



McElhanney



Issued for Tender
Environmental Overview
Assessment:
Project #7 – King Road Realignment

May 21, 2024 | R1 for IFT

Submitted to: Ministry of Transportation and Infrastructure
Prepared by McElhanney Ltd

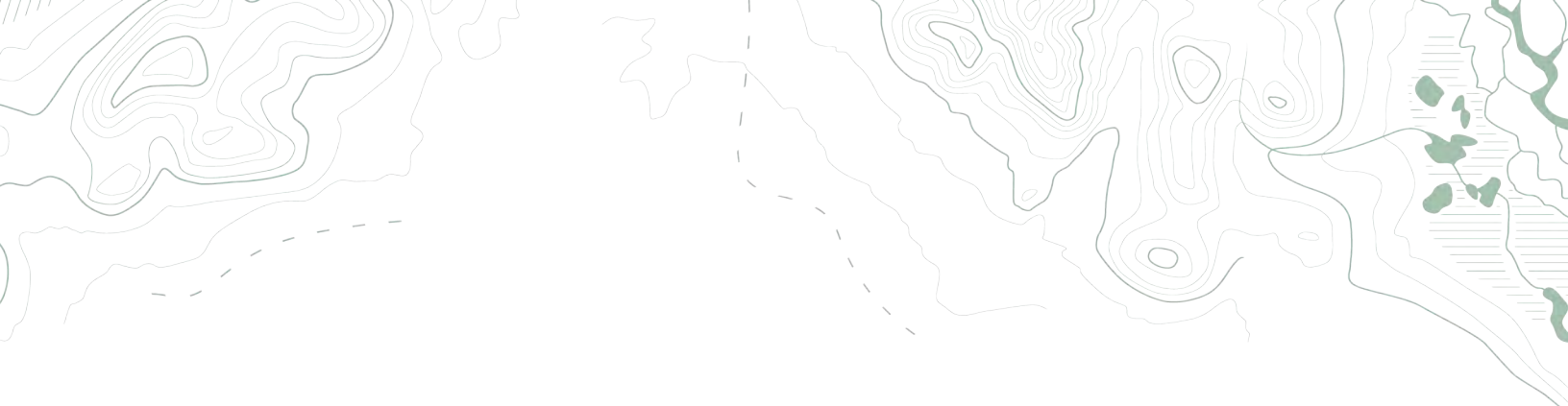
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Our file: 2121-00815-07



**Your Challenge.
Our Passion.**

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Appendix A Provincial Species at Risk Database Results



1. Introduction

This Environmental Overview Assessment (EOA) was undertaken for the Ministry of Transportation and Infrastructure (MoTI) to support the proposed realignment of King Road, in Abbotsford, BC (the Project). This work complements the Highway 1 widening proposed for 264th to Townline Road. King Road is proposed to be shifted south of its existing alignment adjacent to Highway 1 to allow the construction of the highway embankment and a new bridge structure carrying Highway 1 across Riverside Road and the existing railways.

This assessment is tailored to provide an overview of environmental features along the proposed Project alignment, to quantify effects, and to propose mitigation strategies to achieve neutrality with respect to environmental effects.

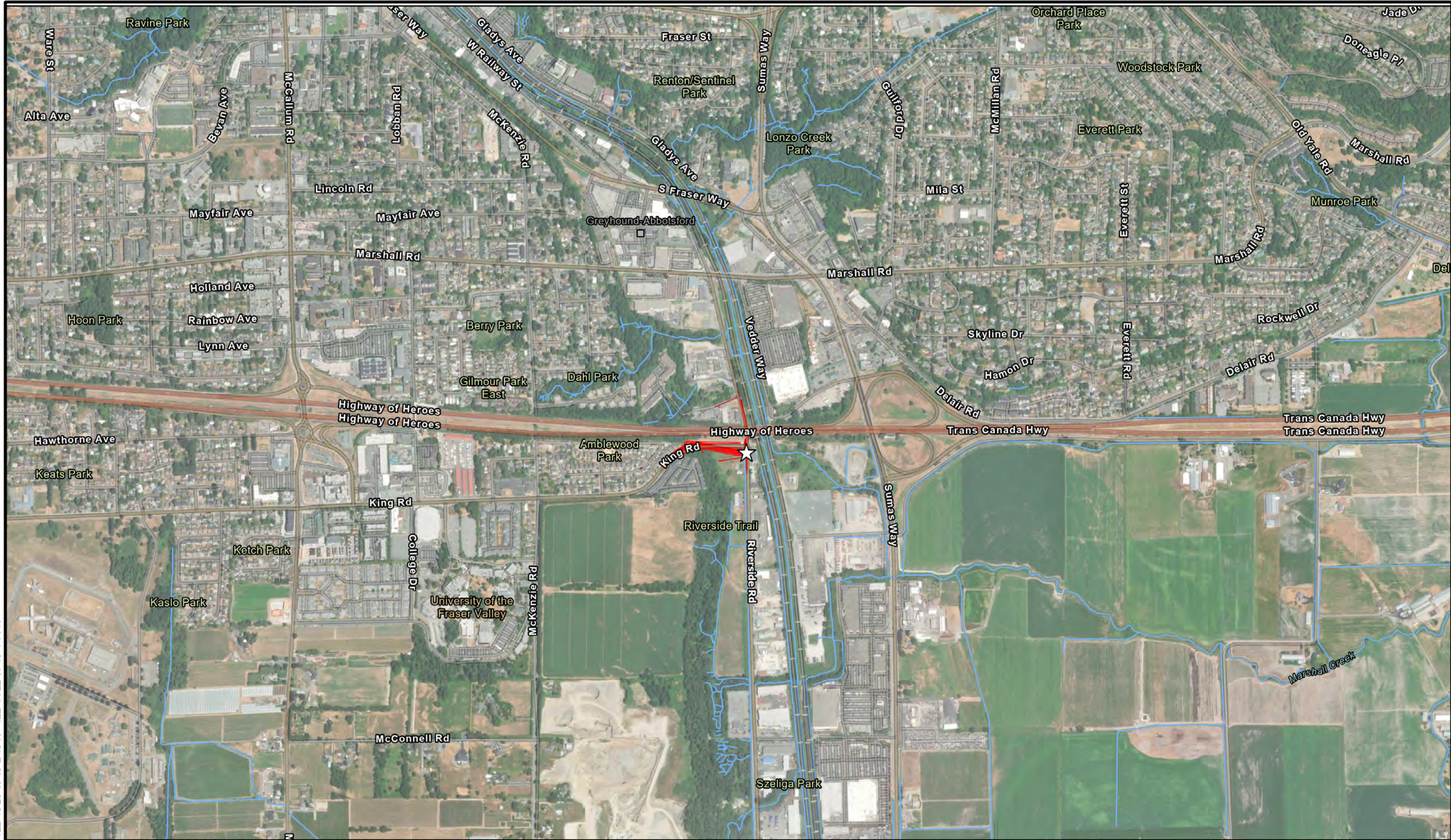
1.1.SITE CONTEXT

The Project is located along King Road and Riverside Road, in Abbotsford, BC, just south of Highway 1, within 300 m of the intersection of King Road and Riverside Road (**Figure 1**). The Canadian Pacific Railway and Southern Railway of BC run north-south adjacent to the east of the Project footprint. A forested corridor runs south through the west side of the Project footprint. South of the Project footprint a townhouse complex and agricultural land are present. Lands within and adjacent to the Project are predominantly zoned as P1 – Civic Institutional Zone. Other smaller portions are zoned as A2 – Agricultural Two Zone, RM60 – High Density Townhouse Zone, and RS3-i – Urban Residential Zone, Infill. The UTM coordinates of the Project site are 10U 553062 m E, 5431383 m N. **Table 1** includes the property information for the Project development. The road right-of-way does not have a Parcel Identification (PID) or plan associated with it so is not included in the table.

Table 1. Location details of project development (CoA 2023).

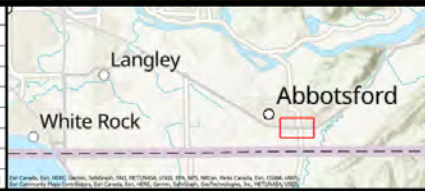
Civic Address	PID	Owner	Plan Number
1640 Riverside Road	013-394-193	Municipal	SECTION 14 TOWNSHIP 16 NWD PARCEL 2, PART SW 1/4, PL W FEE 19330F.
1651 Riverside Road	010-997-326	Private	LOT C SECTION 15 TOWNSHIP 16 PLAN NWP03765 NWD PARCEL 1, (REF PL NWP07775).
34248 King Road	Several (building strata)	Private	BCS3192
34267 King Road	025-410-504	Private	LOT 1 SECTION 15 TOWNSHIP 16 PLAN LMP53543 NWD
34275 King Road	025-750-062	Private	LOT 44 SECTION 15 TOWNSHIP 16 PLAN BCP7475 NWD PART SE 1/4.
34281 King Road	025-750-071	Private	LOT 45 SECTION 15 TOWNSHIP 16 PLAN BCP7475 NWD PART SE 1/4.
N/A	002-402-238	Crown Agency	NWP66637
N/A	024-453-790	Private	No plan
N/A	024-736-597	Municipal	No plan






Frame Coordinates: 122°18'23"W 49°24'48"N - 122°14'22"W 49°11'14"N


Rev	Date	Description	Int'l	Int'l	Int'l
20/07/2023		KING ROAD REALIGNMENT LOCATION MAP			
			Drawn	Design	App'd



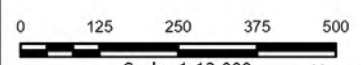
-  Site Location
-  Design Footprint
-  Watercourse



N



Unit 100 8837 201 St
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Scale: 1:12,000 Meters



MoTI

**King Road Realignment
Location Map**

ORIGINAL DWG SIZE: ANSI B (11" x 17")

Drawing No. **HAB**

Project Number **2121-00815-07**

Rev **A**

2. Assessment Objectives

This Project environmental review was undertaken to establish the existing environmental baseline conditions within the temporal, spatial, and scope boundaries of the Project, and to evaluate potential effects or impacts to baseline conditions. This assessment was limited in scope to reflect the level of design and complexity associated with the design. This means potential effects, compensation, mitigation measures, and Best Management Practices (BMPs) are identified at an overview-level only.

3. Assessment Scope

Spatial assessment areas for this Project were characterized as follows:

- **Local Assessment Area (LAA):** areas within 30 m of the Project footprint
- **Extended Assessment Area (EAA):**
 - Fish occurrences within 50 m of the Project footprint
 - Wildlife occurrences within 100 m of the Project footprint
- **Regional Assessment Area (RAA):** areas within 2 km of the Project footprint

Results are limited to data available at the time of the desktop review.

4. Assessment Methods

4.1. DESKTOP REVIEW

To achieve the stated project objectives, this EOA was completed in general accordance with guidance and principles provided in *Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (MOECCS 2014). Data was collected through desktop review of federal, provincial and regional databases to identify any known environmentally sensitive elements in the area (**Table 2**).

Table 2. Project Data Sources.

Source	Data	Scale of Review
Abbotsford WebMap (CoA 2023)	Change and impacts to natural vegetation through time Status of drainage adjacent to project site Documented streams and water bodies	LAA
Google Earth (Google 2022)	Change and impacts to natural vegetation through time	LAA
Invasive Alien Plant Program (IAPP) (BC 2023b)	Invasive plant species occurrences	LAA
Habitat Wizard (BC 2023a)	Fish presence in adjacent streams Surveyed and incidental wildlife occurrences	EAA
	Rare and endangered species occurrences Rare and endangered plant community occurrences Critical habitat for Species at Risk	RAA



Source	Data	Scale of Review
Conservation Data Centre (CDC 2023a)	Surveyed and incidental wildlife occurrences	EAA
	Rare and endangered species occurrences	RAA
	Rare and endangered plant community occurrences	
	Critical habitat for Species at Risk	
BC Species and Ecosystems Explorer (CDC 2023b)	Details about rare and endangered species and plant communities	RAA
Aquatic Species at Risk Map (DFO 2023)	Critical habitat and distribution data for aquatic Species at Risk	1 km of Project footprint
Great Blue Heron Atlas (CMN 2023a)	Great blue heron colony occurrences	RAA
Wildlife Tree Stewardship Atlas (CMN 2023b)	Eagle nest occurrences	RAA

4.2. FIELD REVIEW

The assessment was limited to a single field visit on June 30, 2023, to document existing habitat conditions and to conduct an overview level biophysical inventory within and adjacent to the proposed Project area. The unnamed ditch running parallel to, and on the west side of Riverside Road was reviewed. The forested area and ravine south of King Road were reviewed for signs of potential watercourses. This inventory provides an overview of the area’s valuable ecosystem components but represents a single moment in time and hence is not exhaustive.

5. Details of Proposed Works

King Road is proposed to be realigned south of its existing alignment adjacent to Highway 1 to allow the construction of the highway embankment and a new bridge structure carrying Highway 1 across Riverside Road and the existing railway (see King Road Relocation Issued for Tender Design Drawings). This road re-alignment will include the relocation of municipal utilities including storm sewer, sanitary sewer and watermain as well as the overhead and underground 3rd party utilities. In addition, a ditch will be installed on the south side of the new King Road alignment, to intercept hill slope runoff as a means of limiting surface flow onto the new road surface. This ditch will traverse east to a storm sewer inlet, and flows will be ultimately directed south into the existing ditch. This infrastructure will require replacement of an existing driveway culvert west of Riverside Road.

The proposed realigned footprint will cross an area of mixed forest along the western portion within the limits of construction along King Road. A steep gradient is present within the west side of this forested area, south-west of the proposed Project footprint. This gradient flattens within the bottom of a ravine feature which is present within the centre of the forested area and runs south. Between the eastern boundary of the forested area and Riverside Road, the proposed footprint passes through an area of cleared land generally composed of field. This field has a gently sloping gradient towards Riverside Road and the unnamed ditch located within the eastern portion of the proposed footprint. This field is ultimately proposed to be used as a laydown area during Project works.



Frame Coordinates: 122°16'39"W 49°21'N - 122°16'9"W 49°14'9"N

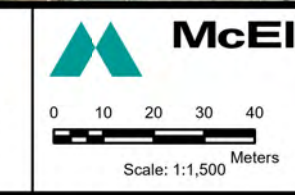


A	DATE	DESCRIPTION	Int'l	Int'l	Int'l
Rev	Date	Description	Drawn	Design	App'd



- + Pileated Woodpecker Activity
- + Other Species Cavity
- + COA Bird Nest
- Drainage
- Design
- Parcel Boundary

- Stream Classification
- A
 - AO
 - B
 - C



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Associated Environmental

MoTI

**King Road Realignment - IFT Design
Site Map**

ORIGINAL DWG SIZE: ANSI B (11" x 17")

Drawing No.	HAB
Project Number	2121-00815-07
Rev	A

Aquatic Resources

6.1. UNNAMED DITCH ALONG RIVERSIDE ROAD

6.1.1. General

The desktop review identified an unnamed ditch that intersects the eastern extent of the Project footprint and runs south along the west side of Riverside Road (**Figure 2**). This ditch was dry at the time of field survey (**Photo 1** and **Photo 2**) and was culverted under multiple driveways. The ditch invert was comprised of fine mineral substrate covered by dense herbaceous vegetation, and no signs of scour were observed north of the northernmost driveway.



Photo 1. Looking north at instream conditions of the unnamed ditch towards the King Road and Riverside Road intersection.



Photo 2. Looking south along Riverside Road at the second driveway culvert inlet south of the Project footprint.

