

RFP 26004 – ADDENDA No 2

RFP TITLE: Cheam Lake Wetlands Floating Boardwalk Replacement

RFP NUMBER: 26004

ADDENDA: Environmental Assessment and Response to Questions

ADDENDA DATE: August 5, 2026

1. ENVIRONMENTAL ASSESSMENT

The environmental assessment for this project is attached to this addendum so proponents can review the document and any applicable requirements, and ensure their proposed solution and methodology align with the environmental requirements.

2. QUESTIONS AND ANSWERS:

Project Scope:

QUESTION 1: Is there boat access to the boardwalk area?

ANSWER: Cheam Lake does not have a formal boat launch, and boats are not permitted on the lake. Proponents should not assume that boat access or boat launching will be available. Due to the surrounding vegetation and variable water depths, water-based access to the boardwalk area is expected to be difficult.

QUESTION 2: Are we allowed to install an anchoring system in to prevent the boardwalk from swaying side to side?

ANSWER: Yes. Proponents may include an anchoring system to limit lateral movement of the boardwalk, provided the proposed system is the same as, or similar to, the existing low-impact helical pile system currently in place.

The existing floating boardwalk is secured using hand-driven piles installed into the substrate. Proponents should include pricing to replace the existing piles with new piles that are compatible with their proposed floating boardwalk system. Any proposed anchoring system

must remain within the existing boardwalk alignment and footprint, comply with all applicable environmental requirements and mitigation measures, and be installed in coordination with the onsite environmental monitor.

QUESTION 3: What is the load capacity of the first bridge before the floating boardwalk?

ANSWER: The existing structure is a pedestrian footbridge, and proponents should not assume it is suitable for heavy machinery or equipment access. Any proposed access methods must be appropriate for a pedestrian bridge and should avoid imposing loads beyond typical pedestrian use unless independently verified by the proponent.

3. THIS IS THE SECOND ADDENDUM:

The deadline for RFP enquiries is Thursday August 6, 2026, at 4:00 PM (PST). The FVRD may issue a further addendum if required before Monday August 10, 2026, at 4:00 PM (PST). Proponents are responsible for reviewing all addenda issued in relation to this RFP.

One (1) completed copy of the Proposal marked with the RFP Title and Number must be delivered by email before Friday, August 14, 2026, 4:00 PM (PST) to:

Fraser Valley Regional District
Attention: Sara Vorlicek
Email: outdoorrecreation@fvrd.ca
1 - 45950 Cheam Avenue
Chilliwack, British Columbia V2P 1N6

Environmental Assessment and Management Plan

Cheam Lake Wetlands Regional Park

Prepared for:

**Fraser Valley Regional District
1-45950 Cheam Avenue
Chilliwack, B.C., V2P 1N6**



Prepared by:

EBB Environmental
Consulting Inc.

[PAGE INTENTIONALLY LEFT BLANK]

Environmental Assessment and Management Plan

Cheam Lake Wetlands Regional Park

PREPARED FOR

Fraser Valley Regional District
1-45950 Cheam Avenue
Chilliwack, B.C., V2P 1N6

SUBMITTED
July 2026

PREPARED BY

EBB Environmental Consulting Inc.
PO Box 18180 1215C 56th Street
Delta, British Columbia, V4L 2M4

Phone: 604-943-3209
Fax: 604-948-3273
Toll-Free: 1-877-943-3209
www.ebbconsulting.ca

PRINCIPAL CONTACT

Oliver Busby, MBA, RPBio, PAg
Mobile: 604-219-2412
Email: busby@ebbconsulting.ca

[PAGE INTENTIONALLY LEFT BLANK]

Document Limitations

This document was prepared exclusively for the Fraser Valley Regional District. The findings, conclusions, and recommendations in this document are based on the expertise and experience of EBB personnel based on 1) the information available at the time of preparation; 2) data supplied by outside sources; and, 3) the assumptions, conditions, and qualifications set forth in this document. While professional judgement and standard practices were used in interpreting external third-party data, EBB did not verify the accuracy and quality of externally provided data.

Respectfully submitted;

Prepared by:

Jessica Derksen, MSc, BIT
EBB Environmental Consulting Inc.



Reviewed by:

Oliver Busby, MBA, RPBio, PAg
Principal
EBB Environmental Consulting Inc.



Table of Contents

1	INTRODUCTION.....	1
1.1	SITE CONTEXT	1
1.2	ECOSYSTEMS AND CLIMATE	2
1.3	PROPOSED PROJECT	2
2	APPLICABLE LEGISLATION	4
2.1	WATER SUSTAINABILITY ACT.....	4
2.2	FISHERIES ACT.....	4
2.3	MIGRATORY BIRDS CONVENTION ACT	4
2.4	WILDLIFE ACT	4
2.5	SPECIES AT RISK ACT.....	5
3	ASSESSMENT METHODOLOGY	5
3.1	DATABASE QUERIES	5
3.2	FIELD ASSESSMENT	6
4	ENVIRONMENTAL ASSESSMENT FINDINGS.....	6
4.1	FIELD ASSESSMENT	6
4.1.1	<i>Terrestrial Habitat</i>	<i>6</i>
4.1.2	<i>Aquatic Habitat.....</i>	<i>7</i>
4.1.3	<i>Summary of Vegetation</i>	<i>8</i>
4.2	WILDLIFE	9
4.2.1	<i>Mammals.....</i>	<i>9</i>
4.2.2	<i>Reptiles and Amphibians</i>	<i>9</i>
4.2.3	<i>Breeding Birds.....</i>	<i>9</i>
4.2.4	<i>Raptors.....</i>	<i>10</i>
4.2.5	<i>Invertebrates.....</i>	<i>10</i>
4.3	SPECIES AND ECOSYSTEMS AT RISK.....	10
4.3.1	<i>Database Results</i>	<i>10</i>
4.3.2	<i>Potential for Occurrence</i>	<i>10</i>
4.3.3	<i>Documented and Incidental Occurrences of At-Risk Species</i>	<i>16</i>
4.3.4	<i>Critical Habitat.....</i>	<i>17</i>
4.3.4.1	<i>Roell's brotherella.....</i>	<i>18</i>
4.3.4.2	<i>Barn owl.....</i>	<i>18</i>
4.3.4.3	<i>Pacific Water Shrew</i>	<i>19</i>
4.3.4.4	<i>Oregon Forestsnail.....</i>	<i>19</i>
4.3.4.5	<i>Coastal Giant Salamander</i>	<i>20</i>
4.3.4.6	<i>Western Painted Turtle - Pacific Coast Population</i>	<i>20</i>
4.3.5	<i>Evaluation of the Likelihood of Occurrence and Potential for Interaction</i>	<i>20</i>
5	ENVIRONMENTAL CONSTRAINTS.....	24
5.1	POTENTIAL IMPACTS	24
5.2	TIMING CONSIDERATIONS.....	24
5.2.1	<i>Pond Breeding and Overwintering Reptiles and Amphibians</i>	<i>25</i>
5.2.2	<i>Pacific Water Shrew.....</i>	<i>25</i>
5.2.3	<i>Oregon Forestsnail.....</i>	<i>25</i>
5.2.4	<i>Fish and Fish Habitat</i>	<i>25</i>
5.2.5	<i>Breeding Birds.....</i>	<i>25</i>

5.2.6	<i>Timing Windows Summary and Recommendations</i>	26
5.3	EFFECTS ON FISH AND WILDLIFE	27
5.3.1	<i>Fish and Herpetofauna</i>	27
5.3.1.1	Direct Harm and Mortality	27
5.3.2	<i>Migratory and non-Migratory Birds</i>	27
5.3.3	<i>Mammals</i>	27
5.3.4	<i>Critical Habitat</i>	28
6	MITIGATION AND ENVIRONMENTAL PROTECTION MEASURES	28
6.1	BEST MANAGEMENT PRACTICES	28
6.2	ENVIRONMENTAL MONITORING	28
6.3	FISH AND WILDLIFE	29
6.3.1	<i>Breeding Birds</i>	29
6.3.2	<i>Fish</i>	30
6.3.3	<i>Amphibians and Reptiles</i>	30
6.3.4	<i>Critical Habitat</i>	30
6.4	INSTREAM AND ABOVE-WATER WORKS	31
6.5	EROSION AND SEDIMENT CONTROL	31
6.6	HUMAN-WILDLIFE CONFLICT MANAGEMENT	32
6.7	INVASIVE PLANT MANAGEMENT	32
6.8	SITE ACCESS AND LAYDOWN AREAS	33
6.9	AIR QUALITY MANAGEMENT AND DUST CONTROL	33
6.10	NOISE AND VIBRATION	33
6.11	CONSTRUCTION WASTE MANAGEMENT, HANDLING AND STORAGE	34
6.11.1	<i>General Considerations</i>	34
6.11.2	<i>Non-Hazardous Wastes</i>	35
6.11.3	<i>Hazardous Wastes</i>	35
6.12	FUEL STORAGE AND HANDLING MANAGEMENT	36
6.12.1	<i>Transportation and Disposal</i>	37
6.13	ARCHAEOLOGICAL RESOURCES	37
6.13.1	<i>Relevant Legislation</i>	37
6.13.2	<i>General Considerations</i>	37
6.13.3	<i>Chance Find Protocols</i>	38
6.13.3.1	Discovery of Suspected Archaeological Materials	38
6.13.3.2	Discovery of Human Remains	38
7	EMERGENCY RESPONSE	39
7.1	EMERGENCY COMMUNICATION	39
7.2	ENVIRONMENTAL EMERGENCY PLAN	40
7.2.1	<i>Reportable Quantities</i>	41
7.3	SPILL RESPONSE PLAN	41
7.3.1	<i>Spill Prevention</i>	41
7.3.2	<i>Spill Response Supplies</i>	42
7.3.3	<i>Spill Response</i>	42
	REFERENCES	44

1 Introduction

EBB Environmental Consulting Inc. (EBB) was retained by Fraser Valley Regional District (FVRD) to conduct an Environmental Assessment (EA) for the proposed replacement of the floating boardwalk at Cheam Lake Wetlands Regional Park. This report includes an assessment of environmental considerations for the proposed project works (including environmentally sensitive areas, species at-risk, critical habitats, and fisheries) and recommendations on mitigation measures and construction timing.

1.1 Site Context

The proposed project works will take place within Cheam Lake Wetlands Regional Park, a 107-ha regional park managed by FVRD, located in Rosedale, British Columbia. The park encompasses a variety of marsh, open water, and forest habitats. Pocket wetlands are present at the northern end of Cheam Lake, and Bridal Creek flows northward from the lake.

The park is bordered by Cheam First Nation (Xwchíyò) lands to the west, FVRD-owned parkland to the north and south, residential subdivisions to the east and south, and rural private properties surrounding the remaining portions of the park. Many adjacent private properties have retained mature tree cover along the lakeshore.

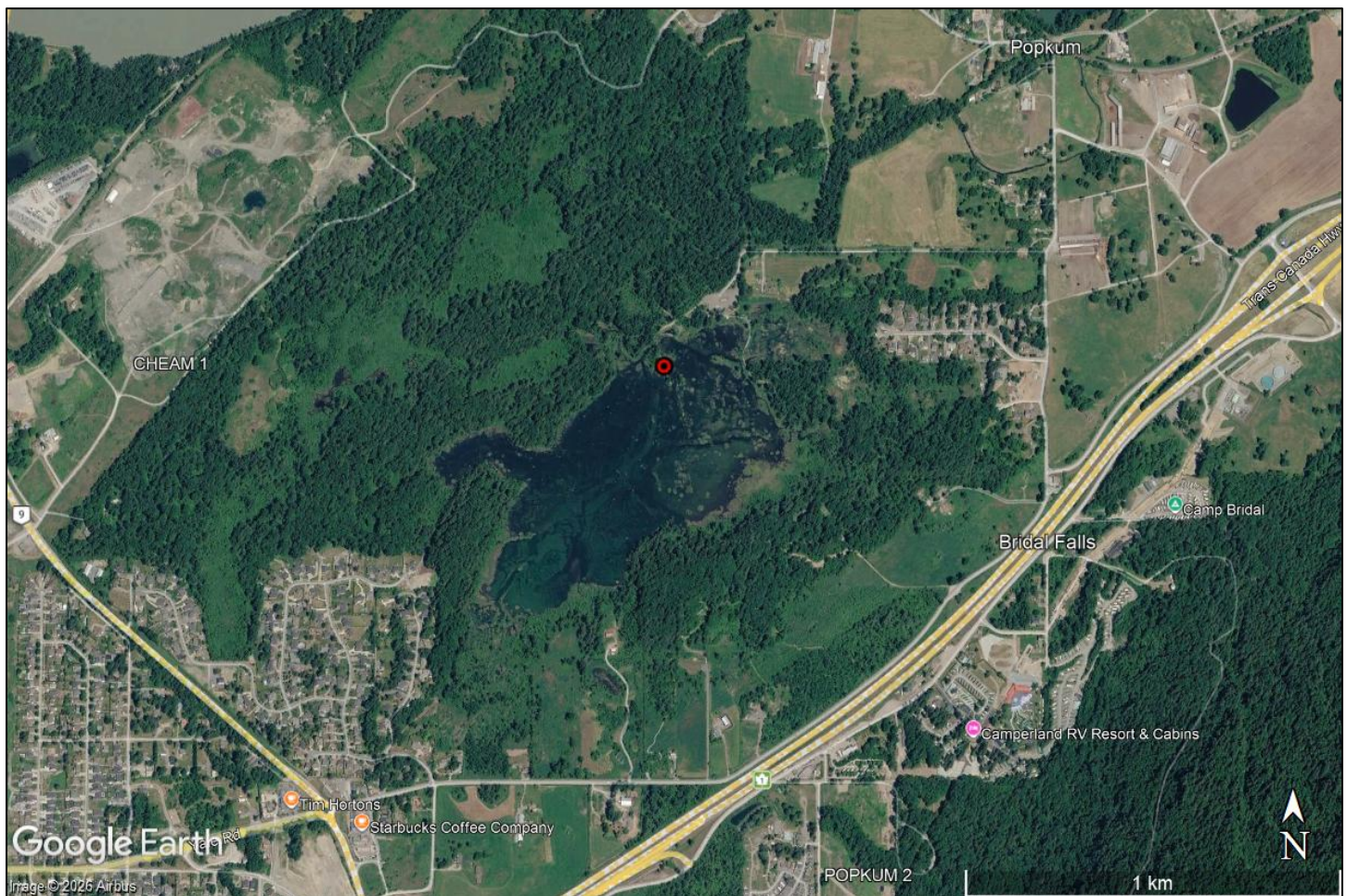


Figure 1. Proposed Works (red) in relation to surrounding community.

1.2 Ecosystems and Climate

Provincially, two biophysical classification systems are used to describe BC landscapes: the BC Ecoregion Classification System and the Biogeoclimatic Zone (BEC) Classification System. Based on the BC Ecoregion Classification System, the Project Footprint is situated within the:

- The Fraser Lowland Ecosection,
 - The Lower Mainland ecoregion,
 - The Georgia Depression ecoprovince,
 - the cool Hypermaritime and highlands ecodivision,
 - the humid temperate ecodomain.

Based on the BEC classification system, the Project Footprint is located within the Coastal Western Hemlock dry maritime, eastern zone (CWHdm3). The CWHdm3 subzone occurs at lower elevations along the Fraser Valley, stretching eastward to the valleys around Cultus Lake. It is present from sea level (or above the Coastal Douglas-fir moist maritime subzone where present) to approximately 700 m. The CWHdm3 is characterized by warm, dry summers and mild, wet winters. Zonal sites may experience water deficits during the long growing season. Annually, the zone receives 1,100 to 2,721 mm of precipitation and 26 to 234 mm of snowfall (Green and Klinka 1994).

1.3 Proposed Project

The proposed works include the replacement of two existing floating boardwalk segments within Cheam Lake Wetlands Regional Park that have reached the end of their service life. Construction activities will be limited to the removal of the existing floating boardwalk segments and installation of replacement segments within the same general footprint.

