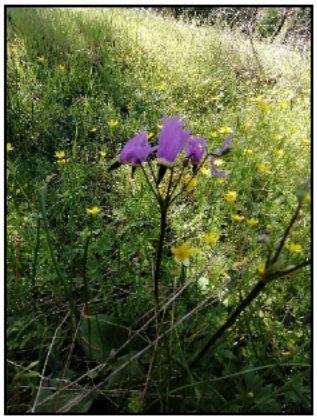
AQUAPARIAN
Environmental Consulting Ltd.

ENVIRONMENTAL ASSESSMENT
REZONING PHASE
950 & 1260 PHOENIX WAY NANAIMO BC



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DISCLAMER AND LIMITATIONS OF USE:

This report has been prepared exclusively for the Nanaimo Forest Products Ltd property (950 &1260 (West) Phoenix Way Nanaimo) re-zoning application for a proposed change to industrial land use. The findings and recommendations documented in this report are based on information available at the time of assessment.

LIMITATIONS:

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1.0 INTRODUCTION

Aquaparian Environmental Consulting Ltd (Aquaparian) was retained by Nanaimo Forest Products Ltd (NFP) to complete an Environmental Assessment (EA) as supplementary documentation for a rezoning application required by the City of Nanaimo (CoN) for proposed industrial land use of two adjacent parcels, 950 Phoenix Way and the western portion of 1260 Phoenix way, a hooked property which straddles the Cable Bay Trail Right-of-Way (ROW) in the community of Cedar BC. Aquaparian completed a separate report (October 2, 2022) for a subdivision application to sever the eastern portion of 1260 Phoenix Way and transfer it back to Oceanview, the previous owner. The subject properties are currently zoned AR1 – Rural Resource and located immediately southeast of the NFP Harmac Pacific Pulp Mill.

The subject parcels are located in the community of Cedar, BC within the City of Nanaimo (CoN) and are legally identified as follows:

- 950 Phoenix Way: LOT 4, SECTIONS 21, 22, AND 23 RANGE 2 AND SECTION 21, RANGE 3, CEDAR DISTRICT, PLAN VIP65621, EXCEPT PLAN EPP23851 (PID 023-922-907); and,

- 1260 Phoenix Way: SECTION 20, RANGE 3, CEDAR DISTRICT, EXCEPT THAT PART IN PLAN VIP59192 (PID 008-747-741). (portion west side of Cable Bay Trail only)

The proposed rezoning of the two subject parcels is consistent with the City of Nanaimo's new Official Community Plan, City Plan, Nanaimo Reimagined (July 4, 2022). This property and other parcels extending west to encompass most of Duke Point, are designated by the City as future Industrial Land Use shown in Schedule 2, a map showing future land use designations. A description of the City's intent to designate additional industrial lands is found in Section D4.6 Industrial Lands.

This report is required for a rezoning application for 950 Phoenix Way and the west portion of 1260 Phoenix Way from the existing zoning AR1 to proposed zoning Industrial (I4). As understood, the land is proposed to be developed for industrial forestry related companies to lease areas as needed for business operations. As understood, an agreement has been reached between the CoN and NFP to provide a buffer averaging 100m in width on the west side of the Cable Bay Trail. Options for the long-term protection of the buffer will be determined in future discussions with the CoN and may include park dedication, land transfer, covenant etc.

Between 1999 and 2003, the parcels were substantially logged leaving some patches of forest and scattered trees throughout the logged area. In 2009, the subject lands and several

surrounding parcels were proposed to be developed by the previous owners as a golf resort community called Oceanview Golf Resort and Spa (Oceanview). Madrone Environmental Services Ltd. (Madrone) produced a comprehensive EA for all of the Oceanview Resort parcels which at that time covered 214.8ha that took a team of professionals four years to complete. The Oceanview project was not approved to proceed. In preparation of this report, Aquaparian reviewed the City Plan, Nanaimo Reimagined (July 4, 2022) document, Madrone's 2009 report and relevant provincial government resources to collect background information for the site. Madrone's report served as a baseline for this study to determine if any changes have occurred since 2009. Aquaparian completed site visits of the subject property on November 28th and December 13th, 2022, to conduct a walk through to look for any landscape changes to the site since Madrone's study in 2009 and additional assessments of targeted areas of interest to look for seasonal changes on May 13th and July 3rd, 2023; February 27th, March 13th and 18th, 2025.

It has been over sixteen years since the Madrone assessment and some federal and provincial *Acts* and Regulations have changed since that time. The intent of this EA is to provide an up-dated environmental characterization of the study area to be compared to the Madrone baseline observations to determine whether environmental features of the site have changed since 2009 and provide a summary of current *Acts* and Regulations that may apply to future development if the rezoning is approved. A focus of the study is the location and size of ESAs within the study area and to compare them to ESAs documented in 2009. The City Plan, Nanaimo Reimagined (July 4, 2022) includes an update to the previous plan's Development Permit Areas. Schedule 6 of the City Plan is a map identifying parcels affected by Development Permit Area 1 (DPA1) - Environmentally Sensitive Areas (ESAs) which includes Watercourse ESAs, Terrestrial ESAs and Marine Foreshore ESAs. The application of DPAs is described in Zoning Bylaw 4500 (July 28, 2025).

Site location maps of the study area have been included in this report as Figure 1a & 1b. A selection of site photographs taken during the site surveys have been included as Appendix A. A preliminary conceptual site plan by Turner & Associates Land Surveying Ltd is included as Figure 2.

1.1. SCOPE OF WORK

The scope of work for this assessment included the following:

- Background review of available information from government databases, maps and previous consultant reports.
- Field assessments to document environmental attributes within the site and current site conditions to determine if changes have occurred since 2009.
- Produce an EA report to document findings and identify if changes have occurred

since 2009.

Findings of the assessment include a review of relevant background information, updated site information, current applicable *Acts* and Regulations, updated site plan showing environmental attributes, and photo documentation. The report is intended to document any changes to the subject parcels in comparison to a 2009 study by Madrone Environmental Services Ltd that included the subject parcels and adjacent properties. The information is provided to facilitate the CoN decision on the re-zoning application. In addition, mapped information is intended to inform the proposed 100m average buffer adjacent to the Cable Bay Trail and for preliminary planning of the industrial lot layout, roads and servicing. If the re-zoning is approved, additional tasks will be required at the Development Permit phase following detailed designs of the project. As bylaws are amended from time to time, the application of Development Permit Areas to the identified features in the parcel will be confirmed by the City in accordance with the bylaws current at the time of application.

2.0 REGULATORY FRAMEWORK

The following is a list of federal, provincial and municipal environmental *Acts*, Regulations and Bylaws current at the date of preparing this report, that *may* apply to development of the subject parcel:

Federal *Species-at-Risk Act* is a key federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides for the legal protection of wildlife species and the conservation of their biological diversity. SARA contains prohibitions against the killing, harming, harassing, capturing, taking, possessing, collecting, buying, selling or trading of individuals of endangered, threatened and extirpated species listed in Schedule 1 of the Act. The Act also contains a prohibition against the damage or destruction of their residences (e.g. nest or den). The *Species at Risk Act* (SARA) applies automatically on federal lands as well as:

- all endangered, threatened and extirpated migratory birds listed in Schedule 1 of SARA and protected by the *Migratory Birds Convention Act*, 1994, anywhere they occur, including private lands, provincial lands and lands within a territory; and
- all endangered, threatened and extirpated aquatic species as defined by the *Fisheries Act* listed in Schedule 1 of SARA, anywhere they occur, including private lands, provincial lands and lands within a territory.

In certain circumstances, SARA prohibitions may be applied to protect any other species listed in Schedule 1 of SARA when found on non-federal lands, if provincial/territorial laws do not

effectively protect the species or its residence. On the recommendation of the Minister of the Environment, the Governor in Council, by Order can provide that sections 32 and 33, or either of them, apply on non-federal lands with respect to individuals of a listed wildlife species that is not an aquatic species or protected by the *Migratory Birds Convention Act, 1994*.

Federal *Migratory Birds Convention Act, 1994*. Most species of birds in Canada are protected under this act. “Migratory birds” are defined by Article I of the Convention which names the families and sub-families of birds protected and provides some clarification of the species included. In general, birds not falling under federal jurisdiction within Canada include grouse, quail, pheasants, ptarmigan, hawks, owls, eagles, falcons, cormorants, pelicans, crows, jays, kingfishers, and some species of blackbirds.