A review of historic aerial photographs illustrates that the area adjacent to this ditch has been used for agricultural purposes since before the first aerial (1940); however, there is no evidence of historical streams no longer extant within the immediate vicinity of the ditch. The ditch itself appears to have been constructed between 1954 and 1963. Based on the site conditions, and the review of historical imagery, this ditch is interpreted to be a constructed feature which intercepts stormwater drainage.

The mean bankfull width along the surveyed reach of this ditch was measured to be 1.76 m, and mean bankfull depth 0.36 m. Potentially, flow may be present during periods of high rainfall, providing some surface connectivity to Marshall Creek and its tributaries, the nearest of which is 700 m south of the Project footprint. Marshall Creek (*Watershed code*: 100-065700-43900) is a fish-bearing stream that provides habitat to multiple fish species, including chum salmon (*Oncorhynchus keta*), coho salmon (*O. kisutch*) and rainbow trout (*O. mykiss*; BC 2023a).

6.1.1. Fish and Fish Habitat

No fish habitat was observed during this site visit; however, a portion of the ditch south of the northernmost driveway was precautionarily classified as “Class B”, being a food and nutrient stream, due to increased scour in this area. This constructed ditch flows south and connects to fish habitat 700 m downstream. No fish species were incidentally observed, and the desktop review did not find any official documentation of fish presence within the EAA as no data is available on provincial databases for this ditch (BC 2023a).

6.1.2. Riparian Habitat

During the site visit, the unnamed ditch was observed to have riparian vegetation dominated by reed canary grass (*Phalaris arundinacea*) (**Photos 1 – 4**). Red alder (*Alnus rubra*), red elderberry (*Sambucus racemosa*) and landscaped trees were observed on the west side of the ditch at the King Road and Riverside Road intersection (**Photo 1**). The riparian zone on the east side of the ditch is narrow (1 m wide) and limited by the footprint of Riverside Road. Shade is provided by occasional overhanging deciduous vegetation on the west side of the ditch, which is present along the fence line of the adjacent farm property (**Photo 4**). Invasive species have been documented within the proposed Project footprint and are described in more detail in **Section 7.3**.



Photo 3. Looking north along the unnamed ditch at the riparian area conditions parallel to Riverside Road. Dense vegetation was present within the channel.



Photo 4. Looking north into the Project footprint at instream conditions of the unnamed ditch towards the King Road and Riverside Road intersection.

6.2. AQUATIC SPECIES AT RISK

A review of DFO’s aquatic species at risk map shows that there are no at-risk species within 1 km of the Project development (2023).



7. Terrestrial Resources

7.1. ECOSYSTEM AND CLIMATE

Canadian Ecological Land Classification hierarchy queries indicate the Project development occurs within the:

- Humid Temperate Ecodomain
 - Cool Hypermaritimes and Highlands Ecodivision
 - Georgia Depression Ecoprovince
 - Lower Mainland Ecoregion
 - **Fraser Lowland Ecoregion**

The Project occurs within the Coastal Western Hemlock very dry maritime (CWHxm) biogeoclimatic zone. Native ecosystems within the CWHxm zone are characterized by warm, dry summers and moist, mild winters with relatively little snowfall. Growing seasons are long, and feature water deficits on zonal sites (Green and Klinka 1994). Forested areas are dominated by Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and minor amounts of western redcedar (*Thuja plicata*). The understory species include salal (*Gaultheria shallon*), dull Oregon-grape (*Mahonia nervosa*), red huckleberry (*Vaccinium parvifolium*). Vanilla-leaf (*Achlys triphylla*), sword fern (*Polystichum munitum*), twinflower (*Linnaea borealis*) and bracken fern (*Pteridium aquilinum*) are also present but in lower quantities.

7.2. VEGETATION

The west edge of the Project area includes a ravine which traverses north – south. This area includes a tall, second-growth, deciduous forest, and runs along the footprint of a historic road (as determined by a review of historic aerial photos). Outside of the disturbance footprint along the existing King Road alignment, which is dominated by invasive species, this ravine is dominated by native species (**Photos 5 and 6**), including bigleaf maple (*Acer macrophyllum*), salmonberry (*Rubus spectabilis*), osoberry (*Oemleria cerasiformis*), thimbleberry (*Rubus parviflorus*), vine maple (*Acer circinatum*), and pacific ninebark (*Physocarpus capitatus*). The native herbaceous layer was sparse, but stinging nettle (*Urtica dioica*) was common, and sword fern was occasional. Project areas immediately west of Riverside Road consist of historic farm properties with non-native vegetation, in the form of open grassy fields with occasional fruit trees.





Photo 5. Typical native vegetation in the bottom of the ravine, with high cover of shrubs and trees, particularly salmonberry and bigleaf maple.

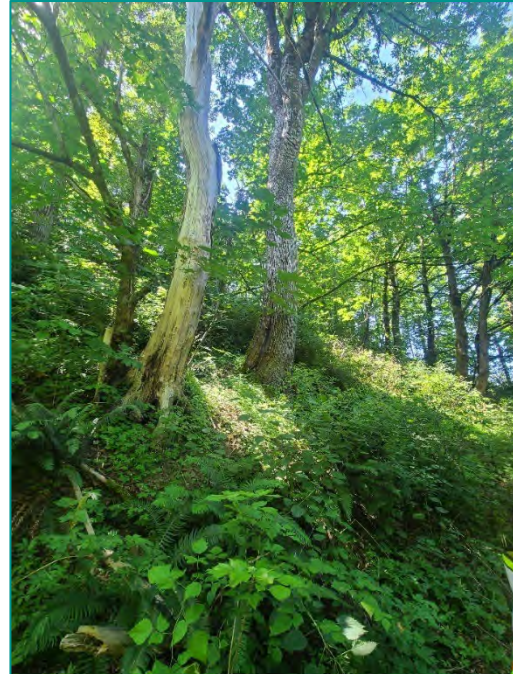


Photo 6. Typical vegetation on the steep, west ravine slope, including high cover of bigleaf maple and a predominance of stinging nettle with occasional sword fern.

7.3. INVASIVE SPECIES

The provincial Invasive Alien Plant Program (IAPP) database was reviewed within the LAA and two occurrences of tansy ragwort (*Jacobaea vulgaris*) have been historically observed on the south side of King Road, within the Project footprint (BC 2023b). These were not noted during the field review. Tansy ragwort is a provincially noxious weed under the *BC Weed Control Act* (1996b), which comes with a legal duty to treat. No other provincial invasive species were documented within the LAA.

Field review confirmed the presence of Himalayan blackberry (*Rubus armeniacus*) on the south side of King Road and reed canary grass and common tansy (*Tanacetum vulgare*) on the west side of Riverside Road (**Photo 7**). These are regionally invasive species but are not provincially regulated. Other non-native species observed included herb-robert (*Geranium robertianum*) and cleavers (*Galium aparine*). Invasive species control practices are required during construction and are discussed further in **Section 8**.



Photo 7. Himalayan blackberry observed at high density along the south side of King Road in the Project footprint. The ravine forest is visible in the background.

7.4.GENERAL WILDLIFE

Search results were generated for incidental and documented wildlife occurrence data within the EAA, using the provincial Habitat Wizard database (BC 2023a). No incidental or documented occurrences of wildlife were identified within 100 m of the site. Detailed measures for mitigating impacts to wildlife are provided in **Section 8**.

With the majority of the Project along roadways and Highway 1 located approximately 20 m north of the Project footprint, wildlife occurrences may be limited to those that thrive in a noisy, urban environment. These include squirrels, rats, raccoon (*Procyon lotor*), coyote (*Canis latrans*), and other scavenger species. However, the presence of a native habitat corridor suggests that other species, including various bat species, may be present throughout the area.

Gartersnakes (*Thamnophis* sp.) have the potential to occur basking along roadside edges. Non-native amphibian species such as green frog (*Lithobates clamitans*) and American bullfrog (*Lithobates catesbeianus*) may be present in the roadside ditch along Riverside Road. Oregon forestsnail (*Allogona townsendiana*) preferred habitat, consisting of bigleaf maple and stinging nettle, was observed during field reconnaissance. An incidental review of the leaf litter within these areas did not locate any shells or individuals (**Photo 8**).

The terrestrial habitat south of King Road provides suitable nesting and foraging habitat for songbirds and woodpeckers adapted to urban landscapes. Species listed under the *Migratory Birds Convention Act* (MBCA; 1994) under Schedule 1 that have potential to occur within the general area include pileated



woodpecker (*Dryocopus pileatus*). The nests of pileated woodpeckers are protected year-round. A songbird nest was observed on an osoberry branch within the forested portion of the footprint during field reconnaissance (**Photo 9**). Activity was not observed around the nest at the time of the site visit.



Photo 8. Bigleaf maple and stinging nettle, which is typical Oregon forestsnail habitat, were observed in the Project footprint.

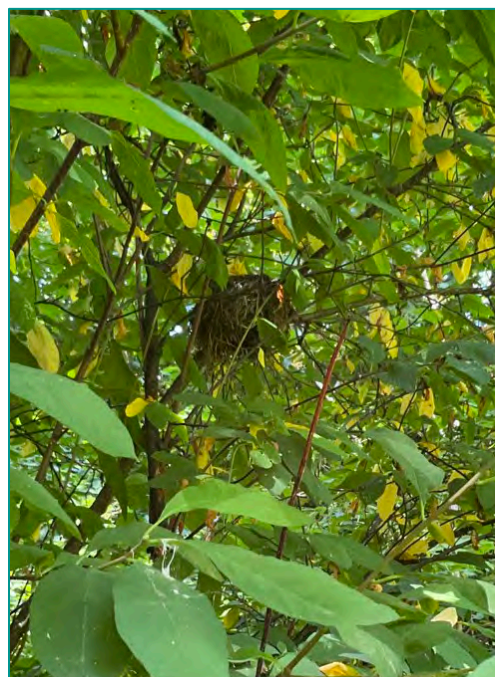


Photo 9. A songbird nest was observed on an osoberry branch.

Two bald eagle (*Haliaeetus leucocephalus*) nests have been documented within the RAA (**Table 3**; CMN 2023b). No great blue heron (*Ardea herodias*) nests were documented within the RAA (CMN 2023a). Year-round nest protection extends to bald eagle, golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), osprey (*Pandion haliaetus*), burrowing owl (*Athene cunicularia*), and great blue heron under the *Wildlife Act*. No nests of these species were observed within the LAA during field assessments. Raptors such as Cooper’s hawk (*Accipiter cooperi*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), and barred owl (*Strix varia*) may hunt or nest throughout the area. Mitigation measures are discussed further in **Section 8**.

Table 3. Bald eagle nests documented in the RAA (CMN 2023b).

ID No.	Description	Distance to Project
BAEA-204-081	Bald eagle nest, documented in 2008.	785 m SE
BAEA-204-080	Bald eagle nest, tree standing. Documented in 2008.	1.3 km SE

7.5.SPECIES AT RISK

The potential for species at risk occurrences within the Project footprint was largely determined based on existing habitat suitability and capability. Provincial database information is presented in **Appendix A** for the general area.



7.5.1. Provincial Occurrence Non-Sensitive and Masked Database

The proximity search of Conservation Data Center and Habitat Wizard non-sensitive and masked database occurrences resulted in the identification of four documented occurrences for at-risk species within 2 km of the Project development, including Townsend’s mole (*Scapanus townsendii*), Oregon forestsnail, pacific water shrew (*Sorex bendirii*), mountain beaver (*Aplodontia rufa*), and painted turtle– Pacific Coast Population (*Chrysemys picta* pop. 1) (**Table 4**; CDC 2023a; BC 2023a). Masked data with object ID: 59280 was also present within the Project footprint. The CDC was contacted regarding masked data and noted that Project works are not likely to impact the associated species.

Table 4. Summary of at-risk species with occurrence data within 2 km of the Project development (BC 2023a).

Common Name	Scientific Name	Type	BC List	SARA	Distance from Project	Likelihood
Townsend’s Mole	<i>Scapanus townsendii</i>	Mammal	Red	1-E	515 m SW	Moderate-low
Oregon Forestsnail	<i>Allogona townsendiana</i>	Invertebrate	Red	1-E	760 m W 895 m NE	Moderate-low
Pacific Water Shrew	<i>Sorex bendirii</i>	Mammal	Red	1-E	1.1 km S	Low
Mountain Beaver	<i>Aplodontia rufa</i>	Mammal	Yellow	1-SC	1.3 km NW 1.9 km S	Low
Painted Turtle – Pacific Coast Population	<i>Chrysemys picta</i> pop. 1	Reptile	Red	1-T	1.9 km SE	Low

Townsend’s Mole

Townsend’s mole is red-listed (endangered or threatened) in British Columbia and is considered endangered by both COSEWIC and SARA (CDC 2023b). Occurrences as recent as 2010 have been documented 515 m southwest of the Project footprint in pasture, farmland and lawn habitat (BC 2023a). Townsend’s mole is typically found in fields, meadows, lawns and other grassy habitats in areas with silt loam soils (CDC 2023b). They create shallow tunnels for foraging and courting and deeper tunnels for breeding. Conical earth mounds are present on the surface in areas where tunneling occurs. They are sensitive to disturbance and will abandon nests up until females give birth. A grassy field that may provide suitable habitat was present at 1651 Riverside Road along the southeast portion of the Project footprint. Mounds were not observed during McElhanney’s field assessment on June 30, 2023, but the field area was not searched due to private property access issues.

During Associated Engineering (AE 2022) previous field assessments of the greater Project alignment of Highway 1 from 264th Street to Whatcom Road, they did not detect any mole tunnels large enough to support Townsend’s mole, and therefore, there was no evidence to suggest that mole mounds encountered were created by anything other than the common coast mole (*Scapanus orarius*). Further, mole carcasses were found within the greater Project alignment, and their body measurements were indicative of the coast mole. Although AE’s results indicated that coast mole is most active in the greater Project alignment, the presence of Townsend’s mole cannot be precluded. Mitigation measures for this species are discussed in **Section 8**.



Oregon Forestsnail

Oregon forestsnail is red-listed (endangered or threatened) in British Columbia and is considered endangered by both COSEWIC and SARA (CDC 2023b). Occurrences as recent as 2006 have been documented 895 m northeast of the Project footprint (BC 2023a). Typical habitat includes mixed and deciduous forest habitats, usually dominated by bigleaf maple, balsam poplar (*Populus balsamifera*) and scattered western redcedar (CDC 2023b). They are correlated with stinging nettle presence, woody debris and significant leaf litter, and require moist conditions. Stinging nettle and bigleaf maple were observed in the Project footprint, but site conditions were very dry. Areas with suitable habitat were searched during field reconnaissance but no shells or individuals were observed.

Pacific Water Shrew

Pacific water shrew is red-listed (endangered or threatened) in British Columbia and is considered endangered by both COSEWIC and SARA (CDC 2023b). The nearest recorded occurrence was in 1927, approximately 1.1 km south of site (BC 2023a). Pacific water shrew is strongly associated with riparian habitat, particularly mature stands with woody debris (Craig et al. 2009). Downed wood is an important habitat feature as pacific water shrews use downed wood for cover, nesting, and foraging. Suitable water features were not present within the Project footprint, and as such, pacific water shrew has a low potential to occur at the site.

Mountain Beaver

Mountain beaver is yellow-listed (secure) in British Columbia and is considered a species of special concern by both COSEWIC and SARA (CDC 2023b). The nearest recorded occurrence was in a forested area in 1974, approximately 1.3 km northwest of the Project footprint (BC 2023a). Mountain beaver occupies damp coniferous, mixed, and red alder forests with plenty of cover and debris on the forest floor, often near watercourses (CDC 2023b). Deep soil areas are essential for the mountain beaver as it digs networks of tunnels and creates an underground burrow nest in winter. Suitable water features were not present within the Project footprint, and as such, Mountain Beaver has a low potential to occur at the site.

