	Yes	Low	Small cavity mid-trunk		
7287	Alder	21	Yes	Yes	Low			
7285	Alder	26			Low			
7284	Alder	25			Low			
7283	Alder	33+23			Low			
7282	Alder	27			Low			
7281	Cottonwood	69			Low			
7280	Cottonwood	41			Low			
7279	Alder	22			Low			
7278	Cottonwood	36			Low			
7277	Cottonwood	71	Yes		Low			
7276	Cottonwood	59	Yes		Low	Phototropic lean in crown.	Prune to reduce some weight in crown.	Low
7275	Cottonwood	69			Low			
7274	Cottonwood	65			Low			
7273	Cottonwood	A 55	Yes		Moderate	1 dead stem at base, live stem grown around dead stem. Lots of wound wood around dead stem. Currently low risk but moderate once development activities begin.	Level 3 risk assessment	To be determined
7272	Cottonwood	58	Yes		Low			
7271	Cottonwood	72+25	Yes		Low	Good reaction wood on phototropic leaning stem. 2 very long branches in crown.	Prune to reduce weight of large branches	Low
7270	Cottonwood	70	Yes		Low	Deadwood	Crown clean recommended	Low

7269	Alder	22			Low	Old failed stem at base. Smaller wounds near base.	Reassess in 2022	Low
7268	Alder	30			Low			
7267	Alder	23			Low	2 cavities (1 lower and 1 mid-stem). Crown suppressed.	Reassess in 2022	Low
7266	Alder	32	Yes	Yes	Low			
7265	Alder	25	Yes	Yes	Low			
7264	Cottonwood	61	Yes	Yes	Low			
7263	Alder	29	Yes	Yes	Low			
7262	Cottonwood	42			Low		Lower dead stem next to #7262 to 3m and retain for habitat	Low
7261	Alder	25	Yes	Yes	Low		Remove 1 small dead stem next to larger stem	Low
7260	Alder	31	Yes		Low	Small cavity with good wound wood.	Reassess in 2022	Low
7259	Alder	54	Yes	Yes	Low	Codominant main stems. Some included bark, a bit of standing water in union.	Reassess in 2022	Low
7258	Alder	28+23	Yes		Low	1 stem has minor wound on lower stem. This stem is protected by other stem from future open edge. Canopy suppressed but healthy.	Reassess in 2022	
7257	Alder	25	Yes		Low			
7256	Alder	21	Yes		Low			
7254	Cottonwood	66	Yes		Moderate	Decay at base, good wound wood around it. Currently low risk but moderate once development activities begin.	Level 3 risk assessment	To be determined
7253	Alder	27	Yes		Low			
7252	Cottonwood	50	Yes		Low			

7251	Cottonwood	A 65	Yes		Moderate	1 small dead stem at base, partially grown into main stem. Good reaction wood on other side of stem. Phototropic lean. Currently low risk but moderate once development activities begin.	Level 3 risk assessment	To be determined
7250	Cottonwood	73	Yes		Low			

APPENDIX C

NOTE: Tree ownership should be confirmed by the client prior to any work near the property boundary.

NOTE: Most tree diameters (DBH) are approximated due to access restrictions.

Trees on adjacent properties with affected root zones				
NOTE: Shown as blue on map				
GPS Label	Species	DBH (cm) (A = approx.)	Notes	Tree protection zone radius (m)
1	Alder	A 45		5.0
2	Douglas fir	A 60		7.0
3	Douglas fir	A 50		4.0
4	Douglas fir	A 30		3.0
5	Douglas fir	A 60		7.0
6	Douglas fir	A 100		8.0
7	Maple	A 20		2.0
8	White pine	A 15		2.0
9	Grand fir	A 10		2.0
10	Sequoia	A100		8.0
11	Alder	A 25	Group	3.0
12	Alder	A 35		4.0
13	Alder	A 30	Group	4.0
14	Alder	A 25	Group	3.0
15	Alder	A 25	Group	3.0
16	Alder	A 25	Group	3.0
17	Grand fir	52		6.0
18	Douglas fir	74		7.0

APPENDIX D

Tree protection fencing specifications. Source: City of Courtenay

SCHEDULE B

TREE PROTECTION AND MANAGEMENT BYLAW NO. 2850, 2016

TREE PROTECTION BARRIER AND SIGNAGE SPECIFICATIONS

Barrier structure and material:

Tree protection ***barriers*** should generally be a minimum of 1.2 meters high, and consist of snow fencing or an equivalent, supported by poles at sufficiently close intervals to ensure the integrity of the fence, or supported by wooden frames.

