CORVIDAE
ENVIRONMENTAL CONSULTING INC.

April 22, 2025

To: Marianne Wade,
Director of Development Services
City of Courtenay, 830 Cliffe Ave,
Courtenay, BC, V9N 2J7

From: Julie Budgen, R.P.Bio., P.Ag.
Corvidae Environmental Consulting Inc
6526 Water Street
Sooke, BC V9Z 0X1

Re: Addressing Environmental Comments from the Lannan Master Plans Resubmissions

To Marianne,

This letter is addressing the most recent comments from the City of Courtenay for the Environmental Master Plan for the Proposed Rezoning of the Lannan Road Site (Corvidae, January 2025).

Comments and responses:

The proposed sanitary main runs through a designated Environmentally Sensitive Areas (ESA) which is under CVRD jurisdiction. The route selected for the sanitary main was determined with the Qualified Environmental Professional (QEP) input for the most direct, least impact route, avoiding routing inside any Stream Protection and Enhancement Areas (SPEAs). For any watercourse crossings for the sanitary main, minimal disturbance techniques will be use, including avoiding tree clearing, concurrent restoration, construction during the least risk timing window and following the Water Sustainability Act requirements and recommendations.

Site 1 in the comments, the proposed expansion of the isolated wetland area in the northeast corner to be a naturalized stormwater pond:

The proposed naturalized stormwater pond (SWP) (engineered wetland) in the northeastern corner of the property has considered the recent fisheries observations made by Cascadia Biological Services, December 2024. The current wetland is isolated from the ditch by a berm, as confirmed in the field.

Due to the fish presence in the ditch, the Section 11 Application to create a large SWP in the isolated wetland area will address the fish passage area for the adjacent ditch. This aspect of the project will be part of the application to the province, to be addressed with habitat improvement options. The SWP will be completely isolated from the ditch area (outside the SPEA) until treated. Following treatment, it will discharge into the ditch network south of the SWP. For the SWP and associated habitat improvement, provincial permits would be obtained for isolation, timing, salvage and construction.

Site 2 in the comments, the isolated wetland area to the southwest on the property, in Phase 1:

This area is proposed to have the removal of an isolated wetland with a replacement wetland to the south. It is too early in the planning stage to confirm the plan for this area. All proposed plans in relation to the isolated wetland will be in consultation with, and approval from, the province. The replacement

value will consider habitat value and replacement ration as per the 2014 Environmental Mitigation Policy (EMP)[1]. The wetland off-setting would be in addition to the SWP for Phase 1.

Site 3, in the same location as Site 2:

This area has sections that are classified as older second-generation forest habitat. As per the City of Courtenay staff, this second-growth forest area has been approved to be removed. The council report stated the following:

THAT based on the April 6th, 2020 staff report "Follow Up Report - OCP Amendment Bylaw No. 2972 and Zoning Amendment Bylaw No. 2973 - Lannan Road" Council approve OPTION 1 and require the applicant to make revisions to the proposal and supply the information listed below prior to proceeding with the bylaw amendments:

1. All remaining trees within the area identified generally on Schedule No. 1 are to be protected with the exception of tree removal necessary to allow for the extension of the Britannia Place strata as well as the extension of Britannia Way.

Site 4, trail system proposed:

The proposed trails follow historic trail locations for one area in the SPEA; this is a natural high point of land in the SPEA where there is existing use, no re-routing or additional trails are planned in the SPEA. The proposed trails have avoided the SPEAs for any new locations.

Please contact the undersigned with any questions or comments.

Sincerely,

Julie Budgen, R.P.Bio., P.Ag.
Reclamation Specialist
250.415.8553 | julib@corvid.pro
Corvidae Environmental Consulting Inc.

[1] https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/environmental-guidance-and-policy/environmental-mitigation-policy



ENVIRONMENTAL MASTER PLAN
FOR THE PROPOSED REZONING OF THE LANNAN ROAD SITE

PREPARED FOR:
SILVERADO LAND CORP.
399 CLUBHOUSE DR.
COURTENAY, BC V9N 9G3

AND

CITY OF COURTENAY
830 CLIFFE AVE.
COURTENAY, BC V9N 2J7

CORVIDAE PROJECT #2023-163
UPDATED April 2025

CORVIDAE
ENVIRONMENTAL CONSULTING INC

6526 WATER STREET, SOOKE, BC

SOLUTION ORIENTED. PROTECTION OF THE ENVIRONMENT. ABSOLUTE INTEGRITY. OPEN COMMUNICATION. RESPECT.

Executive Summary

Corvidae Environmental Consulting Inc. (Corvidae) completed this Environmental Master Plan (EMP) for the proposed rezoning of the Lannan Road Development (the site) for Zoning Amendment Bylaw No. 2973 (PID 025-889-486; LOT 1 DISTRICT LOT 206, COMOX DISTRICT, Plan VIP76495).

The EMP specifically addresses input from consultation with the City of Courtenay, in addition to the federal, provincial and municipal regulations. The provincial guidelines for Environmentally Sensitive Areas (ESAs), as designated, have been mapped and will be protected in perpetuity with the proposed and revised development layout. Also include is a review of the stakeholder comments and feedback from the initial rezoning application, desktop review and seasonal field assessments to precisely determine surface water features, wildlife and vegetation species.

The site is zoned as RU-8 (urban residential – infill property) and is 16.8 ha in size. Approximately 80% of the site was previously cleared, resulting in disturbed areas dominated by invasive vegetation. Intact, forested areas (southern extent of the site) consist of older second-growth forest with wetland areas. The aquatic and terrestrial ESAs are mapped in this area by the City of Courtenay (desktop mapping) and have been field verified by Corvidae.

The landowner is proposing to rezone the site to CD-1J: Single-family and Multi-family Residential. This includes residential buildings, roads, stormwater design (including isolated wetland expansion and naturalization), isolated wetland disturbance, expansion and offsetting, >5% dedication to parkland areas, recreational trails and Hydro Right-of-Way establishment. The initial development layout has been revised to prioritize protection of ESAs as well as protected species (trembling aspen) and wildlife (Species at Risk) habitat.

The previously planned connector road to Britannia Way was removed in the revisions to avoid the second growth forest and riparian areas. The improved layout has the entire southern area remaining as protected ESAs and parkland. The road layout is a loop road in the existing disturbed areas. The planned infrastructure for water and sewer has been designed to go directly south with the least disturbance feasible by having the right-of-way at the minimum width required and following the most direct route. The right-of-way footprint has been situated to avoid ESAs and tree removal. The provincial notifications and permit applications will be submitted for all applicable plans (Section 11's, Riparian Area Applications, wildlife permits, etc.) at the development stage.

Establishment of low impact trails in retained forest areas (including utilizing existing trail routes), implementation of a wildlife corridor on the eastern boundary are proposed. This, and invasive species removal within relevant areas on the site will occur under the advisement of a QEP. For details on the parkland areas refer to the Lannan Park Master Plan (Bloom Landscape Architecture 2025).

A Riparian Areas Protection Regulation (RAPR) detailed assessment was completed during the follow-up field assessment (June 2024) for the subsequent Environmental Development Permit (EDP). This detailed assessment was completed by a QEP according to the methodology outlined in the RAPR Technical Manual (BC FLNRORD 2019) and will be submitted during the development permit stage.

Report Prepared By:

Julie Budgen, R.P.Bio., P.Ag.
Senior Biologist / Reclamation Specialist

Allison Johns, R.B.Tech, B.E.M.
Biologist

Corvidae Environmental Consulting Inc.

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CAVEAT

This Environmental Master Plan (EMP) has been prepared with the best information available at the time of writing, including the City of Courtenay Official Community Plan, review of comments from the Brooklyn Creek Watershed Society and other stakeholders, communications with the landowners, site assessments, and review of site plans and design drawings and other documentation relevant to the project. This EMP has been developed to assist in the proposed rezoning, while following relevant environmental regulations, acts and laws.

1 INTRODUCTION

Corvidae Environmental Consulting Inc. (Corvidae) has prepared this Environmental Master Plan (EMP) for the proposed rezoning of the Lannan Road development (the site) for Zoning Amendment Bylaw No.2973 (PID 025-889-486; LOT 1 DISTRICT LOT 206, COMOX DISTRICT, Plan VIP76495).

1.1 SCOPE OF WORK

Qualified Environmental Professionals (QEPs) from Corvidae completed a detailed environmental assessment of the site in accordance with Appendix B of the document titled "Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development" (BC MOE 2014). This assessment was completed to ensure that all Environmentally Sensitive Areas (ESAs), Communities and Species At-Risk, and surface water features on the site are accounted for in the rezoning, design planning and proposed implementation of the Lannan Road development.

Background information was reviewed, including applicable databases and mapping resources. During the field assessments, inventories of ecological features on the site were recorded, including:

- Areas and features of sensitivity, (i.e., ESAs, Species at Risk and protected species);
- Plant communities and plant species;
- Potential wildlife presence and wildlife habitat;
- Soil properties and terrain; and
- Surface water features, flow patterns, and connectivity.