Painted Turtle – Pacific Coast Population

Painted turtle – Pacific Coast population is red-listed (endangered or threatened) in British Columbia and is considered threatened by both COSEWIC and SARA (CDC 2023b). An occurrence of painted turtle was noted in Marshall Creek in 2011, 1.9 km southeast of the Project footprint (BC 2023a). Painted turtles face many threats including development of the surrounding area, competition with invasive species such as the pond slider (*Trachemys scripta*), and limited dispersal opportunity. This species typically occupies shallow waters, slow-moving streams, and backwater sloughs of rivers with muddy substrate and emergent vegetation (CDC 2023b). Emergent objects are important for basking in the water or along the shore. Nest sites require well drained soils suitable for digging and are typically located within 200 m of aquatic foraging habitat. Suitable water features were not present within the Project footprint, and as such, painted turtle has a low potential to occur at the site.



7.5.2. Critical Habitat Database

A search radius of the RAA yielded three observation records for federally designated species at risk with critical habitat (**Figure 3; Table 5**; BC 2023a). Painted turtle – Pacific Coast population, Oregon forestsnail, and Townsend’s mole are previously discussed in **Section 7.4.1**.

Table 5. Species at risk with critical habitat mapped within the RAA (BC 2023a).

Common Name	Scientific Name	Type	BC List	SARA	Distance from Project	Likelihood
Barn Owl	<i>Tyto alba</i>	Avian	Blue	1-T	In Footprint	High
Painted Turtle – Pacific Coast Population	<i>Chrysemys picta</i> pop. 1	Reptile	Red	1-T	In Footprint	Low
Oregon Forestsnail	<i>Allogona townsendiana</i>	Invertebrate	Red	1-E	840 m NE	Moderate-low
Townsend’s Mole	<i>Scapanus townsendii</i>	Mammal	Red	1-E	240 m SW	Moderate-low

Barn Owl

Barn owl critical habitat is documented over the Project area (**Figure 3**). Barn owls hunt over open areas, such as agricultural land, in search of small mammals (CDC 2023b). Nesting habitat includes old buildings, barns, nest boxes and tree cavities. Species at risk and their habitat is protected under the City of Abbotsford’s Natural Environment Development Permit Guidelines (CoA 2016). Under the Barn Owl Recovery Strategy, biophysical attributes of barn owl foraging habitat include grass fields, one of which is present along the southeast border of the Project footprint at 1651 Riverside Road (ECCC 2022). Conversion and/or fragmentation of land to road development is considered an activity likely to result in the destruction of critical habitat (ECCC 2022). Further assessment is required to determine suitability of this habitat to support barn owls. Based on the results of a detailed barn owl habitat assessment, additional reporting may be required. Adverse impacts to barn owl Critical Habitat are recommended to be mitigated to the degree feasible according to the mitigation hierarchy, which prioritizes avoidance and minimization of impact over restoration and offsetting owing to their effectiveness. Implications and mitigation measures for barn owl are further discussed in **Section 8**.

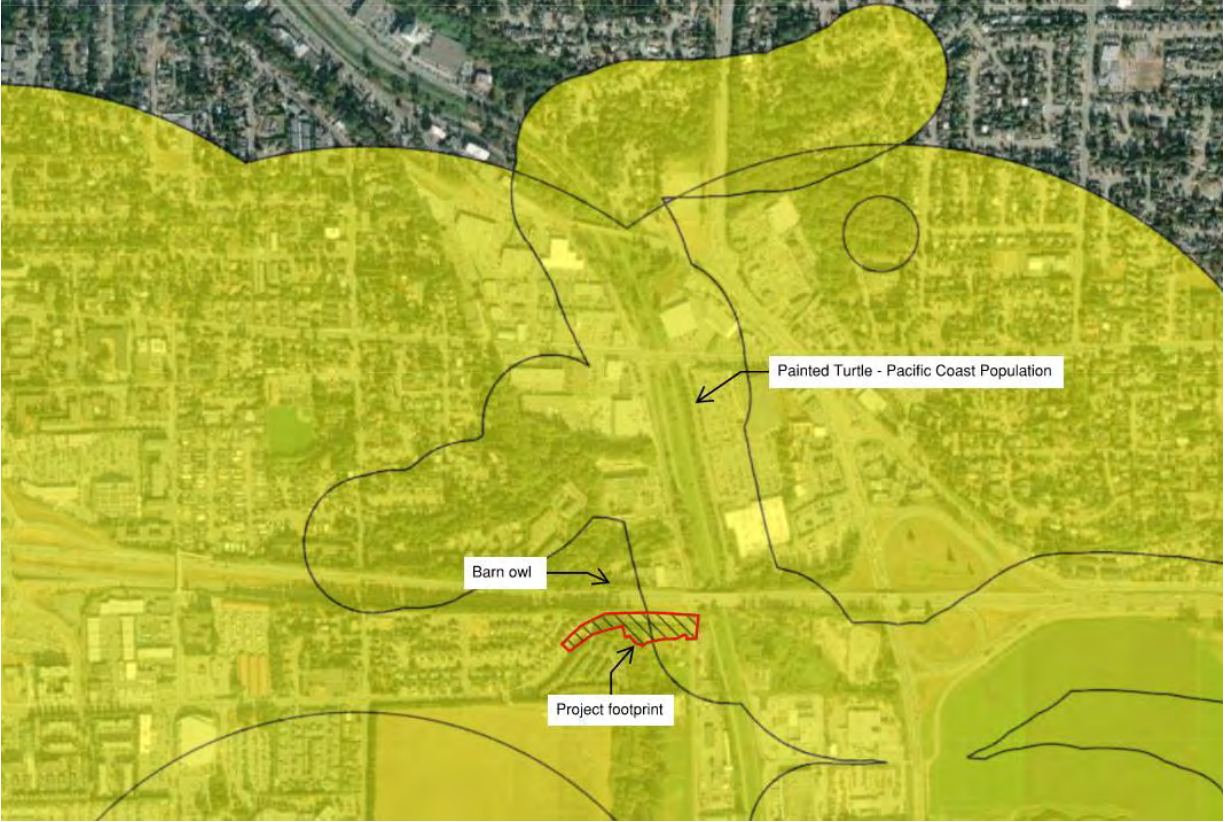


Figure 3. Species at risk critical habitat in and around the Project footprint (BC 2023a).

7.5.3. Potential Occurrence for At-risk Species

Provincially listed species at risk (CDC 2023b) for the CWHxm biogeoclimatic zone are presented in **Appendix A**. Species were selected based on their potential use of mixed forest habitat, grassy fields, and/or urban and anthropogenic settings and their overall likelihood of occurrence within the Project footprint. Probability of occurrence within the footprint was ranked based on the following criteria:

- **High Probability:** species record within the study area and suitable habitat present within the footprint.
- **Moderate-High:** no species record within the study area, but suitable habitat present within the footprint.
- **Moderate-Low:** species record within the study area, but suitable habitat not present within the footprint.
- **Low:** no species record within the study area and no suitable habitat present within the footprint.

Species with a moderate-to-high or high likelihood of occurrence are presented below (**Table 6**).



Table 6. List of at-risk species with and moderate-to-high or high potential to occur within the Project site based on results generated for site conditions within the CWHxm biogeoclimatic zone (CDC 2023b).

English Name	Scientific Name	Type	BC List	SARA	Likelihood of Occurrence
Barn Owl	<i>Tyto alba</i>	Bird	Blue	1-T	High Footprint within critical habitat. Typically occurs in open habitats such as old fields, pastures and grassy marshes. Nests in old buildings, barns, nest boxes or tree cavities. Some foraging habitat within critical habitat areas and footprint.
Townsend's Mole	<i>Scapanus townsendii</i>	Mammal	Red	1-E	High Critical habitat 240 m southwest of footprint. Occurrences 515 m southwest of footprint. Typically occupies fields, meadows, lawns and other grassy habitats, preferring manured pastures and hayfields. May be found in grassy habitat in footprint.
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	Bird	Blue	1-SC	Moderate-high Occurs on the Southcoast year-round. Found in mixed forest habitat. Forages on flowering and berry-producing trees and shrubs.
Barn Swallow	<i>Hirundo rustica</i>	Bird	Yellow	1-T	Moderate-high Barn swallows are typically found in open areas. They nest in nest boxes, buildings and other infrastructure, including the undersides of bridges. Foraging is on the wing capturing flying insects in the air usually within 10 m from the ground. Some foraging habitat within footprint but more likely to use surrounding agricultural areas.
Common Nighthawk	<i>Chordeiles minor</i>	Bird	Blue	1-SC	Moderate-high Nighthawks are most often found in open and partially open habitats where they forage in flight. They nest on bare ground with a nearby cover source. They are only located in the area during the summer months when they come to breed. More likely to use the general area for foraging than for nesting. Species is also crepuscular/nocturnal and is unlikely to be impacted by the proposed works.
Hoary Bat	<i>Lasiurus cinereus</i>	Mammal	Blue	-	Moderate-high Roosts in snags and trees. Habitat includes primarily deciduous and coniferous forests. Forages in open areas. Historical occurrence in Huntingdon.
Little Brown Myotis	<i>Myotis lucifugus</i>	Mammal	Blue	1-E	Moderate-high Uses a variety of forest habitat and typically forages near or over water. Summer roosts include snags. May use the footprint for roosting.
Olympic Shrew	<i>Sorex rohweri</i>	Mammal	Red	-	Moderate-high Historical occurrence in Huntingdon. Associated with mixed forest habitats. More commonly found amidst red alder, birch, Sitka spruce, western hemlock and lodgepole pine or in reed canary grass.
Rough-legged Hawk	<i>Buteo lagopus</i>	Bird	Blue	-	Moderate-high Occurs as a migrant and winter visitor in the region. Habitat includes open areas such as farmlands, agricultural fields, grasslands, rangelands, marshes, alpine meadows. Hunting is possible among the grassy field in the footprint.

English Name	Scientific Name	Type	BC List	SARA	Likelihood of Occurrence
Short-eared Owl	<i>Asio flammeus</i>	Bird	Blue	1-SC	Moderate-high Primary habitat includes grasslands, meadows in early succession, and marshlands. Attracted to areas with an abundance of food (e.g., rodents and small birds). Typically roost on the ground in dry upland areas with low, dense shrub, or in conifers. Hunting is possible among the grassy field in the footprint.
Snowshoe Hare, <i>washingtonii</i> subspecies	<i>Lepus americanus washingtonii</i>	Mammal	Red	-	Moderate-high Occupies mixed forest habitat and riparian areas. Prefers dense shrub layer 1-3 m tall.
Trowbridge's Shrew	<i>Sorex trowbridgii</i>	Mammal	Blue	-	Moderate-high Occupies mixed forests with decaying wood and leaf litter, which were observed in the footprint. Associated with red alder, western hemlock, western redcedar and bigleaf maple.
-	<i>Alsia californica</i>	Moss	Blue	-	Moderate-high Habitat includes the bark of trunks and branches of various trees including alder and maple, which are present on site.

Of the species highlighted, at-risk species with a high likelihood of occurrence in the area include barn owl and Townsend's mole (see **Sections 7.4.1** and **7.4.2**). Mitigation measures to avoid impacts to these species and others described in **Table 8** are outlined in **Section 8**.

7.6. ARCHAEOLOGICAL

Archaeological review of the Project area is being completed under separate cover by Stantec and will inform the process during construction.

8. Mitigations During Construction

The following sections describe impact mitigation for each identified Environmentally Valuable Resource.

8.1. TIMING WINDOWS

Scheduling construction during the period of least risk to species present on site will aid in minimizing overall affects. Timing windows are determined based on the life cycle of a species or species group and the region and habitat they occur within. **Table 7** outlines least risk windows for focal species in the lower mainland region.

Table 7. Summary of timing windows and environmental restrictions on construction.

Focal Species	Least Risk Window	Constraints
Amphibians and Reptiles	March 2 to September 30	BMPs recommend no salvages between October 1 to March 1. Permits may not be issued outside of the least risk window.
Fish (Pacific Salmon)	July 15 to September 15	In-water works conducted outside of the reduced risk window are discouraged as they may be more likely to impact the species during sensitive life stages. Regulators may permit work outside the reduced risk window if an Appropriately Qualified Professional (AQP) can provide justification based on



Focal Species	Least Risk Window	Constraints
		the specifics of the waterbody and/or the urgency of the work. Additional mitigation measures will likely be required.
Fish (Rainbow, Steelhead and Cutthroat Trout)	August 1 to October 31	In-water works conducted outside of the reduced risk window are discouraged as they may be more likely to impact the species during sensitive life stages. Regulators may permit work outside the reduced risk window if an AQP can provide justification based on the specifics of the waterbody and/or the urgency of the work. Additional mitigation measures will likely be required.
Migratory Birds	August 18 to March 11	Breeding bird surveys should precede vegetation clearing works within the sensitive window for breeding birds (March 12 to August 17). Furthermore, surveys for Schedule 1 species with year-round nest protection, such as pileated woodpecker, is required ahead of any vegetation removal, year-round.
Raptors	October 1 to December 31	Raptor nest surveys are recommended to precede works within the sensitive window for raptors (January 1 to September 30). Furthermore, surveys for species with year-round nest protection is required ahead of any vegetation removal, year-round.

8.2. MITIGATION MEASURES

A detailed outline of mitigation strategies to be employed at minimum is provided in **Table 8**.

Table 8. Environmental components to be protected and recommended mitigation strategies.

Component	Project Activities That May Impact Component	Description of Potential Impacts	Recommended Mitigation Measures or BMPs
Vegetation	<ul style="list-style-type: none"> Vegetation clearing 	<ul style="list-style-type: none"> Potential disturbance of breeding birds 	<ul style="list-style-type: none"> Clearing and grubbing for the proposed works should be conducted outside the bird breeding season. If required during the high-risk window, a breeding bird nest survey and monitoring of active nests by an (AQP) will be required for compliance to the <i>Wildlife Act</i> (BC 1996a). Surveys for nests of species with year-round nest protection should be conducted ahead of vegetation clearing at any time of year.
		<ul style="list-style-type: none"> Potential loss of wildlife habitat and wildlife trees 	<ul style="list-style-type: none"> Native trees and shrubs within the Project development are to be retained where feasible. Trees that require removal should be compensated according to BC Tree Replacement Criteria standards (WLAP 1996). Revegetation using native species is required to compensate for any loss of riparian habitat.
		<ul style="list-style-type: none"> Establishment of invasive plant species 	<ul style="list-style-type: none"> Due care should be taken to protect the site and surrounding area from the introduction or spread of invasive plants during construction. Monitor areas with disturbed soils and remove regulated weeds as per the <i>Weed Control Act</i> (BC 1996b) including any encountered tansy ragwort. Revegetate exposed soils with native species appropriate for the site condition, as soon as possible and where practical.
Invasive Species	<ul style="list-style-type: none"> All ground disturbances 	<ul style="list-style-type: none"> Invasive species may spread through construction activities 	<ul style="list-style-type: none"> Ensure proper removal and handling of noxious weeds. Employ methods to prevent spread of propagules on tires of vehicles. Provide protective cover of disturbed soils through native species revegetation.