In instances where ***development*** is not expected to occur near the ***root protection area***, poles strung with multiple bands of flagging tape may be sufficient, subject to approval by an ***Arborist*** and/or the ***Director.***

Barrier distance from tree(s):

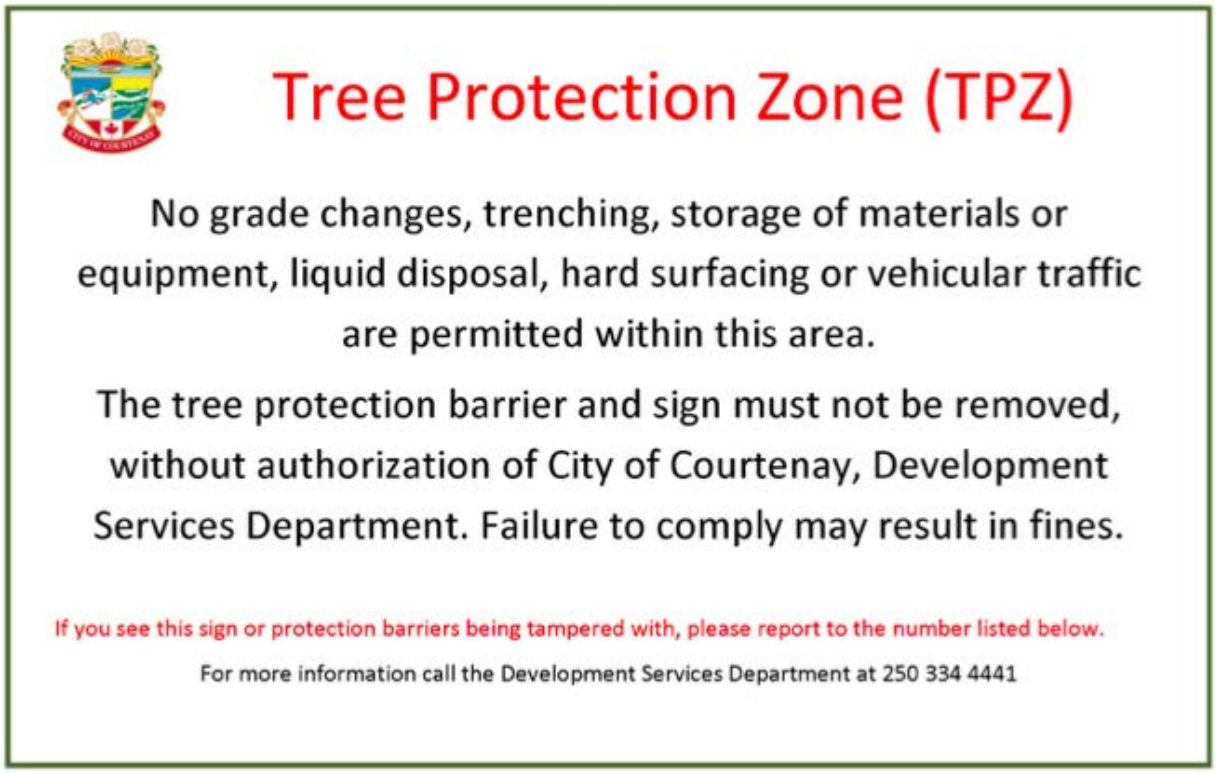
Tree protection ***barriers*** must be of a sufficient size to protect the ***root protection area*** of the tree. The ***root protection area*** refers to the area of land surrounding the trunk of the tree that contains the bulk of the critical root system of the tree, as defined on a plan prepared by an ***Arborist***, that the ***Director*** reasonably approves.

Barrier protection sign:

Where ***retained trees*** require protection barriers, a tree protection informational sign in the format provided in this Schedule, must be affixed to the ***barrier*** at intervals of every 30 metres unless waived as a requirement by the ***Director***. The sign must able to withstand weather conditions for prolonged periods of time.

Barrier duration:

The ***barrier*** must be in place throughout the entire duration of the ***development*** activities that are taking place around the ***tree*** and until written approval of its removal is obtained from the ***City.***



Tree Protection Zone (TPZ)

No grade changes, trenching, storage of materials or equipment, liquid disposal, hard surfacing or vehicular traffic are permitted within this area.

The tree protection barrier and sign must not be removed, without authorization of City of Courtenay, Development Services Department. Failure to comply may result in fines.

If you see this sign or protection barriers being tampered with, please report to the number listed below.

For more information call the Development Services Department at 250 334 4441

I certify that all statements of fact in this report are true, complete and correct to the best of my knowledge and belief, and that this report is made in good faith.

Signature: 

Date: July 1, 2021

APPENDIX B – BC WATER SUSTAINABILITY ACT SECTION 11 APPROVAL #1005012

April 8, 2021

Job Number: 116526
vFCBC Tracking Number: 100335323

1265024 BC Ltd
111-619 Moberly Road
Vancouver, British Columbia
V5Z 4B1

Tomas Nielsen 1265024 BC Ltd:

Change Approval - Changes In and About a Stream (File 1005012)

A change approval for the above application has been granted and a *Water Sustainability Act Section* 11(1) Changes In and About a Stream Approval document verifying this is attached.