Federal Migratory Birds Regulations, 2022 (MBR), provides protection to migratory bird nests when they are considered to have a high conservation value for migratory birds. The MBR prohibits the damage, destruction, removal or disturbance of nests of all migratory birds when there is a live bird or viable egg, or if the nest was built by a species that is listed in Schedule 1 of the regulation. Schedule 1 lists 18 species which are protected year-round unless they are shown to have been abandoned for a designated period of time depending on the species. In BC there are two Schedule 1 species; Great blue heron are protected for 24 months after reporting the nest is unoccupied, and Pileated woodpecker are protected for 36 months after reporting unoccupied.

Provincial *Wildlife Act* Section 34*,*** states that a person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys:

(a) a bird or its egg,
(b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl, or
(c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

Provincial *Water Sustainability Act.* Works in and about a stream under Section 11 of the *Water Sustainability Act* requires that a person may only make "changes in and about a stream" under a "Change Approval" or "Notice of Authorized Change". "Changes in and about a stream" means: *any modification to the nature of the stream including the land, vegetation, natural environment or flow of water within the stream, or any activity or construction within the stream channel that has or may have an impact on a stream."* The *WSA* definition of "stream" includes wetlands. A Notice of Authorized Change is used for specified low risk changes in and about a stream that have minimal impact on the environment or third parties (e.g. road crossing culvert installation). A Change Approval is written authorization to make complex changes in and about a stream (e.g. permanent change to a stream or wetland).

Provincial Heritage Conservation Act. All archaeological sites, recorded or not, are protected under the *Heritage Conservation Act* and must not be altered or damaged without a site alteration permit from the Archaeology Branch. As understood, municipalities have access to provincial records that show recorded sites and sites with high potential for archaeological resources. If a known site is located on the parcel, an archaeological consultant will need to be retained to provide advice. If the site has a high potential, it is recommended to retain and archeological consultant to provide recommendations. Archaeology is outside the scope of this report.

City of Nanaimo, City Plan, (July 2022) – Environmentally Sensitive Areas (ESAs) DPA 1:

a) Watercourse ESA
   i. The width of the Watercourse ESA leave strip shall be determined as specified on Schedule 6 of the *City Plan*.
   ii. The width of the watercourse leave strip is measured horizontally from, and at right angles to, the top of bank or wetland boundary of the watercourse.
b) Terrestrial ESA
   i. Properties impacted by known Terrestrial ESAs are shown on Schedule 6 DPA1: Environmentally Sensitive Areas of the *City Plan*, and the width of the terrestrial ESA leave strip shall be determined by a Qualified Registered Professional through a detailed biophysical assessment and approved by the Director of Development Approvals.
c) Marine Foreshore ESA
   i. Marine Foreshore ESAs are shown on Schedule 6 of the *City Plan*.

No specific Environmentally Sensitive Area polygons are shown within the subject property on Schedule 6 of the City Plan; but the entire parcel is mapped as a green polygon indicating "lands containing terrestrial ESAs".

City of Nanaimo Tree Management and Protection Bylaw 2013 No. 7126 (2022-Nov 21)

Tree Protection Bylaw 2013 No. 7126 requires Subdivision and Development applications to provide a Tree Management Plan (TMP) to be submitted for review and approval and that a Tree Removal Permit be obtained prior to tree cutting, major pruning, or undertaking activities that may damage any tree. A tree inventory including Significant trees previously mapped by Madrone has been provided in this report for future planning and potential permitting consideration (Fig 5).

3.0 SITE DESCRIPTION

The parcel is bound by the Cable Bay Trail ROW to the east, privately owned industrial parcels to the north and west, and the City of Nanaimo boundary to the south. Further to the north of the parcel is the Northumberland Channel and further east of the parcel is Joan Point Park fronting Dodds Narrows. The parcel is undeveloped with dirt logging roads and trails constructed throughout. The parcel is dominated by a second growth dry Douglas-fir (*Pseudotsuga menziesii*) forest that has been logged in the past with some large diameter Douglas-fir trees retained throughout presumably as seed trees. Within the parcel and surrounding area are pockets of meadow which are classified as Terrestrial Herbaceous Ecosystems by the Sensitive Ecosystem Inventory of the East Coast of Vancouver Island and the Gulf Islands (1993-1997). These ecosystems are classified as Environmentally Sensitive Areas (ESAs) by the City of Nanaimo which are forest openings formed by thin soils over bedrock sometimes with exposed bedrock outcrops. These ecosystems are rare and have the potential to support threatened and/or endangered species. Aquaparian located and flagged the boundary of three of these ecosystem polygons, a fourth on the western boundary was mapped by aerial overlay. In addition, three small wetlands within the property were flagged for the surveyors. Turner & Associated Land Surveying Ltd completed a survey of flagged features and compiled the up-dated environmental features of the site on an aerial image with associated DPA setbacks (Figure 3).

4.0 ENVIRONMENTAL SETTING

4.1. Physical Resources

The following section provides a general overview of biophysical attributes and land use of the site documented by government databases, crown publications and from Aquaparian's reconnaissance of the property.

4.1.1. Topography

The terrain within the study area is relatively flat with a gentle overall slope to the northeast ranging in elevation from 25-95m above sea level. The gradient increases along a section of the northeast boundary with some steep to near vertical slopes observed, while most of the west side of the parcel is flat to gently undulating. A portion of the northwest area of the property and beyond the parcel slopes down relatively steeply toward the ocean.

4.1.2. *Climate*

The property is located within the Moist Maritime Coastal Douglas-fir Subzone (CDFmm). The CDFmm is restricted to low elevations along southeast Vancouver Island from Bowser to Victoria, the Gulf Islands south of Cortes Island, and a narrow strip along the Sunshine Coast near Halfmoon Bay. Elevational limits typically range from sea level to approximately 150m.

The CDFmm lies in the rain shadow of the Vancouver Island and Olympic Mountains resulting in warm, dry summers and mild, wet winters. Growing seasons are very long, and feature pronounced water deficits on zonal and drier sites. The CDFmm represents the mildest climate in Canada. *(Green and Klinka).*

4.1.3. *Land/Soil*

The Soils of Southern Vancouver Island (1985) identified the site is comprised predominantly of the Tzuhalem soil association with some Rocky Outcrop classification. Tzuhalem soils occur in the coastal Grand Fir – Western Red Cedar Forest Zone within the Nanaimo Lowland physiographic subdivision. They have developed in sandy, gravelly colluvial or morainal deposits overlying sedimentary (sandstone or conglomerate) bedrock. Slopes vary between 5 and 100% with a moderate to strongly rolling slope class and elevations range from sea level to about 300m. Soils are rapidly drained with gravelly loamy sand or very gravelly loamy sand being the usual texture in the upper horizons and with very gravelly loamy sand in the subsoil layers. The usual soil classification is Orthic Dystric Brunisol (shallow lithic phase).

The terrestrial herbaceous ecosystems (meadows) were observed to have thin, rapidly draining soils over bedrock, particularly in the southeast region. Exposed bedrock was observed on the steep slopes to the northeast of the site. Deeper soils are found throughout the remainder of parcel.

4.1.4. Surface Water

No flowing watercourses were observed within the subject parcels. There are roadside ditches that have been excavated alongside some of the dirt roads throughout the parcel for the purpose of collecting stormwater runoff, but they were not observed to flow directly into any natural watercourses or wetlands. The only natural sources of surface water identified are three small, isolated wetlands, two of which were identified in Madrone's 2009 survey and confirmed by Aquaparian's site reconnaissance in 2022 identified as Polygon 9 and 49 in Madrone's report. The size and location of these wetlands were observed to remain consistent with the mapping completed by Madrone in 2009. Towards the central east of the property there is a small linear wetland that was not identified in Madrone's report. It appears to have resulted from compaction of a low topographic section of an old logging road that is in the process of naturalizing into a functional wetland. Standing water was observed during the site visit, but wetland vegetation is limited to reed canary grass (*Phalaris arundinacea*) and common rush (*Juncus effusus*). Evidence of deer use as a freshwater resource was observed by an abundance of deer droppings and deer trails concentrated around this feature and it is expected to provide springtime amphibian breeding habitat. This wetland may not have been evident during Madrone's study which was completed just a few years following logging. The wetlands offer wildlife value but none of them support fish populations.

4.1.5. Groundwater

The Regional District of Nanaimo map identifies the parcel lies within Aquifer #162-IA (16) which is a bedrock aquifer with a high vulnerability rating, low productivity and a moderate demand. There are no drilled wells mapped within the parcel.

4.2. Biological Resources

4.2.1. *Flora*

Areas of mature second growth forest documented in Madrone's report are still intact and include a narrow strip of trees along the northwest boundary, this stand of trees extends north and downslope off the parcel; a stand of trees at the western end of 1260 Pheonix Way; and a larger stand located within the northeast on a steep slope above the Cable Bay Trail. Most of the site was selectively harvested prior to 2003 and is now comprised of regenerating dry Douglas-fir Forest (*Pseudotsuga menziesii*) with scattered older trees that were retained during logging presumably for seed trees. Several of the previously documented Significant trees have fallen since the Madrone study.