Component	Project Activities That May Impact Component	Description of Potential Impacts	Recommended Mitigation Measures or BMPs
Archaeological	<ul style="list-style-type: none"> All ground disturbances 	<ul style="list-style-type: none"> Disturbance of artifacts 	<ul style="list-style-type: none"> Based on the results of an archaeological impact assessment, a chance find procedure will be put in place during construction.
Wildlife & Wildlife Habitat	<ul style="list-style-type: none"> Vegetation clearing Noise Stripping Excavation Road realignment 	<ul style="list-style-type: none"> Loss of wildlife habitat 	<ul style="list-style-type: none"> Replant non-hard surfaces with appropriate native vegetation for the area.
		<ul style="list-style-type: none"> Direct wildlife mortality 	<ul style="list-style-type: none"> Apply for appropriate fish and wildlife permits if impacts are anticipated. Conduct a salvage of organisms from wildlife habitat to be impacted by construction of the project. Employ an AQP to provide onsite monitoring.
		<ul style="list-style-type: none"> Wildlife encounters 	<ul style="list-style-type: none"> Retain an AQP to be on site during site clearing and grading to salvage and relocate wildlife, if encountered. Develop a plan to reduce attracting birds and other wildlife to construction site through proper waste control.
Birds & Bird Nests	<ul style="list-style-type: none"> Vegetation clearing Noise 	<ul style="list-style-type: none"> Non-compliance with the <i>Wildlife Act</i> through disturbance of breeding birds 	<ul style="list-style-type: none"> Conduct breeding bird nest surveys if vegetation disturbance is proposed during the bird breeding season. Demarcate "no work" buffer zones around active nests. Monitor active nests for disturbance during construction. Removal of protected nests under <i>Wildlife Act</i> 34b and species with year-round nest protection under the MBCA is not permitted.
Barn Owl (SAR)	<ul style="list-style-type: none"> Vegetation clearing Ground disturbance Noise 	<ul style="list-style-type: none"> Disturbance to any resident populations Loss of habitat in identified critical habitat area 	<ul style="list-style-type: none"> Avoidance will be completed through minimizing the disturbance footprint where reasonable. Other mitigations and potential offsetting will be prescribed subsequent to further detailed assessment of habitat features based on the recovery strategy for barn owl. A site-specific management plan will be completed for barn owl prior to the commencement of works.
Fish & Fish Habitat	<ul style="list-style-type: none"> General construction works Road realignment Culvert Construction 	<ul style="list-style-type: none"> Removal of riparian vegetation Potential increase in water turbidity of watercourses downslope of work area Potential change in quality of adjacent fish habitat Increased sedimentation risk 	<ul style="list-style-type: none"> Limit impacts to on-site vegetation and adjacent riparian areas. Classify the Class B ditch as a designated watercourse to ensure it is considered an environmentally sensitive area (ESA) for the duration of works. Apply BMPs to control erosion and sedimentation. Operate equipment from the top of bank, trail side or from dry land. Conduct instream works in isolation of flow. Complete works as efficiently as possible once commenced to minimize duration of instream works. Obtain provincial and federal fish permits to conduct fish salvages (not anticipated). Employ an AQP to conduct fish salvages ahead of instream works to relocate fish out of the work area (not anticipated). Conduct works during the least risk window for pacific salmon and trout (August 1 to September 15).
	<ul style="list-style-type: none"> Accidental spills of deleterious substances Runoff from construction activities and impermeable surfaces 	<ul style="list-style-type: none"> Transport of substances to watercourses reducing water quality 	<ul style="list-style-type: none"> Designate the Class B portion of the ditch as an ESA. Monitor water quality parameters such as total suspended solids (TSS) and turbidity during construction activities in or near a watercourse. <i>Fisheries Act</i> (1985) requires protection of water quality. Follow a spill contingency plan. Spill kits should be located on heavy equipment and throughout Project site. Use biodegradable fuels when working over or adjacent to a watercourse. Use secondary containment for all fuel and hazardous materials storage containers. Contain and collect all effluent and debris from construction activities and disposed of in accordance with BC <i>Environmental Management Act</i> (BC 2003).



Component	Project Activities That May Impact Component	Description of Potential Impacts	Recommended Mitigation Measures or BMPs
Air Quality / Noise & Vibration	<ul style="list-style-type: none"> • Clearing • Stripping • Road realignment 	<ul style="list-style-type: none"> • Dust generation • Noise generation 	<ul style="list-style-type: none"> • Provide AQP monitoring of wildlife that may be impacted by noise.
Soils & Water Quality	<ul style="list-style-type: none"> • Exposed working surfaces • Accidental spills of deleterious substances 	<ul style="list-style-type: none"> • Disturbance and compaction reducing soil permeability • Contamination of soil 	<ul style="list-style-type: none"> • Follow project-specific CEMP and standard BMPs for instream works. • Restrict vehicles and equipment from accessing natural soil surfaces. • Develop/follow a spill contingency plan. • Keep spill kits on heavy equipment and throughout Project site.
	<ul style="list-style-type: none"> • Clearing • Stripping • Placement of materials • Work during heavy rains 	<ul style="list-style-type: none"> • Sediment release into watercourse • Erosion and sedimentation causing increased water turbidity • Bank stability 	<ul style="list-style-type: none"> • Design and implement erosion protections. • Install and monitor site isolation procedures and materials. • Reseed, plant and/or cover impacted areas for soil stabilization. • Employ an AQP to monitor water quality parameters such as TSS and turbidity during construction activities that have the potential to release turbid water to the aquatic environment. • Ensure an EM/AQP is onsite to regularly monitor effectiveness of any erosion measures employed. • Avoid soil disturbance during heavy rain conditions. • Place soil stockpiles in a location that ensures that sediment or debris does not enter downstream waters. • Protect stockpiles from wind and rain erosion. • Pump sediment-laden water to a vegetated area away from the stream where it can seep into the ground sufficiently far from the channel and allow sediment to settle out before the water returns to the stream. • Re-vegetate disturbed areas with native species.

9. Recommendations

The following recommendations are made considering the information available. These recommendations are intended to supplement the various findings of this report.

9.1. REGULATORY INSTRUMENTS

9.1.1. Water Sustainability Act

The realignment of King Road will require infill and realignment of the upper portion of the stormwater ditch, which is a Class C waterbody. A corridor-wide application for Change Approval (File # 2011056) was filed by the Owner on December 19, 2023, which includes the works proposed for the King Road realignment. However, as the ditch to be infilled is not considered a stream, these works do not require permitting under the provincial *Water Sustainability Act* (WSA). The ditch appears to carry overland flow and is likely to have been operated in a manner consistent with a drainage exemption, as a corridor ditch.

9.1.2. Fisheries Act

It is our opinion that the proposed road realignment will not constitute Harmful Alteration, Disruption, or Destruction of Fish Habitat. However, a corridor-wide application for DFO Authorization (23-HPAC-01021) was filed by the Owner on October 13, 2023, which includes the works proposed for the King Road realignment. The existing driveway culvert on the northernmost driveway interfaces with a Class B ditch at



its outlet, and as such, the culvert replacement interacts with fish habitat. Any potential impacts will be mitigated by measures during construction.

9.1.3. Wildlife Act and Migratory Birds Convention Act

Several means of wildlife protection will be required during the Project to ensure protection per the *Wildlife Act*. Based on available habitat and project complexity, wildlife “sweeps” and establishment of work zone isolations will be required to minimize impacts to non-avian wildlife. Sweeps should target at-risk species with potential to occur within the Project alignment. Salvage permits for listed amphibians and reptiles are to be obtained by the Appropriately Qualified Professional (AQP) overseeing construction with ample and sufficient time to allow for permit processing. A provincial General Wildlife Permit is required to handle amphibians, reptiles, and mammals and should be applied for proactively in case a salvage is also needed.

Works adjacent to the roadside ditch have the potential to disturb amphibian and reptile species. The least risk window for conducting amphibian salvages occurs between March 2 to September 30. BMPs recommend no salvages occur outside the least risk window to avoid impacts to overwintering species. Salvages are to be conducted according to the *Best Management Practices for Amphibian and Reptile Salvages in British Columbia* and the *Interim Hygiene Protocols for Amphibian Field Staff and Researchers* (FLNRO 2016). An initial sweep followed by a work zone isolation will be completed, to relocate individuals outside of the working area. The need for a full salvage may be determined on site by the AQP depending on observed presence leading up to construction. A provincial General Wildlife Permit is required to handle amphibians and reptiles and should be applied for proactively in case a salvage is also needed.

Due to the proximity of Townsend’s mole critical habitat with the Project Site, wildlife sweeps will also focus on small mammals. The need for a full salvage will be determined based on these pre-construction sweeps. If required, a General Wildlife Permit shall be obtained, and BMPs for conducting Townsend’s mole salvages are to be followed. Pre-construction sweeps are to be timed well ahead of works to anticipate the need for potential salvages to allow enough time for a full trapping period to be undertaken.

Breeding bird nest surveys shall be conducted prior to any vegetation disturbance during the breeding bird nesting window (March 12 to August 17). Surveys are to be conducted by a AQP knowledgeable about avian behaviour and biology, particularly regarding at-risk species with potential to occur in the area. Active nests observed within and immediately surrounding the Project site are to be buffered to allow a “no work” zone until the nest has confirmed to be fledged. Appropriate buffer sizes will be designated according to the species identified.

Nest surveys for nests with year-round protection should be conducted ahead of vegetation clearing at any time of year.

A raptor nest survey is to be conducted ahead of works to detect potential nests that may be impacted. Raptor nest surveys may be conducted at any time of year to detect presence, and during the prime raptor nesting period to detect activity (January 1 to September 30).



9.1.4. Weed Control Act

In accordance with the *BC Weed Control Act* (1996b) an occupier who is defined as a person who is in physical possession of land, must control noxious weeds growing or located on land and premises, and on any other property located on land and premises, occupied by that person. Tansy ragwort qualifies as a provincial noxious species. If treatment prior to tender is not possible, then management requirements for the construction phase are to be clearly communicated in the tender. A survey for tansy ragwort, and any MoTI priority species, is recommended prior to initiation of construction works. If noted, best practice recommends removal of entire tansy ragwort plant including all roots for small infestations, as the plant reproduces vegetatively as well as from seed (ISCBC 2023). On established patches, mowing regularly prior to seed set aids in control of tansy ragwort extent and spread (MoTI 2019). Additionally, Himalayan blackberry is recommended for treatment per MetroVancouver BMPs (MV 2021a) and is to be mechanically removed as encountered.

9.2. SPECIES AT RISK - BARN OWL

Barn owl critical habitat is documented over the project area; however, the quality of this habitat requires further review to allow application of the mitigation hierarchy. Potential foraging habitat is located at 1651 Riverside Road and requires further assessment to confirm suitability. Species at risk critical habitat is protected under the City of Abbotsford's Natural Environment Development Permit (NEDP) Guidelines (CoA 2016), which require that in areas of critical habitat for species at risk identified by senior government (i.e., mapped critical habitat) and confirmed (in an Environmental Assessment Report) to have potential to support the species at risk, an Effective Protection Plan is required to be prepared by the AQP and submitted to senior government (CoA 2016).

NEDP guidelines also require mitigations to offset impacts where destruction of habitat is unavoidable (CoA 2016). Offsetting measures include providing replacement habitat in a suitable location capable of supporting barn owl and may include installation of a nest box as deemed appropriate by an AQP. Other mitigation measures include minimizing the Project footprint in areas of suitable habitat and planting vegetation with a 4 m above road height minimum in between foraging habitat and roadways to reduce the risk of vehicle collisions (BirdWatch Ireland 2021). Mitigation measures are to be determined by a AQP after further assessment of habitat suitability and offsetting potential. A site-specific management plan is recommended to be completed for Barn Owl prior to the commencement of works.

9.3. DITCH INFILL

The infill works will impact an ephemeral Class C ditch, which is anticipated to be dry most times of the year. To limit potential impacts to downstream water quality, ditch infill is recommended to not be completed within 72 hours of rain event (**Table 8**). Other applicable BMPs to limit environmental impacts include limiting spread of invasive plant species, employing erosion and sediment control methods, and monitoring water quality during construction (as outlined in **Section 9.5**).

9.4. CULVERT CONSTRUCTION

The replacement of an existing culvert under the driveway will impact the Class B portion of the ditch, at the outlet on the south side of the driveway. This ditch is known to be dry in summer and may be dry during winter months as well. If water is present during construction, isolation may be required to limit construction impacts to water quality. Other applicable BMPs to limit environmental impacts include limiting spread of



invasive plant species, employing erosion and sediment control methods, and monitoring water quality during construction (as outlined in **Section 9.5**).

9.5.CONTRACTUAL IMPLEMENTATION OF ENVIRONMENTAL PROTECTIONS

The various BMPs and Terms and Conditions provided throughout this report, any issued regulatory permits and in compliance with MoTI Standard Specifications 165 Protection of the Environment should be made available to bidders and included in the successful Tender such that environmental protection requirements are contractually enforceable. This includes identifying a Construction Environmental Management Plan (CEMP) as a minimum standard for environmental conduct, to be implemented throughout the duration of the project by the successful contractor.

9.6.WATER QUALITY

Water quality parameters such as TSS and turbidity shall be monitored during construction activities near (or in) the ditch. Threshold targets will be closely monitored to ensure they are within the BC Water Quality Guidelines and the CCME Water Quality Guidelines (MOECCS 2021; CCME 1999). Impacts to water quality may be mitigated through proper use and maintenance of ESC measures, ensuring spill prevention materials are on site and accessible, and keeping equipment and machinery in sound operable condition.

9.7. ENVIRONMENTAL MONITORING AND AQP REQUIREMENTS

Requirements for Environmental Monitoring and AQP duties are included in the CEMP; however, this critical role is included here for emphasis. The successful contractor may be required to retain an independent AQP with a background in providing construction related AQP services. The contractor's AQP will be responsible for environment compliance related to the contractor's work. This includes obtaining any required permits for wildlife sweeps or salvages and implementing other necessary BMP work, as required for environmental compliance.



In Closing

This report has been prepared with information available at the time of writing. Should any questions arise, please do not hesitate to contact the undersigned.