Construction access will utilize the existing trail network, and all equipment, materials, and temporary staging areas will be confined to the existing paved parking area adjacent to the wetland. Boardwalk replacement activities will occur within provincial Crown land, while construction staging will occur within the parking area located north of the main wetland on FVRD-owned land.



Figure 2. Segment 2 of the floating boardwalk.



Figure 3. Segment 3 of the floating boardwalk, connecting to the wildlife viewing area.

The floating boardwalk is located at approximately 49.196069, -121.752717 on provincial Crown land and consists of three separate segments that provide access between a series of islands within the wetland. The existing boardwalk is constructed of polyethylene with metal guardrails and connects to a series of existing land-based access ramps, each approximately 3 m by 2 m. Segments 2 and 3 are proposed for replacement. The two segments have a combined length of approximately 66 m, with each segment measuring approximately 33 m in length and 2 m in width. Replacement segments will be installed within the same location and general footprint as the existing boardwalk segments and will connect to the existing land-based infrastructure at either end.

The Project Footprint may change depending on the methodology selected for the Proposed Works. For the purposes of this document, the Project Footprint includes the parking lot staging area, Viewpoint Trail, and Segments 1–3 of the floating boardwalk and connecting islands. Vegetation and wetlands within 1–5 m of these features are also included in the assessment to account for potential indirect effects.

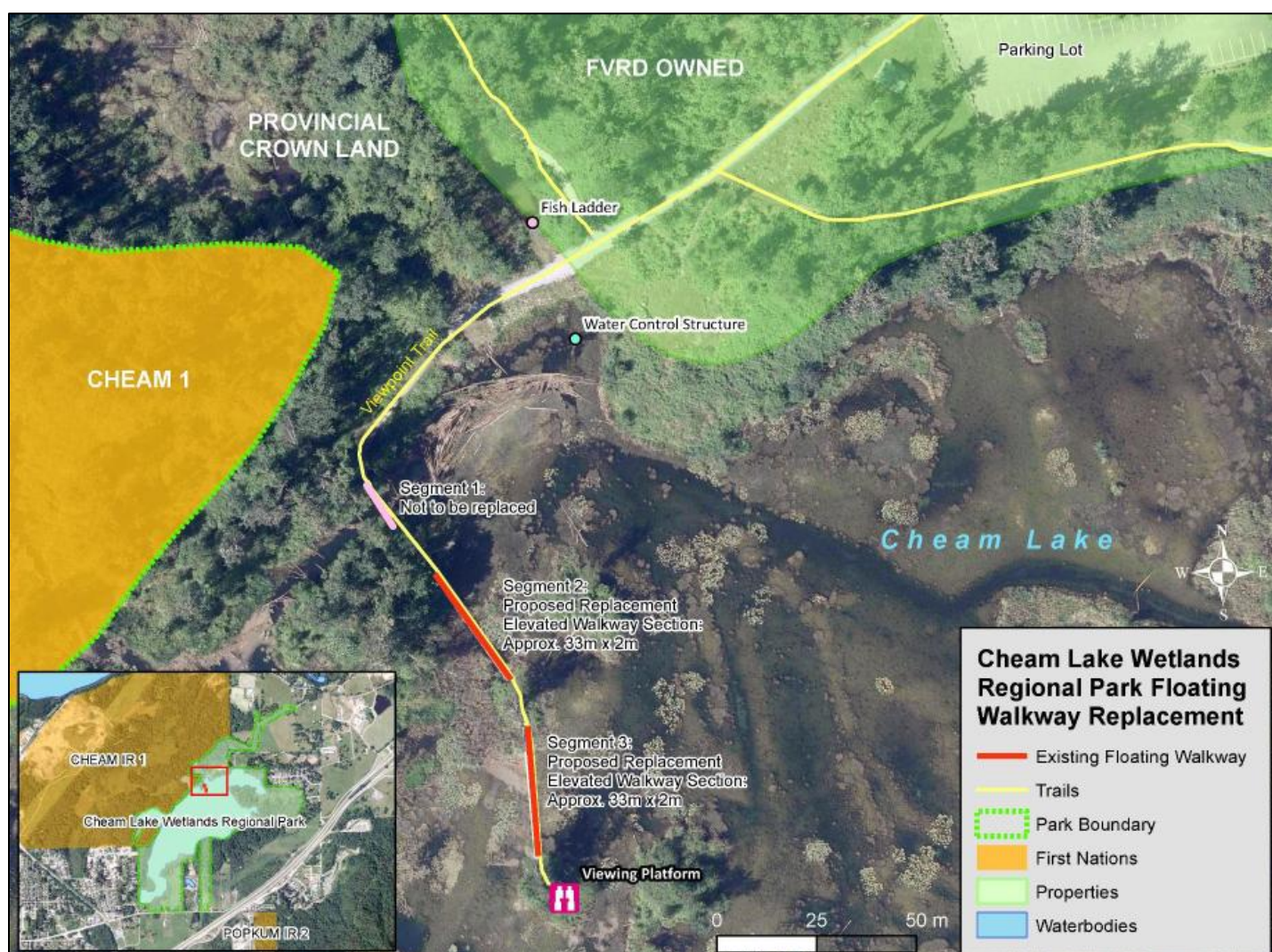


Figure 4. Map provided by the Fraser Valley Regional District of the proposed Project Footprint.

2 Applicable Legislation

The following federal and provincial legislation is applicable to the proposed project.

2.1 Water Sustainability Act

The *Water Sustainability Act* (WSA, 2016) and its associated regulations (Water Sustainability Regulation and Groundwater Protection Regulation) are intended to protect both surface and groundwater resources. Under Section 11 of the WSA, changes in or about a stream, defined as any modification to the nature of a stream, including any modification to the land, vegetation and natural environment of a stream or the flow of water in a stream, or any activity or construction within a stream channel that has or may have an impact on a stream or a stream channel, may only be made under authorization as issued by the comptroller, a water manager or an engineer of the government of British Columbia.

2.2 Fisheries Act

The federal *Fisheries Act* applies to all watercourses that function to provide fish habitat, legally defined as water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas. Under this definition, any stream that is, or flows into fish-bearing streams, is legally protected under the *Fisheries Act*, specifically Section 34.3(1) which states that, *no person shall carry on any work, undertaking or activity, other than fishing, that results in the death of fish* and Section 35(1) which states, *no person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat*.

2.3 Migratory Birds Convention Act

The federal *Migratory Birds Convention Act* (MBCA, 1994) is intended to protect and conserve migratory birds, both as populations and individual birds, as well as their nests and extends legal protection to waterfowl (e.g., ducks and geese), cranes (e.g., sandhill cranes), shorebirds (e.g., plovers and sandpipers) and most songbirds (e.g., robins). The MBCA extends legal protection to migratory birds through the prohibition of possessing, purchasing, selling, exchanging, or giving a migratory bird or its nest.

The *Migratory Birds Regulations*, 2022, provide protection to the nests of all migratory bird species when they contain a live bird or a viable egg. The nests of 18 species (listed in Schedule 1 of the regulations), whose nests are reused by migratory birds, have year-round nest protection, unless they have been shown to be abandoned. To be considered abandoned the Minister must be notified, via an online registration system (the Abandoned Nest Registry), and the nest is to remain unused (does not contain a live bird or viable egg) by migratory birds during the designated wait time for that species.

Land clearing during the breeding bird window (March 1 to August 31) requires nest surveys completed by a qualified environmental professional (QEP) within 72 hours prior to clearing.

2.4 Wildlife Act

The provincial *Wildlife Act* (1996) extends legal protection to designated wildlife within British Columbia, including raptors, threatened species, endangered species, game, and other species of vertebrae prescribed under

Schedule A of the *Designation and Exemption Regulation*, which includes species of mammals, birds, reptiles, and amphibians. Under Sections 29 and 33 of the Act, it is an offence to attempt to capture or possess wildlife.

2.5 Species at Risk Act

The *Species at Risk Act* (2002) provides protection to species designated as at risk under the Act. Specifically, Section 6, to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered, or threatened because of human activity and to manage species of special concern to prevent them from becoming endangered or threatened. Under Sections 32 and 33 of the Act, listed species are afforded legal protection that prohibits harming, harassing, capturing, or taking a listed species; possessing, collecting, buying, selling, or trading an individual of a listed species; or damaging or destroying the residence of a listed species. In addition to the protection of listed wildlife species and their residences, the Act further protects habitat determined to be critical to the survival or recovery of the species.

3 Assessment Methodology

3.1 Database Queries

Digital databases were queried for species with potential to occur within the Project Footprint. Databases included British Columbia Conservation Data Centre (BC CDC), British Columbia Ecological Reports Catalogue (EcoCat), BC Environmental Information Resources System for Biodiversity (EIRS BD) and the Global Biodiversity Information Framework (GBIF). Queries searched for information related to the Project Footprint and the surrounding area. BC CDC results specifically provided listings of at-risk species listed under the provincial Wildlife Act and the federal Species at Risk Act (SARA).

Publicly available datasets from municipal, provincial, and federal sources were reviewed for presence of known environmental values. Data queries included, but were not limited to:

- Wildlife species inventory (WSI) incidental, study and telemetry observations;
- Masked and unmasked sensitive species;
- Critical habitat for species at risk; and,
- Fish observations and distribution.

Analysis of species at risk looked at documented occurrences and ecosystem-based occurrences. Documented occurrences were determined through queries of available datasets, with results spatially limited to the assessment area and included:

- Wildlife Species Inventory, Incidental Observations;
- Wildlife Species Inventory, Survey Observations;
- Wildlife Species Inventory, Telemetry Observations; and,
- B.C. Conservation Data Centre Unmasked Spatial Data.

Potential for species at risk occurrences within the assessment area were determined by querying the B.C. Conservation Data Center's Species and Ecosystem Explorer. Results were limited by the following variables:

- restricted to red, blue, and legally designated species;

- occurring within the Fraser Valley Regional District;
- limited to the Coastal Western Hemlock, Dry Maritime, Eastern variant (CWHdm3) Biogeoclimatic Zones; and,
- occurring within:
 - Forest
 - Mixed Forest (deciduous/coniferous mix)
 - Deciduous
 - Lakes
 - Pond/Open Water
 - Wetland
 - Marsh
 - Riparian
 - Riparian Shrub
 - Riparian Forest
 - Riparian Herbaceous

The resulting list was cross-referenced with known occurrences within the wildlife species inventory and BC CDC unmasked occurrence spatial datasets.

3.2 Field Assessment

A field assessment was conducted within the Project Footprint and surrounding area on July 16, 2026. The assessment included a vegetation survey, raptor nest searches, species at risk habitat assessments, and aquatic and terrestrial habitat descriptions.

4 Environmental Assessment Findings

4.1 Field Assessment

4.1.1 Terrestrial Habitat

The terrestrial habitat within the Project Footprint consists of recreational parkland surrounded by a deciduous riparian forest dominated by black cottonwood (*Populus trichocarpa*) and bigleaf maple (*Acer macrophyllum*). The dense understory is composed primarily of red-osier dogwood (*Cornus sericea*), thimbleberry (*Rubus parviflorus*), common snowberry (*Symphoricarpos albus*), and red-flowering currant (*Ribes sanguineum*). Western red cedar (*Thuja plicata*) becomes increasingly common farther inland from the riparian corridor.

Much of the Project Footprint consists of disturbed parkland, including a small maintained lawn adjacent to the parking area and along the gravel trail leading to the floating boardwalk. Trail areas are heavily compacted as a result of recreational use. However, dense understory vegetation and fencing restrict recreational access to designated areas, and little evidence of disturbance was observed beyond the established trail network.

Small patches of terrestrial vegetation are also present on the two islands that support the floating boardwalk. Vegetation on the islands is similar to that observed within the adjacent riparian forest and wetland margins.



Figure 5. Manicured lawn along the path by the dam. Riparian vegetation and forest are present around the path.



Figure 6. Cottonwood interspersed with bigleaf maple dominates the canopy around the swamp.



Figure 7. Terrestrial vegetation is present on the islands supporting the floating boardwalk.



Figure 8. Manicured lawn near the parking lot. Cottonwood and bigleaf maple are present around the picnic area.

4.1.2 Aquatic Habitat

Cheam Lake consists of open-water and wetland habitats surrounded by extensive marsh vegetation. A small dam located at the outlet regulates water levels within the wetland, resulting in seasonal fluctuations in water depth. The Project Footprint is located within the shallow wetland habitat at the northern end of the lake, adjacent to the dam. Wetland and riparian vegetation observed within the Project Footprint included native species such as cattail (*Typha* spp.), mixed grasses, bracken fern (*Pteridium aquilinum*), and yellow pond lily (*Nuphar polysepala*). Invasive plant species observed within the Project Footprint included yellow iris (*Iris pseudacorus*), Himalayan blackberry (*Rubus armeniacus*), and purple loosestrife (*Lythrum salicaria*). The wetland substrate consists primarily of deep organic mud and supports dense emergent and aquatic vegetation. Numerous floating logs and woody debris were observed throughout the Project Footprint.

Water from the wetland flows into Bridal Creek downstream of the dam. The section of Bridal Creek adjacent to the dam is bordered by dense riparian vegetation, including sword fern (*Polystichum munitum*), Himalayan blackberry (*Rubus armeniacus*), and thimbleberry (*Rubus parviflorus*), beneath a canopy dominated by black cottonwood (*Populus trichocarpa*) and bigleaf maple (*Acer macrophyllum*).



Figure 9. Aquatic vegetation present along the boardwalk.

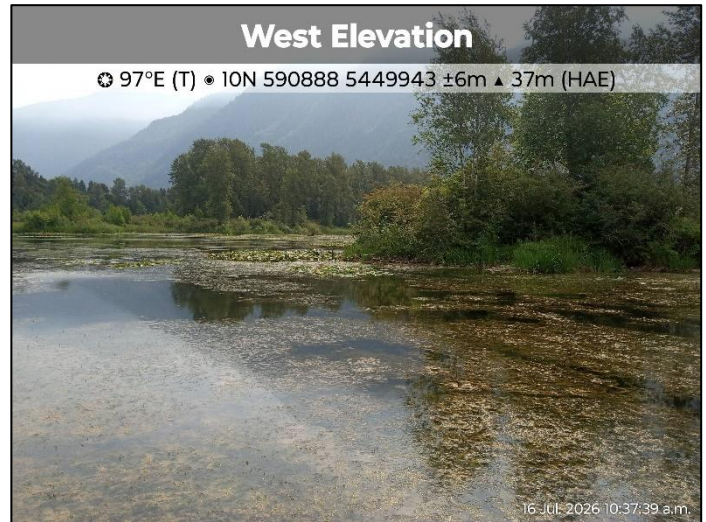


Figure 10. Aquatic vegetation present on the Project Footprint. The boardwalk terminates at the island to the right.

4.1.3 Summary of Vegetation

A list of the dominant observed plant species is provided in the table below.

Table 1. Plants observed during field assessments.