This EMP includes a review of the stakeholder comments and feedback from the initial rezoning application as well as a desktop review to determine what sensitive ecological features are present within or near the site. This review was then followed by supplementary field surveys to confirm initial findings. Surface water features, flow patterns, and watercourse connectivity were also delineated during the field survey.

The results of this EMP provide an overview of the sensitive ecological features and ESAs identified during field surveys that occurred on January 8th and 9th, and June 26th and 27th, 2024. The mapping results provided in this report include mapped and field-verified ESAs. The timing of the initial field assessment (January 2024) coincided with a substantial rainfall event and snow melt and occurred outside of the growing season. Due to timing, the QEPs delineated the ESAs by vegetation communities. Corvidae completed a follow up detailed field assessment during the growing season (June 2024) to further refine the boundaries of the ESAs, particularly as it relates to sensitive wetland delineation on the site. This information will be applied to all future phases for each specific Environmental Development Permit application (EDP). Subsequently, in supplement to this EMP, provincial reporting includes Water Sustainability Act (WSA) applications and notifications and a Riparian Area Assessment application. In addition, an aquatic species survey will be completed at the isolated wetland areas, and a wildlife permit application submitted for any required salvage and relocation.

1.2 SITE DESCRIPTION AND BACKGROUND

The site is zoned as RU-8 (urban residential – infill property) and is 16.8 ha in size. Approximately 80% of the site was previously cleared, resulting in disturbed areas dominated by invasive vegetation. Intact, forested areas (southern extent of the site) consist of older second-growth growth forest. Aquatic and terrestrial ESAs are mapped within the site by the City of Courtenay (desktop mapping) and have been field verified and provided in Figure 1.

1.3 PROPOSED DEVELOPMENT PLAN AND NEXT STEPS

The landowner is proposing to rezone the site to CD-1J: Single-family and Multi-family Residential. The proposed development will include residential buildings, roads, stormwater design (including isolated wetland expansion), wetland disturbance and offsetting, >5% dedication to parkland areas, recreational trails, and Hydro Right-of-Way establishment. The initial development plan layout has been revised to prioritize protection ESAs as well as At-Risk and protected species, and wildlife habitat. In detail, the proposed development plan includes preservation and protection of confirmed ESAs, retention of mature trees and sensitive environmental features, wetland stormwater design, and incorporation of dedicated parkland areas outside of ESAs.

Establishment of low impact trails, designing a wildlife corridor, and invasive species removal within relevant areas on the site will occur under the advisement of a QEP. For details on the parkland areas refer to the Lannan Park Master Plan (Bloom Landscape Architecture 2025).

The previously planned connector road to Britannia Way was removed as a result of the revisions to avoid the second growth forest and aquatic areas. The improved layout has the entire southern area remaining as a protected ESA through parkland. The road layout is a loop road in the existing disturbed areas. The planned infrastructure for water and sewer has been designed to go directly south with the least disturbance feasible by having the right-of-way at the minimum width required and following the most direct route. The Right-of-Way footprint has been planned to avoid ESAs and tree removal. The applicable provincial notifications and any provincial permit applications will be submitted for all crossings at the development stage.

A Riparian Areas Protection Regulation (RAPR) detailed assessment was completed during the follow-up field assessment (June 2024) for the subsequent EDP. This detailed assessment was completed by a QEP according to the methodology outlined in the RAPR Technical Manual (BC FLNRORD 2019) and will be submitted during the development permit stage.

Proposed Design Plan, ESAs and Setback Areas

- Ditch
- Stream
- Drainage (channelized flooding)
- Future Greenway/Trail
- Proposed Greenway/Trail
- Wetland
- Park-Outside treed areas
- Stream 10 m setback
- Ditch 2m setback
- 15 m N, E, W and 30 m S
- Single-family residential
- Park-Within treed areas/Greenway
- Multi-family residential
- Future stormwater management areas
- Property Boundary

N

0 50 100 200 Meters

Project: PID 025-889-486 | Sources: City of Courtenay, Google Earth Imagery, DataBC

CORVIDAE ENVIRONMENTAL CONSULTING INC

Rev. #	Date
0	January 08, 2025
1	January 21, 2025

Corvidae Project No.
COR-2023-163

Figure 1

1.4 REGULATORY FRAMEWORK

This EMP is designed to comply with the federal and provincial regulations listed below; in addition to provisions set out in the City of Courtenay Official Community Plan (OCP) for environmental development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Federal

- Migratory Birds Convention Act
- Species at Risk Act (SARA)
- Fisheries Act

Provincial

- Wildlife Act: Wildlife Permits in place for aquatic species salvage and relocation
- Environmental Best Management Practices for Urban and Rural Land Development (Section 5: Environmentally Sensitive Areas)
    - ESAs need to be protected from development. Best Management Practices include:
        - Detailed site inventory
        - Site planning and site design
        - Protection during development
        - Protection after development
        - Restoration of disturbed ESAs
- Parkland Acquisition Best Practices Guide
    - "If public use and appreciation are encouraged through the placement of trails, boardwalks and viewpoints, the area effectively represents a passive park. n such a case, it is fair to include all or part of the environmentally sensitive area in the total land base on which the 5% parkland requirement is calculated."
- Invasive Species Council of BC
- Weed Control Act
- BC Water Sustainability Act (WSA)
    - Part 2: Changes in and about a stream may only be made in accordance with:
        - (a)the terms and conditions of a change approval,
        - (b)the regulations,
        - (c)the terms and conditions of an authorization, or
        - (d)an order.

- Part 3: 37 A person may make an authorized change without holding an authorization or change approval authorizing the changes if:
    - (a)the person satisfies the requirements in relation to making changes in and about a stream that are imposed by this Part, and
    - (b)the changes in and about a stream are made in accordance with this Part, including, if applicable, the terms and conditions specified by a habitat officer under section 44 *[protection of aquatic ecosystem]*

- Riparian Areas Protection Regulation
    - The objective of the Riparian Area Protection Regulation (RAPR) is to preserve and enhance sensitive riparian ecosystems, including vegetation and coarse woody debris, shade and hydrogeological conditions that are vital for maintaining stream health and productivity.
    - In the RAPR, a Streamside Protection and Enhancement Area (SPEA) is defined as "an area (a) adjacent to a stream that links aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential adjacent upland vegetation that exerts an influence on the stream, and (b) the size of which is determined according to this regulation on the basis of an assessment report provided by a qualified environmental professional in respect of a development proposal."

Municipal

- City of Courtenay OCP, Bylaw No. 3070 (2022)
- City of Courtenay Tree Bylaw No. 2850 (2016)

DPA 4: Environmental (OCP)

This development permit area is intended to protect ecosystems and features that provide habitat for aquatic and terrestrial species, preserve biodiversity, and provide ecosystem services, when conducting development near Environmentally Sensitive Areas. Where the term Environmentally Sensitive Area (ESA) is used, it is meant to include the buffers, also known as protection setbacks, of that ESA.

The types of Environmentally Sensitive Areas fall into the following categories:

- Freshwater aquatic ecosystems: Those natural systems that are either permanently or periodically under water. Water may be running, as in a river or stream or springs or still, as in lakes and wetlands. This includes their riparian areas, specifically lands within 30 metres of the natural boundary of such ecosystems. These ecosystems may also be subject to provincial Riparian Areas Protection Regulation (RAPR).
- Those ecosystems that are land-based. Common designations follow the provincial Sensitive Ecosystem Inventory categories: seasonally flooded agricultural fields, terrestrial herbaceous, older forest, older second growth forest, sparsely vegetated (cliffs and bluffs), wetland, riparian, and woodland such as Garry Oak ecosystems.

- At-Risk Species and Ecological Communities: These include, but are not limited to, species listed under the federal Species at Risk Act (SARA) and Species and Ecological Communities provincially designated as Red or Blue-listed by the Province of British Columbia.
- Ecosystems Connectivity Areas: The Biogeoclimatic Zone in which Courtenay is situated (the Coastal Western Hemlock, very dry maritime, CWHxm1) is one of the most At-Risk BEC zones in BC.

Objectives:

- Protect areas of high biodiversity and ecological sensitivity within Courtenay including ground and surface water, shorelines, forests, wildlife and important wildlife habitats, ecosystem features and functions, and rare and endangered ecosystems, Ecological Communities, and Species.
- Maintain ecosystem connectivity.
- Restore and enhance previously degraded ecosystems.
- Ensure that ecosystem protection and enhancement values are elevated and prioritized in the development design and review process and specify where and how lands are developed around Environmentally Sensitive Areas.
- Protect and enhance water quality and prevent contamination of water from land use and development activities.
- Meet or exceed the Riparian Areas Protection Regulation (RAPR) requirements.
- Provide comprehensive environmental protection guidelines that are scientifically rigorous, clear, and transparent to development applicants.

Parklands (OCP)

The City encourages and, in some instances, requires the dedication of Environmentally Sensitive Areas as part of development proposals, but ESAs shall not be considered part of the 5% subdivision parkland requirement, where this requirement is triggered.