Yours truly,

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APPENDIX A – PROVINCIAL SPECIES AT RISK DATABASE RESULTS

Scientific Name	English Name	BC List	COSEWIC	SARA	Probability	Rationale
<i>Tyto alba</i>	Barn Owl	Blue	T	1-T (2018)	High	Footprint within critical habitat. Typically occurs in open habitats such as old fields, pastures and grassy marshes. Nests in old buildings, barns, nest boxes or tree cavities. Some foraging habitat within critical habitat areas and footprint.
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	Blue	SC	1-SC (2011)	Moderate-high	Occurs on the southcoast year-round. Found in mixed forest habitat. Forages on flowering and berry-producing trees and shrubs.
<i>Hirundo rustica</i>	Barn Swallow	Yellow	SC	1-T (2017)	Moderate-high	Barn swallows are typically found in open areas. They nest in nest boxes, buildings and other infrastructure, including the undersides of bridges. Foraging is on the wing capturing flying insects in the air usually within 10 m from the ground. Some foraging habitat within footprint but more likely to use surrounding agricultural areas.
<i>Chordeiles minor</i>	Common Nighthawk	Blue	SC	1-SC (2023)	Moderate-high	Nighthawks are most often found in open and partially open habitats where they forage in flight. They nest on bare ground with a nearby cover source. They are only located in the area during the summer months when they come to breed. More likely to use the general area for foraging than for nesting. Species is also crepuscular/nocturnal and is unlikely to be impacted by the proposed works.
<i>Lasiurus cinereus</i>	Hoary Bat	Blue			Moderate-high	Roosts in snags and trees. Habitat includes primarily deciduous and coniferous forests. Forages in open areas. Historical occurrence in Huntingdon.
<i>Myotis lucifugus</i>	Little Brown Myotis	Blue	E	1-E (2014)	Moderate-high	Uses a variety of forest habitat and typically forages near or over water. Summer roosts include snags. May use the footprint for roosting.
<i>Sorex rohweri</i>	Olympic Shrew	Red			Moderate-high	Historical occurrence in Huntingdon. Associated with mixed forest habitats. More commonly found amidst red alder, birch, Sitka spruce, western hemlock and lodgepole pine or in reed canarygrass.
<i>Buteo lagopus</i>	Rough-legged Hawk	Blue	NAR		Moderate-high	Occurs as a migrant and winter visitor in the region. Habitat includes open areas such as farmlands, agricultural fields, grasslands, rangelands, marshes, alpine meadows. Hunting is possible among the grassy field in the footprint.
<i>Asio flammeus</i>	Short-eared Owl	Blue	T	1-SC (2012)	Moderate-high	Primary habitat includes grasslands, meadows in early succession, and marshlands. Attracted to areas with an abundance of food (e.g., rodents and small birds). Typically roost on the ground in dry upland areas with low, dense shrub, or in conifers. Hunting is possible among the grassy field in the footprint.
<i>Lepus americanus washingtonii</i>	Snowshoe Hare, <i>washingtonii</i> subspecies	Red			Moderate-high	Occupies mixed forest habitat and riparian areas. Prefers dense shrub layer 1-3 m tall.
<i>Sorex trowbridgii</i>	Trowbridge's Shrew	Blue			Moderate-high	Occupies mixed forests with decaying wood and leaf litter. Associated with Red Alder, Western Hemlock, Western Red-cedar and Bigleaf Maple.
<i>Alsia californica</i>		Blue			Moderate-high	Habitat includes the bark of trunks and branches of various trees including alder and maple, which are present on site.
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Yellow	SC	1-SC (2019)	Moderate-low	Optimal breeding habitat includes open, mature mixed wood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant. Outside the breeding season, the species is largely dependent on seed crops from various trees such as firs and spruces in the boreal forest, but is also attracted to ornamental trees that produce seeds or fruit. May use the forested area for foraging.
<i>Mustela frenata altifrontalis</i>	Long-tailed weasel, <i>altifrontalis</i> subspecies	Red			Moderate-low	Frequently use forest habitats. Usually hunt along water. Dens in abandoned burrows, rock crevices, brushpiles, stump hollows or amongst tree roots. Limited hunting habitat in footprint.
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Yellow	SC	1-SC (2023)	Moderate-low	Occupies coniferous and mixed forested areas. Typically occurs near wetlands or water, which are not present in the footprint. May use the forested areas of the footprint.
<i>Allogona townsendiana</i>	Oregon Forestsnail	Red	E	1-E (2005)	Moderate-low	Occupies mixed and deciduous forest habitats, usually dominated by bigleaf maple, balsam poplar and scattered western redcedar. Correlated with stinging nettle presence, woody debris and significant leaf litter. Requires moist conditions. Stinging nettle and bigleaf maple observed in footprint, but site conditions were very dry. Leaf litter was searched during site assessments but no shells or individuals were observed.
<i>Scapanus townsendii</i>	Townsend's Mole	Red	E	1-E (2005)	Moderate-low	Distribution in Abbotsford adjacent to footprint. Historical occurrence adjacent to footprint. Typically occupies fields, meadows, lawns and other grassy habitats, preferring manured pastures and hayfields. May be found in grassy habitat in footprint. Mounds and carcasses observed during field assessments of greater area attributed to coast mole.
<i>Botaurus lentiginosus</i>	American Bittern	Blue			Low	Breeds in both freshwater habitats including sloughs, marshes, shallow portions of lakes and brackish wetlands, always with tall emergent vegetation. Forages mainly in aquatic habitats but also in moist meadows or drier grasslands near wetlands. Wintering habitat is much like breeding habitat. Overwintering occasionally takes place in brackish coastal marshes.
<i>Pluvialis dominica</i>	American Golden-Plover	Blue			Low	Breeds at Spatsizi Plateau, and possibly the Itcha Mountain Range as well. Migrates throughout the province. Habitat includes short grasslands, pastures, golf courses, mudflats, sandy beaches, and flooded fields.
<i>Sympetrum vicinum</i>	Autumn Meadowhawk	Blue			Low	In ponds, slow streams and lakes with dense, emergent vegetation.
<i>Tanypteryx hageni</i>	Black Petaltail	Blue			Low	Montane. Lives at mid to high elevations in the Cascade and southern Coast mountains, and at sea level on the central coast to about 53°N.

Scientific Name	English Name	BC List	COSEWIC	SARA	Probability	Rationale
<i>Melanitta americana</i>	Black Scoter	Blue			Low	Found mostly in coastal waters, less commonly on large inland lakes and rivers when not breeding.
<i>Cypseloides niger</i>	Black Swift	Blue	E	1-E (2019)	Low	Aerial; forages over forests and in open areas. Nests behind or next to waterfalls and wet cliffs, on sea cliffs and in sea caves, and occasionally in limestone caves. Occurrence likely to only consist of foraging well above canopy during the summer months.
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	Red			Low	Breeds on Reifel Island. Habitat includes marshes, swamps, wooded streams, mangroves, shores of lakes, ponds, lagoons; salt water, brackish, and freshwater situations. Roosts by day in mangroves or swampy woodland.
<i>Pachydiplax longipennis</i>	Blue Dasher	Blue			Low	Typically occupies ponds and lakes with abundant vegetation in the water and along the shore.
<i>Icaricia icarioides montis</i>	Boisduval's Blue, <i>montis</i> subspecies	Blue			Low	Occurs within higher elevation areas including sub-alpine and alpine meadows where native lupines occur.
<i>Branta bernicla</i>	Brant	Blue			Low	Restricted to coastal B.C., mainly Vancouver Island, Haida Gwaii, and the Fraser River delta. May pass through the area on migration and is unlikely to be impacted by Project works.
<i>Hybognathus hankinsoni</i> - Pacific group	Brassy Minnow - Pacific Group	Blue	SC		Low	Occurs within the lower Fraser valley within Delta, Westham Island, Deer and Burnaby Lakes and Brunette River, and to a more limited extent, in the Sumas River and sloughs of Richmond.
<i>Pristiloma johnsoni</i>	Broadwhorl Tightcoil	Blue			Low	Rare species. Occurs on Vancouver Island and adjacent mainland, south. Occurs in leaf litter of deciduous, coniferous and mixed-wood forests, as well as vegetated rockslide habitats.
<i>Salvelinus confluentus</i> pop. 28	Bull Trout - South Coast Population	Blue	SC	1-SC (2019)	Low	Occurs in the Skagit, Squamish, Ryan, Lillooet, Pitt and Lower Fraser Rivers, the Pitt, Birkenhead, Chilliwack, and Chehalis Lakes, and Phelix and Ure Creeks.
<i>Larus californicus</i>	California Gull	Red			Low	Breeding is restricted to the central and southern interior. Habitat includes seacoasts, bays, estuaries, mudflats, marshes, irrigated fields, lakes, ponds, dumps, cities, and agricultural lands. May pass through the area on migration but unlikely to be impacted by project works.
<i>Hydroprogne caspia</i>	Caspian Tern	Blue	NAR		Low	Site does not occur within a known breeding location. Known to breed on the Fraser River delta, and at Fraser and Shuswap lakes. Non-breeding birds occur along the entire coast and in the southern interior. Species may pass through the area on migration.
<i>Montia chamissoi</i>	Chamisso's montia	Blue			Low	Occurs between 1100 - 1220 m elevation. Occupies bogs, marshes and streambanks in the lowland and montane zones.
<i>Oncorhynchus tshawytscha</i>	Chinook Salmon	Not Reviewed	E/T/SC/DD/NAR		Low	Generally spend most of their lives in the ocean. Spawn in gravel bottoms of large streams and rivers. Spawn in tributaries to Boundary Bay such as the Serpentine, Nicomekl and Little Campbell rivers.
<i>Parnassius clodius claudianus</i>	Clodius Parnassian, <i>claudianus</i> subspecies	Blue			Low	Occurs in moist riparian habitats along low-elevation streams. Bleeding heart is the larval foodplant.
<i>Ascaphus truei</i>	Coastal Tailed Frog	Yellow	SC	1-SC (2003)	Low	Typically found in cold, clear, fast-moving streams adjacent to old growth and mature coniferous, deciduous and mixed forest. Associated with steep gradient, non-fish bearing waters.
<i>Pannaria rubiginosa</i>	considerable gingerbread	Red			Low	Rare over conifers in open coastal forests at lower elevations. Nearest occurrence in Vancouver in the 1980s.
<i>Nephroma occultum</i>	cryptic paw	Blue	T	1-SC (2007)	Low	Grows on bark and wood of conifers. Almost all known locations are from old-growth forests. Nearest occurrence at Chilliwack Lake.
<i>Oncorhynchus clarkii clarkii</i>	Cutthroat Trout, <i>clarkii</i> subspecies	Blue			Low	Prefers relatively small streams, with gravel substrate and gentle gradients. Spawning adults migrate from the sea into streams to spawn. Well-shaded streams with water temperatures below 18 C are optimal.
<i>Euphyes vestris</i>	Dun Skipper	Blue	T	1-T (2003)	Low	Occupies open, grassy, moist to wet meadows with significant sedge components. Historical occurrence in Mission.
<i>Galba dalli</i>	Dusky Fossaria	Blue			Low	In lakes, ponds, rivers and marshes across southern BC.
<i>Podiceps nigricollis</i>	Eared Grebe	Blue			Low	Mainly in the southern interior and Peace Lowlands. Uses marshes, ponds and lakes; in migration and winter also salt lakes, bays, estuaries and seacoasts.
<i>Argia emma</i>	Emma's Dancer	Blue			Low	Breeds along lakeshores associated with streams. Montane.
<i>Thaleichthys pacificus</i>	Eulachon	Blue	E/T		Low	Nearshore ocean bottom, coastal inlets. Spawns in coastal freshwater streams seldom more than a few miles inland.
<i>Octogomphus specularis</i>	Grappletail	Red	SC		Low	Occurs along wooded streams draining lakes. Prefers small, swift flowing streams.
<i>Ardea herodias fannini</i>	Great Blue Heron, <i>fannini</i> subspecies	Blue	SC	1-SC (2010)	Low	Breeding extends from the coast to Hope; usually in colonies (which were not observed within the footprint). Suitable habitat not present in footprint.
<i>Butorides virescens</i>	Green Heron	Blue			Low	Largely restricted to the Georgia Depression Ecoprovince, but may occur outside this range. Typically breeds along riparian edges of slow moving rivers in stands of red alder. Habitat includes swamps, mangroves, marshes, and margins of ponds, rivers, lakes, and lagoons. Suitable habitat not present in footprint.
<i>Acipenser medirostris</i>	Green Sturgeon	Blue	SC	1-SC (2006)	Low	Found in estuaries, lower reaches of large rivers, and in salt or brackish water off river mouths. Limited freshwater utilization in Canada.

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<i>Falco rusticolus</i>	Gyrfalcon	Blue	NAR		Low	Breeding range is restricted to mountainous regions of the Northern Boreal Mountains ecoprovince. Primarily found in open country in the Arctic, including tundra, open coniferous forest, mountainous regions, and rocky seacoasts; generally in coastal areas in winter.
<i>Sidalcea hendersonii</i>	Henderson's checker-mallow	Blue			Low	Grows in coastal wet areas, mudflats and high marshes.
<i>Eremophila alpestris strigata</i>	Horned Lark, <i>strigata</i> subspecies	Red	E	1-E (2005)	Low	The last confirmed breeding record was 1978. A few birds may persist in the lower Fraser Valley at Vancouver International Airport, near Abbotsford, and near Chilliwack. Habitat consists of large expanses of bare or thinly vegetated land, including fields, prairies, dunes, upper beaches, airports, and similar areas with low/sparse grassy vegetation.
<i>Viola howellii</i>	Howell's violet	Red			Low	Occupies mesic to moist woodlands and forests in the lowland zone. Mainly on Vancouver Island and the coast.
<i>Callophrys johnsoni</i>	Johnson's Hairstreak	Red	SC		Low	Occurs within dwarf-mistletoe-infected forests (typically low elevation, structurally diverse, old growth/mature forests). Adults frequent forest openings, riparian areas and forest edges with abundant wildflowers. Larvae require hemlock dwarf mistletoe to complete their lifecycle.
<i>Charadrius vociferus</i>	Killdeer	Blue			Low	Habitat includes various open areas such as fields, meadows, lawns, pastures, mudflats, and shores of lakes, ponds, rivers, and seacoasts. Nests are on the ground in open dry or gravelly areas, typically near water, and in areas with sparse or low vegetation cover. Suitable areas with sparse vegetation not present in footprint.
<i>Couesius plumbeus</i>	Lake Chub	Yellow	DD		Low	Outside of distribution.
<i>Pyrola aphylla</i>	leafless wintergreen	Blue			Low	Occupies mesic forests, typically coniferous. Distribution not in the region.
<i>Mitellastra caulescens</i>	leafy mitrewort	Blue			Low	Occupies wet to moist meadows and woodlands in the lowland and montane zones. Closest occurrence Elk Mountain.
<i>Musculium transversum</i>	Long Fingernailclam	Blue			Low	Most common in large lakes and rivers.
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	Blue	T	1-T (2003)	Low	Breeds along the coast, with the majority of nests within 30 km of the sea, but up to 50 km inland. Breeds in old coastal forests. Site lacks large diameter mature/old growth trees suitable for nesting.
<i>Planorbula campestris</i>	Meadow Rams-horn	Blue			Low	Occurs in vegetated vernal ponds, swamps, and springtime flooded portions of permanent water bodies. Few historical records, closest Chilliwack Lake.
<i>Scytinium californicum</i>	midlife vinyl	Blue			Low	Occurs on mossy rock in open, dry maritime and intermontane localities. Nearest distribution on mainland in Princeton.
<i>Danaus plexippus</i>	Monarch	Red	E	1-SC (2003)	Low	Occupies agricultural areas, grasslands, and areas abundant in milkweed. Element occurrence records for the Monarch are mainly from the southern interior regions of BC.
<i>Aplodontia rufa</i>	Mountain Beaver	Yellow	SC	1-SC (2003)	Low	Associated with coniferous, mixed and red alder forests on moist slopes or hillsides near small streams or seeps. Requires deep soils for excavating burrows and tunnels. Suitable habitat not present in footprint.
<i>Navarretia intertexta</i>	needle-leaved navarretia	Blue			Low	Occupies moist meadows and vernal pools in the lowland and montane zones. No occurrences in the region.
<i>Rhinichthys cataractae - Chehalis lineage</i>	Nooksack Dace	Red	E	1-E (2003)	Low	In Bertrand Creek, Pepin Creek, Fishtrap Creek and the Brunette River in the Fraser Valley. Associated with riffle habitat.
<i>Accipiter gentilis laingi</i>	Northern Goshawk, <i>laingi</i> subspecies	Red	T	1-T (2003)	Low	Dependent on landscapes with mature/old forest structural features for nesting and fledging habitat. Use mature continuous forests for foraging.
<i>Rana aurora</i>	Northern Red-legged Frog	Blue	SC	1-SC (2005)	Low	Preferred habitat and habitat features (e.g. permanent water body including slow moving portions of streams) are not present on site. Use both aquatic and terrestrial habitats. Breeding occurs in permanent water with aquatic vegetation where eggs can be attached to submerged stems.
<i>Charina bottae</i>	Northern Rubber Boa	Yellow	SC	1-SC (2005)	Low	Occurs in humid mountainous regions and dry lowland areas, usually around rock outcrops, piles, bluffs or talus slopes, which are not present on site. Can be found beneath rocks and woody debris in forested habitats.
<i>Rana pretiosa</i>	Oregon Spotted Frog	Red	E	1-E (2003)	Low	All sites are located within the Fraser River Basin, including Aldergrove, Maria Slough, Mountain Slough, Morris Valley and McLennan Creek. Oregon spotted frogs are generally associated with wetland complexes > 4 ha in size with extensive emergent marsh coverage.
<i>Sorex bendirii</i>	Pacific Water Shrew	Red	E	1-E (2003)	Low	Documented occurrences and critical habitat zones occur within 3 km of the project footprint. Occupies riparian habitats associated with streams, creeks, and wetlands in mature coniferous or deciduous forests with downed logs. Suitable water features not present in footprint.
<i>Chrysemys picta</i> pop. 1	Painted Turtle - Pacific Coast Population	Red	T	1-T (2021)	Low	Critical habitat within footprint. Suitable water features not present within footprint.
<i>Scytinium polycarpum</i>	peacock vinyl	Yellow	SC	1-SC	Low	Footprint not near existing distribution area. Occurs in coastal forests on mossy branches of deciduous trees, especially Bigleaf Maple.
<i>Falco peregrinus anatum</i>	Peregrine Falcon, <i>anatum</i> subspecies	Red	NAR		Low	Suitable nesting features, including cliff ledges and largescale infrastructure, do not exist within the project footprint. Typically forage along waterand wetland features with seabirds, shorebirds, and waterbirds, which are not present in the footprint.