Scientific Name	Common Name	Type	BC List
-	Mixed grasses	Herb	-
<i>Acer macrophyllum</i>	Bigleaf maple	Tree	Y
<i>Alnus rubra</i>	Red alder	Tree	Y
<i>Amelanchier alnifolia</i>	Saskatoon berry	Shrub	Y
<i>Cornus sericea</i>	Red-osier dogwood	Shrub	Y
<i>Corylus cornuta</i> ssp. <i>cornuta</i>	Beaked hazelnut	Tree	-
<i>Crataegus douglasii</i>	Black hawthorn	Tree	Y
<i>Equisetum arvense</i>	Common horsetail	Herb	Y
<i>Geranium robertianum</i>	Herb Robert	Herb	Ex
<i>Iris pseudacorus</i>	Yellow iris	Herb	Ex
<i>Juncus</i> ssp.	Rush spp.	Herb	-
<i>Lythrum salicaria</i>	Purple loosestrife	Herb	Ex
<i>Myriophyllum</i> spp.	Milfoil	Herb	-
<i>Nuphar polysepala</i>	Yellow pond lily	Herb	Y

Scientific Name	Common Name	Type	BC List
<i>Phalaris arundinacea</i> var. <i>arundinacea</i>	Reed canary grass	Herb	Ex
<i>Polystichum munitum</i>	Western sword fern	Herb	Y
<i>Populus trichocarpa</i>	Black cottonwood	Tree	Y
<i>Pteridium aquilinum</i>	Bracken fern	Herb	Y
<i>Ribes sanguineum</i> var. <i>sanguineum</i>	Red-flowering currant	Shrub	Y
<i>Rubus armeniacus</i>	Himalayan blackberry	Shrub	Ex
<i>Rubus parviflorus</i>	Thimbleberry	Shrub	Y
<i>Salix sitchensis</i>	Sitka willow	Tree	B
<i>Spiraea douglasii</i>	Hardhack	Shrub	Y
<i>Symphoricarpos albus</i>	Snowberry	Shrub	Y
<i>Tanacetum vulgare</i>	Common tansy	Herb	Ex
<i>Thuja plicata</i>	Western red cedar	Tree	Y
<i>Typha</i> spp.	Cattail	Herb	-

4.2 Wildlife

4.2.1 Mammals

Field observations did not identify the presence of any mammal species during the assessment. However, high-quality mammal habitat is available throughout the park. Dense forest habitat with limited off-trail access occurs directly adjacent to the Project Footprint, providing suitable areas for foraging, cover, and movement. As the park is closed to visitors at dusk, mammal use of the Project Footprint may increase during periods of reduced recreational disturbance.

4.2.2 Reptiles and Amphibians

High-quality breeding, overwintering, and general habitat for reptiles and amphibians is available throughout the park. Available habitat features include wetlands, open-water habitats, creeks, isolated pocket wetlands, deep organic substrates within the wetland, and extensive forest cover. During the site assessment, three amphibian species and one reptile species were observed.

A red-eared slider (*Trachemys scripta elegans*) was observed basking on a log near the floating boardwalk. A western painted turtle (*Chrysemys picta bellii*) was observed basking along the shoreline of the second island supporting the boardwalk structure. A green frog (*Lithobates clamitans*) was observed on a lily pad adjacent to the footbridge. Two common garter snakes (*Thamnophis sirtalis*) were observed along the trail near the dam.

4.2.3 Breeding Birds

The assessment was undertaken during the typical breeding bird window (March 1 to August 31). Nesting activity was observed within a bird box located above the picnic table near the parking lot (Figure 10). Numerous bird species were observed throughout the site exhibiting foraging, calling, and singing behaviours. Species observed

included spotted towhee, black-capped chickadee, cedar waxwing, northern rough-winged swallow, great blue heron, Swainson's thrush, and warbling vireo.

4.2.4 Raptors

Field assessments did not identify any raptor nests or large natural cavities suitable for nesting within the Project Footprint. Raptors may use the site for foraging, and the presence of mature trees surrounding the Project Footprint provides potential nesting habitat for raptor species.

4.2.5 Invertebrates

No snails were observed during field assessments. Numerous dragonflies and damselflies were observed throughout the Project Footprint. Although autumn meadowhawk is known to occur near the Project Footprint, this species was not observed during the assessment.

4.3 Species and Ecosystems at Risk

4.3.1 Database Results

It was determined that forty (40) listed species have a broad potential to occur in or around the Project Footprint. Broad queries of the BC Conservation Data Centre through the BC Species and Ecosystems Explorer and incidental observations yielded 40 species with the potential to occur within similar habitats as that present within and adjacent to the project footprint, of these, twenty-seven (27) species are legally protected under the federal *Species at Risk Act*. The query used when searching for potential species limits potential species to general habitat types, Biogeoclimatic Zone and User Defined Location. Many at-risk species have limited data for their dispersal or habitat needs, and for many species, known occurrences are rare on the landscape.

4.3.2 Potential for Occurrence

An initial screening was undertaken to evaluate the broad habitat requirements for each of the identified species at risk with potential to occur within the assessment area and excluded species that are recorded as extirpated, where habitat is not available (e.g., marine habitats), where the habitat is not within established ranges, or where habitat requirements are not compatible (Table 3). All habitat requirements were referenced from the respective Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status reports. From the initial seventy-five (75) species, 35 were excluded, resulting in forty (40) at risk species, designated under SARA or the Provincial *Wildlife Act*, with potential to occur within the assessment area.

Using the broad list of at-risk species with potential to occur within the Project Footprint produced from the BC CDC query, a field assessment was conducted to further refine the list and determine the probability of occurrence (Table 3). Whether a species is likely to occur in a specific location within the property is based on habitat suitability and availability. Using the available data for each species' known occurrences and specific habitat requirements for breeding, foraging, and dispersing, a rating for each species' potential to occur within the Project Footprint is determined based largely on field observations. Potential to occur is ranked as either Probable, Possible or Unlikely, and are defined as:

Confirmed The species has been confirmed to be present within the Project Footprint by a QEP during project-specific field surveys.

- Probable** Habitat exists within the Project Footprint that is suitable for either foraging, breeding or dispersal for the species. The species is known to exist within the neighbouring region.
- Possible** The species makes occasional use of the habitat type within the Project Footprint or there is quality habitat for the species adjacent to the Project Footprint. Data may be limited for this species.
- Unlikely** Habitat used by the species does not exist within the Project Footprint and/or data is very limited for the species and/or the species is considered extirpated.

Table 2. BC CDC query results for species at risk with potential to occur within the Project Footprint. SARA status consists of the SARA Schedule followed by the SARA Status code and may be followed by the date that the rank was last reviewed. E=Endangered, T=Threatened, SC=Special Concern.

Scientific Name	Common Name	BC	SARA	Potential to Occur
<i>Accipiter atricapillus laingi</i>	American Goshawk, laingi subspecies	Red	1-T	Possible Frequent users of riparian forest habitat. May disperse up to 90-km during food shortages. Known historical nest sites within 20 km of the Project Footprint.
<i>Acipenser transmontanus</i> pop 4	White Sturgeon (Lower Fraser River Population)	Red	-	Unlikely (juveniles); Unlikely (all other life stages) Spawn in sidechannels with substrates of gravel, cobble and sand. Juveniles are often found in the lower reaches of tributaries, large backwaters, sidechannels and sloughs. Found in Fraser River. White sturgeon is often unsuccessful at navigating fish ladders, so dam still poses a significant fish passage barrier.
<i>Aechmophorus occidentalis</i>	Western Grebe	Red	1-SC	Unlikely No known colonies near the Project Footprint. May use open lakes/ponds as migratory stopover habitat during spring and fall migration.
<i>Allogona townsendiana</i>	Oregon Forestsnail	Red	1-E	Probable Known to occur within the park. Critical habitat within the project area and high-quality habitat throughout. Hibernates within leaf litter. Mating and nesting strongly correlated with stinging nettle patches. Mixed wood and deciduous forest, particularly associated with bigleaf maple. Usually prefer dense cover of low herbaceous vegetation.
<i>Anaxyrus boreas</i>	Western Toad	Yellow	1-SC	Possible Frequent users of riparian areas and all forest types. Suitable breeding habitat consists of lotic habitats with little to no flow, such as shallow zones of lakes, pools, wetlands, bogs, and roadside ditches.
<i>Aplodontia rufa</i>	Mountain Beaver	Blue	1-SC	Unlikely Associated with coniferous, mixed and red alder forests on moist slopes or hillsides near small streams. No recorded sightings near the Project Footprint.
<i>Argia emma</i>	Emma's Dancer	Blue	-	Unlikely Habitat includes creeks and larvae that occur in debris among plant stems in creek pools and under rocks in riffles.
<i>Ardea herodias fannini</i>	Great Blue Heron, fannini subspecies	Blue	1- SC	Probable

Scientific Name	Common Name	BC	SARA	Potential to Occur
				Foraging habitat includes streams, ditches, marshes fields, and meadows. May utilize watercourses adjacent to the site and riparian areas within the site.
<i>Ascaphus truei</i>	Coastal Tailed Frog	Yellow	1-SC	Unlikely Typically found in older forests. Prefer clear, cold swift-moving mountain streams with coarse substrates.
<i>Asio flammeus</i>	Short-eared Owl	Blue	1- SC	Unlikely Prefers open habitats, including grasslands, marshes, and fields.
<i>Botaurus lentiginosus</i>	American Bittern	Blue	-	Unlikely Forages and breeds in freshwater lakes and marshes. Project Footprint at edge of range.
<i>Brotherella roellii</i>	Roell's brotherella	Blue	1-E	Possible Found in mixed forests at low elevations along valley margins, and swampy floodplains. Prefer bigleaf maple and red alder.
<i>Butorides virescens</i>	Green Heron	Blue	-	Unlikely Foraging habitat includes small, freshwater ponds and streambanks with thick surrounding vegetation. Project Footprint is outside of their summer breeding range.
<i>Carychium occidentale</i>	Western Thorn	Blue	-	Possible Prefers perpetually moist, rich deciduous litter habitats. Little is known about its range but has been found in bigleaf maple dominated forests as far south as the Chilliwack River.
<i>Charina bottae</i>	Rubber Boa	Y	1-SC	Unlikely Can occasionally be found in riparian corridors in deciduous and evergreen forests. Associated with rock outcrops, rock piles, and rock bluff.
<i>Chordeiles minor</i>	Common Nighthawk	Blue	1-SC	Unlikely Prefer open forests and grasslands for foraging and nesting.
<i>Chrysemys picta</i> pop. 1	Painted Turtle - Pacific Coast Population	Red	1-T	Confirmed Prefers shallow, slow-moving water with emergent and floating vegetation and organic substrate. Document presence within the Project Footprint.
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	Yellow	1-SC	Unlikely Travels and forages in flocks. Commonly forage in second growth, mixed forests and use broadleaved trees for nesting and foraging. Occasionally known to forage in parks.
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Yellow	1-SC	Possible Prefer coniferous forests but occasional uses mixed forests. Sighting within 2km of Project Footprint.
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	Blue	-	Probable Preferred foraging habitat includes coniferous and deciduous forests and forest edges, riparian areas, and open woodland.

Scientific Name	Common Name	BC	SARA	Potential to Occur
<i>Cypseloides niger</i>	Black Swift	B	1-E	Unlikely Airborne at high altitudes for most of their lives. Outside of known breeding range. May forage over marshes.
<i>Dicamptodon tenebrosus</i>	Coastal Giant Salamander	Blue	1-T	Possible Project Footprint is within Critical Habitat. Prefer humid forests near clear, cool or cold, well-oxygenated streams.
<i>Falco peregrinus anatum</i>	Peregrine Falcon, anatum subspecies	Red	-	Unlikely Typically nests on rock cliffs above river valleys or along the coast. Prefer large, open water bodies for foraging.
<i>Hirundo rustica</i>	Barn Swallow	Yellow	1-T	Possible Occasional users of riparian and mixed forests. Prefers open habitats, frequently near water, for foraging. Nests in barns or other buildings, in caves, and in cliff crevices. May use structures within the park.
<i>Larus californicus</i>	California Gull	R	-	Unlikely Outside of known breeding range. May use open wetlands for foraging during migration.
<i>Lasiurus cinereus</i>	Hoary Bat	Blue	-	Possible Prefer mixed forests with riparian corridors and open space for foraging. Roost in large trees. May migrate through the Project Footprint in spring and fall
<i>Megascops kennicottii kennicottii</i>	Western Screech-Owl, kennicottii subspecies	Blue	1-T	Possible Found in a variety of forest and woodland habitats, especially riparian habitats. Require large trees with suitable cavities for nesting and roosting.
<i>Myotis lucifugus</i>	Little Brown Myotis	Blue	1-E	Possible Often forages over water and along the margins of lakes and streams. Use a variety of forest types, including mixed.
<i>Octogomphus specularis</i>	Grappletail	Blue	-	Unlikely Occur in the lower Fraser Valley along wooded streams.
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	Blue	1-SC	Probable Found in a variety of coniferous and mixed forest types. May also forage in suburban parks.
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Blue	1-SC	Unlikely Occasional use of wetlands during spring and fall migration.
<i>Rana aurora</i>	Northern Red-legged Frog	Blue	1-SC	Probable Found in moist, lower-elevation forests with nearby permanent waters, including stream pools, marshes, and ponds. Species recorded 1 km away down a stream connected to the Project Footprint.
<i>Rana pretiosa</i>	Oregon Spotted Frog	Red	1-E	Possible Typically associated with wetlands or slow-moving streams with abundant emergent vegetation.

Scientific Name	Common Name	BC	SARA	Potential to Occur
<i>Scytinium polycarpum</i>	Peacock Vinyl	Y	1-SC	Possible Found in low-elevations on deciduous trees, particularly red alder and bigleaf maple.
<i>Sorex bendirii</i>	Pacific Water Shrew	Red	1-E	Probable Obligate users of riparian areas, with a preference for mature wet coniferous forests. Requires dense understorey vegetation with abundant downed wood. Critical habitat identified within the Project Footprint. Species recorded within the park.
<i>Sorex rohweri</i>	Olympic Shrew	Red	-	Unlikely Frequently associated with riparian and mature forests. Limited data available.
<i>Sorex trowbridgii</i>	Trowbridge's Shrew	Blue	-	Possible Found in mature forests with abundant ground litter, forested canyons and swampy woods. Frequent use of riparian areas.
<i>Strix occidentalis</i>	Spotted Owl	Red	1-E	Unlikely Generally found in old growth stands. Forage in coniferous forests with large overstory trees.
<i>Sympetrum vicinum</i>	Autumn Meadowhawk	Blue	-	Probable Found in permanent ponds and lakes, in or near woodland. Records of species within the Project Footprint.
<i>Tyto alba</i>	Barn Owl	Blue	1-T	Possible Forages in open spaces, including grassy fields and marshlands. Occasional use of riparian and forested habitat.

Table 3. Excluded BC CDC query results for species at risk with potential to occur within the Project Footprint.

Scientific Name	Common Name	BC List	SARA	Justification for Exclusion
AVIFAUNA				
<i>Ammospiza nelsoni</i>	Nelson's Sparrow	R	-	Outside of known range for the species.
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	B	1-T	Outside of known breeding range for the species.
<i>Buteo lagopus</i>	Rough-legged Hawk	B	-	Outside of known breeding range for the species.
<i>Cardellina canadensis</i>	Canada warbler	B	1-T	Outside of known breeding range for the species.
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	R	-	Outside of known breeding range for the species.
<i>Cygnus columbianus</i>	Tundra swan	B	-	Outside of known breeding range for the species.
<i>Euphagus carolinus</i>	Rusty blackbird	B	1-SC	Outside of known range for the species.
<i>Falco rusticolus</i>	Gyr Falcon	B	-	Outside of known breeding range for the species.

Scientific Name	Common Name	BC List	SARA	Justification for Exclusion
<i>Icteria virens</i>	Yellow-breasted Chat	R	1-E	Outside of typical breeding range for the species.
<i>Limosa haemastica</i>	Hudsonian Godwit	R	-	Outside of typical breeding range for the species.
<i>Melanerpes lewis</i>	Lewis's Woodpecker	B	1-T	Outside of typical breeding range for the species. Prefer pine oaks forests during migration.
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	R	-	Outside of known range for the species.
<i>Pelecanus erythrorhynchos</i>	American White Pelican	R	-	Outside of known range for the species.
<i>Pluvialis dominica</i>	American Golden-Plover	B	-	Outside of known range for the species.
<i>Progne subis</i>	Purple Martin	B	-	Outside of current known range for the species.
<i>Recurvirostra americana</i>	American Avocet	B	-	Outside of typical range for the species. Rare migrant through area.
<i>Sterna forsteri</i>	Forster's Tern	R	-	Only found in two locations in BC.
<i>Tringa incana</i>	Wandering Tattler	B	-	Outside of known range for the species.
INVERTEBRATES				
<i>Argynnis zerene bremnerii</i>	Zerene Fritillary, bremnerii subspecies	R	-	Outside of known range for the species.
<i>Cryptomastix devia</i>	Puget Oregonian	R	1-XT	Extirpated.
<i>Enallagma clausum</i>	Alkali Bluet	B	-	Outside of known range for the species.
<i>Erynnis propertius</i>	Propertius Duskywing	R	-	Outside of known range for the species. Oaks not present.
<i>Macromia magnifica</i>	Western River Cruiser	B	-	Outside of known distribution for the species.
<i>Sphaerium patella</i>	Rocky Mountain Fingernailclam	R	-	Only two known historic location in BC.
<i>Tanypteryx hageni</i>	Black Petaltail	B	-	Habitat requirements not present.
MAMMALS				
<i>Lepus americanus washingtonii</i>	Snowshoe Hare, washingtonii subspecies	R	-	The assessment area occurs outside of the known range of the species.
<i>Myotis thysanodes</i>	Fringed Myotis	B	3	Outside of known range for the species.
<i>Gulo gulo luscus</i>	Wolverine	B	1-SC	Excluded. The species is associated with tundra and high-elevation habitats.
<i>Neogale frenata altifrontalis</i>	Long-tailed weasel, altifrontalis subspecies	R	-	Within historic range, but no recent records. May be extirpated.
<i>Scapanus townsendii</i>	Townsend's mole	R	1-E	The assessment area occurs outside of the known range for the species. Canadian population is restricted to a small area in the Abbotsford/Huntington region. Additionally, the species is generally found in pastures, prairies, and shrub habitats in lowlands and flood plains, which are not present in the assessment area.
<i>Ursus arctos</i>	Grizzly bear	B	1-SC	Extirpated from the Lower Mainland.