As per the City of Courtenay OCP Objectives, Policies:

- NE 32 - Require that Environmentally Sensitive Areas be retained under single ownership or dedicated to the City at time of subdivision. Such lands shall not be considered as part of the required 5% dedication for parkland, where applicable as a condition of subdivision approval.
- NE 33 - Do not permit development within Environmentally Sensitive Areas. New trails or facilities in Environmentally Sensitive Areas will be discouraged and installed only where they provide net gain for habitat values.
- PR 10 - Prioritize parkland dedication over cash-in-lieu contribution, where opportunities exist. Environmentally Sensitive Areas and required setbacks areas are not considered as part of development related parkland dedications.

City of Courtenay Tree Bylaw No. 2850 – City of Courtenay

Protected species: a) Garry Oak (*Quercus garryana*); b) Pacific Dogwood (*Cornus nuttallii*); c) Western White Pine (*Pinus monticola*); d) Pacific Yew (*Taxus brevifolia*); e) **Trembling Aspen (*Populus tremuloides*);** f) Arbutus (*Arbutus menziesii*)

- Bylaw Purpose - this Bylaw is enacted for the purposes of: a. regulating the cutting and removal of trees; b. regulating the protection of retained trees during development; c. setting forth expectations regarding the treatment of trees that are regulated under this Bylaw; d. requiring that tree retention and/or planting targets (measured as a tree density target) be achieved.
- Bylaw Application - this Bylaw applies to all properties within the City and to all protected trees. A Tree Cutting Permit is required to be obtained prior to any tree over 20 cm Diameter at Breast Height or protected tree being removed in the following circumstances: a. on any greenfield property; b. on any infill property where the removal of said trees will result in the tree density target not being achieved for that property.

    - Tree Removal, Protection and Management Conditions - a person performing development on lands containing one or more retained trees, where a Tree Cutting Permit is required, shall:

        a. ensure that no development occurs within the root protection area;
        b. place and maintain a temporary tree protection barrier around any retained tree or group of retained trees in accordance with Schedule B.

    - Tree Density Target - the tree density target may be achieved: to be met at the time of EDP.

    - Replacement Trees, Security Bonds, Tree Planting and Replacement Reserve Funds - Where the Director has issued a Tree Cutting Permit, the following replacement formulas shall be followed, subject to subsections (b) through (d):

        a. the net developable area shall achieve the tree density target;
        b. if the tree removed is hazardous, one replacement tree shall be required for every tree removed;
        c. notwithstanding section 10.1.b, if the tree removed is hazardous and is growing within Environmentally Sensitive Areas, three replacements of native species shall be required for every tree removed;
        d. for the removal of a protected species, three replacements of the same species shall be required for every tree removed, including hazardous trees.

2 METHODS

2.1 LITERATURE REVIEW (DESKTOP)

Baseline biophysical conditions were compiled by reviewing the best available data and information including existing reports for the area and by conducting searches of online databases. The following resources were used during the literature review process:

- Aerial photographs of the site (Google Earth 2024);
- BC Conservation Data Centre (BC CDC 2024a and 2024b);
- BC HabitatWizard (Province of BC 2024);
- City of Courtenay mapping system and database (City of Courtenay, n.d.);
- Briefing Note – 'Update to Zoning Amendment Bylaw No. 2973 – Lannan Rd' (City of Courtenay 2023);
- Comox Valley Regional District mapping system (CVRD 2024);
- City of Courtenay Official Community Plan Bylaw No. 3070 (City of Courtenay 2022);
- 'Lannan Development Site Wetland Assessment' (Strategic Environmental Consulting, 2017);
- 'Lannan Road Proposed Residential Subdivision Drainage Study' and 'Lannan Road Development Map' (Koers & Associates & Engineering Ltd. 2022/2025);
- 'Lannan Lands Map', 'Parks Master Plan Map' and 'Draft Connectivity Map' (Bloom Landscape Architecture 2025); and
- 'Overview Environmental Assessment of the Lannan Development Property' (Strategic Consulting 2017).

2.2 FIELD SURVEY

Corvidae QEPs completed the initial field survey of the site on January 8th and 9th, 2024. The follow-up assessment was completed on June 26th and 27th. The assessments included documentation of vegetation and habitat types, wildlife sign and species observations, wildlife habitat, surface water features, and current environmental conditions. A Riparian Area Assessment was also conducted to delineate the current provincial setback requirements for watercourses and wetlands as a RAPR report will be submitted at the time of the Environmental Development Permit Application.

During the initial assessment, areas requiring further investigation and / or delineation (e.g., aquatic and terrestrial ESAs) were recorded using GPS and preliminarily delineated (January 2024), then revisited during the second assessment during the growing season (June 2024). During the assessments, soil pits were used to accurately delineate aquatic features; this was unsuccessful in the January assessment due to site conditions at the time of the assessment (i.e., high ground water table levels and increased runoff due to precipitation). Soil pits were dug abundantly throughout the second

assessment in June to precisely delineate wetland boundaries. Site photographs were taken during the assessments and are included as Appendix A.

3 ENVIRONMENTAL RESULTS

3.1 LAND USE

Vegetation within the northern 80% of the site was previously cleared and is now dominated by invasive species (see Photo 1). There is remaining intact forest along the southern extent of the site that is bisected by a constructed road. The older second-growth forest in the southern area is being protected within parkland as it is not considered an ESA as per provincial parameters (Ministry of Environment, 2004). . The site is bordered by the Crown Isle Golf and Resort Community to the west and to the north, and by private property to the east and to the south. Figure 1 shows the mapped provincial ESAs confirmed onsite by the QEPs. These ESAs were field verified following the clear ESA parameters and characteristics provided in the OCP, Best Management Practices for Environmentally Sensitive Areas (MOE 2004), and desktop mapping by the City of Courtenay for aquatic and At-Risk Ecological Communities.

3.2 CLIMATE AND BIOGEOCLIMATIC ZONE

The site is located within the Coastal Western Hemlock (CWHxm1) biogeoclimatic zone (BC CDC 2024a). The CWHxm1 occurs at lower elevations along the coast of Vancouver Island (above the CDF where present) at typical elevations of 150 m to 450 m above sea level. CWHxm1 has warm, dry summers and moist, mild winters with relatively little snowfall. Growing seasons are long, and feature water deficits on zonal sites (Pojar et al. 1991).

3.3 TERRAIN AND SOILS

Three (3) soil survey polygons are mapped within site boundaries (BC SIFT 2018). In the southern extent, the soil is described as 100% poorly drained silt loam (KOKSILAH soil association). In the north, the soil is defined as 100% rapidly drained loamy sand (QUENNEL soil association). In the northwest corner of the site, the soil is described as 60% moderately well-drained loamy sand and 40% imperfectly drained sandy loam (ST MARY soil association) (BC SIFT 2018). The site slopes gradually north to south.

3.4 ENVIRONMENTALLY SENSITIVE AREAS (ESA)

The QEPs completed detailed field assessments to confirm the location of the mapped ESAs (specifically Aquatic and At-risk Ecological Communities) as they are characterized in the provincial guidelines and the City of Courtenay OCP. Previously, the older second-growth forest onsite was mapped / determined by the City of Courtenay as a Terrestrial ESA, however, through consultation with the municipality, it has been determined that this area is not deemed an ESA; the second growth forested areas are actively utilized for recreational walking trails by local residents, thus, it will be stipulatory that these areas are preserved and will continue to be used recreationally in perpetuity through parkland dedication.

During the winter/spring, and summer assessments, the aquatic areas were refined using vegetation delineation, soil pits (to confirm wetland boundaries) and surface water feature mapping. Site assessments during the growing season allowed for better identification of foliage which confirmed the presence of an At-Risk Ecological Community (Trembling aspen / Pacific crab apple / Slough sedge).