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<i>Cephalanthera austiniiae</i>	phantom orchid	Red	E	1-T (2003)	Low	Occupies moist to mesic forests in the lowland zone. Typically occur in sites with little to no ground cover. Strongly correlated with limestone.
<i>Pinicola enucleator carlottae</i>	Pine Grosbeak, <i>carlottae</i> subspecies	Blue			Low	Breeds in coniferous forest habitat in mountainous regions. Sometimes move to lower elevations during the winter months to take advantage of different food sources. Typically occurs in open coniferous (less commonly mixed coniferous-deciduous) forest and forest edge.
<i>Fissidens pauperculus</i>	poor pocket moss	Red	E	1-E (2003)	Low	Known only from Lynn Canyon Park. Restricted to exposed soil on banks of streams that are subject to erosion by seasonal high water.
<i>Galba bulimoides</i>	Prairie Fossaria	Blue			Low	Occupies perennial-water habitats (lakes, ponds, and slow-moving streams) and vernal habitats (roadside ditches, temporary pools). Suitable water features not present in footprint.
<i>Progne subis</i>	Purple Martin	Blue			Low	Nests in nest boxes mounted on pilings along marine foreshores in the Georgia Depression. Forage aerially typically near water features, which are not present in the footprint.
<i>Galba parva</i>	Pygmy Fossaria	Blue			Low	Occupies wet mud flats, lakeshores, riverbanks, streams, and marshes among vegetation submerged in shallow water. Suitable water features not present in footprint.
<i>Calidris canutus</i>	Red Knot	Blue	T	1-T (2010)	Low	Primarily found on seacoasts on tidal flats and beaches, less frequently in marshes and flooded fields. On sandy or pebbly beaches, especially at river mouths. Nests on ground in barren or stony tundra and in well-vegetated moist tundra.
<i>Sphaerium patella</i>	Rocky Mountain Fingernailclam	Red			Low	Last reports occurred in Burnaby Lake in 1961 and Abbotsford Lake in 1949. Occurs in lakes, sloughs, rivers and streams. Suitable water features not present in footprint.
<i>Physella propinqua</i>	Rocky Mountain Physa	Blue			Low	This species is found in permanent, cool water habitats, most often in lakes.
<i>Brotherella roellii</i>	Roell's brotherella	Red	E	1-E (2018)	Low	Occupies open, mixed coniferous and deciduous forest, on stream terraces, swampy floodplains, and creek ravines. Bigleaf maple and red alder are the preferred hardwood habitat. Suitable water features not present in footprint.
<i>Antigone canadensis</i>	Sandhill Crane	Yellow	NAR		Low	Breeding areas are limited to Reifel Island, Burns Bog, Pitt-Addington WMA & the Alouette area. Frequently use coniferous forests as escape cover, and possibly when resting and feeding with young.
<i>Limnodromus griseus</i>	Short-billed Dowitcher	Blue			Low	Occupies mudflats, estuaries, shallow marshes, pools, ponds, flooded fields and sandy beaches. Prefers shallow salt water with soft muddy bottom. Nests in grassy or mossy tundra and wet meadows, in muskeg.
<i>Ophiogomphus occidentis</i>	Sinuus Snaketail	Blue			Low	Montane. Occupies sunny stream banks and sandy lakeshore beaches at low elevations.
<i>Myodes gapperi occidentalis</i>	Southern Red-backed Vole, <i>occidentalis</i> subspecies	Red			Low	Known from Point Grey, north of the Fraser River estuary, from Stanley Park and Burns Bog. Primarily a forest species, inhabiting coniferous forests with abundant woody debris. It is generally most abundant in mature forest with abundant shrub and ground cover.
<i>Strix occidentalis</i>	Spotted Owl	Red	E	1-E (2003)	Low	Restricted to the western Cascades west of the Anderson River, and Coast Range east of the Capilano River, and south of Birkenhead Lake and Lillooet. Occupy old coniferous forests for foraging, roosting and nesting, with large overstorey trees (>75 cm dbh), multilayered canopy, large decaying fallen trees and large diameter standing dead trees; these stands are typically dominated by trees >200 years.
<i>Lupinus rivularis</i>	streambank lupine	Red	E	1-E (2005)	Low	Typically found on sandy/gravelly substrate in areas that are periodically but not frequently flooded.
<i>Physella virginea</i>	Sunset Physa	Blue			Low	Footprint not in known distribution area. Found in lakes, rivers, creeks and sloughs. Suitable water features not present in footprint.
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	Blue			Low	Occupies forested regions, caves, cultivated valleys, and hills with mixed vegetation. Prefer riparian habitats, wetlands, and moist conditions for foraging. Maternity and hibernation colonies typically occur in caves and mine tunnels. Sometimes tree hollows are used for roosting. Suitable habitat not present in footprint.
<i>Bidens amplissima</i>	Vancouver Island beggarticks	Blue	SC	1-SC (2003)	Low	It occupies a variety of wetland habitats including ditches, willow wetlands, old riverbeds, pond margins, streambanks, and tidal or non-tidal river edges. Suitable habitat conditions not present in footprint.
<i>Argia vivida</i>	Vivid Dancer	Blue	SC	1-SC (2019)	Low	Associated with cool or hot springs.
<i>Erioderma soledatum</i>	vole felt	Blue			Low	Rare over trees and shrubs in somewhat sheltered open hypermaritime forests.
<i>Callophrys eryphon sheltonensis</i>	Western Pine Elfin, <i>sheltonensis</i> subspecies	Blue			Low	Known from southeast Vancouver Island from Campbell River area south to Victoria, as well as a few locations in the lower mainland, including Squamish and the Sunshine Coast. In mature pine stands.
<i>Erythemis collocata</i>	Western Pondhawk	Blue			Low	Around ponds and marshy lakes, especially where floating plants occur. Nearest occurrence past Chilliwack.
<i>Megascops kennicottii kennicottii</i>	Western Screech-Owl, <i>kennicottii</i> subspecies	Blue	T	1-T (2005)	Low	Occupies mature lowland coniferous and mixed forests below 600 m elevation. Population declines throughout the lower mainland are significant and the species is now rarely observed in the area. Suitable habitat not present in footprint.

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<i>Carychium occidentale</i>	Western Thorn	Blue			Low	Occurs in low elevation deciduous and mixed forests, often with bigleaf maple. Colonies occur in leaf litter, moist hollows and along riparian zones. Site observed to be very dry. Suitable conditions not present.
<i>Anaxyrus boreas</i>	Western Toad	Yellow	SC	1-SC (2018)	Low	Occurs in young seral and managed second-growth forests and riparian areas. Breeding habitat includes shallow areas of ponds, lakes, or reservoirs, or pools of slow-moving streams with sandy substrate. Adults disperse to terrestrial habitat such as forests after breeding. May roam from standing water, but prefer damp conditions. Site observed to be very dry. Suitable conditions not present.
<i>Acipenser transmontanus</i> pop. 4	White Sturgeon (Lower Fraser River Population)	Red	T		Low	Suitable habitat requirements not present.
<i>Aeronautes saxatalis</i>	White-throated Swift	Blue			Low	Primarily occupies mountainous habitat, especially near cliffs and canyons where breeding occurs; forages over forest and open situations in a variety of habitats. May forage over the site by flying-over, but is unlikely to be impacted by the Project works.
<i>Stagnicola caperata</i>	Wrinkled Marshsnail	Blue			Low	Primarily occurs in north central BC. Occurs in ditches, shallow pools, vernal ponds, or in the spring-flooded margins of permanent-water habitats, and occasionally in large permanent lakes, rivers and swamps.
<i>Icteria virens</i>	Yellow-breasted Chat	Red	E	1-E (2003)	Low	Mostly restricted to the Okanagan Valley and lower Similkameen Valley. Breeds in riparian thickets of wild rose, willow, hawthorn, trembling aspen, black cottonwood and water birch.
<i>Lindernia dubia</i> var. <i>dubia</i>	yellowseed false pimpernel	Blue			Low	Occupies wet, sandy or muddy banks and shores in the lowland and steppe zones.
<i>Myotis yumanensis</i>	Yuma Myotis	Blue			Low	Occupies a wide variety of upland and lowland habitats, including riparian, moist woodlands, and forests, usually near open water. Foraging occurs over water or in open spaces over land. Warm-season roosts are in caves, cliff crevices, bridges, buildings, and tunnels, and cavities and nooks in large live trees near water. Closely associated with water features, which are not present in the footprint.
<i>Speyeria zerene bremnerii</i>	Zerene Fritillary, <i>bremnerii</i> subspecies	Red			Low	Mostly occurs on Vancouver Island and Saltspring Island. Occupies mesic meadows in Douglas-fir habitat and Garry oak and associated habitats.
<i>Bryhnia hultenii</i>		Red			Low	Footprint not nearby known distribution area. Soil, rock, cliff bases, under dense <i>Alnus</i> canopy, bottom of gullies, sides of brooks, moderate to strong shade, wet to mesic places
<i>Bucklandiella pacifica</i>		Blue			Low	Occurs at low elevations from southern Vancouver Island southwards to central California.
<i>Callicladium haldanianum</i>		Blue			Low	Occurrences not documented east of Coquitlam. Habitat includes logs, stumps, conifer and hardwood forests, at the base of trees, on soil and rock.
<i>Dicranodontium asperulum</i>		Blue			Low	Occupies damp, shaded, acidic cliff faces and cliff shelves, occasionally on earth of overturned tree roots.
<i>Discelium nudum</i>		Red			Low	Only one extant population on Sea Island in Richmond is currently known. Found on clay or silt of recently denuded banks of streams, sometimes on landslides or steep roadcuts.
<i>Ditrichum schimperi</i>		Blue			Low	Occurs on Vancouver Island and south through the Coastal Ranges to Yosemite Valley.
<i>Entodon concinnus</i>		Blue			Low	Footprint does not occur in know distribution area. Found on soil and rock in calcareous areas from low to high elevations.
<i>Fissidens ventricosus</i>		Blue			Low	Typically in fast-running streams.
<i>Hageniella micans</i>		Blue			Low	Footprint not nearby known distribution area. Typically found on rock, in usually somewhat shaded areas near streams at low to moderate elevations. Suitable water features not present in footprint.
<i>Imbricium gemmiparum</i>		Blue			Low	Associated with springs.
<i>Myurella sibirica</i>		Red			Low	Footprint does not occur in know distribution area. Occupies mesic, calcareous rock crevices.
<i>Oedipodium griffithianum</i>		Red			Low	Footprint not near known distribution area. Occupies protected niches on moist soil or humus, typically in crevices of siliceous rocks.
<i>Orthotrichum rivulare</i>		Blue			Low	Habitat includes exposed tree roots, base of trees along streams, siliceous boulders at edges of streams and rivers, frequently inundated rock. Suitable water features not present in footprint.
<i>Philonotis yezoana</i>		Blue			Low	Grows over rock in shaded stream gorges and on cliffs or steep slopes wet by seepage.
<i>Pohlia columbica</i>		Blue			Low	Footprint not in known distribution area. Habitat includes silt banks, slopes and near creeks. Found on disturbed soil along streams.
<i>Ptychostomum schleicheri</i>		Blue			Low	Arctic-alpine species.
<i>Rosulabryum erythroloma</i>		Blue			Low	Footprint not near known distribution area. Occurs on soil, rocks, rotten logs, bases of trees and other substrates at low elevations. Habitat includes moist shaded soil, soil banks, and rotting wood in lowland forests.