Scientific Name	Common Name	BC List	SARA	Justification for Exclusion
REPTILES				
<i>Actinemys marmorata</i>	Northwestern pond turtle	R	1-XT	Extirpated.
VASCULAR PLANTS				
<i>Pinus albicaulis</i>	whitebark pine	E	1-E	High-elevation species, present between 1950 to 2250 m, the assessment site is within elevation less than 200 m.
BRYOPHYTES				
<i>Fissidens pauperculus</i>	poor pocket moss	R	1-E	Outside of known range of the species. Only known population is in North Vancouver.
<i>Nephroma occultum</i>	cryptic paw	B	1-SC	Site does not contain habitat requirements (old-growth forest).

4.3.3 Documented and Incidental Occurrences of At-Risk Species

Spatial data for at-risk species were analysed to identify CDC and Wildlife Species Inventory (WSI) listed occurrences within three (3) kilometres of the Project Footprint. Three (3) species occurrences were identified within the Project Footprint. Eleven (11) species at risk have recorded occurrences within 3 km of the property. Potential to occur is ranked as either Probable, Possible or Unlikely and is defined in section 4.4.1.

Table 1. At-risk species with documented CDC and WSI occurrences within 3 km of the Project Footprint.

Scientific Name	Common Name	BC	SARA	Proximity to Project Footprint	Description of Occurrence
<i>Acipenser transmontanus</i> pop. 4	White Sturgeon (Lower Fraser River Population)	Red	-	1.0 km N	Detected during population assessment (2004)
<i>Allogona townsendiana</i>	Oregon Forestsnail	Red	1-E	In Project Footprint	Numerous encounters throughout the park during surveys from 1984-2022. One confirmed within Project Footprint in riparian zone east of the dam.
<i>Aplodontia rufa</i>	Mountain Beaver	Blue	1-SC	2.5 km S	Survey encounter (2003)
<i>Ardea herodias fannini</i>	Great Blue Heron	Blue	1-SC	1.3 km SW	Colony in 1994, abandoned in 1997
<i>Brotherella roellii</i>	Roell's brotherella	Blue	1-E	1.3 km SE	Collected for herbarium (1969-1991)
<i>Chrysemys picta</i> pop. 1	Painted Turtle - Pacific Coast Population	Red	1-T	In Project Footprint	Species observed during site visit
<i>Dicamptodon tenebrosus</i>	Coastal Giant Salamander	Blue	1-T	600 m SE	Presence detected by eDNA water sampling (2015)
<i>Gulo gulo</i>	Wolverine	Blue	1-SC	1 km SE	Incidental encounter (2004)
<i>Rana aurora</i>	Northern Red-legged Frog	Blue	1-E	50 m E	Survey encounter (2011)

Scientific Name	Common Name	BC	SARA	Proximity to Project Footprint	Description of Occurrence
<i>Rana pretiosa</i>	Oregon Spotted Frog	Red	1-E	In Project Footprint	Juvenile caught using a dip net (2018)
<i>Salvelinus confluentus</i>	Bull trout	Blue	1-SC	2 km N	Observed in 2010 during sturgeon monitoring
<i>Sorex bendirii</i>	Pacific Water Shrew	Red	1-E	In Project Footprint	One found on water's edge south of southwest corner of parking lot at end of trail and one dead shrew found on boardwalk (1999).
<i>Sympetrum vicinum</i>	Autumn Meadowhawk	Blue	-	-	Sightings in park from 1990-2004
<i>Ursus arctos</i>	Grizzly Bear	Blue	1-SC	1 km N	Historical record. Seen from boat (1995)

4.3.4 Critical Habitat

Critical Habitat is defined under SARA as *the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species*. For aquatic species, critical habitat is further defined to include *spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced*.

A review of published Critical Habitat polygons within 3 km of the Project Footprint identified designated or proposed Critical Habitat for six (6) species: Oregon forestsnail (*Allogona townsendiana*), coastal giant salamander (*Dicamptodon tenebrosus*), Roell's brotherella (*Brotherella roellii*), barn owl (*Tyto alba*), Pacific shrew (*Sorex bendirii*), and spotted owl (*Strix occidentalis caurina*). Of these, Pacific water shrew, coastal giant salamander, and Oregon forestsnail have Critical Habitat which overlaps with the Project Footprint.

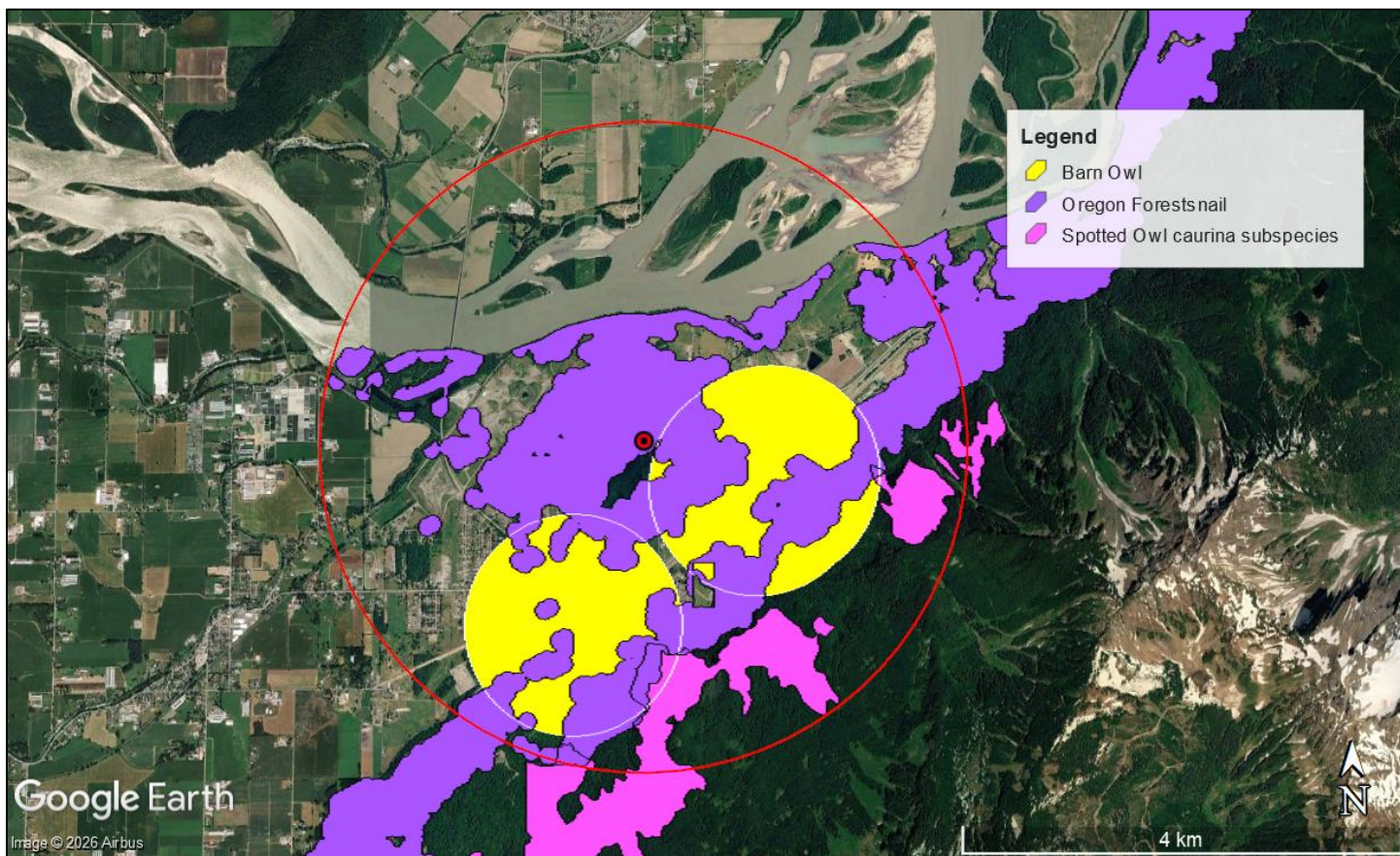


Figure 11. Critical habitat designations barn owl (yellow), Oregon forestsnail (purple), and spotted owl (pink) within three (3) km (red circle) of the Project Footprint (red dot).

4.3.4.1 *Roell's brotherella*

Roell's brotherella forms mats on rotten wood, and bases of deciduous trees in cool to moist, mixed coniferous and deciduous forest, usually at low elevations along valley margins, on slopes, stream terraces and swampy floodplains. Deciduous trees are important for the species because they allow light to the moss, especially once they drop their leaves. Bigleaf maple and red alder are the preferred hardwood habitat (COSEWIC 2025).

4.3.4.2 *Barn owl*

Barn owls require open foraging habitats, with a suitable abundance of small mammal prey and nearby protected cavity sites for nesting. Key foraging habitats include old agricultural fields, pasture, grassy roadsides, marine foreshore, and marshes, with old fields and grasslands between two and four years old. Barn owls utilize a variety of natural and artificial structures for nesting, including tree cavities (live or dead trees), chimneys, elevated platforms in barn lofts, hangars, water towers, bridges and overpasses, attics, and other suitable building structures (COSEWIC 2010).

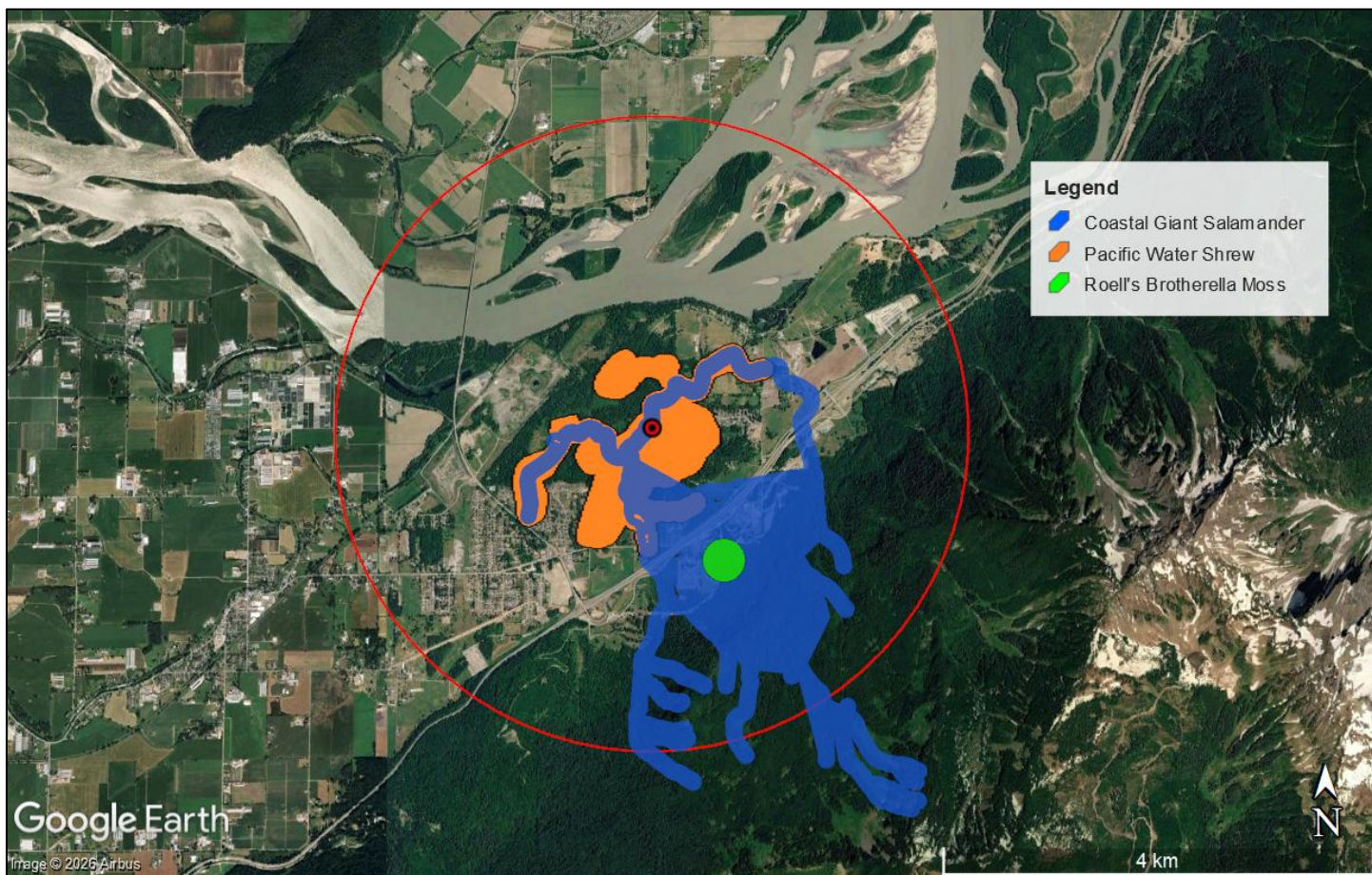


Figure 2. Critical habitat designations coastal giant salamander (blue), Pacific water shrew (orange), and Roell's brotherella (green) within three (3) km (red circle) of the Project Footprint (red dot).

4.3.4.3 *Pacific Water Shrew*

Pacific water shrew is primarily a riparian habitat specialist, often associated with dense, wet forests (e.g., western redcedar with heavy shrub cover and downed wood). It is also found in marshes, forest edges, or stands of vegetation adjacent to water (usually streams or springs). It is often found in areas with downed logs and sometimes in grassy habitats bordering ditches or sloughs. Pacific water shrew are a semi-aquatic shrew that can swim and dive under water. It appears to prefer gentle streams with low gradient banks, woody debris, and overhanging vegetation. It is usually found within 60 m of a watercourse but has been found up to 1 km away (COSEWIC, 2006).

4.3.4.4 *Oregon Forestsnail*

Oregon forestsnail is associated with low-elevation deciduous and mixed broadleaf forests, particularly those dominated by bigleaf maple. The species prefers habitats with a complex vegetation structure, dense herbaceous understory, deep leaf litter, and consistently moist conditions. Suitable habitat commonly occurs within riparian areas, ravines, gullies, forest edges, and other low-lying areas associated with permanent or seasonal watercourses. Mating and nesting habitat is strongly associated with dense patches of stinging nettle, while deep leaf litter provides important overwintering habitat (COSEWIC 2013).

4.3.4.5 Coastal Giant Salamander

Coastal giant salamanders occur in a variety of aquatic habitats, ranging from small seepages and streams to lakes. Larvae and paedomorphic adults typically inhabit clear, cold, well-oxygenated streams, while metamorphosed adults occupy adjacent moist forest habitats where they shelter beneath coarse woody debris and rocks (COSEWIC 2014).