AQUATIC ESA AND RIPARIAN HABITAT

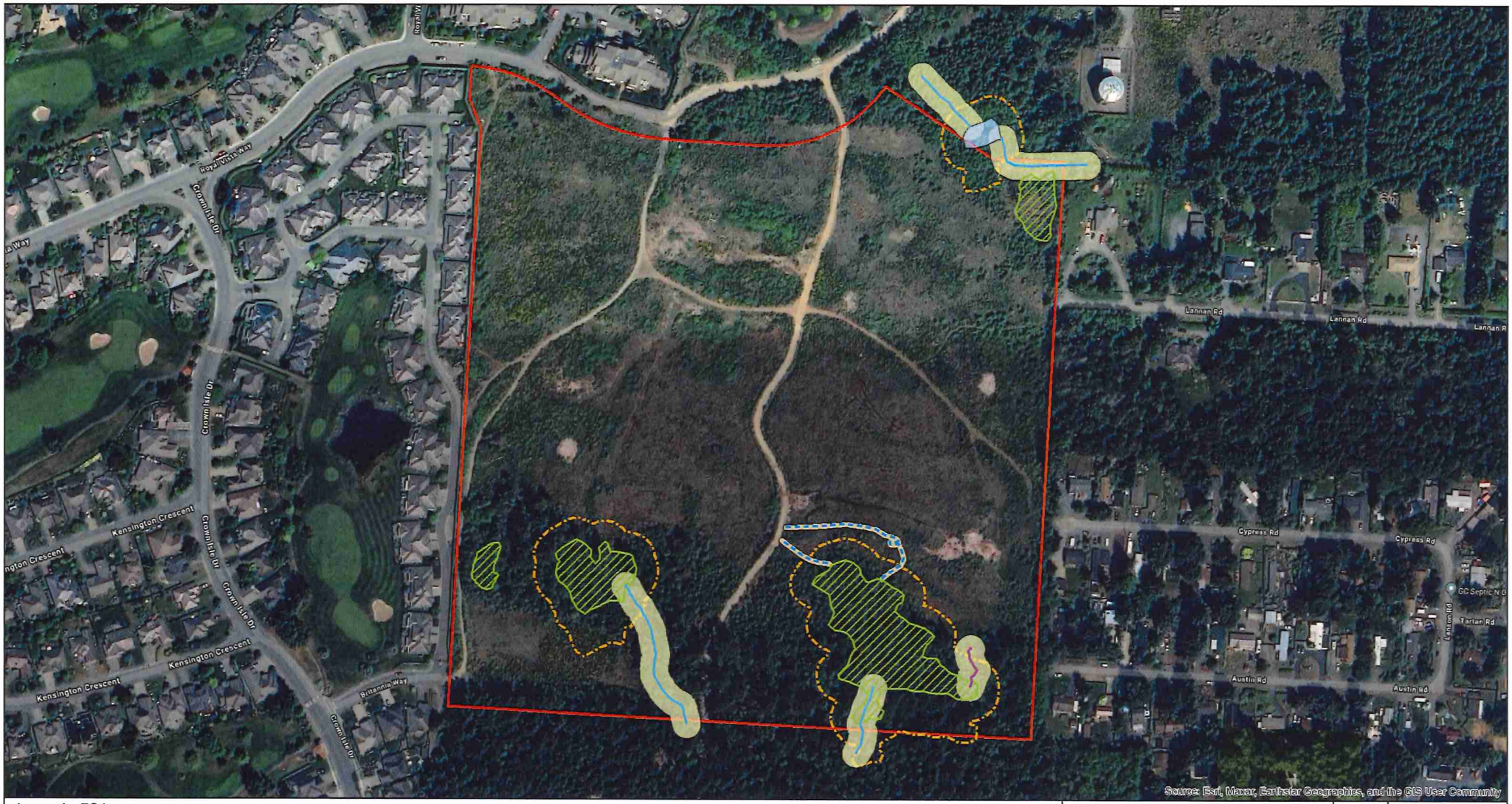
The site occurs within two local watersheds: the Brooklyn Creek watershed (south) and the Little River watershed (northeast). Wetlands, and watercourses connecting the wetlands to the south, were detected onsite during the field survey. During the field assessments, the QEPs mapped and applied the provincial watercourse protection setbacks as they are assumed to be connected downstream. Surface water flows within the southern area of the site are captured in the southern forested aspects within wetland habitat and moist microsites; then carried offsite (south) via stream channels that eventually discharge to Brooklyn Creek. In the northeastern corner, the land gently slopes to the north, where there is a drainage ditch (offsite) and a large headwall (Photos 5 and 6) conveying any surface water drainage to the northeast and eventually draining into the Litter River Watershed. This drainage ditch has reported fish (salmon) sightings in it, it is completely separated from the site by a constructed berm.

There are two isolated wetlands that were identified during the field assessments: one located in the northeast corner of the site and the other in the south on the western side of the site. The wetland in the northeast is indicative of a low seasonally wet area that has no connectivity to the ditch to the north due to the rise in elevation, differing from 70.5 m ASL to 71 m ASL at the berm that borders its northern and western extent. This wetland did not contain water at the time of the assessment in June 2024 and did not contain hydrophilic species characteristic of natural wetlands; it was primarily dominated by invasive species including Scotch broom and Himalayan blackberry. The wetland is likely a depression created during clearing operations, with the separate corridor ditch constructed to the north and east. The isolated wetlands do not have the same setback requirements as the connected wetlands as they are not fish habitat and do not connect to fish-bearing habitat.

TERRESTRIAL

TREMBLING ASPEN / PACIFIC CRAB APPLE / SLOUGH SEDGE

Trembling aspen / Pacific crab apple / Slough sedge is an At-Risk Ecological Community and was detected within the southern area of the site during the June 2024 field assessment. This community is rare, as per provincial parameters, and has been very clearly delineated so that it will be protected in perpetuity for this proposed development. See Figure 1 and Figure 3 for details.



Aquatic ESAs

- Stream
- Drainage (channelized flooding)
- Pond
- Wetland
- Ditch 2m seteback
- Stream 10 m setback
- 15 m N, E, W and 30 m S
- Property Boundary

N

0 25 50 100 Meters

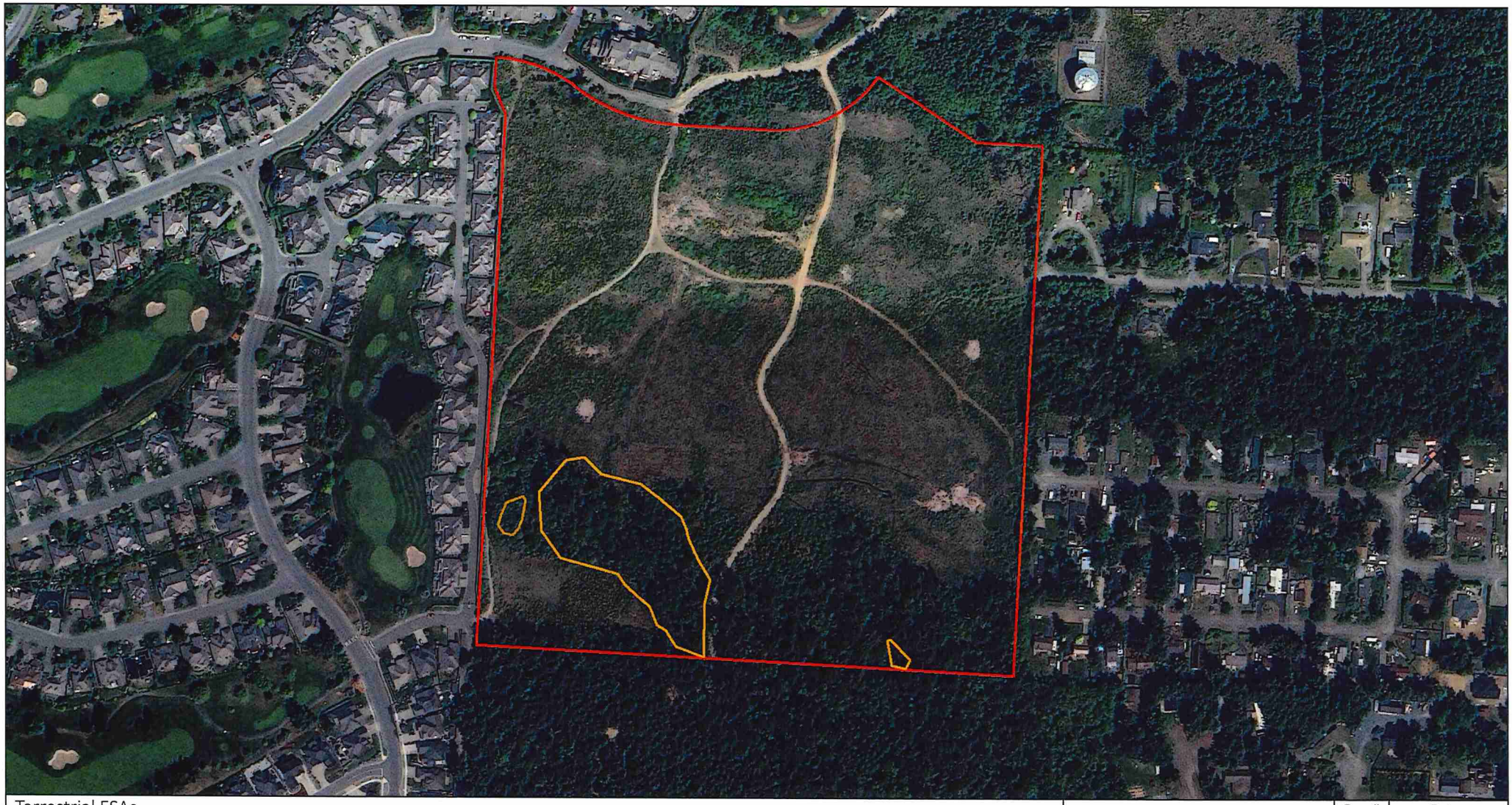
Project: PID 025-889-486
Sources: City of Courtenay, Google Earth Imagery, DataBC

CORVIDAE ENVIRONMENTAL CONSULTING INC

Rev. #	Date
0	July 15, 2024
1	July 19, 2024

Corvidae Project No.
COR-2023-163

Figure 2



Terrestrial ESAs

ESA-Trembling Aspen-Crabapple-Slough Sedge

Property Boundary

N

0 25 50 100 Meters

Project: PID 025-889-486
Sources: City of Courtenay, Google Earth Imagery, DataBC

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ENVIRONMENTAL CONSULTING INC

Rev. #	Date
0	July 15, 2024
1	July 18, 2024
2	January 21, 2025

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Figure 2

3.5 VEGETATION

Coniferous forests in the CWHxm1 zone are dominated by Douglas-fir, western hemlock and western red cedar. Understory species include salal, dull Oregon-grape, red huckleberry, vanilla-leaf, sword fern, twinflower, bracken fern, step moss, and Oregon beaked moss.