Canopy species are dominated by Douglas-fir with a minor contribution of arbutus (*Arbutus menziesii*) and an understory predominantly comprised of salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), dull Oregon-grape (*Mahonia nervosa*), oceanspray (*Holodiscus discolor*), evergreen blackberry (*Rubus laciniatus*) and baldhip rose (*Rosa gymnocarpa*). Transitional zones surrounding the terrestrial herbaceous ecosystems include a higher proportion of arbutus with a few Garry oak (*Quercus garryana*) amongst the Douglas fir stands and more spacing between trees with a more open understory including scattered oceanspray, minor tall Oregon grape (*Mahona aquifolium*), low patchy salal and dull Oregon-grape and a groundcover of trailing snowberry (*Symphoricarpos mollis*), hairy honeysuckle (*Lonicera hispidula*) and rattlesnake plantain (*Goodyera oblongifolia*) over a continuous carpet of mixed moss species.

In lower topographic areas the canopy is comprised of western redcedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), and red alder (*Alnus rubra*) with the occasional grand fir (*Abies grandis*), Pacific yew (*Taxus brevifolia*) and bitter cherry (*Prunus emarginata*) identified throughout these areas. Sloping terrain to the east leads down into a small stream ravine east of the Cable Bay Trail; this area was observed to have more deciduous representation in the canopy including a sizeable stand of bigleaf maple with a luxuriant Western swordfern understory. Wetland margins were observed to include red alder, western redcedar and some willow species (*Salix* spp.) including a large, old Sitka willow (*Salix sitchensis*) approximately 75cm diameter-at-breast-height (dbh) within the wetland to the south. The south wetland is vegetated predominantly by hardhack (*Spiraea douglasii*) with grasses, common rush, buttercup (*Ranunculus* sp.), invasive evergreen blackberry (*Rubus laciniatus*), invasive Himalayan blackberry (*Rubus armeniacus*), with an abundance of large woody debris observed. The two small wetlands in the north half of the parcel were dominated by grass species including reed canary grass and common rush in one and patchy sedges in the other. A detailed survey of all plant species was not completed as part of this assessment.

The terrestrial herbaceous ecosystems (meadows) were identified to have less than 10% canopy cover including some Garry oak (*Quercus garryana*) with thin, moss-covered soils and sparse grass over bedrock and exposed rocky outcrops or areas where the moss and soil have been scraped off. Grasses and mosses dominate the ground cover, and some invasive Scotch broom (*Cytisus scoparius*) has established within these areas. Observations of the meadows to the south and west of the property were consistent with Madrone's findings. The western meadow was observed by Madrone to have been significantly impacted between 2003-2009 when a quarry was excavated into the south half of this meadow as well as vehicle movement throughout

resulting in a water-filled quarry and large areas of exposed bedrock that is still evident. This meadow has shallow vernal seeps draining northeast over exposed rock and mossy areas with a potential to support species listed on Schedule 1 of the *Species-at-Risk Act* (SARA) and appears to be starting to recover from previous impacts. The meadow along the south boundary contains several vernal seeps and pools (critical habitat) that have the potential to support listed plant species. This meadow also has been impacted, and scotch broom is encroaching. Due to the presence of critical habitat (seeps) that has the potential to support SARA listed species, Aquaparian recommends these meadows are to be retained and protected by a buffer if future development is proposed.

Aquaparian identified and surveyed two additional small meadows that are centrally located within the property. These meadows are dry and no vernal pools or seeps were identified during the assessment. The preliminary conceptual site plan indicates these two meadows may be lost to development if the re-zoning is approved and the project proceeds to detailed design. Following the City's initial review of the rezoning application package, the City issued a Comprehensive Letter (RA000503 – 950 & 1260 Phoenix Way; August 15, 2024) identifying additional submission information requirements. As such, this report has been revised to include the following information requested for the environmental assessment:

- *"The Environmental Assessment needs to identify whether critical habitat is present as defined by the "Recovery Strategy for Multi-Species at Risk in Vernal Pools and other Ephemeral Wet Areas Associated with Garry Oak Ecosystems in Canada (Proposed) 2005" and "Replacement of Sections 2.5 and 2.6 of the Recovery Strategy for Multi-Species at Risk in Vernal Pools and other Ephemeral Wet Areas associated with Garry Oak Ecosystems in Canada" in the two terrestrial Environmentally Sensitive Areas (ESAs) identified in the middle of the site."* And,
- *"The conceptual site plan needs to be updated to include all the environmental features and associated setbacks identified in the Environmental Assessment."*

Aquaparian completed field assessments of the central meadows during the flowering season on May 13, 2023, and again on July 3, 2023, to document spring and summer flowering species that were present that may not have been visible during the initial survey. These two meadows are generally dry with no seeps or vernal pools present. The May and July surveys identified the following flowering species within the central meadows: few-flowered shooting star (*Dodecatheon pulchellum*), small-leaved montia (*Montia parvifolia*), small-flowered blue-eyed Mary (*Collinsia parviflora*), small hop-clover (*Trifolium dubium*), common vetch (*Vicia sativa*), common camas (*Camassia quamash*), sweet-scented bedstraw (*Gallium triflorum*), sweet vernal grass (*Anthoxanthum odoratum*), western buttercup (*Ranunculus occidentalis*), large-leaved avens (*Geum*

macrophyllum), broad-leaved starflower (*Lysimachia latifolia*), royal rein-orchid (*Platanthera transversa*), rattlesnake plantain, Pacific sanicle (*Sanicula crassicaulis*) and yarrow (*Achillea millefolium*). There were large, dense patches (10-15% cover) of shooting star observed within the east-central meadow. No rare plant species were observed at the time of the assessments.

Aquaparian completed additional investigations of all four of the meadows during the wet season to determine whether Critical Habitat is present that could potentially support plant species identified on Schedule 1 of the *Species-at-Risk Act* (SARA). Critical Habitat identified in the *Recovery Strategy for Multi-Species at Risk* includes vernal pools and ephemeral wet areas. Detailed descriptions of habitat attributes within these meadows, identification of the habitat requirements of species-at-risk that have the potential to be found in these meadows, and further studies recommended to confirm presence or absence of these species, including general recommendations to be considered at the Development Permit Phase have been provided below.

Aquaparian completed additional investigations of the meadows in February and March 2025, following an extended period of wet weather to look for vernal pools or other ephemeral wet areas considered to be critical habitat for several listed plant species. Comparison sites were assessed to confirm that sufficient precipitation had occurred to result in seepage including the small stream located on the east side of Cable Bay Trail which was flowing at the time of the assessment and the large meadow on the adjacent parcel on the east side of Cable Bay Trail was also observed to have flowing vernal seeps and pools fed by groundwater breakout forming surface flow paths through the moss-covered bedrock.

The two larger meadows located on the southern and western boundaries of the subject parcel previously documented by Madrone in 2009 were observed to have a number of flowing vernal seepages and vernal pools. This is consistent with Madrone's findings.

Within the two central meadows, no areas of seepage or shallow depressions with pooling water or accumulated moisture were observed. These two meadows are separated to the east and west sides of an old logging road. The west-central meadow slopes north at a gradient of 7-8% with no plateaus and has undulating terrain formed by parallel grooves aligned northwest. The west-central meadow was observed to have one small, isolated round hole in the bedrock approximately 30cm in diameter that had standing water and was supporting a species of insect larvae. The hole was approximately 30cm deep and had a thick layer of decomposing grass and an anoxic odour. It is too deep and stagnant to support rare meadow plant species and appeared

to catch rainwater. This meadow is approximately 25m from north to south and approximately 86m east to west with a northern aspect. Shade throughout the day would influence the species presence. The east-central meadow slopes north and northeast at a gradient of 15-18% with no plateaus. It is also undulating with shallow, parallel grooves aligned northwest. This meadow is roughly "C" shaped with the widest section from north to south being approximately 40m and approximately 95m from east to west. This meadow is also influenced by shade throughout the day. Dry Douglas fir forest surrounds each of the central meadows and is consistent in composition. There are no wetlands upslope (south) of either of the meadows that could contribute to winter drainage. No other aquatic features upslope of the meadows such as conveyance channels, springs or old road ditches were found that could supply the meadows with seepage; no pools, depressions or flat areas were observed downslope that would receive and retain water. In summary, there is no critical habitat (vernal seeps or pools) for within these two central meadows. Additional photographs from the February 2025 survey have been added to Appendix A.