4.3.4.6 Western Painted Turtle - Pacific Coast Population

Western painted turtles occupy slow-moving or stagnant freshwater habitats, including ponds, lakes, marshes, river channels, roadside ditches, and slow-moving streams. Suitable habitat typically contains emergent or floating vegetation, large woody debris, and soft substrates such as mud, silt, or sand. Terrestrial habitats used for nesting occur within 200 m of water on south-facing slopes with loose, well-drained soils (COSEWIC, 2016).

4.3.5 Evaluation of the Likelihood of Occurrence and Potential for Interaction

Following the initial screening of identified species at risk, the resulting list of twelve (12) species was reviewed in detail to assess species-specific habitat requirements, evaluate habitat suitability within the Project Footprint, and determine the likelihood of species occurrence and potential interactions with the proposed works.

This evaluation determined that the Project Footprint provides moderate to high suitability habitat for Oregon forestsnail, great blue heron, Roell's brotherella, western painted turtle, northern red-legged frog, Oregon spotted frog, Pacific water shrew, and autumn meadowhawk.

Of these species, western painted turtle and great blue heron were confirmed to occur within the Project Footprint during field surveys. Oregon forestsnail, western painted turtle, northern red-legged frog, Oregon spotted frog, Pacific water shrew, and autumn meadowhawk have historically been recorded within or directly adjacent to the Project Footprint; however, no individuals or direct evidence of occurrence were documented during the assessment. Roell's brotherella was considered to potentially occur within the Project Footprint based on the presence of numerous mature bigleaf maple trees along the boardwalk and trail. Coastal giant salamander was considered to have moderate habitat suitability; however, the species is more likely to occur in habitats associated with Bridal Creek, reducing the likelihood of occurrence within the Project Footprint.

Scientific Name	Common Name	BC List	COSEWIC	SARA	Critical Habitat	Critical Habitat Status	Summary of Range and Habitat Requirements	Habitat Suitability	Likelihood of Occurrence within the Project Area	Likelihood of Project Interaction
<i>Acipenser transmontanus</i> pop. 4	White sturgeon	R	T	-	No	N/A	<u>Range:</u> The Lower Fraser River population is restricted to the lower Fraser River, extending from the Fraser Delta upstream to Hells Gate. <u>Habitat:</u> The species occupies large rivers with deep pools, side channels, and sloughs. Juveniles prefer shallow, low-velocity habitats with sandy or silty substrates, while adults typically occupy deeper pools with moderate currents. Spawning occurs over coarse cobble or boulder substrates in fast-flowing river sections.	Low (Adults) – Suitable habitat is absent. The project area lacks deep, cool, high-velocity water and coarse spawning substrates. Low (Juveniles) – Limited shallow, low-velocity habitat with deep silty substrate is present and may provide suitable rearing habitat. Dam presents a significant fish passage barrier.	Low – Cheam Wetlands are isolated from the Fraser River by a water control structure (dam). Although fish passage is provided by a fish ladder, white sturgeon is not known to effectively utilize conventional fish ladders,	Unlikely – The species is unlikely to occur within the Project Footprint due to the limited habitat suitability and restricted access created by the water control structure.
<i>Allogona townsendiana</i>	Oregon forestsnail	R	E	1-E	Yes	Proposed	<u>Range:</u> This species is restricted to the lower Fraser Valley of British Columbia. <u>Habitat:</u> The species is closely associated with low-elevation (< 400 m) deciduous and mixed-wood forests, comprised of bigleaf maple, black cottonwood and scattered western redcedar. The species is commonly found in habitats with dense understory vegetation. The species appears to require a well-established leaf litter layer with ample coarse woody debris for shelter and moisture retention. Strong association with stinging nettle patches.	Moderate – The Project Area contains mixed forest, with bigleaf maple present along the wetland margin. Field assessments did not identify stinging nettle; a plant commonly associated with the species. The dense shrub and herbaceous layers and deep leaf litter provide suitable habitat features.	Potential – The proposed critical habitat polygon overlaps the Project Footprint. Although stinging nettle was not observed during field assessments, other suitable habitat features are present that could support the species.	Moderate – Proposed critical habitat and suitable habitat are present within the Project Footprint. The species has been recorded within the Project Footprint. Trimming of riparian vegetation may result in disturbance.
<i>Apodontia rufa</i>	Mountain beaver	B	SC	1-SC	No	N/A	<u>Range:</u> In BC, the species occurs in the southwestern mainland, including the Lower Fraser Valley, eastern Fraser Valley, and adjacent Cascade foothills. <u>Habitat:</u> The species inhabits moist forests with dense understory vegetation and deep, well-drained soils suitable for burrowing. It is commonly associated with riparian areas, young coniferous forests, and regenerating forest stands with abundant herbaceous vegetation. Dens are typically constructed in damp ravines and shaded hillsides along stream banks.	Low – Preferred habitat is only partially present. The surrounding forest consists of mixed forest with a dense understory, damp ravines and stream banks. Coniferous forest is from the Project Footprint.	Low – Suitable habitat is limited to the forested areas surrounding the Project Footprint and adjacent stream corridors. The species could occur in these areas but is unlikely to occupy the Project Footprint.	Unlikely – The Project Footprint does not overlap preferred denning habitat or stream banks.
<i>Ardea herodias fannini</i>	Great blue heron	B	-	1-SC	No	N/A	<u>Range:</u> The species is distributed throughout the Pacific Coast, from Alaska south to Puget Sound. <u>Habitat:</u> Foraging habitat associated with coastal and estuarine environments, including tidal mudflats, riverbanks and lakeshores, freshwater and saltwater marshes, eelgrass beds, and agricultural fields. Seasonally, habitat use, and foraging can occur in grasslands, estuarine and riverine marshes, coastal fields and marshes become critical when aquatic prey is less available. The species are colonial nesters, with colonies range from small (<25 nests) to large (>100 nests). Colonies are often established in woodlands near water and foraging areas, and can be reused for decades, but colonies are dynamic and shift when disturbed. Both contiguous forest stands, and fragmented patches are used. The species typically nests in colonies in tall Sitka spruce, western red cedar, western hemlock, pine, red alder, Douglas-fir, and black cottonwood.	Moderate – Potential nesting trees are present within the surrounding forest. However, no active nests or evidence of nesting were observed during field assessments. The shallow open-water wetland provides suitable foraging habitat.	Probable – The species is expected to use the surrounding area primarily for foraging within the shallow open-water wetland. Foraging was seen during field assessments. Suitable nesting habitat is limited, and no evidence of nesting was observed during field assessments.	Low – Project activities are not expected to affect nesting habitat. Temporary disturbance to foraging habitat may occur during construction. These effects are expected to be localized, short-term, and negligible due to the small Project Footprint and the continued availability of foraging habitat within the wetland.

Scientific Name	Common Name	BC List	COSEWIC	SARA	Critical Habitat	Critical Habitat Status	Summary of Range and Habitat Requirements	Habitat Suitability	Likelihood of Occurrence within the Project Area	Likelihood of Project Interaction
<i>Brotherella roellii</i>	Roell's brotherella	B	E	1-E	No	N/A	<u>Range:</u> In BC, the species occurs at low elevations (<100 m) within the Coastal Western Hemlock Biogeoclimatic Zone. <u>Habitat:</u> The species is associated with cool, humid mixed deciduous and coniferous second-growth forests, particularly stream terraces, swampy floodplains, and occasionally within creek ravines. It typically grows on the trunks of deciduous trees, including red alder, bigleaf maple, Pacific dogwood, and birch, in moist, shaded environments.	Moderate – The moist mixed forest with abundant bigleaf maple provides suitable habitat. Mapped critical habitat does not overlap the Project Footprint.	Potential – Bigleaf maple is present within the Project Footprint. Only limited downed woody debris was observed during field assessments.	Low – No tree removal is anticipated, and only limited displacement of coarse woody debris is expected. As a result, project interactions with the species are expected to be minimal.
<i>Chrysemys picta pop. 1</i>	Western painted turtle, pacific population	R	T	1-T	No	N/A	<u>Range:</u> The pacific coast population of the species occurs within the Lower Fraser Valley from Chilliwack to the coast. <u>Habitat:</u> Aquatic habitats are described as shallow ponds, lakes, oxbows, marshes, and slow-moving streams or river backwaters, with a preference towards sites with muddy or sandy substrates, emergent aquatic vegetation and floating logs, cattail mats, and open banks for basking. Terrestrial habitats used for nesting occur within 200 m of water on south-facing slopes with loose, well-drained soils (sand, gravel, or loam) and minimal vegetation cover to maximize solar exposure.	High – The shallow open-water wetland provides suitable aquatic habitat for foraging, basking, and overwintering. Adjacent terrestrial habitat has the potential to support nesting.	Confirmed – The species was observed within the wetland during field assessments.	Moderate – Project interactions may include temporary noise and visual disturbance, as well as the temporary displacement or relocation of basking structures during boardwalk replacement. These effects are expected to be localized, short-term, and minimized through implementation of mitigation measures.
<i>Dicamptodon tenebrosus</i>	Coastal giant salamander	B	T	T	Yes	Final	<u>Range:</u> This species is restricted to the Chilliwack River Valley in Canada. <u>Habitat:</u> Can be found in a variety of lotic environments from small seepages, large rivers, lakes and ponds, often at mid elevations. Adults inhabit cool clear streams and moist terrestrial habitat, often within 10 m of aquatic habitat. They breed mostly in mountain streams. Juveniles can be found in mountain ponds, lakes, and sub-benthic habitat.	Moderate – Habitat along Bridal Creek provides suitable habitat for adult coastal giant salamanders. Critical habitat is present within the Project Footprint. However, the species is more commonly associated with higher-elevation streams.	Low – Breeding habitat is limited to Bridal Creek, as the species typically breeds in cool, clear streams. The water control structure between Bridal Creek and Cheam Wetlands limits movement into the wetland, making occurrence within the Project Footprint unlikely.	Low – Preferred habitat is limited to Bridal Creek, outside of the Project Footprint.
<i>Rana aurora</i>	Northern red-legged frog	B	SC	1-SC	No	N/A	<u>Range:</u> The species is widely distributed throughout southwestern BC, west of the Coast Mountains, generally at elevations below 500 m. <u>Habitat:</u> The species occupies permanent and seasonal wetlands, with breeding occurring in ponds, marshes, ditches, springs, potholes, lake margins, and slow-moving portions of rivers and streams. Terrestrial habitat includes moist upland forests with a complex understory, abundant coarse woody debris, and dense ground cover such as sword fern. Although the species occupies a wide range of forest ages and structures, it is most abundant in older moist forests and is also commonly found in second-growth stands.	High – The shallow open-water pond provides permanent aquatic habitat suitable for breeding, overwintering, and tadpole development. Adjacent upland habitat consists of maturing conifer forest with abundant sword fern and coarse woody debris, particularly south of the assessment area, providing suitable terrestrial habitat.	Probable – The species has been documented within the same wetland complex as the Project Footprint. Both aquatic and adjacent terrestrial habitats within the assessment area provide high-quality habitat, making it probable that the species occurs within or adjacent to the Project Footprint.	Moderate – Individuals may be present within the water or along wetland margins during instream works. Although the Project Footprint is limited and anticipated effects are localized and short-term, direct disturbance to individuals or suitable habitat is possible. Potential effects will be minimized through implementation of mitigation measures.
<i>Rana pretiosa</i>	Oregon Spotted Frog	R	E	1-E	No	N/A	<u>Range:</u> In BC, this species is found only within the Fraser River Lowlands. Their distribution is highly restricted in this range. <u>Habitat:</u> Habitat for this species is described as seasonally warm shallow areas with emergent or floating vegetation. Breeding occurs in shallow,	High – The shallow open-water pond provides permanent aquatic habitat with abundant emergent vegetation and a deep, muddy substrate, making it suitable for breeding,	Potential – Oregon spotted frog has been documented within the same wetland complex as the Project Footprint. Both aquatic and adjacent terrestrial habitats within the assessment area provide high-quality habitat.	Moderate – Individuals may be present within the water or along wetland margins during instream works. Although the Project Footprint is limited and anticipated effects are localized and short-term, direct

Scientific Name	Common Name	BC List	COSEWIC	SARA	Critical Habitat	Critical Habitat Status	Summary of Range and Habitat Requirements	Habitat Suitability	Likelihood of Occurrence within the Project Area	Likelihood of Project Interaction
							seasonally flooded areas with gently sloping benches containing residual emergent vegetation. Overwintering occurs in seeps or low flow channels that don't freeze.	tadpole development, active-season habitat, and overwintering.	However, the species remains highly localized in British Columbia, and only a single documented occurrence is known from Cheam Wetlands.	disturbance to suitable habitat and individuals is possible. Potential effects will be minimized through implementation of mitigation measures.
<i>Salvelinus confluentus</i> pop. 28	Bull trout	B	SC	-	No	N/A	<u>Range:</u> In Canada, the Southcoast British Columbia populations inhabit the Skagit, Squamish, Ryan, Lillooet, Pitt and Lower Fraser Rivers, the Pitt, Birkenhead, Chilliwack, and Chehalis Lakes, and Phelix and Ure Creeks. <u>Habitat:</u> Bull trout require cold water temperatures and complex stream habitat, including deep pools, overhanging banks, and large woody debris. They spawn in cold, clean, low-gradient streams with stable gravel or cobble substrates. Juveniles require shallow shoreline pools, low-velocity backwaters, side channels, and intact riparian habitat.	Low – Suitable habitat, if present, would be limited to the lower reaches of Bridal Creek. Spawning habitat is unlikely due to the disturbed nature of the lower reaches of the creek.	Low – Cheam Wetlands are connected to the Fraser River via Bridal Creek, which extends over 1 km from the river to the Project Area. Bridal Creek has a highly disturbed riparian zone throughout much of its length and provides limited instream complexity, including large woody debris.	Unlikely – Bull trout are unlikely to occur within the Project Footprint due to the limited availability of suitable habitat and restricted access through Bridal Creek.
<i>Sorex bendirii</i>	Pacific water shrew	R	E	1-E	Yes	Final	<u>Range:</u> The species is found within the southwestern area of BC, including the Lower Fraser Valley, Skagit Valley and Squamish. <u>Habitat:</u> Habitat for the species is described as wet, older seral stage forests adjacent to freshwater streams, wetlands, and riparian zones. Most records are from low-elevation environments with dense canopy cover and minimal disturbance and occur on permanent stream and wetlands with downed woody debris, leaf litter, and moist soils. Nest are located in downed wood or under loose bark of trees.	High – Critical Habitat polygons overlap the Project Footprint. Intact, dense forest adjacent to wetlands and streams is present within the Project Footprint. Forested islands accessed by the boardwalk provide suitable habitat features for the species.	Probable – Critical Habitat is present within the Project Footprint, and suitable habitat features, including dense forest adjacent to wetlands, are present. However, cleared riparian vegetation around the trail and staging area reduces the availability of suitable habitat in these areas. The species has been previously recorded within the Project Footprint.	Potential – Proposed works may result in small-scale vegetation removal. If required, disturbance or removal of downed woody debris could affect habitat features.
<i>Sympetrum vicinum</i>	Autumn meadowhawk	B	-	-	-	-	<u>Range:</u> The species is found in southwestern BC, from the Lower Fraser Region to the Kootenay River. <u>Habitat:</u> Can be found in ponds, slow streams, and lakes with dense, emergent vegetation.	High – The open-water wetlands within Cheam Lake Wetlands Regional Park contain suitable habitat features, including abundant emergent vegetation.	High – The species has been recorded directly adjacent to the Project Footprint within Cheam Lake Wetlands Regional Park. Suitable habitat is present within the Project Footprint.	Potential – Proposed works may result in localized disturbance to wetland habitat, including potential impacts to emergent vegetation or aquatic margins if construction activities extend beyond the boardwalk footprint.