This change approval does not authorize occupation of private or Crown owned land. Permission of the affected landowner, or a permission to occupy Crown land, must be obtained and should be in writing for your protection.

The holder of this approval shall ensure that any proposed development and/or changes do not impact traditional or special sites in accordance with the *Heritage Conservation Act* and the ability of First Nation community members to participate in traditional activities on the land and water.

This approval does not constitute authority of any other agency. The holder of this approval shall have the necessary permits from other agencies concerned prior to the commencement of the works authorized herein. The permit holder is required to adhere to all other applicable provincial and federal regulations.

Archeological sites (both recorded and unrecorded) are protected under the *Heritage Conservation Act* and must not be altered or damaged without a permit from the Archeology Branch. The holder of this approval must advise everyone who will be involved in ground-disturbance and construction that if archeological materials are encountered, activities must be halted and the Archeology Branch contacted at 250-953-3334 for direction.

Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Resource Management

Mailing Address: 370 S. Dogwood St.
Campbell River, BC V9W 6Y7

Location: 370 S. Dogwood St.
Campbell River, BC V9W 6Y7

Phone:(250) 286-9300
Fax: (250) 286-9490
Web:
https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

Section 105 of the *Water Sustainability Act* gives the recipient of this notice the right to appeal my decision. You may file an appeal within 30 days of the date indicated on this letter. Information on filing an appeal can be found on the Environmental Appeal Board website at http://www.eab.gov.bc.ca/.

If you have any questions or concerns regarding the document issued or this letter please feel free to contact Sheri Petrovcic, Authorization Specialist, by email at sheri.petrovcic@gov.bc.ca or by phone at (250) 850-1747.

Sincerely,

Lesley Fettes
Assistant Water Manager

Enclosure(s) Approval Document

Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Water Management

Mailing Address: 103-2100 Labieux Road, Nanaimo BC V9T 6E9
Location: 103-2100 Labieux Road, Nanaimo BC V9T 6E9

Phone: (250) 751-7220
Fax: (250) 751-7192
Web: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

April 8, 2021

Job Number: 116526
vFCBC Tracking Number: 100335323

1265024 BC Ltd
111-619 Moberly Road
Vancouver, British Columbia
V5Z 4B1

Tomas Nielsen,

Change Approval - Changes In and About a Stream - 1005012

1265024 B.C. Ltd. (Tomas Nielsen), 111-619 Moberly Rd. Vancouver, British Columbia V5Z 4B1 is hereby authorized to make changes in and about a stream as follows:

At an unnamed stream/pond located at 1915 Cumberland Road in Courtenay, British Columbia that connects to Tributary 10 of Piercy Creek.

The changes to be made in and about the stream are: Driveway access onto the subject property will require extending a section of existing 200 mm PVC storm pipe approximately 30 m from the end of Larsen Road in a non-fish bearing ditch. In addition, a 485 m^2 habitat pond will be established south of the proposed driveway alignment that will serve the joint function of improving stormwater detention for the entire 2.95 acre parcel and creating new amphibian breeding habitat that is currently absent from a nearby shallow 415 m^2 depression with some wetland characteristics.

The location of the works is at the following coordinates, as provided by the applicant: 49.6747000N, -125.0080400W

All works shall take place between June 15 to September 15, 2021 and June 15 to September 15, 2022

A Qualified Environmental Professional/Monitor with the authority to halt work shall be on site during all phases of construction.

All machinery and equipment operating within the stream shall be clean, free of external grease, oil or fluid leaks and shall use biodegradable grease, oil and fluids.

Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Water Management

Mailing Address: 270 S Dogwood Street, Campbell River BC V9W 6Y7

Location: 270 S Dogwood Street, Campbell River BC V9W 6Y7

Phone: (250) 286-9300
Fax: (250) 286-9490
Web: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

Fuelling and servicing of vehicles and equipment must occur a minimum of 30 metres away from all streams, lakes and waterbodies. Keep a spill containment kit on site and train onsite staff in its use. Immediately report any spill of a substance that is toxic, polluting, or deleterious to aquatic life of reportable quantities to the Dangerous Goods Incident Report 24-hour phone line at **1-800-663-3456**.

The works shall not result in depressions that have the ability to trap fish and other aquatic life.

The holder of this approval shall take reasonable care to avoid damaging any land, works, trees, or other property and shall make full compensation to the owners for any damage or loss resulting from the exercise of the rights granted with this approval.

Riparian areas which are disturbed by the works shall be restored to their original condition and protected from erosion.