4.2.2. Fauna

The mature forest habitat within the subject parcel is expected to be utilized by a variety of large and small mammals including black bear (*Ursus americanus*), cougar (*Puma concolor*), black-tailed deer (*Odocoileus hemionus)*, racoon (*Procyon lotor*), eastern cottontail rabbits (*Sylvaginus floridanus*), red-squirrel (*Tamiasciurius hudsonicus*) and several species of rodent. Large snags are available to provide roosting habitat for bats. Several piles of deer and rabbit droppings were observed, and deer and their tracks were noted during the assessment. The small wetlands showed signs of regular use by deer.

The terrestrial herbaceous ecosystems within the site have rocky outcrops and sunny forest openings providing good habitat for reptiles including northern alligator lizards (*Elgaria coerulea*) and garter snakes (*Thamnophis elegans*). Amphibians are expected to find habitat where wetland features are located. A Pacific tree frog (*Pseudacris regilla*) was heard near a roadside ditch and the forested areas provide a shaded environment for terrestrial amphibians including abundant coarse woody debris on the forest floor. Observations and site conditions indicate no change of species use is expected since Madrone's 2009 study. A detailed survey to confirm wildlife species presence was not completed as part of this assessment.

4.2.3. Birds

A variety of resident and migratory bird species are likely to inhabit and utilize the study area. The forest stand within the property is continuous with surrounding forests to the south and east and is near the ocean. The site offers excellent forage (acorns, berries, seeds insects etc.) and a layered canopy for nesting. Forest-meadow interfaces provide suitable habitat for songbirds. Dead standing (wildlife) trees and snags throughout the site provide insect forage and cavity nesting opportunity for birds and small mammals. Woodpeckers were heard excavating deadwood during the survey and Pileated woodpeckers were observed in the March 2025 assessment.

A review of the provincial Wildlife Tree Stewardship (WiTS) did not identify mapped bald eagle (*Haliaeetus leucocephalus*) nests within or immediately adjacent to the subject property, but Madrone recorded a nest tree in the northeast portion of the parcel during their survey. Aquaparian confirmed that this nest tree is now dead, and no nest is present. The closest mapped eagle nests are located over 250m north or northeast of the parcel. No eagle nests were identified during site reconnaissance of the property, but large trees capable of supporting a bald eagle nest are present throughout the site. The WiTS eagle nest map is included as Figure 4a.

A review of the Great Blue Heron Atlas identified that there are no mapped great blue heron (*Ardea Herodias fannini*) nest trees located within or nearby the study area. No heron nests were identified within or nearby the subject parcel during the site assessment (Figure 4b).

No raptor nests, whitewash against trees, feathers, prey remains or plucking stations were detected during the site assessment. However, observations of forest habitat within the site identified that the site has abundant suitable nesting habitat for several smaller raptors such as hawks and owls. Several owl pellets were found, and great horned owl calls were heard during the March 2025 site reconnaissance. Several standing dead trees may provide nesting habitat for secondary cavity nesting owls. Madrone's report confirmed the presence of barred owls (*Strix varia*) through a nocturnal raptor survey and found indirect presence of smaller owl species through identification of owl pellets.

Observations and site conditions indicate no change of species use is expected since Madrone's 2009 study. A detailed bird survey was not conducted as part of this assessment. Species presence will change seasonally throughout the year. If re-zoning is approved, targeted studies would be required to identify nest trees of species that are protected year-round during detailed design. Federal guidelines indicate the songbird

nesting season in this area extends from March 1st to August 15th of a given year. Raptors tend to begin nesting earlier in the year, as early as February. Bald eagle nesting season generally starts in January and extends until August 15th of a given year. Great blue heron nesting seasons occurs between April and May with chicks fledging the nest late August and sometimes into September. If the project is approved for rezoning and subsequent development plans proceed, clearing is to be scheduled outside of the nesting seasons as far as possible. Additional studies and permits may be required prior to clearing and be appropriate for the time of year the work is scheduled.

4.2.4. *Fisheries*

A review of the Provincial database Habitat Wizard identifies one mapped stream (Watershed Code 920-370700) that is located to the east of the Cable Bay Trail ROW. This stream is identified with a CoN 15m DPA measured from the top of bank that is outside of the eastern property boundary. Fish presence is not confirmed in this small seasonal stream.

No fish habitat is located within the subject parcel. Surface water is limited to three small, isolated wetlands that are incapable of supporting fish. Roadside ditches do not connect directly to fish-bearing streams. Observations of perched water or saturated soils were confined to the three small wetlands. Regular soil saturation in the two previously documented wetlands was indicated by established semi-aquatic plant communities.

4.2.5. Sensitive Ecosystems Inventory Mapping

The Sensitive Ecosystem Inventory of southeast Vancouver Island and the Gulf Islands (SEI) 1993-1997 systematically identified and mapped specific rare and fragile ecosystems. The purpose of the SEI project was to identify remnants of rare and fragile terrestrial ecosystems and to encourage land-use decisions that will ensure the continued integrity of these ecosystems.

Seven sensitive ecosystem types were described and mapped in the east coast of Vancouver Island study area as follows: Wetland, Woodland, Riparian, Older Forest (>100yrs), Terrestrial Herbaceous, Sparsely Vegetated and Coastal Bluff. Two other important ecosystems were mapped for their general biodiversity and wildlife habitat values: Older Second Growth Forest (60-100yrs) and Seasonally Flooded Agricultural Fields.

A review of the 2004 SEI map covering the study site (92G.011) identified that there are three mapped polygons within the study area identified as follows:

1. N0033-R4*/(SG:co/WD) (Second Growth: conifer-dominated/Woodland). There is a narrow strip of this polygon that extends into the southwest edge of the parcel, and disturbance of this ecosystem was mapped. Typically, disturbance includes logging, roads/trails, or residential, urban, agricultural or industrial use. Madrone's report identifies the polygon area as ESA #633 (Second Growth Forest – conifer dominated) and indicates it extends only marginally into the southwest side of the parcel. Aerial imagery shows that the majority of that polygon has been logged. Aquaparian's site reconnaissance did not identify woodland characteristics within this area; it is more representative of second growth conifer forest consistent with Madrone's study.

2. N0031-R1*/(SG:co/OF:co) (Second Growth: conifer-dominated/Older Forest:conifer-dominated) located along the north side of the parcel. SEI mapping indicates most of this polygon has been disturbed. Aerial imagery and site reconnaissance confirms that logging has impacted this ecosystem in the past. The Madrone report maps this polygon as ESA #603 (Second Growth Forest – conifer dominated). Aquaparian's site reconnaissance determined that the Old Forest ecosystem polygon has been subject to selective logging and is now better represented by a mixed mature and young ecosystem consistent with Madrone's findings.

3. N0028*/HT:ro (Terrestrial Herbaceous: bedrock outcrops). The Madrone report maps this polygon as ESA #657 (Terrestrial Herbaceous ESA) in the southeast corner of the parcel. The shape and location of it was confirmed during Aquaparian's site assessment.

Madrone had identified an additional terrestrial herbaceous meadow on the western boundary of 960 Phoenix Way that extended off the parcel westward onto the adjacent parcel. The southern half of this meadow had been extensively damaged by excavation of a rock quarry prior to 2003 as well as logging roads extending north and west. Land clearing to the west of the subject lands in 2014 appears to have further impacted a portion of this meadow on the adjacent parcel. Aquaparian observed the quarry remains and is filled with water, there are large areas of exposed bedrock and vehicle tracks within the southern half of the meadow and vehicle tracks across the northern half of the meadow. However, there is still meadow habitat comprised of a thin layer of moss-covered soil over bedrock supporting flowering plant species and it appears to be starting to recover from previous impacts. Extensive vernal seeps were observed in

March 2025 flowing to the northeast.

Aquaparian's study identified two additional terrestrial herbaceous ecosystem polygons as well as three small wetland habitats that were not mapped by the SEI, as the provincial mapping was limited to areas greater than 0.5ha due to limitations at the time of air photo quality and scale. Smaller areas were not captured in the study. The SEI map is included with this report as Figure 5.

4.2.6. Species-At-Risk

4.2.6.1. Species at Risk Act

The Species at Risk Act (SARA), Schedule 1 lists species that are legally protected due to their risk status. Sections 32 and 33 contains prohibitions against the killing, harming, harassing, capturing, taking, possessing, collecting, buying, selling or trading of individuals of endangered, threatened and extirpated species listed in Schedule 1 of the *Act*. This *Act* applies to:

- all endangered, threatened and extirpated migratory birds listed in Schedule 1 of SARA and protected by the *Migratory Birds Convention Act*, 1994, anywhere they occur, including private lands, provincial lands and lands within a territory.
- all endangered, threatened and extirpated aquatic species as defined by the *Fisheries Act* listed in Schedule 1 of SARA, anywhere they occur, including private lands, provincial lands and lands within a territory.
- With respect to individuals of a listed wildlife species that is not an aquatic species or a species of birds that are migratory birds protected by the *Migratory Birds Convention Act, 1994*, sections 32 and 33 of SARA do not apply in lands in a province that are not federal lands unless an Order is made under subsection (2) to provide that they apply.
- The Governor in Council may, on the recommendation of the Minister, by Order, provide that sections 32 and 33, or either of them, apply in lands in a province that are not federal lands with respect to individuals of a listed wildlife species that is not an aquatic species or a species of birds that are migratory birds protected by the *Migratory Birds Convention Act, 1994*.