5 Environmental Constraints

5.1 Potential Impacts

The proposed works will involve the removal of the existing floating boardwalk segments, transportation and off-site disposal of decommissioned boardwalk materials, and delivery and installation of new boardwalk segments within the same general footprint. The proposed works are expected to represent lower risk for adverse impacts to the environment and sensitive receptors as the works are replacing existing infrastructure and is expected to occupy the same footprint as the existing boardwalk.

Potential impacts to fish, wildlife and habitat may include:

- Direct mortality
- Temporary loss of habitat
- Release of sediment-laden water or deleterious substances.

5.2 Timing Considerations

Based on the observed environmental values occurring within the assessment area, several timing considerations for several species, including Oregon forestsnail, Pacific water shrew, amphibians and reptiles, fish, and migratory birds. Table 4 outlines both the windows of least risk for fish and wildlife and the restriction windows.

Table 4. Summary of timing windows and environmental restrictions on construction.

Environmental Timing Constraints		
Focal Species	Recommended Least Risk Window	Restrictions
Oregon forestsnail	Mid-March to mid-June	No official restrictions. Works within suitable habitat should occur during the least-risk window (mid-February to mid-October).
Pacific water shrew	Mid-August to mid-February	No official restrictions. Works should occur outside of the breeding window (February to August).
Amphibians and Reptiles	March 1 to September 30	Work outside of the least-risk window increases the potential to adversely impact overwintering reptiles and amphibians because they cannot be salvaged and relocated.
Fish	July 15 to September 15	Instream works are typically required to take place within the least-risk timing window.
Migratory Birds	September 1 to February 28	Breeding bird surveys must precede works within the sensitive window for breeding birds (March 1 to August 31).

5.2.1 Pond Breeding and Overwintering Reptiles and Amphibians

Typically, where works within or immediately adjacent to habitat suitable for amphibian breeding and overwintering, instream works are to be avoided during the overwintering window (October 15 to March 15). Considering the scope of work, and the limited footprint within the aquatic habitat, it is not anticipated that the works will impact overwintering habitats.

5.2.2 Pacific Water Shrew

Instream works or works within adjacent riparian areas containing suitable Pacific water shrew habitat should be conducted outside of the breeding season, which generally occurs between February and August. Pacific water shrew is active year-round; however, dispersal from riparian habitats may be more common during the winter months, reducing the likelihood of impacts to breeding individuals and young (COSEWIC 2006).

5.2.3 Oregon Forestsnail

As the proposed works are predominantly limited to areas of existing impacts, there is a very low likelihood of interacting with, and adversely impacting Oregon forestsnail.

5.2.4 Fish and Fish Habitat

The window of least harm to fish species likely to be encountered is July 15 to September 15. Works near or within streams should take place during this window. Fish salvages by a QEP should take place prior to any instream works outside of this fish window. A QEP must be on site during all works in and near a stream.

	Jan		Feb		Mar		April		May		June		July		Aug		Sept		Oct		Nov		Dec	
Rainbow, Steelhead, Cutthroat																								
Dolly Varden, Bull trout																								
Kokanee																								
Pacific salmon																								

Figure 3. Highest (dark shaded) and lowest (un-shaded) risk periods for Lower Mainland fish species

5.2.5 Breeding Birds

Works throughout the Project Footprint have the potential to affect breeding birds and their habitat. For the Fraser Lowland Ecodistrict, the highest probability of nest initiation, resulting in potential impacts on construction schedules, is between May 15 and July 25 of any given year, but could begin as early as February for vegetation nesters and as late as mid-September for ground and vegetation nesters (Figure 12). Barn owl and raptor species have the potential to nest within 100 m of the Project Footprint and can begin nesting as early as March.

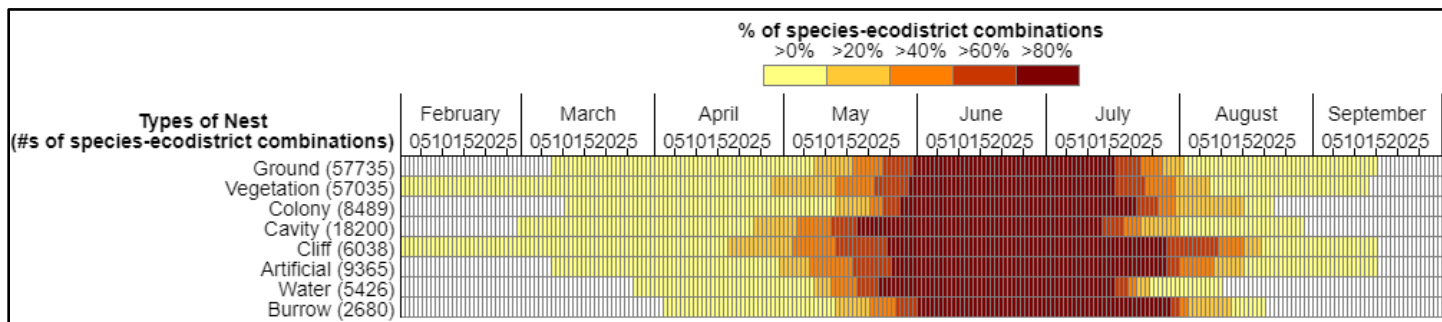


Figure 4. Breeding bird nesting calendar (probability of nest initiation) for the Fraser Lowland Ecodistrict (Rousseu and Drolet, 2015).

5.2.6 Timing Windows Summary and Recommendations

A key component of this Environmental Assessment is to address considerations for least-risk timing windows, given the presence of multiple species at risk and critical habitats within the Project Footprint. Figure 13 summarizes the least-risk timing windows for key focal species.

	Jan		Feb		Mar		April		May		June		July		Aug		Sept		Oct		Nov		Dec	
Oregon forestsnail																								
Pacific water shrew																								
Amphibians and Reptiles																								
Fish																								
Migratory Birds																								

Figure 13. Highest (shaded) and lowest (unshaded) risk period summary for conducting works.

The proposed construction schedule is anticipated to begin in October 2026. While this timing does occur outside of the typical least-risk timing windows for Oregon forestsnail, amphibians and reptiles, and fish, the scope of the proposed works represent limited impacts to aquatic and riparian habitats. Notwithstanding, implementation of additional mitigation measures, including environmental monitoring, surveys and daily sweeps for species within the work area may be required to minimize potential effects.

An alternative fall construction window is September 1 to 15, which coincides with the least-risk timing window for fish, amphibians, and reptiles, and Pacific water shrew. Although this period remains outside the least-risk window for Oregon forestsnail, the species is generally still active, allowing qualified environmental professionals to complete pre-construction surveys and salvage.

A second alternative construction window is March 15 to 31. This period falls within the least-risk timing window for Oregon forestsnail and amphibians and reptiles and occurs at the start of the migratory bird nesting period, reducing the likelihood of impacts to breeding birds. However, this timing coincides with the beginning of the Pacific water shrew breeding season and falls outside the least-risk timing window for fish. Additional mitigation measures, including fish salvage and environmental monitoring, may be required if works were undertaken during this period.

5.3 Effects on Fish and Wildlife

5.3.1 Fish and Herpetofauna

Risks to fish, amphibians, and aquatic reptiles include sediment introduction, erosion, and hydrocarbon (diesel fuel, hydraulic oil, and grease) spills. Sedimentation within the watercourse may occur during the installation and removal of site isolation measures and during the deconstruction and replacement of the floating boardwalk structures. These effects are expected to be localized to the Project Footprint and temporary in duration. Implementation of site isolation, salvage procedures, and erosion and sediment control measures is expected to minimize potential impacts.

Western painted turtles are known to occur within the Project Footprint and may utilize upland areas for nesting. Nesting habitat may include exposed, south-facing slopes with loose gravel or sandy substrates. Western painted turtle hatchlings may overwinter within nest sites in the Fraser Valley prior to emergence in spring. Hatchlings may be vulnerable to disturbance from heavy equipment, including potential crushing of individuals within nest sites and soil compaction that may restrict successful emergence.

The replacement boardwalks will be installed within the footprint of the existing structures and will not result in the permanent loss of riparian, wetland, or aquatic habitat. As a result, long-term changes to habitat availability or ecological function are not anticipated.

5.3.1.1 Direct Harm and Mortality

The proposed activities involve works below the high-water mark; therefore, direct impacts to resident salmonid and non-salmonid fish, amphibians, and reptiles may occur. Potential harm is most likely to result from stranding or crushing during instream works. Impacts associated with the proposed instream activities are expected to be limited to the Project Footprint and the duration of instream construction activities.

5.3.2 Migratory and non-Migratory Birds

Under the federal *Migratory Birds Convention Act*, and the associated Migratory Birds Regulations, the nest of 17 species of migratory birds are legally protected, whether or not they are occupied. Similarly, under the provincial Wildlife Act, the nests of eagles, peregrine falcons, gyrfalcons, osprey, herons, and burrowing owls are protected, whether or not they are occupied. Field assessments have not identified any protected nest (i.e., pileated woodpeckers, eagles, herons) occurring within the property.

Potential impacts to birds are expected to be limited to temporary noise disturbance and minor branch pruning required to facilitate site access. Should vegetation clearing or tree removal be required during the breeding bird season (March 1 to August 31), breeding bird surveys must be completed by a QEP prior to the commencement of works.

5.3.3 Mammals

Mammals associated with riparian and wetland habitats may include small mammals, such as shrews and bats, as well as larger mammals that use wetlands as a water source and adjacent riparian habitats for cover. Potential effects are expected to be limited to temporary disturbance and displacement associated with construction noise, increased human activity, and minor vegetation trimming along the existing path. As vegetation removal will be

minimal and suitable habitat will remain available adjacent to the Project Footprint, no measurable long-term effects on mammal habitat or populations are anticipated.

5.3.4 Critical Habitat

The Project Footprint occurs within designated Critical Habitat for Oregon forestsnail, Pacific water shrew, and coastal giant salamander, and is located within 3 km of designated Critical Habitat for barn owl, spotted owl, and Roell's Brotherella moss.

The proposed works are anticipated to have minimal impacts on habitat features for these species. Basking logs represent important habitat features for amphibians and reptiles within the wetland and are located directly adjacent to the existing floating boardwalk. These features may require temporary relocation or disturbance during construction activities. Minor riparian vegetation trimming may be required to facilitate the access of crews and equipment and will be replanted after the completion of the project.

6 Mitigation and Environmental Protection Measures

6.1 Best Management Practices

All instream works are to be conducted in a manner that ensures appropriate best management practices (BMPs) are implemented to minimize impacts to both aquatic and terrestrial habitats. Generally, these measures include:

- Sediment and erosion control.
- Prevention of hydrocarbon (diesel fuel, hydraulic oil, and grease) spills.
- Surface water quality.
- Invasive vegetation management.
- Habitat protection.

6.2 Environmental Monitoring

A Qualified Environmental Monitor (QEM) will be on site during all instream works and will:

- Oversee compliance with regulatory conditions and permit requirements.
- Maintain copies of all relevant documents on site during construction.
- Conduct tailboard meetings to review construction progress, the day's schedule, environmental considerations, and required BMPs.
- Monitor water quality upstream and downstream of the work area and direct work to cease if British Columbia Water Quality Guideline (BCWQG) targets or turbidity shutdown criteria are exceeded.
- Monitor issues related to contaminants, waste management, wildlife interactions, and other environmental concerns.
- Assist with spill response, as required.
- Prepare a post-construction monitoring report for submission to regulatory agencies, as required, summarizing the construction sequence, photographic documentation, monitoring results, and any contingency measures implemented where mitigation measures did not function as intended.

6.3 Fish and Wildlife

Based on the high-level review of the habitat and the footprint of the proposed works, interactions with wildlife are expected to be limited. To support the works and avoid interactions with wildlife, wildlife sweeps are to be conducted daily. Wildlife sweeps are representative of immediate searches of the proposed development area and within a 100 m radius, for important wildlife features, to identify and assess features, so that they can be avoided.

6.3.1 Breeding Birds

Suitable breeding habitat exists within the Project Footprint for numerous bird species protected under the provincial *Wildlife Act* and the federal *Migratory Birds Convention Act*. The proposed project works are not anticipated to result in significant vegetation removal; however, heavy machinery access to the Project Footprint may require travel through areas of dense vegetation, which could result in potential disturbance to nesting birds.

Project works should be scheduled outside the breeding bird window for the Fraser Lowland Ecodistrict, generally considered to occur between March 1 and August 31, with peak nesting activity typically occurring between May 1 and July 31. If project works are required during the breeding bird window, pre-construction nest surveys should be completed by a QEP to identify active nests and establish appropriate mitigation measures, as required.

If works are to be conducted between March 1 and August 30, breeding bird nest surveys are to be conducted in a manner consistent with the following methodology:

- Prior to any construction-related activity within undisturbed habitat, the surveyor(s) are to walk the entire area where works are proposed to identify birds exhibiting nesting behaviours and to locate nests within and adjacent to the right-of-way, this includes:
 - Observing visual and audible behavioural cues.
 - Inspecting suitable nesting habitats, including ground, shrubs, wetland perimeters, and trees for nests.
- A minimum of two surveys on separate days are to be conducted to identify any potential nests.
- Surveys are to be conducted at a minimum intensity of 1 ha per hour.
- Should an active nest be identified during nest surveys, a “no-work” radial buffer appropriate to the species and as determined by the QEP is to be established around the nest as described below. No work is to be conducted within the buffer until the nest has fledged.
- Surveyors are to record the following information for identified nests:
 - Species
 - Coordinates
 - Distance to the applicable Project components
 - Date and time of day
 - Representative photos

- Site description (i.e., tree or shrub species, height of nest, type of nest, direction cavity faces)
- Stage of nesting (i.e., construction stage; eggs, including number; hatchlings; almost fledged)

6.3.2 Fish

Both salmonid and non-salmonid fish species are present within the Cheam Wetlands. Project works are to be planned and implemented in a manner that minimizes disturbance to fish and aquatic habitat, with sensitive spawning habitats avoided wherever practicable. To the extent possible, the existing post anchors will be reused, therefore avoiding any disturbances to the bed of the wetland. Instream works will include both surface and in-water work. In-water works will include, as necessary, the replacement of anchoring posts, which are to be driven by hand. The surface works will involve the removal of the existing floating boardwalk, and the placement of the new floating boardwalk. The works will be undertaken within rearing and overwintering habitat, with no spawning habitats being impacted. Considering the scope of works, avoidance of impacts can be reasonably expected, without the need for salvages.

6.3.3 Amphibians and Reptiles

Suitable aquatic and terrestrial habitat are present within the Project Footprint for numerous amphibian and reptile species. Where practicable, works should be completed during the least-risk window for amphibians and reptiles, generally from March 1 to September 30. To avoid impacting any amphibians occurring within the project footprint, particularly during the transfer of the boardwalk structure from the trail approach it is recommended that an amphibian sweep be conducted immediately prior to the activity to ensure that no individuals are present within the footprint. Considering the scope of works, it is expected that any impacts can be avoided through the application of amphibian sweeps.

6.3.4 Critical Habitat

Impacts to designated Critical Habitat are to be minimized by limiting disturbance to the minimum area required to complete the proposed works. Equipment staging and material storage will occur within the existing paved parking lot, access to the site will be restricted to the designated recreational pathway, and the active work area will be kept to the minimum extent practicable.

Minor vegetation trimming may be required to facilitate crew and equipment access to the site and to provide safe working conditions for heavy equipment operating from the bank. Vegetation trimming should avoid any stinging nettle patches, as these provide suitable habitat for Oregon forestsnail. Trees, particularly bigleaf maple and red alder, should be surveyed for at-risk bryophytes prior to any limb removal. Any vegetation trimming should be limited to the minimum necessary to safely complete the proposed works.

Basking logs and other woody debris should remain in place wherever practicable. Where temporary relocation is necessary to facilitate construction, the original location and orientation of each log should be documented (e.g., photographed) prior to movement, and the logs should be returned to their original or comparable locations upon completion of the works, where practicable. Woody debris within terrestrial habitats on the islands is to be retained and should not be removed unless required for safety or construction purposes.

6.4 Instream and Above-water Works

Instream works are considered any works conducted below the typical high-water mark. For this project, instream works may include activities associated with the decommissioning of the existing floating boardwalk and the installation of the replacement floating boardwalk.