There are three types of ecosystems on the site: older second-growth forest, the Trembling aspen / Pacific crab apple / Slough sedge community, wetlands and stream ecosystems, and cleared areas infested with invasives. All plant species observed throughout the site during the field assessment are listed in Table 1.

The riparian areas of the wetlands and stream networks within the older second-growth forest ecosystem are relatively uniform and consist largely of slough sedge and sword fern in the understory, and western redcedar and Douglas-fir in the overstory. In the riparian areas adjacent to historical disturbance, Himalayan blackberry and other invasives are prevalent. Trembling aspen, along with the associated Ecological Community At-Risk (Trembling aspen / Pacific crab apple / Slough sedge) is majorly present within the southwest extent of the site, within the identified ESAs.

The previously cleared area is dominated by invasives (e.g., Scotch broom, Himalayan blackberry), with grasses, sedges, and immature dogwood and alder trees, as well as limited juvenile spruce regrowth.

The older second-growth forest consists of Douglas-fir, western red cedar, sword fern and big leaf maple, with aquatic and riparian vegetation associated with wetlands and stream channels. Pockets of trembling aspen, a protected tree species in the City of Courtenay, were also present. This habitat type is not considered an ESA by the City of Courtenay. However, this area is being protected and utilized as parkland with use of existing trails, additional trails as per the Parks Master Plan and a wildlife corridor. The entire area has hummocky features due to the large roots and organic soil.

INVASIVE SPECIES

Six invasive species were observed, including common St. John's wort, cutleaf blackberry, English holly, English Ivy, Himalayan blackberry and Scotch broom. Common St. John's wort, English ivy, English Holly, Himalayan blackberry and Scotch broom are listed as "Control" species under the Coastal Invasive Species Committee (2022). It is recommended that control measures for these species are focused within high value conservation areas. Biological Control, if available, may be used on a landscape scale. Measures to remove and prevent invasive species noted on the site are provided in Section 5 of this report.

Table 1. Plant species observed on site during field assessments in 2024.

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Bracken fern	*Pteridium aquilinum*	Yellow	--
Common rush	*Juncus effusus*	Yellow	--
Common St. John's wort	*Hypericum perforatum* ssp. *perforatum*	**Invasive**; Exotic	--
Cutleaf blackberry	*Rubus laciniatus*	**Invasive**; Exotic	--
Douglas-fir	*Pseudotsuga menziesii*	Yellow	--

Common Name	Scientific Name	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
Dull Oregon-grape	*Mahonia nervosa*	Yellow	--
English holly	*Ilex aquifolium*	**Invasive**; Exotic	--
English ivy	*Hedera helix*	**Invasive**; Exotic	--
Grand fir	*Abies grandis*	Yellow	--
Hardhack	*Spiraea douglasii* var. *douglasii*	Yellow	--
Himalayan blackberry	*Rubus armeniacus*	**Invasive**; Exotic	--
Nootka rose	*Rosa nutkana* ssp. *nutkana*	Yellow	--
Oceanspray	*Holodiscus discolor* var. *discolor*	Yellow	--
Red alder	*Alnus rubra*	Yellow	--
Red huckleberry	*Vaccinium parvifolium*	Yellow	--
Red osier dogwood	*Cornus sericea*	Yellow	--
Reed canarygrass	*Phalaris arundinacea*	**Invasive**; Exotic	--
Rough horsetail	*Equisetum*	Yellow	--
Salal	*Gaultheria shallon*	Yellow	--
Salmonberry	*Rubus spectabilis*	Yellow	--
Scotch broom	*Cytisus scoparius*	**Invasive**; Exotic	--
Sitka spruce	*Picea sitchensis*	Yellow	--
Skull cap sp.	*Scutellaria* sp.	--	--
Slough sedge	*Carex obnupta*	Yellow	--
Spreading wood fern	*Dryopteris expansa*	--	--
Sword fern	*Polystichum munitum*	Yellow	--
Trailing blackberry	*Rubus ursinus*	Yellow	--
Trembling aspen	*Populus tremuloides*	Yellow	--
Western hemlock	*Tsuga heterophylla*	Yellow	--
Western redcedar	*Thuja plicata*	Yellow	--
Western white pine	*Pinus monticola*	Yellow	--

[1] BC CDC 2024a
[2] Government of Canada 2023

3.6 WILDLIFE AND WILDLIFE HABITAT

The forested habitat found in the Coastal Western Hemlock biogeoclimatic zone is home to many wildlife species. Black-tailed deer, black bear, marten and gray wolf are the most common large mammals in this zone on Vancouver Island. For bird species in this zone, the following typically occur: great horned owl, barred owl, ruffed grouse, band-tailed pigeon, northern flicker, hairy woodpecker, common raven, Steller's jay, chestnut-backed chickadee, red-breasted nuthatch, varied thrush, red-tailed hawk, and Townsend's warbler. The following amphibians may occur in this biogeoclimatic zone: western toad, Pacific tree frog, and western redbacked salamander (Pojar et al. 1991).

The forest onsite provides habitat for a variety of birds, mammals, reptiles, and amphibians. Mature trees provide nesting and roosting habitat for songbirds, owls, and woodpeckers. Coarse woody debris provides cover habitat for small mammals (e.g. western water shrew), snakes, and amphibians (e.g. northern red-legged frog). The wetlands provide suitable amphibian breeding habitat. Wildlife trees were

spotted onsite that provide foraging and possible nesting sites for birds. Significant whitewash was noted on a large tree within the forested area, indicating use by avian species. No nests were observed at the time of the site assessments. Mule deer were observed during the field surveys. All wildlife species detected during the field assessments are listed in Table 2.

Table 2. Wildlife Species observed (audio or visual) on site during field assessments in 2024.

Common Name	Scientific Name+	BC Provincial Status[1]	*SARA* Schedule 1 Status[2]
MAMMALS			
Eastern cottontail	*Sylvilagus floridanus*	Exotic	--
Mule deer	*Odocoileus hemionus*	Yellow	--
BIRDS			
Bewick's wren	*Thyromanes bewickii*	Yellow	--
Chestnut-backed chickadee	*Poecile rufescens*	Yellow	--
Common raven	*Corvus corax*	Yellow	--
Dark-eyed junco	*Junco hyemalis*	Yellow	--
Golden-crowned kinglet	*Regulus satrapa*	Yellow	--
House finch	*Haemorhous mexicanus*	Yellow	--
Northern flicker	*Colaptes auratus*	Yellow	--
Pacific wren	*Troglodytes pacificus*	Yellow	--

[1] BC CDC 2024a

[2] Government of Canada 2023

3.7 SPECIES AT RISK

A query of the BC CDC iMap tool yielded occurrences of the following Species and Ecological Community At-Risk within a two-kilometer radius of the site (BC CDC 2024a). Species and the Ecological Community identified are described below. Species at Risk not mapped within Provincial databases have also been accounted for (see below).

ECOLOGICAL COMMUNITIES

Trembling Aspen / Pacific Crab Apple / Slough Sedge

There is a polygon overlapping the southern extent (forested area) of the site for the Trembling aspen / Pacific crab apple / Slough sedge (*Populus tremuloides / Malus fusca / Carex obnupta*) Ecological Community. This Community is red listed in BC and is deemed to be extirpated due to land clearing activities (B.C. CDC 2001).

Trembling aspen stands were detected within the southwest corner of the site during the field assessment. Slough sedge was also observed amongst the stands and throughout the forested areas in the southern extent. Pacific crab apple was not detected at the time of the initial assessment; however, the assessment took place outside of the growing season. Areas containing trembling aspen were re-evaluated during the follow-up field assessment to confirm the presence of this species and associated Ecological Community and to accurately map its extent throughout the site. During the second field survey, Pacific crab apple was observed. Thus, this community was confirmed onsite and delineated by

Corvidae's QEPs. These areas are protected through the terrestrial ESA as well as the Tree Protection Bylaw (City of Courtenay Bylaw 2850).