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<i>Schistidium trichodon</i>		Blue			Low	Footprint does not occur in know distribution area. Occurs on basic montane rocks, usually calcareous.
<i>Sphagnum aongstroemii</i>		Blue			Low	Occupies wet rock faces and moist depressions, usually in the open among scattered shrubs and sedges in minerotrophic sites.
<i>Sphagnum balticum</i>		Blue			Low	Occurs in ombrotrophic bogs.
<i>Sphagnum contortum</i>		Blue			Low	Footprint does not occur in know distribution area. Minerotrophic.
<i>Sphagnum quinquefarium</i>		Blue			Low	Occurs on wet mineral bedrock and damp coniferous humus along the coast and in montane regions.
<i>Tortula bolanderi</i>		Red			Low	Footprint does not occur in know distribution area. Occurs on soil and rock. Known from cliff crevices, earth banks and roadsides.
<i>Ulota drummondii</i>		Blue			Low	Occurs on twigs and trunks of conifer and deciduous trees in dense coastal forests at low elevations. Suitable habitat not present in footprint.
<i>Seligeria acutifolia</i>	acuteleaf small limestone moss	Red	E	1-E (2021)	Unlikely	Only on Vancouver Island. Found growing on limestone cliffs.
<i>Erynnis afranius</i>	Afranius Duskywing	Red			Unlikely	Occurs in Northwestern BC. Mostly woodlands, openings and prairie.
<i>Enallagma clausum</i>	Alkali Bluet	Blue			Unlikely	Occurs in B.C.'s southern interior north to the Cariboo region. Prefers saline ponds and lakes in grasslands and dry forests.
<i>Recurvirostra americana</i>	American Avocet	Blue			Unlikely	Breeding is distributed mainly in the Thompson - Okanagan, and some in the West Kootenays and historically in the Lower Fraser Valley. Most of the breeding population is concentrated at Alki Lake. Occupies lowland marshes, mudflats, ponds, alkaline lakes, and estuaries.
<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>	American glehnia	Blue			Unlikely	Occurs on Haida Gwaii and Vancouver Island. Occupies moist to mesic coastal dunes and sandy beaches in the lowland zone.
<i>Pelecanus erythrorhynchos</i>	American White Pelican	Red	NAR		Unlikely	Only known to breed in the Central Interior Ecoprovince.
<i>Synthliboramphus antiquus</i>	Ancient Murrelet	Blue	SC	1-SC (2006)	Unlikely	Breeds primarily on smaller islands in the Haida Gwaii archipelago. Outside the breeding season occurs in coastal BC waters.
<i>Boloria astarte distincta</i>	Astarte Fritillary, <i>distincta</i> subspecies	Blue			Unlikely	Occurs in the northwestern corner of BC.
<i>Omus audouini</i>	Audouin's Night-stalking Tiger Beetle	Red	T	1-T (2018)	Unlikely	Restricted to a small area in the Georgia Basin of southwestern British Columbia, within a narrow strip of coastal lowland around Boundary Bay and Greater Victoria.
<i>Setophaga castanea</i>	Bay-breasted Warbler	Red			Unlikely	Occurs in NE BC.
<i>Calystegia soldanella</i>	beach bindweed	Blue			Unlikely	On sandy beaches from southern Vancouver Island north to Haida Gwaii.
<i>Polygonum paronychia</i>	black knotweed	Blue			Unlikely	Occupies moist to mesic sand dunes and beaches in the lowland zone. Distribution on S Vancouver Island and the Gulf Islands.
<i>Setophaga virens</i>	Black-throated Green Warbler	Blue			Unlikely	Occurs in NE BC.
<i>Prophyaon coeruleum</i>	Blue-grey Taidropper	Blue	T	1-T (2019)	Unlikely	Restricted to Vancouver Island.
<i>Dolichonyx oryzivorus</i>	Bobolink	Red	SC	1-T (2017)	Unlikely	Breeds in the southern and central interior, from the Similkameen east to Creston and north to the Chilcotin. Occurs in native and tame grasslands, haylands, lightly to moderately grazed pastures, no-till cropland, small-grain fields, oldfields, wet meadows, and planted cover.
<i>Icaricia icarioides blackmorei</i>	Boisduval's Blue, <i>blackmorei</i> subspecies	Blue			Unlikely	Restricted to the eastern side of Vancouver Island, from Campbell River to Victoria.
<i>Urile penicillatus</i>	Brandt's Cormorant	Red			Unlikely	Breeding range restricted to offshore islands on the south, west, and north coast of Vancouver Island. Outside the breeding period, can be found in inshore marine waters throughout the coast, but are most abundant in the Gulf Islands and Juan de Fuca Strait.
<i>Lomatium papilioniferum</i>	butterfly bearing lomatium	Red	T	1-T (2011)	Unlikely	Occurrences from Galiano Island and Saltspring Island. Occupies dry rocky or open slopes in the lowland zone.
<i>Cardellina canadensis</i>	Canada Warbler	Blue	SC	1-T (2010)	Unlikely	Breeds in NE BC.
<i>Seligeria careyana</i>	Carey's small limestone moss	Red	E	1-E (2023)	Unlikely	Occurs in Haida Gwaii.
<i>Ptychoramphus aleuticus</i>	Cassin's Auklet	Red	SC	1-SC (2019)	Unlikely	Breeds off the west and north coasts of Vancouver Island, locally along the central mainland coast and throughout much of coastal Haida Gwaii.
<i>Gasterosteus aculeatus</i> pop. 1	Charlotte Unarmoured Threespine Stickleback	Red	SC	1-SC (2019)	Unlikely	Restricted to Haida Gwaii.
<i>Pamassius clodius pseudogallatinus</i>	Clodius Parnassian, <i>pseudogallatinus</i> supspecies	Blue			Unlikely	Occurs in the Coast Range from elevations of 100 m in subalpine habitats.
<i>Dicamptodon tenebrosus</i>	Coastal Giant Salamander	Blue	T	1-T (2003)	Unlikely	Distribution limited to the Chilliwack River Valley and nearby tributaries south of the Fraser River.
<i>Cottus aleuticus</i> pop. 1	Coastrange Sculpin, Cultus Population	Red	E	1-T (2003)	Unlikely	Found only in Cultus Lake, B.C.
<i>Githopsis specularioides</i>	common bluecup	Blue			Unlikely	Range from Horne Lake to Victoria. Occupies moist seepage areas on rock outcrops in the lowland zone.
<i>Uria aalge</i>	Common Murre	Red			Unlikely	Breeds from Barkley Sound on southwestern Vancouver Island to the Kerouard Islands on the southern tip of Haida Gwaii. Non-breeding: typically pelagic and along rocky seacoasts.
<i>Coenonympha californica insulana</i>	Common Ringlet, <i>insulana</i> subspecies	Red			Unlikely	Occurs on Vancouver Island and Gulf Islands.
<i>Contia tenuis</i>	Common Sharp-tailed Snake	Red	E/T	1-E (2003)	Unlikely	Occurs in dry woodlands in the Gulf Islands and SE Vancouver Island.

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<i>Cercyonis pegala incana</i>	Common Wood-nymph, <i>incana</i> subspecies	Red			Unlikely	Restricted to southern Vancouver Island and Gulf Islands, with rare occurrences on the Sunshine Coast.
<i>Oporornis agilis</i>	Connecticut Warbler	Blue			Unlikely	Breeds in NE BC.
<i>Catostomus bondi</i>	Cordilleran Sucker	Blue	SC	1-SC (2017)	Unlikely	Found in the Fraser River and tributaries to the Columbia River and Snake River below Shoshone Falls: Willamette, Boise, John Day, Yakima, Okanagan, Palouse, Owyhee, Salmon Falls, and (possibly) Salmon rivers.
<i>Entosphenus macrostomus</i>	Cowichan Lake Lamprey	Red	T	1-T (2003)	Unlikely	Only in Cowichan Lake and Mesachie Lake.
<i>Daltonia splachnoides</i>	Dalton's moss	Red	E	1-E (2023)	Unlikely	Occurs in Haida Gwaii.
<i>Balsamorhiza deltoidea</i>	deltoid balsamroot	Red	E	1-E (2003)	Unlikely	Restricted to southeastern Vancouver Island between sea level and 200 m elevation.
<i>Nannopterum auritum</i>	Double-crested Cormorant	Blue	NAR		Unlikely	Breeding is primarily in the Strait of Georgia. Outside the breeding period Double-crested Cormorants can be found in sheltered waters throughout the coast, but are most abundant in the Strait of Georgia and Juan de Fuca Strait.
<i>Hemphillia dromedarius</i>	Dromedary Jumping-slug	Red	T	1-T (2005)	Unlikely	Restricted to Vancouver Island.
<i>Oxystegus recurvifolius</i>	drooping-leaved beard-moss	Red	E	1-E (2023)	Unlikely	Occurs in Haida Gwaii
<i>Rubus lasiococcus</i>	dwarf bramble	Blue			Unlikely	Occupies mesic to moist thickets and open forests in the montane and lower subalpine zones. Nearest occurrence in Manning Park.
<i>Euphydryas editha taylori</i>	Edith's Checkerspot, <i>taylori</i> subspecies	Red	E	1-E (2003)	Unlikely	Occurs on Denman Island. Occurs in Garry oak and associated ecosystems although some populations are known from old clearcuts (approximately ten years old).
<i>Anarta edwardsii</i>	Edwards' Beach Moth	Red	E	1-E (2011)	Unlikely	Occurs in Pacific Rim National Park and the Saanich Peninsula and adjacent Gulf Islands (James and Sydney Islands).
<i>Mustela richardsonii anguinae</i>	Ermine, <i>anguinae</i> subspecies	Blue			Unlikely	Restricted to Vancouver Island and Salt Spring Island.
<i>Castilleja ambigua</i> var. <i>ambigua</i>	estuarine paintbrush	Blue			Unlikely	Occurs in deltaic sediments at the mouth of large creeks on the west coast of Vancouver Island.
<i>Deroceras hesperium</i>	Evening Fieldslug	Red	DD		Unlikely	Believed to be extirpated in the region.
<i>Leioderma soledadum</i>	felted elf	Blue			Unlikely	Occupies semi-open habitats on the coast, most often in dune woodlands and deflation plains. Always found within a few km of the ocean.
<i>Pekania pennanti</i>	Fisher	No Status			Unlikely	Found through low to moderate elevations within forested habitat in the central interior and boreal regions of BC.
<i>Collema flaccidum</i>	flaking tarpaper	Red			Unlikely	Occurs in open coastal localities.
<i>Sterna forsteri</i>	Forster's Tern	Red	DD		Unlikely	Breeding restricted a single site in SE BC.
<i>Lymnaea atkaensis</i>	Frigid Lymnaea	Blue			Unlikely	Occurs in Northern BC. Occupies clear, cold, oligotrophic lakes
<i>Woodwardia fimbriata</i>	giant chain fern	Blue			Unlikely	Occurs on SE Vancouver Island, Lasqueti and Texada Islands.
<i>Gasterosteus</i> sp. 1	Giant Threespine Stickleback	Red	SC	1-SC (2019)	Unlikely	Endemic to two lakes in the northeast of Graham Island, Haida Gwaii.
<i>Pituophis catenifer catenifer</i>	Gophersnake, <i>catenifer</i> subspecies	Red	XT	1-XT (2005)	Unlikely	Extirpated from area.
<i>Icaricia saepiolus insulanus</i>	Greenish Blue, <i>insulanus</i> subspecies	Red	E	1-E (2003)	Unlikely	Endemic to Vancouver Island.
<i>Ursus arctos</i>	Grizzly Bear	Blue	SC	1-SC (2018)	Unlikely	Rare in southwest BC. Now found mostly in arctic tundra, alpine tundra, and subalpine mountain forests. Most populations require huge areas of suitable habitat. Common only where food is abundant and concentrated (e.g., salmon runs, caribou calving grounds).
<i>Mustela haidarum</i>	Haida Ermine	Red	T	1-T (2003)	Unlikely	Endemic to Haida Gwaii.
<i>Staala gwaii</i>	Haida Gwaii Slug	Red	SC	1-SC (2018)	Unlikely	Endemic to Haida Gwaii and northern Vancouver Island.
<i>Dryobates villosus piceoides</i>	Hairy Woodpecker, <i>piceoides</i> subspecies	Yellow			Unlikely	Endemic to Haida Gwaii.
<i>Cicindela hirticollis</i>	Hairy-necked Tiger Beetle	Blue			Unlikely	Typically occupies sand bars and sandy beaches.
<i>Juncus hemiendytus</i> var. <i>hemiendytus</i>	Hermanns dwarf rush	Red			Unlikely	Distribution on Vancouver Island. Typically occupies vernal pools and seasonal seeps.
<i>Sphaerium occidentale</i>	Herrington Fingernailclam	Blue			Unlikely	Occurrences from south eastern BC. Restricted to waterbodies that dry up for a part of each year.
<i>Chlosyne hoffmanni</i>	Hoffman's Checkerspot	Red			Unlikely	Restricted to Manning Provincial Park.
<i>Fratercula corniculata</i>	Horned Puffin	Red			Unlikely	Restricted to offshore islands off Haida Gwaii and northern Vancouver Island.
<i>Limosa haemastica</i>	Hudsonian Godwit	Red	T		Unlikely	Restricted to Chilkat Pass area in northwest BC.
<i>Stenodus leucichthys</i>	Inconnu	Blue			Unlikely	Occurs in arctic drainages. Found in and around Teslin Lake in the upper Yukon River, the Peel River and the large shield lakes of the Northwest Territories.
<i>Papilio indra</i>	Indra Swallowtail	Red			Unlikely	Occupies arid rocky mountainous lands (canyons, cliffs, foothills, barrens). Range around Manning Park to the Skagit river valley.
<i>Euchloe ausonides insulanus</i>	Large Marble, <i>insulanus</i> subspecies	Red	XT	1-XT (2003)	Unlikely	Considered extirpated.
<i>Chondestes grammacus</i>	Lark Sparrow	Blue			Unlikely	Breeding population concentrated in lower elevations of south Okanagan and extreme south Similkameen Valleys, extending to the northwest central interior and a few locations in the Kootenays.
<i>Dermodochelys coriacea</i>	Leatherback Sea Turtle	Red	E	1-E (2017)	Unlikely	Marine species.
<i>Melanerpes lewis</i>	Lewis's Woodpecker	Blue	T	1-T (2012)	Unlikely	Interior species. Does not occur in the region.
<i>Gasterosteus aculeatus</i> pop. 2	Little Quarry Lake Benthic Threespine Stickleback	Red	T		Unlikely	Restricted to Little Quarry Lake on Nelson Island.
<i>Gasterosteus aculeatus</i> pop. 3	Little Quarry Limnetic Threespine Stickleback	Red	T		Unlikely	Endemic to Little Quarry Lake, British Columbia.

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<i>Numenius americanus</i>	Long-billed Curlew	Yellow	SC	1-SC (2005)	Unlikely	Occurs in large, open grassland habitats. The breeding range is restricted to the south-central interior, with the provincial centre of abundance for the province found on the Fraser Plateau.
<i>Spirinchus thaleichthys</i>	Longfin Smelt	Blue			Unlikely	Occurs in the Fraser River estuary and near Prince Rupert and Vancouver in British Columbia. Typically occurs in coastal waters near shore, bays, estuaries, and rivers; some populations are landlocked in lakes.
<i>Limnanthes macounii</i>	Macoun's meadow-foam	Red	T	1-T (2006)	Unlikely	Occurs on SE Vancouver Island and adjacent islands.
<i>Trifolium dichotomum</i>	Macrae's clover	Red			Unlikely	Occurs on SE Vancouver Island and adjacent Gulf Islands.
<i>Pieris marginalis guppyi</i>	Margined White, <i>guppyi</i> subspecies	Blue			Unlikely	Occurrences in northwestern BC, within the Tatshenshini-Alesk Provincial Park. Occupies habitats that include avalanche chutes and wet shrubby willow-alder habitats.
<i>Gasterosteus sp. 18</i>	Misty Lake "Lake" Stickleback	Red	E	1-E (2010)	Unlikely	Range is limited to Misty Lake on northeastern Vancouver Island, British Columbia.
<i>Gasterosteus sp. 19</i>	Misty Lake "Stream" Stickleback	Red	E	1-E (2010)	Unlikely	Range is limited to streams associated with Misty Lake on northeastern Vancouver Island, British Columbia.
<i>Callophrys mossii mossii</i>	Moss' Elfin, <i>mossii</i> subspecies	Red			Unlikely	Occurs in Garry oak ecosystems on southern Vancouver Island and the Gulf Islands.
<i>Oreamnos americanus</i>	Mountain Goat	Blue			Unlikely	Alpine and subalpine habitat; steep grassy talus slopes, grassy ledges of cliffs, or alpine meadows. Usually at timberline or above. May seek shelter and food in stands of spruce or hemlock in winter.
<i>Ammospiza nelsoni</i>	Nelson's Sparrow	Red	NAR		Unlikely	Breeds in NE BC.
<i>Thelypteris nevadensis</i>	Nevada marsh fern	Red			Unlikely	Rare in SW BC, known only from the Sooke River. Occupies wet to moist gravel bars in the lowland zone (moist in summer, flooded in winter).
<i>Haliotis kamtschatkana</i>	Northern Abalone	Red	E	1-E	Unlikely	Confined to coastal strip of marine areas.
<i>Fulmarus glacialis</i>	Northern Fulmar	Red			Unlikely	Occupies offshore waters of Vancouver Island and Haida Gwaii; very rare in inner coastal areas.
<i>Glaucidium gnoma swarthi</i>	Northern Pygmy-owl, <i>swarthi</i> subspecies	Blue			Unlikely	Restricted to Vancouver Island and Gulf Islands.
<i>Aegolius acadicus brooksi</i>	Northern Saw-whet Owl, <i>brooksi</i> subspecies	Blue	T	1-T (2007)	Unlikely	Endemic to Haida Gwaii.
<i>Actinemys marmorata</i>	Northwestern Pond Turtle	Red	XT	1-XT (2005)	Unlikely	Extirpated from area.
<i>Fraxinus latifolia</i>	Oregon ash	Red			Unlikely	Occurs on W Vancouver Island. Occupies swamps and estuaries in the lowland zone.
<i>Hemphillia camelus</i>	Pale Jumping-slug	Blue			Unlikely	Occurs in SE BC.
<i>Falco peregrinus pealei</i>	Peregrine Falcon, <i>pealei</i> subspecies	Blue	SC	1-SC (2003)	Unlikely	Occurs in northern and western Vancouver Island to the Alaska panhandle. The population is centered on Haida Gwaii.
<i>Parnassius phoebus</i>	Phoebus Parnassian	Red			Unlikely	Range at the Yukon border in the northwestern corner of BC. Occupies mountains and tundra.
<i>Aphyllon pinorum</i>	pine broomrape	Red			Unlikely	Occurs on S Vancouver Island.
<i>Trifolium depauperatum</i> var. <i>depauperatum</i>	poverty clover	Blue			Unlikely	Occupies vernal wet to moist grassy sites in the lowland zone. Distribution on SE Vancouver Island and the Gulf Islands.
<i>Falco mexicanus</i>	Prairie Falcon	Red	NAR		Unlikely	One known active nesting site south of Williams Lake. Habitat consists of open situations, especially in mountainous areas, steppe, plains or prairies.
<i>Lupinus lepidus</i>	prairie lupine	Red	E	1-E (2003)	Unlikely	Occurs on SE Vancouver Island. Occupies dry gravelly openings and rock outcrops in the lowland zone.
<i>Erynnis propertius</i>	Propertius Duskywing	Red			Unlikely	Restricted to garry oak ecosystems on Vancouver Island and Gulf Islands.
<i>Cryptomastix devia</i>	Puget Oregonian	Red	XT	1-XT (2005)	Unlikely	Extirpated from area.
<i>Sanicula bipinnatifida</i>	purple sanicle	Red	T	1-T (2003)	Unlikely	Restricted to southeastern Vancouver Island plus smaller islands in Haro Strait and the Strait of Georgia, including Saturna Island. Occupies dry to mesic meadows and mesic, open, deciduous woodlands in the sub-Mediterranean climate.
<i>Spirinchus sp. 1</i>	Pygmy Longfin Smelt	Red	DD		Unlikely	Occurs in large, oligotrophic, fiord lakes. In Harrison and Pitt lakes in the lower Fraser River Valley.
<i>Stygobromus quatsinensis</i>	Quatsino Cave Amphipod	Blue			Unlikely	Restricted to several caves on Vancouver Island.
<i>Dermatocarpon intestinale</i>	quilted stippleback	Blue			Unlikely	Occurs on base-rich rock in open, usually exposed sites. Occurrences on Vancouver Island.
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Blue	SC	1-SC (2019)	Unlikely	Breeding restricted to the Chilkat Pass area in extreme northwestern British Columbia and the Spatsizi Plateau. In winter: primarily pelagic, sometimes occurring in migration on ponds, lakes, open marshes, estuaries, and bays, coastal lagoons, salinas, sewage ponds.
<i>Bartramia aprica</i>	rigid apple moss	Red	E	1-E (2003)	Unlikely	Restricted to the dry Coastal Douglas-fir zone on southeastern Vancouver Island.
<i>Parnassius smintheus olympianus</i>	Rocky Mountain Parnassian, <i>olympiannus</i> subspecies	Blue			Unlikely	Occurrences on Vancouver Island, from mid island, from Nanaimo north to Strathcona Provincial Park area.
<i>Cervus elaphus roosevelti</i>	Roosevelt Elk	Blue			Unlikely	Considered rare or absent in the area.
<i>Eurybia radulina</i>	rough-leaved aster	Red			Unlikely	Occupies dry rock outcrops and open forests in the lowland zone. Known only from SE Vancouver Island.
<i>Euphagus carolinus</i>	Rusty Blackbird	Blue	SC	1-SC (2009)	Unlikely	Does not occur in the area. Has been recorded breeding in all Ecoprovinces of the interior of British Columbia and in several valleys on the northern mainland coast.