- Works should be completed above the high-water mark wherever practicable.
- Heavy equipment will not enter the wetland below the high-water mark.
- The installation and removal of temporary stabilizing posts below the high-water mark may be required during the decommissioning and installation of the floating boardwalk. Posts should be installed and removed using hand tools wherever practicable, and personnel should minimize entry into the water.
- During decommissioning of the existing boardwalk, care will be taken to prevent debris or construction materials from entering the wetland. Any materials or debris that inadvertently enter the wetland will be retrieved immediately.
- Construction materials, tools, and waste will be secured to prevent accidental loss to the wetland.
- Demolition debris will be removed from the site as it is generated and will not be stockpiled within the wetland.
- If work is temporarily suspended, the work area will be left in a stable condition, and all loose materials will be removed or secured.
- Any accidental release of sediment, debris, or deleterious substances to the wetland will be reported immediately to the Qualified Environmental Professional (QEP), and appropriate containment and cleanup measures will be implemented.

6.5 Erosion and Sediment Control

Minimal ground disturbance is anticipated as part of the proposed Project Works. Should ground disturbance occur, appropriate erosion and sediment control (ESC) measures will be implemented to prevent the release of sediment into adjacent watercourses and wetlands and to minimize potential effects on fish habitat and water quality.

Install, Inspect, and Maintain Appropriate ESC Measures

- Prior to ground disturbance works (i.e. construction of footings), ESC measures specific to the Project Footprint will be installed to prevent erosion and release of sediment. It is anticipated that ESC measures will be “field fit” and chosen in consultation with the QEP.
- Installed ESC measures will be continually maintained during the construction of the works and be monitored every two weeks or during 24-hr periods where precipitation exceeds 25 mm.
- All sediment fencing will be removed following site completion as determined by the QEP.

Minimize Erosion

- Works are to be timed to coincide with periods of low precipitation.
- Project rainfall and extreme weather shutdown guidelines will be adhered to.

Sediment Fencing

- Sediment fencing is to be installed prior to initiating ground disturbances (i.e. riparian vegetation removal).
- Sediment fencing is to be installed per manufacturers instructions.
- Wire backed sediment fencing should be utilized at areas where there is a greater risk of wind exposure to promote increased durability.

6.6 Human-Wildlife Conflict Management

During the Project, the Contractor, at minimum, should implement the following (where feasible/applicable) to reduce human-wildlife conflict:

- Assess and manage risks of food, garbage and fuel cache locations pertaining to the proximity of environmentally-sensitive features and potential human-wildlife encounters;
- Housekeeping in work and laydown areas will be conducted daily;
- Contain garbage and food in locked and sealed containers;
- Store personnel equipment appropriately to prevent the attraction of animals and environmental impact;
- Provide training to on-site staff regarding wildlife conflict management;
- With the assistance of the EM, inform personnel of any areas that are frequented by wildlife and ensure on-site personnel know to contact the EM if they observe an animal trapped or in distress;
- Implement protocols to ensure that wildlife have the right-of-way;
- Report any near miss or collisions with wildlife; and
- Remove all roadkill from roadways and the Project Footprint to prevent scavenging wildlife from being attracted to the roads.

6.7 Invasive Plant Management

Invasive plant species are known to be present within the Project Footprint in Cheam Wetlands and its associated riparian zone. Care will be taken to prevent the spread of existing invasive species to adjacent ecosystems and to avoid the introduction of new invasive plant species during construction activities.

- Prior to mobilization and demobilization, all vehicles, equipment, and tools used for clearing, grubbing, stripping, or other ground-disturbing activities are to be thoroughly cleaned of all visible soil, mud, and plant material. All machinery, equipment, and materials arriving on and departing from the Project Footprint are to be maintained in a clean condition and free of invasive plant propagules and noxious weeds.
- A site-specific procedure for the removal, handling, and disposal of invasive plant material will be implemented. All invasive plant material is to be securely bagged or otherwise contained and clearly labelled.
- All invasive plant material is to be transported and disposed of at an approved disposal facility in accordance with applicable municipal and provincial requirements.
- Disturbed areas will be restored following construction to re-establish their pre-disturbance ecological function using appropriate site stabilization and revegetation measures, where required.

6.8 Site Access and Laydown Areas

The Contractor will be responsible for maintaining all site access/egress routes and the Project Footprint.

- The Contractor will be responsible for maintaining all site access/egress routes and the Project Footprint in a safe, clean, and orderly condition throughout construction.
- Construction staging, including the storage of equipment, materials, and supplies, will occur within the existing paved parking.
- Construction activities within the active work area will be limited to those that are required to complete the boardwalk replacement. Where practicable, tasks that do not require direct access to the water or work site, including assembly of boardwalk components and preparation of materials, will be completed within the paved parking lot to minimize disturbance within the Project Footprint.
- Access to the work site will be restricted to the designated recreational pathway. Equipment and personnel will remain within established access routes and the delineated work area wherever practicable.

6.9 Air Quality Management and Dust Control

The Contractor is to implement measures to reduce undue emissions and prevent stockpiled materials from becoming airborne:

- The potential for dust generation and combustion emissions will be monitored throughout construction. Appropriate mitigation measures, including dust suppression and minimizing equipment idling, will be implemented as necessary in accordance with this Plan to reduce air quality impacts.
- Visual assessments of dust and exhaust emissions will be completed on an ongoing basis during work and / or while machinery is operating.
- Vehicle and equipment speeds will be limited within the Project Footprint to control dust mobilization.
- Implement an anti-idling policy to ensure construction vehicles and transport vehicles are shut off when not in use.
- On-road low sulphur diesel fuel will be used in all equipment capable of using such fuel.
- Diesel particulate filters will be used on all construction equipment capable of supporting their use.
- Paved areas will be cleaned routinely to prevent the accumulation and subsequent mobilization of dust.
- Weather conditions are to be monitored, and preventative actions are to be undertaken prior to the onset of dry, windy conditions.
- Adequate dust suppression equipment is to be kept on site at all times.
- Dust suppressants will be applied (i.e., water) on access roads as required, with increased frequency during periods of high traffic. Care will be taken to maintain dust suppression near sensitive areas.

6.10 Noise and Vibration

The Contractor is to implement measures to limit the impact of noise and vibrations, including:

- Environmental training for all Project Personnel will address site specific and generic construction noise issues, potentially sensitive noise receptors, relevant noise bylaws and performance criteria.
- Equipment will be kept in good working order, emphasizing lubrication, replacement of worn parts and the condition of exhaust systems. If needed, equipment will be fitted with residential-rated mufflers and/or silencers for night-time work.

- Locate noisy equipment (e.g., portable generators) away from sensitive noise receptors, wherever practical.
- Shut-off equipment that is not in use.
- Enforce speed limits to reduce vehicle noise. This will also help reduce dust mobilization.
- Install temporary noise barriers as needed. If noise barriers are necessary, they should be located as close as practical to the source.

6.11 Construction Waste Management, Handling and Storage

Construction-related waste management can have negative impacts on wildlife and personnel working at the Project site. The Contractor shall adhere to applicable legislation with respect to the handling, transportation, and/or disposal of all materials related to the Project (waste or otherwise). These regulations include (but may not be limited to):

- BC Hazardous Waste Regulation
- Spill Reporting Regulation
- Workers Compensation Board Regulation
- Transportation of Dangerous Goods Regulation

Hazardous and non-hazardous wastes anticipated to be generated during the Project include:

- General garbage (e.g., discarded food, food wrappers and cartons, paper, and other garbage generated by site personnel).
- Recyclable non-hazardous wastes, such as cardboard, wood and approved plastics.
- Non-hazardous solid wastes, such as construction debris.
- Oily rags or sorbents containing hydrocarbons.
- Wastes generated during spills and leaks, including used sorbent materials and contaminated soils.

6.11.1 General Considerations

The Contractor will implement mitigation measures to reduce the impacts of wastes generated on-site, as such, the Contractor will:

- Adhere to all legislation applicable to the handling, transportation, and/or disposal of all waste materials generated during the Project.
- Provide appropriate containers that are labelled and separated by waste type (e.g., oily rags, used sorbent pads).
- Identify all hazardous materials present, or potentially present on-site and ensure that all Workplace Hazardous Materials Information System (WHMIS) and Safety Data Sheets (SDS) are kept on-site and made available to construction personnel.
- All recyclable and compostable materials are to be sorted and stored separately from general construction wastes.
- The Contractor will place all animal attractant wastes (i.e., food scraps) in animal proof containers and will ensure that these wastes are removed on a regular basis from the site.
- All generated wastes are to be removed from the construction site in a timely manner.
- Locations for waste collection and sorting are to be identified by the Contractor and all wastes are to be stored in a manner that is secure and protected from the elements.
- Temporary sanitary facilities (i.e., portable toilets) are to be self-contained. Facilities will be maintained and emptied by a licensed waste Contractor at regular intervals for the duration of the construction phase.

All sewage will be disposed of off-site in an approved sewage disposal facility. Each portable toilet should be located on flat, stable ground.

- Records are to be maintained to indicate the volume and dates of all waste materials removed from the site and will be kept on-site.

6.11.2 Non-Hazardous Wastes

The Project is anticipated to generate non-hazardous wastes, including the decommissioned boardwalk. The Contractor will implement mitigation measures to reduce the impacts of wastes generated on-site, and will include:

- Implementation of good housekeeping to prevent and control litter and to collect and separate recyclable and compostable materials.
- Establishing designated smoking areas with receptacles suitable for extinguishing and collecting used cigarette butts.
- Routine collection and disposal or recycling of generated non-hazardous wastes is to be implemented to prevent the accumulation of wastes.
- All non-hazardous solid wastes are to be handled and disposed of in a manner consistent with applicable municipal, provincial, and federal regulations and disposed of at an authorized receiving facility. All materials will be transported in accordance with the *Transportation of Dangerous Goods Act* and the BC Hazardous Waste Regulation.

6.11.3 Hazardous Wastes

The Project may generate hazardous wastes, such as waste oils and used sorbent materials.

- Personnel handling hazardous materials are to be appropriately trained in the handling, storage, and disposal methods. Training records are to be maintained by the Contractor.
- Absorbent materials or soils contaminated with oil (greater than 3% by weight) or any quantity of gasoline must be handled and transported as hazardous waste.
- Any contaminated soils resultant from construction activities associated with the Project will be excavated and hauled off-site to an authorized treatment/disposal facility in accordance with the BC Hazardous Waste Regulation.
- All hazardous wastes are to be managed, labelled, stored, and transported in accordance with the BC Hazardous Waste Regulation, and must follow all required protocols for transportation and disposal (i.e., completion of waste manifests, use of licensed transporters, and disposal and licensed facilities).
- All hazardous materials are to be segregated from non-hazardous wastes and are to be stored and transported in a manner that prevents the mixing of incompatible materials.
- Wastes containing flammable liquids are not to be mixed with wastes containing oil.
- All containers or areas used to store hazardous wastes are to be clearly labelled as containing hazardous wastes and will be placed within appropriate secondary containment.
- Hazardous waste storage containers are to be kept closed and sealed at all times, except when being filled or emptied.
- Hazardous waste storage areas are to be inspected routinely, and a log of inspections will be maintained by the Contractor.
- Hydrocarbon products and other hazardous wastes present on the worksite are to be identified, with the appropriate WHMIS and SDS documentation made available on site.

- Hazardous wastes are to be labelled and stored in a manner that is consistent with the *Transportation of Dangerous Goods Act* and *Workers Compensation Act*.
- Waste rags and sorbents will be stored in labelled containers with self-closing lids, with the bottom of the container raised and vented.
- Hazardous wastes are to be managed in compliance with all applicable fire codes.
- Stockpiled contaminated and hazardous materials will be separated from non-contaminated materials and segregated according to the material qualify classification.
- An inventory and description of all hazardous materials, including storage and handling methods, used during the Project are to be maintained by the Contractor.
- All spills of hazardous materials are to be immediately reported to the QEP and the Owner and cleaned up.
- If materials believed to be contaminated are discovered, the QEP and the Owner must be notified immediately. If the material is stable and does not pose an immediate threat, operations should be halted until the Contractor determines the appropriate course of action for removal or neutralization of the hazardous material. If the contaminated/hazardous material poses an immediate threat and is unstable, then the spill response procedures outlined in Section 7.3 should be immediately followed to contain the material.

6.12 Fuel Storage and Handling Management

- Fuel storage and handling facilities shall be compatible with *A Field Guide to Fuel Handling, Transportation and Storage* (MWLAP, 2002).
- Locate storage, handling, fuelling and equipment maintenance and repair sites on flat, stable ground.
- Store all tanks, barrels, and containers containing hydrocarbon products within impermeable containment areas designed to contain 110% of the volume of the largest container.
- Operate storage areas so that containment systems remain effective during wet weather and winter conditions.
- Hydrocarbon storage sites, if used, shall have a written Spill Contingency Plan with required actions specified and will include the names of those to be contacted.
- Plastic containers used to carry petroleum products shall be designed for that purpose and cannot be more than five years old. Containers shall not leak and shall be sealed with a proper fitting cap or lid.
- Containers shall be labeled according to the *Transportation of Dangerous Goods Act* regulations.
- Containers that are 23 L (five gallons) or less shall be stored and transported in an equipment box of a vehicle that can retain the total quantity of fuel, in the containers, should it leak or spill.
- Containers greater than 23 L (five gallons), including 205 L (45 gallon) drums, must be transported upright, and secured to prevent shifting and toppling.
- Transportation of all hydrocarbons to and within the Project Footprint shall conform with the requirements of the *Transportation of Dangerous Goods Act*.
- Refuelling of equipment and refilling of small field containers shall be conducted at a minimum of 30 m from the top-of-bank.
 - Small field containers are to be filled within secondary containment.
 - Absorbent pads will be used during refuelling, especially during the removal of the filling spigot to capture any errant drips.
- Vehicles and equipment, including their hydraulic fittings, shall be inspected daily to ensure that they are in good condition and free of leaks.

6.12.1 Transportation and Disposal

- Contractors shall inspect all equipment prior to transportation to the site to ensure equipment is clean and free of oil and grease.
- Equipment is required to be clean and in good working order, meeting manufacturer standards. The Contractor shall provide fully stocked spill kits adequate to deal with emergencies on the road, including provision of spill kits within vehicles on site used for the transport of equipment, waste, and hazardous materials.
- A licensed waste Contractor shall transport hazardous wastes such as waste oil. Both the shipper (consignor) and the carrier (driver) of dangerous goods and hazardous wastes require *Transportation of Dangerous Goods Act* certification.
- All requirements of the *Environmental Management Act* and the *Transportation of Dangerous Goods Act* for disposal of waste materials shall be followed.
- It is the responsibility of the Contractor to manage all generated wastes. If generated, it shall be sent to an appropriate facility to be recycled or disposed. Oil destined for recycling and/or waste oil is considered hazardous waste and will require a Hazardous Waste Manifest and labelling. New insulating oil is not a regulated product and does not require a *Transportation of Dangerous Goods Act* shipping document or a waste manifest.
- Any material produced by the construction works (e.g. cut asphalt) must be transported offsite and disposed of properly.
- The Contractor shall ensure that materials being transported for offsite disposal are properly contained, labelled, and secured for transport.

6.13 Archaeological Resources

Archaeological sites are considered locations where there is physical evidence of how people lived in the past and provide rich insights into the history of B.C. According to the Archeology Branch, over 55,000 archaeological sites have been recorded in BC. Given the prevalence of recorded archaeological sites and the established history and territories of Indigenous people within the Fraser River Estuary, potential exists for undiscovered archaeological resources to be discovered.

6.13.1 Relevant Legislation

Legal protection for archaeological sites is afforded under Section 12 of the *Heritage Conservation Act* (HCA) to both known sites that pre-date AD 1846 and sites that could pre-date AD 1846, regardless of their condition.