WILDLIFE

Ermine

The ermine (*Mustela richardsonii* ssp. *anguinae*) is a small mammal within the weasel family. The ermine is endemic to Vancouver Island and Blue-listed in the Province of BC (Government of Canada 2022). Ermine are highly affected by fragmented landscapes and disturbance (land clearing for development) and are closely tied to prey availability. Ermine occupy a variety of forest habitats but often utilize forest edge habitat. Their presence is highly dependent on the availability of the Townsend's vole (*Microtus townsendii*), as this is the ermine's main prey. The Townsend's vole prefers fresh marshes, moist meadows (sometimes dry grass), wetlands along streams, alpine and subalpine meadows as habitat and can create burrows through underwater access. The site conditions may satisfy habitat requirements for the Townsend's vole, but due to the lack of understory, limited forested area and severe disturbance, the site is not expected to provide adequate habitat for ermine (BC CDC 2024a).

Western Water Shrew

No critical habitat or species occurrences of the western water shrew (*Sorex navigator brooski*) are mapped within site boundaries, however, there are some characteristics of the site (vegetation and riparian areas) that may provide suitable habitat for this species. Mapped occurrences of this species exist north of the site near Black Creek. The western water shrew was not observed during field assessment; however, detection of this species would be difficult without completing inventory monitoring (trapping). The western water shrew is a provincially Blue-listed species and can be found within both the CDF and CWH biogeoclimatic zones. This species is endemic to Vancouver Island and is dependent on high-quality, intact aquatic / riparian habitat. They are habitat specialists living at the water's edge. Presence of coarse woody debris and dense riparian vegetation are key habitat features. Major threats posed to this species include forestry and urbanization (BC CDC 2024a). The already disturbed (cleared) areas of the site do not offer suitable habitat, however, the intact coniferous forest with abundance of aquatic habitat and riparian areas may be favourable to this species.

Northern Red-legged Frog

No critical habitat or species occurrences of the northern red-legged frog are mapped within site boundaries, however, the potential for this species at risk to occur has been evaluated. The northern red-legged frog breeds in permanent water bodies including wetlands, marshes, ponds and other quiet bodies of water. This species may occupy a variety of terrestrial and aquatic habitat but is often found within the vicinity of permanent waters. Damp woods some distance from water are utilized, particularly during wet periods. Estivation sites consist of moist leaf litter in dense riparian vegetation (BC CDC 2024a). Due to the ephemeral nature of the water features onsite, and lack of consistent water in wetland areas, suitable breeding habitat for the northern red-legged frog does not exist within site boundaries.

4 POTENTIAL ENVIRONMENTAL IMPACTS

No environmental impacts are anticipated in the initial rezoning phase of the development. Potential environmental impacts associated with future development phases are listed below. This list will be updated as design plans progress and ESAs are further delineated.

- Impacts to identified ESAs.
- Impacts to remaining forested areas.
- Spread of invasive plant species from adjacent clearing and disturbance.
- Loss of existing vegetation.
- Change in wildlife habitat availability and wildlife mortality risk.
- Erosion and sediment transport within and around the site area.

The residual environmental impacts of future development activities on the site will be reduced by the implementation of the mitigation and restoration measures recommended in Section 5 of this report.

4.1 ENVIRONMENTALLY SENSITIVE AREAS

AQUATIC ESA AND RIPARIAN HABITAT

The site design avoids the aquatic ESAs and associated riparian habitat (following RAPR standards for setback areas), with the exception of any crossings for trails and access. The Park Management Plan (Bloom Landscape Architecture 2025) provides details on the proposed parkland areas. In summary, the 'Parkland Acquisition – Best Practices Guide' (Development Finance Review Committee 2006) has been followed for parkland design as well as inclusion of ESAs within parkland.

The remaining forested areas, second growth mature forest, will utilize the existing trails for resident users. Trail development will build upon the existing network of nature trails, adding key connections into adjacent neighbourhoods and through the site. Crossing of ESAs will be done in a perpendicular fashion to ensure minimal disturbance. Future detailed design will explore trail widths and surfacing materials.

The wetlands and connecting watercourses in the development area are mapped and will be protected by the SPEA setbacks (15 m to the north, east, and west, and 30 m to the south of all wetlands, as well as 10 m on both sides of the seasonal watercourses).

There are no regulations that mandate protective buffers or setbacks (e.g., SPEAs) for the isolated wetlands onsite. The two isolated wetlands are proposed to be impacted by development activities. For the first wetland, in the northeast corner, expansion is proposed. In the southern area of the site along the western boundary, removal and offsetting (replacement with a larger wetland area) of the wetland is proposed. These isolated wetlands are currently impacted with many invasives, including dense concentrations of Himalayan blackberry. There will be a net increase of wetland areas with the proposed naturalized stormwater ponds. There will also be a loss of potential amphibian habitat in the isolated wetland to be removed and off-set, however, creation of naturalized wetlands through stormwater design may increase amphibian habitat post-development.

TERRESTRIAL ESA (TREMBLING ASPEN / PACIFIC CRAB APPLE / SLOUGH SEDGE)

No environmental impacts to this Ecological Community are expected as all occurrences are encompassed within the protected ESAs, which have been field verified, mapped, and the site design has been adapted to protect these areas. Trembling aspen is considered a protected tree as per the City of Courtenay Tree Protection Bylaw (Bylaw No. 2850). Removal of trembling aspen is not proposed as part of the development. Trembling aspen will be protected in perpetuity within the designated ESA boundaries in the southern extent of the site. See Figure 1 and Figure 3 for details.

4.2 VEGETATION

Forested areas on the site will remain undisturbed in the protected areas (ESAs) and dedicated parkland. As per previous discussions, trees can be removed for Phase 1 Britannia Place. Vegetation immediately adjacent to cleared areas may experience changes in windthrow, light, and moisture due to future development activities and land modifications.

INVASIVE SPECIES

Invasive plants are particularly adept at colonizing degraded plant communities and disturbed soils in high traffic areas, such as the margins of roads and parking areas. Invasive plants establish readily in disturbed areas as they have a wide ecological tolerance and grow and propagate quickly. The effects of invasive plant establishment may be the reduction or displacement native species by capturing resources and occupying habitats.

4.3 WILDLIFE AND WILDLIFE HABITAT

Habitat loss and alteration from vegetation clearing can cause displacement of wildlife, use of less suitable habitat, reduced foraging ability, increased energy expenditure and lower reproductive success. Reduction of habitat quality can occur as a result from the creation of habitat edges and the introduction of buildings with many windows into previously unused spaces (which can increase mortality risk for birds). Noise from site preparation and construction may temporarily disturb and displace wildlife residing or passing through the site.

4.4 SPECIES AT RISK

ECOLOGICAL COMMUNITIES

As per the identified ESAs mapped and protected for the proposed development, there is the Trembling aspen / Pacific crab apple / slough sedge community identified. This Ecological Community at Risk will be protected in perpetuity as occurrences exist within the planned protected areas outside of the park space and outside of all development.

WILDLIFE

Wildlife Species at Risk that have potential occur in the area include ermine, western water shrew and northern red-legged frog. From field surveys and desktop review, there is unlikely potential for these species to utilize the site due to the degree of disturbance on and surrounding the site which has resulted in habitat fragmentation.

However, areas that have the highest potential to provide value to ermine, western water shrew and northern red-legged frog exist within the intact (forested) aquatic and terrestrial ESAs are to be protected and remain undisturbed in perpetuity.

4.5 EROSION AND SEDIMENT TRANSPORT

Removal of vegetation and ground disturbance may expose soils to erosion and can result in the movement of sediment on the site. Damage or degradation of soil surfaces during construction can include loss of soil structure, increased erosion, and soil compaction which can negatively affect post-construction reclamation efforts.

Increased levels of sediment and turbidity can impact the productivity of aquatic ecosystems. Sediment in the water may change the amount of light reaching aquatic plants, thereby negatively impacting growth. Sediment has both lethal and sublethal impacts on fish. Aside from direct mortality from suffocation, sediment in the water may limit visual feeding, change fish behavior, and reduce egg and embryo survival.

5 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

The mitigation measures provided in this report are designed to protect sensitive ecosystems and were developed in accordance with:

- The City of Courtenay OCP (City of Courtenay 2022),
- Parkland Acquisition Best Practices Guide (2006)
- Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) (BC Ministry of Environment [MOE] 2014a),
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (Government of BC 2014),
- Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (BC Ministry of Water, Land and Air Protection 2004), and
- RAPR Technical Manual (BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development 2019).
- A User's Guide for Changes in and About a Stream in British Columbia (WSA 2022).

The mitigation measures described below are expected to reduce potential environmental impacts when applied during site preparation and future development and building activities on the site. These measures will be updated where required as design plans progress.

5.1 ENIVRONMENTALLY SENSITIVE AREAS

The detailed field surveys provided the information needed to accurately determine the ESAs. These areas were mapped and then provided to the design team (engineering, planning, landscape and park design). Recommendations by the City of Courtenay, as well as guidelines in the Parkland Acquisition – Best Practices Guide were followed for the proposed parkland layout (Bloom Landscape Architecture 2025). All ESAs will be clearly flagged during the subdivision and EDP stage to ensure protection and prevent encroachment into these areas apart from crossings (trails and access). For any watercourse crossings Section 11 Notifications and RAPR reports will be completed.

For the proposed expansion of the isolated wetland area in the northeast corner a Section 11 Application will be submitted to the province as part of the Water Sustainability Act. The RAPR does not apply due to its isolation from fish habitat.