When a Recovery Strategy or Action Plan is created for specific species listed on the SARA Public Registry, critical habitat is identified which is the habitat necessary for the survival or recovery of a listed species. Sometimes critical habitat is identified for groups of species occurring in specific habitat. Critical habitat identification alone is not an automatic protection designation. Federal or non-federal laws or bylaws may

be in place to provide protection. At the provincial level, the province of BC does not have specific legislation in place for the protection of vascular plants at risk. The province of BC considers recovery planning documents, including the identification of critical habitat by the federal government, science advice only. The intent of the *Act* is to "protect critical habitat as much as possible through voluntary actions and stewardship measures" and "prohibitions against the destruction of that particular critical habitat may come into play" (*Government of Canada*). If the critical habitat of a listed species is identified on private land, landowners may be required to take measures to protect it such as modifying land use to avoid habitat destruction.

4.2.6.2. Provincial Species Ranking

The British Columbia Conservation Data Centre (BC CDC) assists in conservation of biodiversity in the province by collecting and sharing information about wildlife, plants and ecosystems in the province. Species and ecosystems are placed on a Red, Blue or Yellow list to rank them according to their provincial conservation status. Provincially Red-Listed species includes any native species or ecological communities that have, or are candidates for, Extirpated, Endangered, or Threatened status in British Columbia. Extirpated species no longer exist in the wild in British Columbia but do occur elsewhere. Endangered species and ecological communities are facing imminent extirpation or extinction. Threatened species and ecological communities are likely to become endangered if limiting factors are not reversed. Blue-Listed species includes any native species or ecological community considered to be of Special Concern (formerly Vulnerable) in British Columbia. Species or ecological communities of Special Concern have characteristics that make them particularly sensitive or vulnerable to human activities or natural events. Yellow-Listed Species includes species or ecological communities that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies. The BC CDC also identifies ecological communities at risk based on species composition and habitat condition.

4.2.6.3. At-risk Species Screening

There are a number of "at-risk" species listed by the BC CDC Ecosystems Explorer search tool which are considered to have some potential to occur at the study area. The search parameters used include animals or plants; BC Conservation status red or blue; municipality of Nanaimo; Habitat subtypes Conifer Forest – Dry, Garry Oak Woodland, Mixed Forest; BGC Zone, Subzone CDFmm; and wetland. A list of 30 Blue-listed species and 25 Red-listed species were generated. A copy of the BC CDC iMap and Ecosystem Explorer search results have been included as Appendix

B. In consideration of the habitat characteristics observed in the site including intact second growth forest stands, small wetland pockets, a few terrestrial herbaceous meadows, the overall site has the potential to support several listed species. Species generated by the search results that have a *reasonable potential* to be found within the site are discussed briefly below:

Band-tailed pigeon (*Patagioenas fasciata*): Provincially Blue-listed

The Canadian breeding range of this large pigeon is restricted to southern British Columbia, mainly on southern Vancouver Island and along the mainland coast. The Band-tailed Pigeon uses a variety of habitats in coastal B.C. Winter habitat includes open woodland and edges with berries and acorns. Fall migrants use open coniferous habitat near farmland, shorelines with mineral sites, riparian habitat, railways, farmyards, and regenerating clear-cuts. The Band-tailed Pigeon eats mainly grain, fruit, acorns, pine nuts, and the flowers and new buds of shrubs and trees. (*BC CDC*). The subject parcel provides suitable habitat for band-tailed pigeons due to the forest edges located near open meadows, availability of berry-producing shrubs, bud-producing deciduous trees and Garry oaks providing acorns for forage.

Northern pygmy owl, *swarthi* species (*Glaucidium gnoma swarthi*): Provincially Blue-listed

There are three species of the seven Northern pygmy owl species recognized in North America that breed in BC. The *swarthi* subspecies is endemic to Vancouver Island and adjacent islands. These owls are crepuscular (active at dawn and dusk), feeding on small mammals, reptiles, amphibians, a variety of bird species and invertebrates using a perch and pounce hunting method. They forage along roads through forested areas, openings within continuous forest, open stands, riparian corridors and open habitats along lakeshores and higher elevations. Forage sites include shrub, pole sapling, young, mature or old forest seral stages. This obligate secondary cavity nester is dependent on woodpecker or natural cavities in coniferous trees. Nesting sites include young forest with suitable wildlife trees, mature forest or old forest sites. (*Cooper and Beauchesne, 2004*). This species is uncommon or localized in the Nanaimo area year-round. The project site offers dead standing trees to provide suitable cavity nesting habitat and intact forest stands continuous with surrounding forests for this species to hunt within.

Western Screech Owl, *kennicotti* subspecies (*Megascops kennicottii kennicottii*): Provincially Blue-listed

This owl species occurs at lower elevations within moist, coniferous and mixed forests and riparian woodlands. Often, they are associated with bigleaf maple or black cottonwood in riparian areas. They nest in natural tree cavities or abandoned woodpecker holes. This species is a generalist predator, feeding on small mammals (mice and shrews), insects and small birds (*BC CDC*) but also fish, frogs and slugs (*COSEWIC,* 2012). This species is uncommon or localized within the Nanaimo area year-round. The forest within the study area and cavities excavated in trees and snags may provide suitable habitat for this secondary cavity nester, and the forest is expected to provide forage.

Hoary Bat (*Lasiurus cinereus*): Provincially Blue-listed

Vancouver Island's largest bat with adult body length of 120-146mm. This bat is typically solitary, except for mother-young association; however, this species may form groups of hundreds during migration. Habitat includes primarily deciduous and coniferous forests and woodlands, including areas altered by humans. Forages for insects, especially moths, over various open areas and along riparian corridors. Usually roosts in foliage of large coniferous or deciduous trees near the end of branches 9-13m above the ground. May roost in rock crevices but rarely in caves. Roost site fidelity is low. Likely overwinters in southeastern USA, Western California and Mexico. May hibernate in tree cavities, squirrel's nests or in a clump of Spanish moss. (*BC CDC*). The study site may offer resting sites in hollow trees and is located near some small wetlands that may offer forage.

Little Brown Myotis (*Myotis lucifugus*): Provincially Blue-listed; SARA Endangered (1-E (2014))

The core range of this species appears to be from the Alaska-Canada Boreal Forest south through the northeastern United States, with smaller populations in the southern and western United States. In the northeast, individuals may migrate hundreds of kilometers between winter and summer habitats; in the west, these bats are believed to hibernate near their summer range. These bats use a wide range of habitats including human-made structures for resting and maternity sites as well as caves and hollow trees. Winter hibernation sites have a stable temperature of 2-12^{o}C and include caves, mines, tunnels, etc. Maternity colonies are commonly found in warm buildings (e.g. attics) and less commonly in hollow trees. Foraging requirements are also generalized, typically over water, along stream and lake edges

or in woodlands near water. This species was changed from Yellow- to Blue-listed in 2022. The study site may offer roosting sites in hollow trees and is located near some small wetlands that may offer insect forage.

Townsend's big-eared bat (*Corynorhinus townsendii):* Blue-listed

In Canada, it is restricted to British Columbia. On the coast, it inhabits Vancouver Island, the Gulf Islands and the Vancouver area. In British Columbia this species is associated with a variety of habitats from coastal forests to arid grasslands of the interior. Its elevational range in the province is from sea level to 1070 metres, although most occurrences are from low elevations. Although it is widespread across most of southern British Columbia, this bat is particularly vulnerable to human activity. Disturbing females with young will affect breeding success, and repeated disturbance at winter hibernacula will increase winter mortality. Females form colonies of a dozen to several hundred in dimly lit areas in buildings, caves or mines. This is one of the few bats that have been consistently found hibernating in British Columbia. The only nursery colony found in British Columbia was in the attic of a house on Vancouver Island; it consisted of about 60 females and their young. A late flyer, Townsend's Big-eared Bat emerges an hour or so after dark. It is an agile bat that is capable of flying at slow speeds *(BC CDC).* Due to the forest stands, open forest edges, open grassy areas and insect-rich wetland pockets, it is possible that the study site may provide foraging and roosting habitat for these bats.