6.13.2 General Considerations

Legally protected archaeological materials can present in many forms including:

- Surface features such as cultural depressions created by former habitations, earthen fortifications, rock cairns, fish traps, clam gardens, burned rock, and shell middens.
- Habitation sites including camping/transitory/hunting, seasonal and permanent villages.
- Resource gathering and processing.
- Culturally modified trees (CMTs) such as bark stripping, planks, and territory markers.
- Rock art including pictographs (painted rock) and petroglyphs (carved or pecked rock).
- Stone, bone, antler, bark, wood, or shell artifacts.

6.13.3 Chance Find Protocols

Archaeological materials are most likely to be encountered in greenfield environments or at depths not previously impacted by anthropogenic disturbance (e.g., construction or agricultural activities). However, archaeological artifacts may be encountered where previous development has occurred. Works associated with the project, including clearing and grubbing, excavation, movement, vibration, or other forms of ground disturbance can uncover and impact unidentified archaeological artifacts.

All applicable protocols for the discovery of archaeological materials and features are to be implemented by the Contractor. The measures outlined within this document are to be implemented during any chance find of archaeological materials. To limit the potential impact associated with project activities, the Contractor is to implement the following protocols in the event of the discovery of archaeological artifacts.

6.13.3.1 Discovery of Suspected Archaeological Materials

It is extremely unlikely that any archaeological discovery will be made during the works; however, if any suspected archaeological materials are observed during the works the following protocols are to be implemented:

- **STOP WORK IMMEDIATELY.**
- Contact PM and QEP.
- The PM will immediately contact the BC Archaeology Branch (the Branch) to determine what archaeology and / or protection measures are required.
- The Branch may collect site information and / or opinions, at their discretion, from the PM, the QEP, landowners and / or affected First Nations. Measures may include:
 - An exclusion zone around the discovery with snow fence or flagging - the dimensions of this zone are at the discretion of the Branch.
 - Site stabilization, with possible drainage, erosion and sediment control measures as needed to protect the discovery.
 - Additional archaeology (including salvage or emergency excavations) undertaken by a permitted archaeologist and affected First Nations under appropriate *Heritage Conservation Act* permit(s).
 - Other recommendations.
- Project Personnel will not collect archaeological artifacts. However, if an isolated artifact is found and it may be destroyed or lost if not immediately removed from the working area, then the following steps should be taken:
 - Photograph the artifact in-place (if possible).
 - Carefully collect the artifact and mark its location with a wooden stake, flagging or some other visible marker.
 - Record the location (e.g., UTM co-ordinates) of the find.

6.13.3.2 Discovery of Human Remains

- In the unlikely event that human remains, or suspected human remains are discovered in working areas the following steps should be taken:
 - **STOP WORK IMMEDIATELY.**
- Contact the PM and the QEP

- The PM will then immediately contact the Branch and the RCMP, if there is a possibility that the remains could be a contemporary forensic concern. The Branch and/or the RCMP will determine what archaeology and/or protection measures are required.
- The Branch may collect site information and / or opinions, at their discretion, from the PM, the QEP, private landowners, other agencies and/or affected First Nations.
- Project Personnel should not handle human remains in any way. As a temporary measure, it is acceptable to shelter exposed human remains with plastic sheeting or another clean cover, but materials should not come in contact with the remains.

For detailed information, refer to Provincial Found Human Remains web page:

https://www.for.gov.bc.ca/archaeology/policies/found_human_remains.htm

<https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/archaeology/report-a-find>

7 Emergency Response

7.1 Emergency Communication

The following table details the contact information for relevant agencies that may be contacted during an environmental incident.

Table 5. Contact information for environmental incidents.

Contacts for Environmental Incidents		
Contact	Location	Phone Number
Emergency Services		911
Fraser Valley Regional District	Chilliwack	604-702-5000
Emergency Management BC (Regional Office)	Surrey	604-586-4390
BC Emergency Spill Reporting		800-663-3456
Environment and Climate Change Canada	Delta	604-666-7294
DFO Field Office	Delta	604-666-8266
BC Ministry of Environment Ecosystems Section	Surrey	604-660-2421
BC Ministry Forests, Archaeological Branch	Victoria	250-953-3334
Non-Emergency Fire (Chilliwack)	Chilliwack	604-792-8713
Chilliwack RCMP (Non-Emergency)	Chilliwack	604-792-4611
Chilliwack Hospital	Chilliwack	604-795-4141

7.2 Environmental Emergency Plan

An Environmental Incident is one that has caused or has the potential to cause one or more of the following:

- Exceedance in any of the parameters listed in this Environmental Assessment & Management Plan or project permits.
- Adverse impact on the land or water, wildlife or aquatic species, and species at risk.
- Alteration or damage to cultural or archaeological resources.

Examples of Environmental Incidents include, but are not limited to:

- Uncontrolled discharge of deleterious substances to fish-bearing waters.
- Fish kills.
- Spill of reportable quantities (*e.g.*, fuel/oil).
- Violations of project permits and the Environmental Assessment & Management Plan.
- Landslides and/or significant erosion.
- Harm to wildlife species and species at risk.

In the event of an Environmental Incident, the Contractor will advise the Qualified Environmental Professional and the Owner immediately, and construction activities should cease (to extents practical, taking into account safety of on site personnel). The QEP and/or the Owner will inform applicable regulatory agencies that may require notification. The Contractor will work with the QEP to document and investigate any incident. Environmental Incident Reports (EIRs) are the responsibility of the Contractor, and a draft EIR should be submitted to the QEP within 24 hours of an Environmental Incident. Once acceptable, the QEP will sign-off on the EIR and depending on the degree of sensitivity, severity, or critical circumstances, may submit to regulatory agencies and be appended to the final Project monitoring report.

The Contractor may use and provide their own reporting forms if available. The EIR will include, at minimum:

- General information.
- Contact information of company involved in the incident.
- Type of incident (*e.g.*, buffer encroachment, adverse impacts to fish/wildlife, hazardous material spill, etc.).
- Incident profile (*e.g.*, weather, location, description/cause, witnesses, environmental impacts, salvage efforts, water quality samples, etc.).
- Photo documentation.
- Incident response measures.
- Actions to prevent recurrence.
- Regulatory notification record.

7.2.1 Reportable Quantities

Table 6. Summary of EEP reportable spill quantities for both soil and water.

EEP Reportable Quantities *			
TDG Class	Substance Spilled	Minimum Reportable Quantity Threshold for Spills in Soil	Minimum Reportable Quantity Threshold for Spills in Water
2.1 2.2	Flammable and Non-Flammable Gasses <i>Ethane, Butane, Propane, Acetylene, unplanned CO₂ (fire suppression) release</i>	≥ 10 (kg or L)	Any
3	Flammable Liquids <i>Condensate, fuel (gasoline, diesel, jet fuel, kerosene), Mercaptan, Methanol, Paint, Pigging Liquid, Scrubber Fluids, Solvents</i>	100 L	Any
8	Corrosive Substances <i>Acids (includes battery fluids), pure Amine (e.g. pure MEA), Caustic (e.g. NaOH, KOH), Lime (may include sludges), Mercury.</i>	5 (kg or L)	Any
Other	Leachable Waste <i>Includes leachable heavy metals in soil or filter media, oily sludge</i>	25 (kg or L)	Any
Other	Waste Oil <i>Include wastes greater than 3% oil (e.g. hydrocarbon contaminated soil, oily rags), Filters (oil and gas production filters), Lube oil</i>	100 (kg or L)	Any

* Note: This list represents common substances used in construction, it does not represent an exhaustive list of all reportable substances or quantities, refer to the BC *Environmental Management Act, Spill Reporting Regulation* for a detailed list. Available online at: <http://www.bclaws.ca/>

7.3 Spill Response Plan

7.3.1 Spill Prevention

The Contractor, at minimum, will adhere to the following requirements during the Project to address hazardous materials storage, handling, and emergency response:

- Excavator's operating within 15 m of a watercourse should be filled with synthetic biodegradable hydraulic fluids; alternatively, the Contractor may prepare an alternative mitigation strategy which includes detailed spill response and containment measures, as well as a list of activity-, location- and quantity-specific spill containment equipment that will be kept in the immediate vicinity of the works. Alternative mitigation strategies for the use of non-biodegradable hydraulic fluids in excavator must be reviewed and approved by both the Owner and the QEP.
- All construction vehicles and machinery should contain spill response kits in good working order.
- Larger spill containment caches suitable to potential spill sources and quantities should be available on site.
- All spills, regardless of type and size, must be cleaned in an appropriate manner and contaminated material must be disposed of at approved facilities.
- Fuels, other than fuelling trucks should only be stored in designated areas at least 30m horizontal distance from watercourses. If not possible, alternative locations should be discussed with Owner and the QEP.

- Machinery fuelling and minor servicing should occur at least 30 m horizontal distance from any watercourse and at a level grade to prevent fuels, oils or other deleterious substances from entering the soil or any watercourse. In the event refuelling activities are required within 30 m of any watercourse, the QEP should be consulted to ensure adequate mitigation is in place. Any spills of fuels, oils or other fluids during fuelling will be contained. During fuelling, vehicle brakes should be applied, and wheels chocked.
- Oil absorbent sheets and/or containers will be immediately placed under any vehicle or equipment that is leaking or that is parked directly adjacent to a fish bearing stream for more than two hours;.
- Fuel containers, generators or other fueled equipment must be designed for that purpose and should not be more than five years old. Containers and equipment should have a proper fitting cap or lid and be stored with secondary containment equal to 110% of volume.
- Major servicing of construction equipment is prohibited on site.
- Large equipment, including their hydraulic fittings, will be inspected daily and be free of leaks.
- SDS for all hazardous materials must be kept on site and made available upon request.
- Ensure adequate training and orientation for on site personnel in hazardous material identification, spill response, and containment, as well as hazardous material storage and handling requirements listed above.

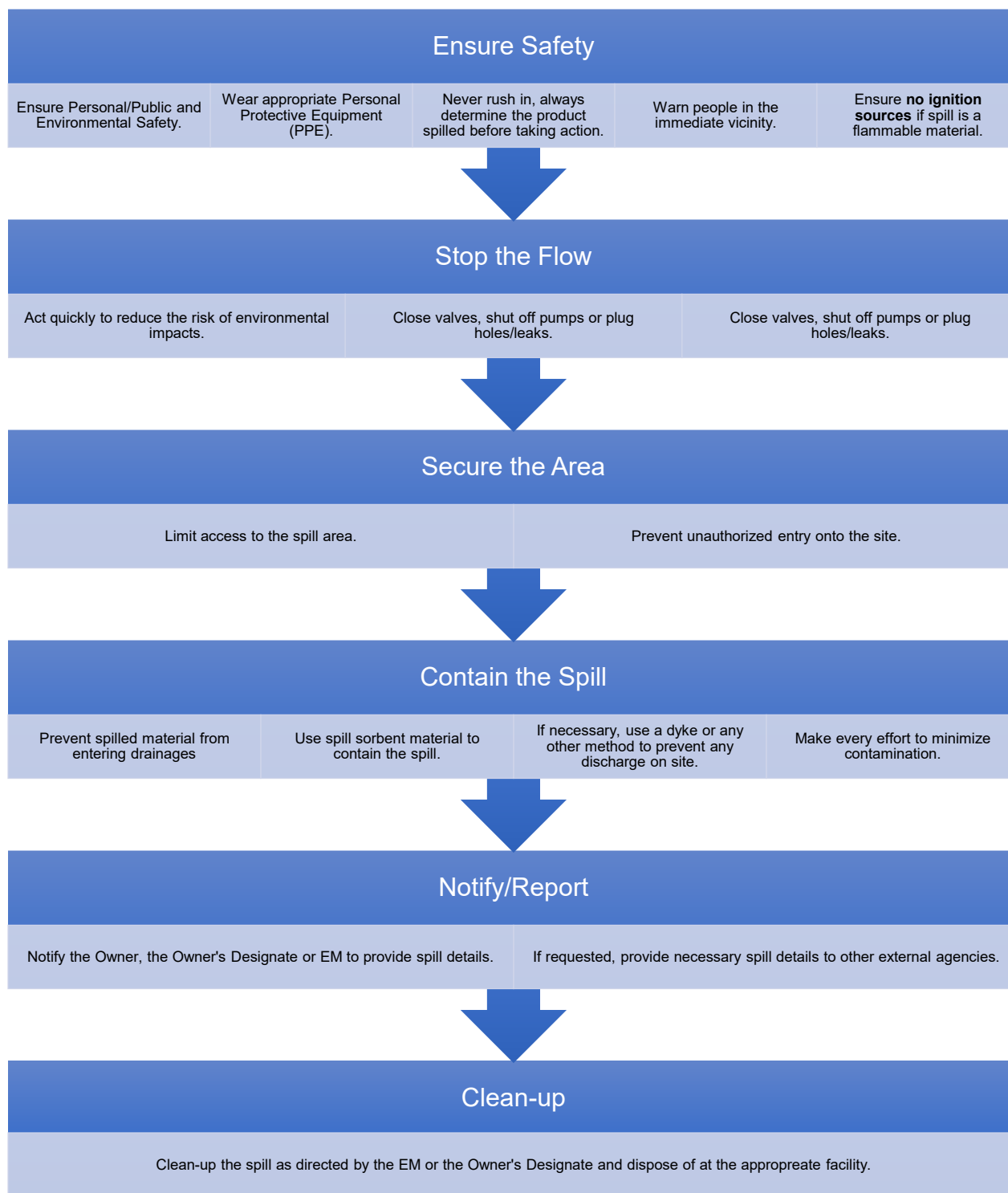
7.3.2 Spill Response Supplies

An appropriately stocked spill response kit must be available and on site at all times. Material quantities within the spill kits are to be replaced immediately after use. At minimum, the kit should contain:

- Absorbent Pads (Oil, Gas and Diesel and Universal)
- Oil Absorbent Pillows
- Absorbent Socks

7.3.3 Spill Response

If a spill of fuel, oils, unmixed cement, lubricants or other hazardous substances occurs, the following spill response steps must be implemented immediately:



References

- COSEWIC. 2006l. COSEWIC assessment and update status report on the Pacific water Shrew *Sorex bendirii* in Canada. COSEWIC Committee on the Status of Endangered Wildlife in Canada Ottawa. 28 pp
- COSEWIC. 2010. COSEWIC assessment and status report on the Barn Owl *Tyto alba* (Eastern population and Western population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
- COSEWIC. 2013. COSEWIC assessment and status report on the Oregon Forestsnail *Allogona townsendiana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 87 pp. (Species at Risk Public Registry).
- COSEWIC. 2014. COSEWIC assessment and status report on the Coastal Giant Salamander *Dicamptodon tenebrosus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 53 pp. (Species at Risk Public Registry website).
- COSEWIC. 2015. COSEWIC assessment and status report on the Red-legged Frog *Rana aurora* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 69 pp. (Species at Risk Public Registry).
- COSEWIC. 2016. COSEWIC assessment and status report on the Western Painted Turtle *Chrysemys picta bellii*, Pacific Coast population, Intermountain – Rocky Mountain population and Prairie/Western Boreal – Canadian Shield population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxi + 95 pp. (Species at Risk Public Registry website).
- COSEWIC. 2025. COSEWIC assessment and status report on the Roell's Brotherella Moss *Brotherella roellii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 46 pp. (Species at risk public registry).
- Craig, V.J, R.G. Vennesland and K.E. Welstead. 2010. Best Management Practices for Pacific Water Shrew in Urban and Rural Areas. Version May 2010. Prepared for the Pacific Water Shrew Recovery Team. Pp. 41
- Environment and Climate Change Canada. 2024. Amended Recovery Strategy for the Oregon Forestsnail (*Allogona townsendiana*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. vii + 62 pp.
- Green, R.N. and Klinka, K., 1994. A field guide to site identification and interpretation for the Vancouver Forest Region (No. 28). Ministry of Forests, Research Program
- Rousseu, F. and B. Drolet. 2015. Prediction of the nesting phenology of birds in Canada. In: J. Hussell and D. Lepage. 2015. Bird Nesting Calendar Query Tool. Project NestWatch. Bird Studies Canada / Études d'Oiseaux Canada
- South Coast Conservation Program. 2018. Oregon forestsnail best management practices guidebook.