The isolated wetland along the west boundary to the south is proposed to be removed and offset (replaced) to the south by a larger naturalized stormwater pond, located in a previously disturbed area. The wetland, as it exists currently, has poor ecological value due to previous disturbance and concentration of invasive species dominating the riparian vegetation. For the proposed removal and replacement (offsetting) of this low-quality wetland a Section 11 Application will be submitted to the province as part of the Water Sustainability Act. The RAPR does not apply due to its isolation.

Mitigation measures for both of the isolated wetlands and associated plans include amphibian surveys and applicable permitting, such as salvage / relocation if amphibians are present in these areas. Wetland creation includes enhancement through invasive species removal, excavation, contouring and planting with suitable aquatic and riparian species. Wetland creation and improvement is expected as a result of the development activities and may increase habitat for small mammals and amphibians once naturalized. A detailed design for each wetland creation will be provided at the development stage, as well as submitted to the province for the Section 11 Applications.

5.2 VEGETATION

Retention of remaining forested areas is planned. The remaining forested areas outside of the ESAs will be dedicated to the City of Courtenay as parkland, as part of the 5% park dedication requirement. The Trembling aspen / crab apple / Slough sedge and Aquatic ESAs will not be part of the parkland dedication and will remain undisturbed (see Figures 1, 2 and 3). During the development phases, high visibility fencing should be installed along the perimeter of park areas and ESAs to protect the drip and root zones of retained trees near active construction areas.

It is recommended that areas disturbed by site preparation and construction activities that are not part of a permanent road or residential footprint be replanted with native vegetation. Table 3 includes native plant species that are suitable for the area. The recommended plant density following invasive removal is 1 to 2 m^2 for shrubs and 3 to 5 m^2 for trees. Details will be provided in the landscape design at the EDP stages of each phase.

The purpose of using native species is to reduce irrigation maintenance in the future. The optimal time for revegetation is in the fall, prior to the wet winter season. However, planting at any time of the year (with irrigation as needed) is acceptable to prevent invasive species establishment. A replacement ratio of 3 to 1 is recommended for all trees greater than 50 cm DBH (diameter at breast height) on the site

that will need to be removed as part of future development proposals; this also meets the Courtenay Tree Protection and Management Bylaw No. 2850.

Table 3. Recommended native vegetation species for enhancement.

Common Name	Species
Salal	*Gaultheria shallon*
Salmonberry	*Rubus spectabilis*
Nootka rose	*Rosa nutkana*
Oceanspray	*Holodiscus discolor*
Sword fern	*Polystichum munitum*
Western redcedar	*Thuja plicata*
Trembling aspen	*Populus tremuloides*
Bigleaf maple	*Acer macrophyllum*
Coastal Revegetation Mix by Pacific Premier or equivalent	

INVASIVE SPECIES

Any invasive species encountered on the site should be removed, particularly in the ESAs identified (Figures 2 and 3). Six invasive species were observed on the site during the field assessment. Invasive species should be removed using the most appropriate methods, at the correct time of year, and plant material must be disposed of correctly to avoid re-establishment or spread. Details of removal methods for the invasive species recorded onsite are provided below in Table 4.

Mitigation measures to control and minimize the spread of invasive species on the site include:

- Clean all machinery before arrival onto the site to ensure that more invasive seeds and other propagules (e.g., pieces of root) are not brought into the development area.
- If fill or topsoil is imported from external areas, ensure that it is from an invasive-free source.

Disturbed areas should be seeded with fast growing vegetation or seed mix to compete with invasive species, fix nitrogen, and provide soil stabilization.

Table 4. Recommended removal and disposal methods for invasive species

Species	Removal Method	Removal Timing	Plant Disposal
English ivy	Can be removed by hand pulling and cutting of vines. Roots should be pulled so no rooted portions re-grow.	Removal should occur in the fall, when plants are easier to remove due to moist soil conditions.	Burned or bagged and disposed of properly in a landfill. Do not compost.
English holly	English holly can be removed by hand pulling small seedlings or cutting mature trees at ground level removing all plant material.	Removal is best done before flowering to eliminate seed production.	Holly does not root again once removed, so it can also be piled to desiccate on site. Can be bagged and disposed of properly in a landfill. Do not compost.

Species	Removal Method	Removal Timing	Plant Disposal
Cutleaf blackberry	Continuous cutting or mowing can be combined with herbicide treatment to control.	Removal should occur in the spring and early summer before they produce berries as canes that are cut as the plant is producing flowers are least likely to re-sprout.	Burned or disposed of properly in a landfill. Do not compost.
Himalayan blackberry	Can be removed by pulling or cutting the canes from the ground. If possible, dig out the roots, paying careful attention not to damage nearby vegetation.	Removal should occur in the spring and early summer before they produce berries as canes that are cut as the plant is producing flowers are least likely to re-sprout.	Burned or disposed of properly in a landfill. Do not compost.
Scotch broom	Avoid disturbing the soil which can stimulate dormant broom seeds to sprout. Small broom plants can be pulled easily from the ground by hand without disturbing the soil. Larger plants should be cut below the root crown using loppers or a pruning saw.	Scotch broom removal should occur mid-April through early June, when in flower and before its seed pods begin to open.	Disposed of properly in a landfill or burning. Do not 'recycle' garden debris or compost.
St. John's wort	Hand pulling, digging or tillage and removing as much of the root system as possible. Herbicides have also been proven to be an effective method of control.	Removal is best done before flowering to eliminate seed production and spread.	Disposed of properly in a landfill. Do not 'recycle' garden debris or compost.

5.3 WILDLIFE AND WILDLIFE HABITAT

Mitigation measures to minimize impacts on wildlife and wildlife habitat include:

- Vegetation clearing should be completed outside of the migratory bird window (prior to March 15th or after August 31st; Government of Canada 2021). If vegetation clearing is scheduled within the sensitive time period for breeding birds, a QEP should conduct nest search surveys a maximum of 2-3 days prior to the start of activities. If an active nest is discovered during nest searches or clearing activities, the nest will be subject to site-specific mitigation measures (e.g., protective buffer around the nest or unobtrusive monitoring) until the young have naturally fledged/left the area. Multiple nest sweeps may be required.
- A raptor nest survey should be completed by a QEP prior to clearing and or construction activities. If work is scheduled between January 1 and August 15, occupied or active nests would be subject to the actions described above. If any eagle or osprey nests are observed in trees to be removed, note that a permit is required to remove an eagle or osprey nest regardless of occupancy.
- Avoid additional removal of established trees or shrubs, where practical, except for identified danger trees (that cannot be avoided) or invasive species.

- The protected ESAs will include mature and protected trees and associated habitat for wildlife.
- For the proposed isolated wetland expansion and offsetting, a wildlife permit will be obtained for amphibian salvage and relocation. The salvage and relocation efforts will meet provincial guidelines and standards, and include amphibian surveys at the appropriate season, with the relocation in the same catchment area.

WILDLIFE CORRIDOR

The proposed development will reduce the wildlife movement in the area. As mitigation, the connection of the proposed park areas to the south with the proposed stormwater pond in the northeastern corner has been created in the design plan. A 10 m wide wildlife corridor along the eastern site boundary would provide an area for wildlife movement, as shown in Figure 1. Detailed studies have shown that wildlife will readily share human-use corridors (pathways and greenspaces) when they are not in use by humans (Corvidae 2015).

PROPOSED TRAIL & GREENWAYS

The Lannan Park Master Plan (Bloom Landscape Architecture 2025) provides details on the trails and parkland areas. Corvidae has been working closely with the landscape designer to have additional trails and park areas outside of any ESAs while also utilizing existing trails in the older second-growth forest area. The parkland areas and trails will provide areas for wildlife movement (e.g., corridors, as discussed above).

5.1 SPECIES AT RISK

The measures to protect Species at Risk are accounted for through the permanent protection of the ESAs shown in Figure 1. In addition, the park planning includes *park outside tree protection area* and *park inside tree protection area*. With the park plan, protection of the ESAs has been applied to ensure impacts are with existing trails and trail routing to reduce / prevent local residents creating new trails and causing impacts to these areas. There are no trails or parks planned within the Trembling aspen / Pacific crab apple / Slough sedge ESA, and none within the Aquatic ESA and associated SPEA setbacks (see Figure 1).

5.2 EROSION AND SEDIMENT CONTROL

Mitigation options to minimize the potential for erosion and sediment transport include:

- Disturbed areas should be seeded with fast growing vegetation or seed mix to compete with invasive species, fix nitrogen and provide soil stabilization following soil disturbance and or vegetation removal. Straw or erosion control blankets can also be applied as an immediate temporary measure to prevent erosion.
- If erosion or sediment movement is observed during construction activities, silt fencing or straw wattles should be installed to direct sediment to a holding area or vegetated area away from any surface water features to settle.

- Heed weather advisories and scheduling initial clearing work to avoid excessively rainy periods (>20 mm in 24 hours) that may result in high flow volumes and / or increase erosion and sedimentation.
- Regularly inspect and maintain Erosion and Sediment Control measures for the duration of the development.