Northern red-legged frog (*Rana aurora):* Provincially Blue-listed

Range extends from southwestern British Columbia, including Vancouver Island in Canada, south along the coast of the United States. Red-legged Frogs have been observed in a variety of aquatic and terrestrial habitats typically at elevations below 500m. They breed in shallow, littoral zones of lakes, temporary and permanent pools and wetlands, and bogs and fens regardless of size but in close proximity to forest; tadpoles associate with benthic habitats. Lotic habitats with little to no flow may be utilized by red-legged frogs, and riparian areas are important for newly metamorphosed froglets. Outside of the breeding season, red-legged frogs utilize shady cool forest as “core” and primarily utilize all forest and woodland types, but individuals are occasionally found in more open and rural areas such as shrubland/chaparral, cropland/hedgerow, old fields, and suburban/orchard (*BC CDC*). Wetland habitat located within the subject parcel may offer suitable breeding habitat to this species if water depth is sufficient and there is a reasonable probability that Red-legged frogs may be found in the surrounding forest environment.

Propertius duskywing (*Erynnis propertius*): Provincially Red-listed

This butterfly species is closely associated with Garry oak as the larval foodplant and a source of nectar for the adult life stage. Leaves at the base of the tree are important for protection of larvae during hibernation. Historically collected only at the southeastern tip of Vancouver Island and on adjacent Gulf Islands, occurrences have been recorded in multiple locations throughout the South Island including the Cedar area in association with Garry oak ecosystems. (*BC CDC*). The open meadows within the property provide potentially suitable habitat for this species.

Common wood-nymph, *incana* subspecies: Provincially Red-listed

This species is restricted to southern Vancouver Island and the gulf islands, with scattered records in Sunshine Coast and lower mainland areas. Known from southeast Vancouver Island, Thetis Island, Qualicum Beach, Hornby Island, Wellington, greater Victoria area and other gulf islands. Butterflies are known to require specific larval and adult food plants for their continued survival in a location. Larvae of *C.p.incana* are known to use grasses and sedges such as *Tridens flavus, Avena fatua, Stipa, Andropoon* and *Carex* (Guppy and Shepard 2001; Layberry *et al.* 1998). Adults are known to nectar on wildflowers (Layberry *et al.* 1998). The species occurs within the fragmented Garry oak ecosystems, and further decline of this habitat type threatens this subspecies. Invasive plants also threaten its habitat. (*BC CDC*). This species is attracted to open meadows for wildflower forage and has been recorded by the BC CDC at a nearby location east of the study site.

Banded Cord Moss: Provincially Blue-listed; SARA Special Concern (1-SC (2006))

Extremely local on periodically damp or humid earth of terraces of exposed outcrop knobs in open stands of arbutus and Garry oak on southern and eastern Vancouver Island. On soil to 700m. It faces widespread, low-level threats from urban development, recreational activities and climate change. The habitat trend is declining, and the species will become increasingly vulnerable if habitat destruction occurs at its present rate. This moss species has been recorded near Harmac (BC CDC) and was also documented in a large meadow located on the east side of the Cable Bay Trail by Madrone in 2009. It has potential to be located within the study site in suitable microhabitats.

Howell's triteleia (*Triteleia howellii*): Provincially Red-listed

Grows in Garry oak woodlands. Deep, dark soils and an extremely rich understory of low shrubs characterise the Garry oak woodlands in the Cowichan Garry oak Preserve. This plant species also occurs in Garry oak – arbutus stands at the base of rock outcrops, where the well-developed shrub layer has a high cover of oceanspray and tall Oregon-grape. Disturbed sites include private yards and roadsides. Flowers in late May and June. Outcompeted by Scotch broom and invasive grasses. (*BC CDC*). The forest-meadow interface within the site may provide suitable microhabitat for this plant species. Potentially, removal of broom from the site may allow this species to establish populations.

Muehlenberg's centaury (*Centaurium muehlenbergii*): Provincially Red-listed; SARA Endangered (1-E (2010))

This small annual herb arises from a short taproot, growing to a height of 3-30cm, but in BC they are often 4-5cm tall. Tube-shaped flowers on a simple stem are white to deep pink with fused petals. Found in two distinct habitats in BC: a vernal pool within a large meadow in a Garry oak woodland, or along the margins of a tidal salt marsh. Seed dispersal seems poor and little is understood about seed bank dynamics. Requires open patches of bare soil for growth and germination. This species appears to be a poor competitor and may be outcompeted by invasive grasses. (*BC CDC*). This species has been identified in close proximity to the study site. Seepage areas and flow paths were observed in the southern and western meadows of the study site and may support this species. These two meadows are proposed to be preserved.

Rough-leaved aster (*Eurybia radulina*): Provincially Blue-listed

Perennial herb from a slender rhizome, 10-70cm tall. Habitat includes dry rock outcrops and open forests in the lowland zone. Known only in southeastern Vancouver Island south to California. (*E-Flora*). Little information is available about this plant species, but the meadows within the study site may provide suitable habitat.

Slimleaf onion (*Allium amplectens*): Provincially Blue-listed

This vascular perennial herb is found in scattered sites on south Vancouver Island, the Gulf Islands and the Sunshine Coast. It flowers in May and June, growing from a

small bulb. All BC populations are found in Garry oak meadows or on dry, rocky bluffs (GOERT, 2011). Populations are usually found on south/southwestern exposures in full to partial sun. A key habitat requirement is soil that is reliably moist in the springtime. This species has been identified in habitat adjacent to the subject parcel by Madrone in 2009 and is mapped within close proximity to the study site by the BC CDC. There is a probability that populations could be supported by the terrestrial herbaceous ecosystems found within the subject parcel.

Twisted Oak Moss (*Syntrichia laevipila*): Provincially Blue-listed; SARA Special Concern (1-SC (2005))

Only found on southeastern Vancouver Island restricted to the bark of primarily Garry oak trees but also bigleaf maple trees as an epiphyte. This moss grows in small clumps at the base of trees where it is susceptible to damage from dogs, grazing animals or during routine maintenance. Only 22 occurrences have been mapped. (*BC CDC*). Mature oak and maple trees within the study site may support this species.

White-lip Rein Orchid (*Platanthera ephemerantha*): Provincially Blue-listed

(Previously named *Piperia candida*). A perennial herb from tubers. Grows 20-55cm tall with terminal flower spike of small white flowers, sometimes faintly green, and an unpleasant scent. Found in dry forests and forest margins in the lowland to montane zones, north to Alaska and south to California; rare in coastal BC. (*E-flora*). Though rare in the general location, the dry forest ecosystem found within the site may provide suitable habitat for this orchid species.

White-top Aster (*Sericocarpus rigidus*): Provincially Blue-listed; SARA Special Concern (1-SC (2019))

A 4–12-inch erect perennial emerging from a creeping rhizome. A leafy stem has a single, compact terminal cluster of flower heads. The general habitat is typically open, non-forested habitats that are seasonally mesic but somewhat moisture stressed during late summer, such as those found in Garry oak – arbutus – Douglas fir forest or woodland ecosystems or in open stands of shrubs including invasive Scotch broom. Requires shallow soils among rocky outcrops and full sun to partial shade. Flowering peaks in late July to early August. (*BC CDC*). Suitable habitat characteristics for this species were observed in the study area, and this species has been previously recorded east of the subject parcel.

Yellow Montane Violet, *praemorsa* subspecies (*Viola praemorsa praemorsa*): Provincially Red-listed

A 6-30cm tall yellow flowering perennial growing from a short, vertical rhizome. Occurs in many habitats in Garry oak woodland communities and grass-dominated meadows. These low-elevation dominated ecosystems are generally confined to coastal situations along southeastern Vancouver Island and on nearby offshore islands. Most microhabitats have shallow soils over bedrock, are relatively level or south-facing, or have little to no shrub cover and are dominated by a cover of herbaceous species. Generally, shade-intolerant but sometimes found in partial shade of Garry oaks. *Viola praemorsa* also grows in exposed grassy fields in areas of deep soil that retain moisture during summer drought. (*BC CDC*). The site may have suitable habitat to support this plant species.

4.2.6.4. Results

A search of the BC CDC iMap identifies the southeastern portion of the subject property is mapped as Occurrence Record # 107885 Grand fir / Dull Oregon grape ecological communities which is Red-listed.

The BC CDC iMap also identifies the location of occurrence records of listed plant and animal species. A search of the study area resulted in a concentrated cluster of four occurrence records within and / or near the west boundary of the subject parcel approximately where the western meadow is located. One Red-listed species (occurrence record 122596) is the Common wood-nymph *incana* subspecies (*Cercyonis pegala incana*) which is a butterfly associated with Garry oak meadow ecosystems. Blue-listed species include white-top aster (*Sericocarpus rigidus*) (occurrence record 11719), slimleaf onion (*Allium amplectans*) (occurrence record 91888) and banded cord-moss (*Entosthodon fascicularis*) (occurrence record 29430). In addition, the BC CDC identifies masked occurrences over the study area. The BC CDC was contacted and provided with the project information, and they determined that details regarding the masked occurrence were not relevant for the project due to distance from the occurrence. Masked ocurrence information from the province is shared under a confidentiality and non-reproduction agreement.