All material utilized during construction shall be contoured and placed in a stable area such that it is not able to mobilize and managed to avoid entry into any stream or watercourse.

The works authorized shall be completed on or before September 15, 2022.

Measures must be taken to ensure that no harmful material (e.g. fuel and other hydrocarbons, soil, road fill, or sediment) which could adversely impact water quality, fish and other aquatic life, and/or fish habitat, be allowed to enter the wetted perimeter as a result of the project activities.

All rock used in the works shall be clean and free of sediment producing material, durable, non-acid generating and suitably graded.

The activities authorized under this approval may be halted at any time by an Order in writing from a Water Manger under the *Water Sustainability Act* to ensure compliance with the terms and conditions authorized herein.

All work shall be carried out in accordance with the Provincial "Standards and Best Practices for In-stream Works" (2004). The Provincial guidance document can be found at the following link:
http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf.

All changes in an about the stream shall be completed to the satisfaction of a Water Manager, as defined by the *Water Sustainability Act*.

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

Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Water Management

Mailing Address: 103-2100 Labieux Road, Nanaimo BC V9T 6E9

Location: 103-2100 Labieux Road, Nanaimo BC V9T 6E9

Phone: (250) 751-7220
Fax: (250) 751-7192
Web: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

a) Filter fabric dams, rock check 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. 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.

b) Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting the watercourse.

c) Watercourses are not to be traversed by machinery at any time.

d) Soil stockpiles will be placed a minimum of 5 metres from any watercourse and in a location where erosion back into the watercourse cannot occur and will not impede any drainage.

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

f) Permanent exposed soil areas and erosion-prone slopes that may potentially erode into the watercourse are to be seeded immediately, or covered with geotextile.

g) 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.

h) Site re-vegetation measures may be required to stabilize soils and stream banks and reduce erosion. The measures, including planting native vegetation, are to be implemented as directed by the biologist as construction is completed.

Sincerely,

Lesley Fettes
Assistant Water Manager

Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Water Management

Mailing Address: 103-2100 Labieux Road, Nanaimo BC V9T 6E9

Location: 103-2100 Labieux Road, Nanaimo BC V9T 6E9

Phone: (250) 751-7220
Fax: (250) 751-7192
Web: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water

APPENDIX C – MILLARD PIERCY WATERSHED STEWARDS LETTER

Dusty Silvester

From: Jennifer & Robin Harrison <robinjen@shaw.ca>
Sent: March 31, 2021 8:38 AM
To: tomas@formstate.com
Cc: Steve Williams; Helmut Novak; Dusty Silvester
Subject: Fw: Update on 1915 Cumberland Road

Hi Tomas and Tamara,

Thanks for providing an outline of the proposed development on your property. MPWS does not have any concerns about the proposal as described. In fact, the wildlife pond would be an excellent addition. We have full confidence in the expert guidance provided by Dusty in the design of the project.
I appreciate you contacting us to provide an opportunity to comment.

Sincerely,
Robin Harrison
President, MPWS

Hello again, Steve.

We hope the new year has been going well for you.

We failed to respond to your last email when you sent us, but yes, we'd be interested in being included on the MPWS volunteer list. Thanks!

We also have some updates on information from the City and our current thinking for development concepts on our property, and thought to loop you back in.

The right-of-way that the City will be seeking runs the full length of the property (from Larsen in the back to Cumberland Rd in the front), and will be used for a 12 inch sanitary main, and will require access to manholes and service points. According to the Engineering Department, it is a planned expansion to the City infrastructure that they've had for a while now, to help accommodate the growing community. While we weren't exactly thrilled to hear of that, we understand that it's needed for the community. So, we're rolling with the punches and trying to see how that can best be managed on the property. Our thinking is that it makes most sense to run a driveway along the line where the City sanitary main will be.

You'll probably remember that there were some wet areas/ depression on the back portion of our property. Our environmental assessment showed that most of the areas designated as "wet areas" were filling in naturally and succeeding to forest. There is still one patch that is ephemerally wet (though not providing any functional wetland habitat or connection to the stream channel behind the property). It was confirmed that the wetness in these areas is contributed to by the ditch running from the neighbour's property to the south onto our property.

Our thought here is to make a trade-off: knowing that the sanitary main and driveway would disrupt some of that wet depression zone, we propose building a large wildlife bearing pond in the SW quadrant of the

property that would serve to improve the habitat function of the property, as well as aid in stormwater detention. We have been working with Dusty Silvester at Current Environmental, as well as an engineer to see if this is feasible. They've come up with design specs and say it's absolutely feasible to make this into sustained amphibian habitat! So, we've submitted an application to the Province to see if they'll approve those proposed changes.

We'd be interested in hearing any feedback you may have. We look forward to continuing to be in touch.

Thanks very much!
All the best,
Tomas and Tamara