Measures must also be taken to prevent the risk of hazardous materials and contaminant spills, including oil, gas, and hydraulic fluid during construction. It is recommended that a large, labeled, mobile spill kit is kept onsite during construction works and that all construction equipment is kept in good working order without leaks.

STORMWATER MANAGEMENT

The proposed SWMP is designed to maintain baseflows to the natural, undeveloped areas while routing water from larger storm events with higher flows to the detention ponds and naturalized wetlands. This concept will achieve the goal of maintaining base flows in the headwaters of Brooklyn Creek. See the Lannan Road Proposed Residential Subdivision Preliminary Storm Water Management Master Plan (Koers 2025) for details.

For the aquatic areas, the SWMP includes creating naturalized stormwater ponds that will increase aquatic habitat with riparian and aquatic vegetated ponds. The SWMP shows the details of the naturalized stormwater pond size and location. For each of these proposed ponds, and changes to the two isolated wetland areas, a Section 11 Application will be submitted to the province for approval prior to proceeding.

6 CONCLUSION

This EMP for the proposed rezoning of the Lannan Road development provides details of the environmental features on the site and recommended protection measures. Results and recommendations made in this report are provided to guide future development activities.

Corvidae identified ESAs including surface water features, Communities At-Risk, and protected tree species that occur within undisturbed areas of the site. These sensitive ecological features will be protected throughout rezoning and development phases.

The assessment results have been integrated into the planning for the site design and park planning. There will be an Environmental Development Permit at the time of subdivision. All provincial applications and permitting will be completed at that time. All work must be completed in accordance with relevant legislation and during appropriate timing windows.

During development, implementation of the protection and mitigation measures recommended in this report, including, but not limited to, the protection of the ESAs and Communities at Risk, will minimize the impact of the proposed development on the environment.

7 REFERENCES

BC Soils Information Finder Tool (BC SIFT). 2018. Provincial Soils Working Group. BC Ministry of Environment and Climate Change Strategy and Ministry of Agriculture. Accessible at: https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=cc25e43525c5471ca7b13d639bbcd7aa

B.C. Conservation Data Centre (BC CDC). 2025. Conservation Status Report: *Sorex navigator brooksi*. B.C. Ministry of Environment. Available: https://a100.gov.bc.ca/pub/eswp/ (accessed Dec 17, 2024).

Bloom Landscape Architecture. 2025. PRELIMINARY PARKS MASTER PLAN, Lannan Road Development – Proposed Rezoning – Zoning Amendment Bylaw 2973

British Columbia Conservation Data Centre (CDC). 2024a. BC Species and Ecosystems Explorer. B.C. Ministry of Environment. Victoria, B.C. Available: http://a100.gov.bc.ca/pub/eswp/. Accessed: January 2024.

British Columbia Conservation Data Centre (CDC). 2024b. CDC iMap [web application]. Available at: http://maps.gov.bc.ca/ess/sv/cdc/. Accessed: January 2024.

British Columbia Ministry of Environment (MOE). 2014a. Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) Version 1.0.

British Columbia Ministry of Environment (MOE). 2014b. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: https://www2.gov.bc.ca/gov/content/environment/natural-resourcestewardship/naturalresource-standards-and-guidance/best-managementpractices/develop-with-care.

British Columbia Ministry of Environment. 2004. *Environmental Best Management Practices for Urban and Rural Land Development*

British Columbia Ministry of Environment. 2009. *A User's Guide to Working In and Around Water.*

British Columbia Ministry of Environment. 2014b. Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia. Available at: https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/natural-resource-standards-and-guidance/best-management-practices/develop-with-care.

City of Courtenay Official Community Plan (OCP). 2022. City of Courtenay. Available at: https://www.courtenay.ca/assets/Departments/Development~Services/OCP~Update/CourtenayOCP-June2022interactive-with-bylaw.pdf

Coastal Invasive Species Committee (Coastal ISC). 2022. Coastal ISC Priority Invasive Plants. Available at: https://www.coastalisc.com/priority-invasive-plants/. Accessed: January 2024.

Corvidae Environmental Consulting Inc. 2013-2015. Three Sisters Village Wildlife Camera Study. The human interface with wildlife on high use trails.

Development Finance Review Committee. 2006. Parkland Acquisition – Best Practices Guide. https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/local-governments/finance/parkland_acquisition_best_practices_guide.pdf

Government of Canada. 2021. General nesting periods of migratory birds. Available at: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html. Accessed: January 2024.

Government of Canada. 2023. Species at Risk Public Registry. Available at: https://www.canada.ca/en/environment-climate-change/services/species-risk-publicregistry.html. Accessed: January 2024.

Koers, et al, 2025. Lannan Road Proposed Residential Subdivision Preliminary Storm Water Management Master Plan (DRAFT Mar 5, 2024).

Pojar, J., K. Klinka, and D.A. Demarchi. 1991. Coastal Western Hemlock Zone. In Ecosystems of British Columbia. D. Meidinger and J. Pojar (editors). B.C. Ministry of Forestry, Victoria, B.C. Spec. Rep. Ser 6. Pp 95-111.

Province of British Columbia. 2021. HabitatWizard. Available at: http://maps.gov.bc.ca/ess/hm/habwiz/. Accessed: January 2024.

Strategic Consulting. 2017. Overview Environmental Assessment of the Lannan Development Property.

APPENDIX A – SITE PHOTOGRAPHS

Photo 1. East-facing view of previously cleared area adjacent to tree line at the southern extent of the Site. June 26th, 2024.

Photo 2. Northwest-facing view of watercourse and culvert along constructed road, near the southern site boundary. January 8th, 2024.

Photo 3. Trembling aspen stand (ESA) in southern section of site. June 26th, 2024.

Photo 4. Corridor ditch to the northeast, outside of the site boundary, view east. January 8th, 2024.

Photo 5. View of headwall for culvert intake area to the northeast, offsite. View east. June 27th, 2024.

Photo 6. Typical view of mature, second-growth forest (upland) in the southern site extent. January 8th, 2024.

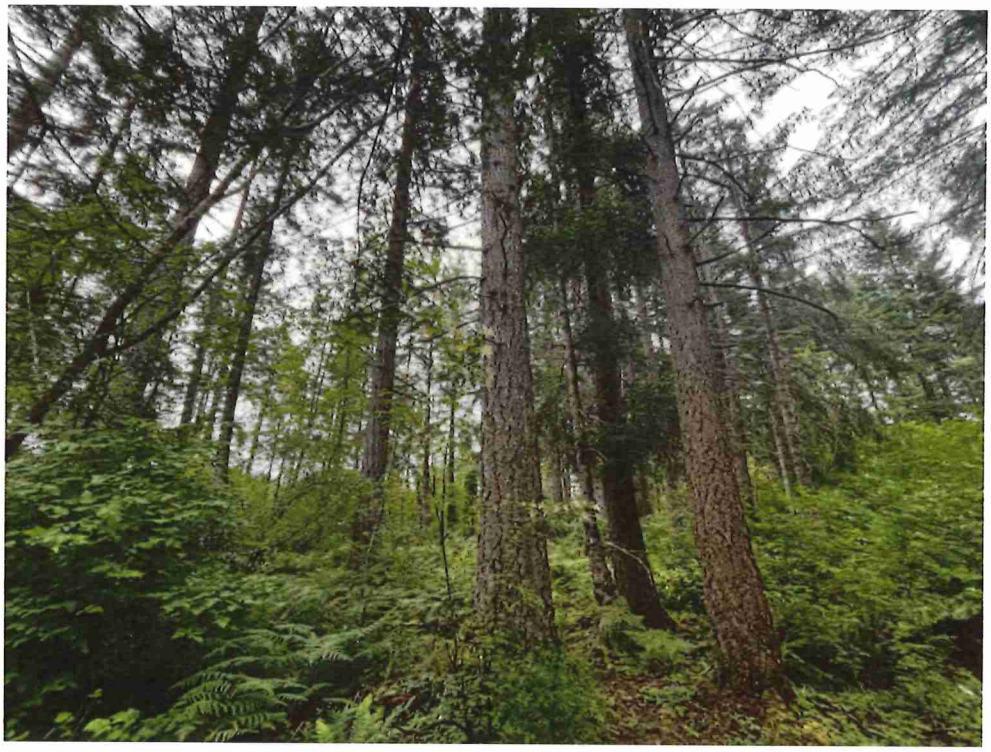

Photo 7. Watercourse flowing south in the southern forested area of the site. January 8th, 2024.

Photo 8. View of aquatic and riparian habitat observed near the southern site extent. Dense slough sedge along banks. June 26th, 2024.

Photo 9. Evidence of wildlife foraging in decaying stems. January 8th, 2024.

Photo 10. Watercourse and vegetation along the southern forest edge. June 26th, 2024.

Photo 11. Soil pit example, used to determine hydraulic nature of site and accurately delineate wetland areas. June 26th, 2024.

Photo 12. Water inundation to the southeast. January 8th, 2024.