Previous studies by the province of BC (Ward *et al.*, 1998) and Madrone identified terrestrial herbaceous meadows within and adjacent to the subject parcels with listed plant species. In meadows adjacent to the subject parcels, Madrone confirmed the presence of white-top aster in the meadow on the east side of Cable Bay Trail

(Madrone Polygon 3, City of Nanaimo ESA #634), and slim-leaf onion in ESA #655. Madrone's study identified Muhlenberg's centaury (*Centaurium muehlenbergii*), also in the adjacent parcel which is provincially Red-listed and listed as SARA Schedule 1 - Endangered (2010).

Within the subject parcel, listed species identified by Madrone within the southern meadow (Polygon 7, ESA #657) and western meadow (Polygon 42, part of ESA# 633) that contain vernal seeps and pools are expected to still occur in these areas as they remain relatively unchanged. In the western meadow (Polygon 42) Madrone confirmed the presence of:

- white topped-aster (since down-listed from red to blue-listed),
- awned cyperus (yellow-listed),
- banded cord-moss (Yellow-listed, 1-SC (2006)),
- Nuttall's quillwort (Yellow-listed)
- Hookers onion (Yellow-listed)

In the southern meadow (Polygon 7) Madrone identified slimleaf onion (blue-listed), and Nuttal's quillwort.

The two small central meadows identified in Aquaparian's study have some habitat features with potential to support rare plant species that occupy dry open meadows and other topographic features that support niche-dependent rare species; however, none were identified during the 2023 spring and summer surveys during the flowering season. The central meadows do not contain any vernal pools or ephemeral drainage features considered to be critical habitat defined by SARA.

A review of the databases iMap BC and Esri Canada did not identify any mapped critical habitat within the parcel. Critical habitat for Muhlenberg's centaury is mapped east of the project boundary identified as "Joan Point" (#1011_01). A review of the rare plant species-at-risk considered to have a *potential* to be found in the parcel found only one species, Muhlenberg's centaury, has critical habitat criteria identified in its recovery strategy (see Table 1). The four main habitat types identified in the *Recovery Strategy for Multi-species at Risk in Vernal Pools and other Ephemeral Wet Areas Associated with Garry Oak Ecosystems in Canada* include vernal pools, vernal seeps, vernal swales, and seasonally wetted wetland margins. These features are considered critical habitat.

The southern and western meadows proposed to be retained were observed to have a number of well-developed vernal seeps and some vernal pools. However, the two

central meadows do not have vernal seeps or pools or other ephemeral wetted areas. They lack upslope pools or conveyances that would provide the meadow habitat with seasonal groundwater seepage to support native plant species that are generally not found in drier conditions. No catchment area such as pools or swales were identified during the site survey. Pools and swales are generally formed by rock-depressions which are common on rocky bluffs, or by clay depressions commonly found in low-lying meadows (*Parks Canada Agency, 2005*). The central meadow habitat is sloped and gently undulating and characterized by small clearings with thin soils over bedrock. The meadows are not bluff habitat or positioned at the base of a hillside. Shallow soils over sloping bedrock appear rapidly draining throughout the meadow sites and are surrounded by dry Douglas fir forest that was observed to be uniform in habitat composition.

Table 1 below identifies the critical habitat requirements to support SARA Schedule 1 plant species-at-risk that have the potential to be found in the subject parcels.

Table 1: Federally Listed Species-at-risk Screening

SPECIES COMMON NAME	LATIN NAME	FEDERAL STATUS - SARA	PROVINCIAL STATUS	CRITICAL HABITAT
White-top aster	*Sericocarpus rigidus*	Special Concern (1-SC (2019))	Blue	No Critical Habitat has been proposed as per the *Recovery Strategy for Multi-Species at Risk in Garry Oak Woodlands in Canada*.
Muhelnberg's centaury	*Centaurium muehlenbergii*	Endangered (1-E (2010))	Red	Critical habitat attributes are as follows: 1. Shallow depression with slope angles of < 2% that occur between 0.5-90 m above sea level. 2. The lowest portion of the depression is sunny with short or sparse vegetation, woody plants may be found on areas less prone to winter flooding. 3. Soils at the lowest point are poorly drained, generally shallow (< 10 cm deep) and usually have a negligible component of coarse fragments. 4. Soils tend to be moist during the winter and are very dry by mid-summer (June/July).
Twisted oak moss	*Syntrichia laevipila*	Special Concern (1-SC (2005))	Blue	No Recovery Plan
Banded cord-moss	*Entosthodon fascicularis*	Special Concern (1-SC (2006))	Blue	No Recovery Plan

None of these rare, provincially listed plant species were identified within the central meadows during Aquaparian's investigations. Neither of the two central meadows have ephemeral vernal pools or seeps. While the initial site survey of the overall area was completed outside of the wildflower season, additional spring and summer flowering plant surveys were conducted in May and July 2023 to determine if any listed plant species were supported by the two small central meadows that may be impacted by the proposed development. The southern and western meadows were not surveyed additional times during the flowering season as they will be preserved by the proposed trail buffer and additional recommended DPA setbacks. Provincially listed wildflowers identified above were not found in the central meadows that are expected to be impacted, but they may be present within the southern and western meadows that are recommended to be preserved as well as other meadows in the general area adjacent to the site. Additional targeted surveys may be required if the two central meadows are proposed to be developed.

5.0 SUMMARY

In general, the subject parcel appears to have changed little in overall ecosystem composition since the Madrone 2009 study and no new anthropogenic impacts were observed. Aquaparian identified four terrestrial herbaceous ecosystems (meadows) within the confines of the subject parcels. Madrone's report mapped Polygon 7 which was found to be consistent with the SEI mapped polygon (ESA #657) and has not appeared to have changed significantly in shape or size since 2009. Madrone also identified a meadow on the western boundary identified as Polygon 42, that appears to have been significantly impacted by past land use. Madrone's description and classification of the second growth forest present within most of the site is consistent with Aquaparian's observations. Extensive selective logging has impacted the site historically, but many large veteran trees remain that appear to have been left as seed trees during previous logging. Madrone's report includes an inventory of all the trees within the site classified as "Significant Trees" by the City of Nanaimo based on species and stem size. Aquaparian confirmed that several Significant Douglas-fir trees have fallen since the 2009 study. One eagle nest tree mapped by Madrone which was not included in the WiTS database, was confirmed by Aquaparian to be dead and no nest or nest material was observed.

Madrone's study included detailed animal and plant species surveys. Aquaparian's reconnaissance of the parcel suggests that species recorded by Madrone are likely to continue to find suitable habitat in the parcel given its existing condition. Some of the Provincially listed species that were observed in proximity to the subject parcel have been re-classified since Madrone's study as documented in this report.

6.0 POTENTIAL IMPACTS - PRELIMINARY CONCEPTUAL DESIGN

Aquaparian has identified 3 wetland ESAs and 4 terrestrial herbaceous ESAs (western, southern and two central meadows) within the two subject parcels. Madrone had identified the southern and western meadows in the 2009 study which contain vernal seeps and vernal pools which are considered critical habitat for the SARA *Recovery Strategy for Multi-species at Risk in Vernal Pools and other Ephemeral Wet Areas Associated with Garry Oak Ecosystems in Canada.*

None of these wetlands or terrestrial herbaceous ESAs are specifically mapped within the CoN Schedule 6 DPA 1: Environmentally Sensitive Areas map. However, the 2022 City Plan map now identifies the entire parcel is subject to DPA1: lands containing Terrestrial Environmentally Sensitive Areas.

An agreement has been met between the CoN and NFP to protect a tree buffer on the west side of the Cable Bay Trail that is to have an average width of 100m. Preliminary layout of this buffer has been designed to capture as much of the wetland and terrestrial herbaceous polygons as possible as well as the larger of the two polygons of mature forest located on a steep slope in the northeast portion of the parcel. The proposed tree buffer shown on the attached plan covers 11,200m^2 (11.2ha).

At the time of writing this report, NFP is in the process of creating a preliminary plan for the proposed industrial lands including access roads, servicing, and potential lease lot areas for industrial use. It is assumed that the leased lots will be extensively cleared for the intended use. As understood, the application of Development Permit Areas will be discussed and confirmed with the City of Nanaimo at the detailed design and Development Permit stage if rezoning is approved as zoning bylaws are amended from time to time. The following considerations have been provided to facilitate future discussions.