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<i>Oreoscoptes montanus</i>	Sage Thrasher	Red	E	1-E (2003)	Unlikely	Primarily in the south Okanagan and Similkameen valley. A sagebrush obligate species.
<i>Catostomus</i> sp. 4	Salish Sucker	Red	T	1-T (2005)	Unlikely	Salish Sucker distribution falls within 11 watersheds, including Little Campbell River, Bertrand Creek, Pepin Creek, Fishtrap Creek, Salmon River, Chilliwack Delta, Elk Creek/Hope Slough, Salwein Creek/Hopedale Slough, Mountain Slough, Agassiz Slough and Miami River.
<i>Erigeron philadelphicus</i> var. <i>glaber</i>	salt marsh Philadelphia daisy	Blue			Unlikely	Occurrences from estuaries on Vancouver Island.
<i>Corydalis scouleri</i>	Scouler's corydalis	Yellow	NAR		Unlikely	Occurs in the Nitinat and Klanawa River drainages, as well as in the Carmanah valley.
<i>Hypogymnia heterophylla</i>	seaside bone	Red	NAR	1-T (2010)	Unlikely	Occurs on southern Vancouver Island.
<i>Elatine brachysperma</i>	short-seeded waterwort	Red			Unlikely	Occurrences only on Vancouver Island.
<i>Lathyrus littoralis</i>	silky beach pea	Red	T	1-T (2023)	Unlikely	Occurs on Vancouver Island and Haida Gwaii. Occupies coastal dunes and sand beaches.
<i>Epargyreus clarus californicus</i>	Silver-spotted Skipper, <i>californicus</i> subspecies	Red			Unlikely	Restricted to Cortes Island.
<i>Zygodon gracilis</i>	slender yoke-moss	Red	E		Unlikely	Occurs in Haida Gwaii.
<i>Allium amplexans</i>	slimleaf onion	Blue			Unlikely	Occurs on SE Vancouver Island, the Gulf Islands and the adjacent mainland (Powell River).
<i>Prosartes smithii</i>	Smith's fairybells	Blue			Unlikely	Sporadically occurs on the west coast of southern Vancouver Island.
<i>Calcarius pictus</i>	Smith's Longspur	Blue			Unlikely	Breeds in northwestern BC.
<i>Gyraulus crista</i>	Star Gyro	Blue			Unlikely	Found in selective habitat types (eutrophic ponds, oligotrophic lakes, slow moving streams and seasonal ponds) in central and eastern BC.
<i>Eumetopias jubatus</i>	Steller Sea Lion	Blue	SC	1-SC (2005)	Unlikely	Occupies marine habitats.
<i>Cyanocitta stelleri carlottae</i>	Steller's Jay, <i>carlottae</i> subspecies	Blue			Unlikely	Subspecies endemic to Haida Gwaii
<i>Sphaerium striatinum</i>	Striated Fingernailclam	Blue			Unlikely	Occurrences from northeast of Prince George, "Little Lake", Cariboo and Sumas Lake. Occupies both lotic and lentic environments and on mud, sand, gravel and rock substrates.
<i>Melanitta perspicillata</i>	Surf Scoter	Blue			Unlikely	Breeds in the Peace River district and overwinters off the coast.
<i>Musculium partumeium</i>	Swamp Fingernailclam	Blue			Unlikely	Occurs in Kootenay Lake and on Salt Spring Island.
<i>Nuttallanthus texanus</i>	Texas toadflax	Blue			Unlikely	Occurs on steep rock with seepage, rocky ledges, coastal bluffs, and grassy slopes. Distribution on Vancouver Island and Sunshine Coast.
<i>Uria lomvia</i>	Thick-billed Murre	Red			Unlikely	Restricted to Triangle Island. Nonbreeding: mostly pelagic, less frequently along rocky coasts. Tends to occupy deeper waters and areas farther offshore.
<i>Nearctula</i> sp. 1	Threaded Vertigo	Blue	SC	1-SC (2012)	Unlikely	Restricted to Vancouver Island, Gulf Islands, Sunshine Coast.
<i>Microtus townsendii cowani</i>	Townsend's Vole, <i>cowani</i> subspecies	Red			Unlikely	Endemic species, only occurring on Triangle Island.
<i>Fratercula cirrhata</i>	Tufted Puffin	Blue			Unlikely	Breeding pairs are distributed all along the outer coast of British Columbia. Major breeding colonies are restricted to the Scott Islands, Solander Island, and Haida Gwaii.
<i>Bartramia longicauda</i>	Upland Sandpiper	Red			Unlikely	Found primarily in the Boreal Plains Ecoprovince in northeastern British Columbia.
<i>Aneides vagrans</i>	Wandering Salamander	Blue	SC	1-SC (2018)	Unlikely	Only found on Vancouver Island, adjacent small islands and one location on the Sunshine Coast.
<i>Tringa incana</i>	Wandering Tattler	Blue			Unlikely	Breeding range restricted to the St. Elias Mountains in extreme NW BC, but likely extends south to at least Gnat Pass near Dease Lake.
<i>Hemphillia glandulosa</i>	Warty Jumping-slug	Red	SC	1-SC (2005)	Unlikely	Restricted to southern Vancouver Island.
<i>Claytonia washingtoniana</i>	Washington springbeauty	Blue			Unlikely	Range from Mt. Douglas Park north to Port Neville, central coast, on the north side of Johnstone Strait.
<i>Hesperia colorado oregonia</i>	Western Branded Skipper, <i>oregonia</i> subspecies	Red	E	1-E (2023)	Unlikely	Restricted to Vancouver Island and the Gulf Islands.
<i>Lampetra richardsoni</i> pop. 1	Western Brook Lamprey (Morrison Creek Population)	Red	E	1-E (2003)	Unlikely	Endemic to Vancouver Island.
<i>Aechmophorus occidentalis</i>	Western Grebe	Red	SC	1-SC (2017)	Unlikely	Typically occupies marshes, lakes, & bays. Regular breeding populations are restricted to Salmon Arm, the north arm of Okanagan Lake, and Duck Lake near Creston.
<i>Euonymus occidentalis</i> var. <i>occidentalis</i>	western strawberry-bush	Red			Unlikely	Occupies mesic forests and thickets in the lowland and montane zones. Known only from Courtenay, Vancouver Island.
<i>Sorex navigator brooksi</i>	Western Water Shrew, <i>brooksi</i> subspecies	Blue			Unlikely	Restricted to Vancouver Island.
<i>Meconella oregana</i>	white meconella	Red	E	1-E (2006)	Unlikely	Occurs on SE Vancouver Island and the Gulf Islands. Occupies vernal moist rocky or grassy slopes in the lowland zone.
<i>Sericocarpus rigidus</i>	white-top aster	Blue	SC	1-SC (2003)	Unlikely	Limited to the dry coastal Douglas-fir zone on southeastern Vancouver Island.
<i>Stagnicola traski</i>	Widelip Pondsnaill	Blue			Unlikely	Occurs in southeastern BC.
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	wine-cup clarkia	Red			Unlikely	Restricted to southeastern Vancouver Island and smaller islands in the Strait of Georgia including Saturna and Saltspring Islands.
<i>Gulo gulo luscus</i>	Wolverine, <i>luscus</i> subspecies	Blue	SC	1-SC (2018)	Unlikely	Typically found in remote wilderness areas away from human activity. Known to avoid crossing active transportation corridors.

Scientific Name	English Name	BC List	COSEWIC	SARA	Probability	Rationale
<i>Gulo gulo vancouverensis</i>	Wolverine, <i>vancouverensis</i> subspecies	Red	SC	1-SC (2018)	Unlikely	This subspecies may be extirpated, and has not been confirmed since 1992. Restricted to Vancouver Island.
<i>Viola praemorsa</i> var. <i>praemorsa</i>	yellow montane violet	Red	E	1-E (2003)	Unlikely	Restricted to southeast Vancouver Island and Saltspring Island.
<i>Abronia latifolia</i>	yellow sand-verbena	Blue			Unlikely	It occurs along both coasts of Vancouver Island, on some of the Gulf Islands between Victoria and Comox, and on the east coast of Graham Island on Haida Gwaii.
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo	Red			Unlikely	Does not occur in the region.
<i>Andraea mutabilis</i>		Red			Unlikely	Occurs on acidic rock faces, occasionally thin soil, at moderate elevations.
<i>Campylopus schimperi</i>		Red			Unlikely	Occurs on soil in tundra habitats, in alpine elevations, 2700-3400 m.
<i>Claopodium pellucinerve</i>		Red			Unlikely	Occurs on pockets or crevices of shaded cliffs, limestone boulders, and humus at cliff bases from 2700-3400m.
<i>Didymodon leskeoides</i>		Red			Unlikely	Occupies the spray zone of falls, alpine tundra, and damp cliff shelves at moderate elevations.
<i>Didymodon subandreaeoides</i>		Red			Unlikely	Occupies limestone outcrops, cliffs, bluffs, soil pockets in granite, tundra, and along streams or associated with waterfalls, at moderate to high elevations (600-3500 m).
<i>Diphyscium foliosum</i>		Blue			Unlikely	Associated with canyon walls and cliff crevices. In the Lower Mainland only occurs in Capilano Canyon and Lynn Canyon.
<i>Fissidens fontanus</i>		Red			Unlikely	The two known locations in BC occur at the SW end of Harrison Lake and the Fraserview Golf Course.
<i>Funaria muhlenbergii</i>		Blue			Unlikely	Occupies bare, alkaline soils at moderate elevations.
<i>Geheebia gigantea</i>		Red			Unlikely	Found on wet calcareous soil and rock; often in fens in the open tundra.
<i>Gollania turgens</i>		Red			Unlikely	Occurs on wet or moist rocks, often calcareous rocks, in boreal forest zone to arctic tundra at moderate to high elevations (700-4800 m).
<i>Grimmia anomala</i>		Blue			Unlikely	Occupies exposed, damp acidic rock in boreal and alpine meadows and slopes at moderate to high elevations (200-3000 m).
<i>Hydrogonium amplexifolium</i>		Red			Unlikely	Occurs on rock, often limestone, occasionally sandstone, usually in moist areas, mountain slopes, cliffs, tundra, and the mist zone of waterfalls, at moderate to high elevations (700-1800 m).
<i>Hymenostylium recurvirostrum</i> var. <i>insigne</i>		Blue			Unlikely	Occurs on wet, limey cliffs from 0-1000 m.
<i>Lescurea saxicola</i>		Blue			Unlikely	Occurs on granitic or sandstone boulders, outcrops, exposed mineral soil, and seepage areas in subalpine and arctic-alpine regions, at moderate to high elevations (200-3400 m).
<i>Physcomitrium immersum</i>		Red			Unlikely	Grows on wet soil in floodplains or mud flats on the banks of streams and the bottom of dried-up reservoirs at moderate to high elevations.
<i>Platyhypnum alpinum</i>		Blue			Unlikely	Alpine hygrophnum moss.
<i>Pohlia cardotii</i>		Blue			Unlikely	Occurs on soil in mesic alpine and subalpine zones.
<i>Pohlia elongata</i>		Blue			Unlikely	Occurs on humus-rich soil banks, along streams and paths, and on tree bases, at moderate to high elevations.
<i>Schistidium atrichum</i>		Red			Unlikely	Occurs on dry, shaded limestone rocks, usually at high elevations.
<i>Seligeria tristichoides</i>		Blue			Unlikely	Occurs on calcareous cliffs.
<i>Tortula nevadensis</i>		Red			Unlikely	Occurs on soil, occasional saline soil, clay, at moderate to high elevations (500-3900 m).
<i>Trematodon montanus</i>		Red			Unlikely	Occurs on soil at moderate elevations (700-800 m). Found in late-snowbed areas.
<i>Tripterocladium leuocladulum</i>		Blue			Unlikely	Occurs on dry, shaded cliffs and boulders at moderate elevations (400-600 m).
<i>Wijkia carlottae</i>		Blue			Unlikely	Endemic to Haida Gwaii. Occurs on shaded rock at humid sites.

Search Criteria

BGC Zone, Subzone: CWHxm

Sort Order:Phylogenetic Ascending

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