- Wetlands are protected by the provincial *Water Sustainability Act*. Two small wetlands on the east side are located within and just beyond the proposed tree buffer, a 15m setback can be extended to encompass these wetlands. The other small wetland is located on the south boundary and extends beyond the parcel to the south, a 15m setback can be extended around this wetland.
- SARA *Recovery Strategy for Multi-species at Risk in Vernal Pools and other Ephemeral Wet Areas Associated with Garry Oak Ecosystems in Canada* Critical Habitat (seeps and vernal pools) has been identified in the south and west meadows. A portion of the southern terrestrial herbaceous polygon extends beyond the proposed tree buffer but is very near the southern boundary and can be extended to encompass a 15m

recommended setback to protect critical habitat. The western meadow extends west onto the adjacent parcel and a 15m setback is recommended to protect critical habitat.

- No SARA critical habitat was identified in the two small central meadows. If all of the property is cleared and graded except for the areas proposed in this report for retention, the two smaller terrestrial herbaceous meadows located in the east central area will be lost. If the proposed development plan is approved, consider salvaging and transplanting flowering plant species from these two small meadows to the west meadow to facilitate restoration of that meadow.

A tree inventory including Significant trees was previously completed by Madrone. This has been used as a base plan to complete a Tree Inventory attached as Figure 6 which also shows the above-mentioned polygons with DPA buffer areas and proposed clearing area. A tree removal permit application will be required once the final development plan is approved. Preliminary discussions with the City staff (W. Ernst & D. Mousseau) for proposed tree replacement calculations and criteria were that replacement should be based on the removal of 100 trees per ha of land cleared and replacement to be based on 1200 forestry seedlings per hectare preferably within the subject lands owned by Nanaimo Forest Products within the City boundary. This density and tree planting method follows a typical coastal reforestation model and accounts for some mortality. If rezoning is approved and the project proceeds to the development phase, tree removal and replacement requirements will require further discussion with the City as part of the Tree Removal Permit application.

7.0 ADDITIONAL STUDIES

If the project is approved for rezoning to industrial land use, detailed engineering design will proceed, and the City of Nanaimo will confirm the extent of additional studies. Detailed design will refine the proposed development footprint including the vegetation clearing boundary and confirm the tree buffer area, cut and fill requirements, stormwater management, road layout, servicing requirements and construction phasing. Environmental DPAs will be confirmed by the City and anticipated impacts can then be confirmed which will inform the measures to avoid impacts as far as possible, mitigate or limit impacts or compensate when required. Additional tasks that may be required to obtain development permits and comply with other environmental *Acts* and Regulations include but are not limited to the following:

- Tree Management Plan – calculate tree removal and replacement requirements based on final design. Produce TMP and apply for tree removal permit. An ISA Certified Arborist and / or Registered Professional Forester is expected to be required for this component to provide appropriate assessments and recommendations.

- If the two central meadows are still proposed to be lost to development, a rare plant specialist should be retained conduct a spring / summer assessment to confirm there are no protected species present.

- Pileated woodpecker nest cavity survey – this may need to be repeated depending on the schedule of development and initial findings. Federal permits will be required before the cavity nest trees can be removed in the non-breeding season.

- Re-assessment to determine if any new eagle, heron or other raptor nests have been constructed.

- Depending on the time of vegetation removal and phases / areas of construction, additional targeted studies may be warranted (i.e. migratory bird nest surveys, raptor nest surveys, bat roosting surveys, amphibian surveys).

- Construction Environmental Management Plan (CEMP) which will set out the framework and provide environmental mitigation recommendations during construction. This is expected to include, but not be limited to: communications, emergency contacts and reporting requirements; identification of environmental least-risk timing windows; Erosion and Sediment Control Plan designed by an engineer; spill prevention and waste management plan; soil management plan; vegetation management plan; air quality and dust control management plan; Environmental Monitoring requirements and reporting.

8.0 CLOSURE

Aquaparian Environmental Consulting Ltd was retained to complete an Environmental Assessment to support a re-zoning application to the City of Nanaimo for industrial use of two adjacent parcels, 950 Phoenix Way and the west portion of 1260 Phoenix Way, a hooked property which straddles the Cable Bay Trail Right-of-Way. This report was completed to identify general habitat conditions and features within the study area to be compared with a comprehensive study completed by Madrone in 2009. A focus of this study was to identify and map Environmentally Sensitive Areas (ESAs) located within the parcel to determine if there were changes since the Madrone study. No detailed species presence assessments were completed for this study.

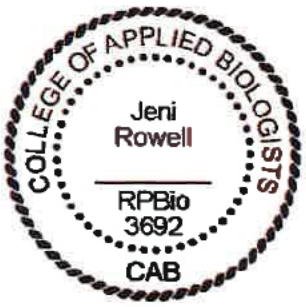
This report has been prepared at the rezoning stage. At the time of writing this report, only a preliminary layout plan was provided. At the detailed design and development stage, the area of the ESAs and their *leave strips,* development permit requirements, and protection measures

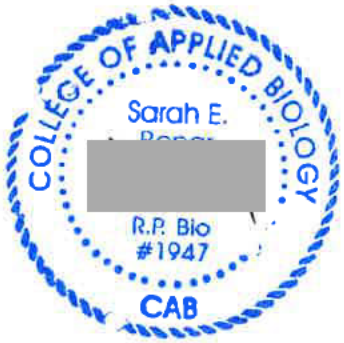
will need to be discussed with the City of Nanaimo. A Tree Management Plan and tree removal permit will be required for tree removal once clearing limits have been finalized. Phasing of the project would also need to be planned accordingly. The development stage will also require that a Construction Environmental Management Plan be prepared by a Qualified Environmental Professional to provide mitigation measures to avoid or limit potential negative impacts to sensitive environmental features during construction works and identify if any additional provincial permits are required. The CEMP will also outline environmental monitoring requirements during construction.

This report has been completed in accordance with generally accepted biological practices. No other warranty is made, either expressed or implied. Aquaparian trusts that the information provided in this report meets your requirements. Any questions regarding information provided in this document, please contact the undersigned at (250) 591-2258.

Respectfully submitted,

AQUAPARIAN ENVIRONMENTAL CONSULTING LTD.





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Intermediate Biologist

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Senior Biologist/Principal

Aquaparian
Environmental Consulting
203- 321 Wallace Street, Nanaimo, BC V9R 5B6
SARAH BONAR 250-714-8446 CHRIS ZAMORA 250-714-8864

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FIGURE 1A & 1B

SITE LOCATION MAP

FIGURE 1A & 1B – SITE LOCATION MAP

FIGURE 2

PRELIMINARY LAYOUT PROPOSED

SITE PLAN TO ACCOMPANY REZONING APPLICATION FOR:

LOT 4, SECTIONS 21, 22 AND 23, RANGE 2 AND SECTION 21, RANGE 3, CEDAR DISTRICT, PLAN VIP65621 EXCEPT PLAN EPP23851 (PID 023-922-907) AND
PART OF SECTION 20, RANGE 3, CEDAR DISTRICT, EXCEPT THAT PART IN PLAN VIP59192 (PID 008-747-741).

Civic Address: 950 & 1260 PHOENIX WAY, NANAIMO				Existing Zoning: AR1	Proposed Zoning: I4 INDUSTRIAL
File: 19-177 PRO LAYOUT_REV4_20221216	Scale: 1:2500	Date: DECEMBER 16, 2022	Drawn by: RJT	Checked by:	

Client: NANAIMO FOREST PRODUCTS

Project:

0 50 100 150 200

SCALE 1:2500

DISTANCES AND ELEVATIONS SHOWN ARE IN METRES.

CONTOURS ARE DERIVED FROM CITY OF NANAIMO MAPPING DATA

Note:
THE SUBJECT PROPERTIES ARE AFFECTED BY THE FOLLOWING REGISTERED DOCUMENTS:

CA7710622, CA7710624, H28579, H47153, EL85329, EL85331, EW29984, EW29986, EW29987, FB348676, M76300, EH70647, EH85016, CA7710624, EX113757, 186251G, EK50203, EW29985 & EW29986.

DATE:	REVISION:
DECEMBER 2, 2022	FIRST ISSUE
DECEMBER 13, 2022	REVISE LAYOUT, LARGE LOT SIZES
DECEMBER 16, 2022	REVISE LAYOUT, ROAD ALIGNMENT & LOT CONFIGURATION

Turner & Associates
land surveying
435 Terminal Avenue North
Nanaimo, B.C.
V9S 4J8
250-753-9778
www.turnersurveys.ca

FIGURE 3

ENVIRONMENTALLY SENSITIVE AREAS AND SIGNIFICANT TREE LOCATION MAP (TURNER & ASSOCIATES LAND SURVEYING)

N

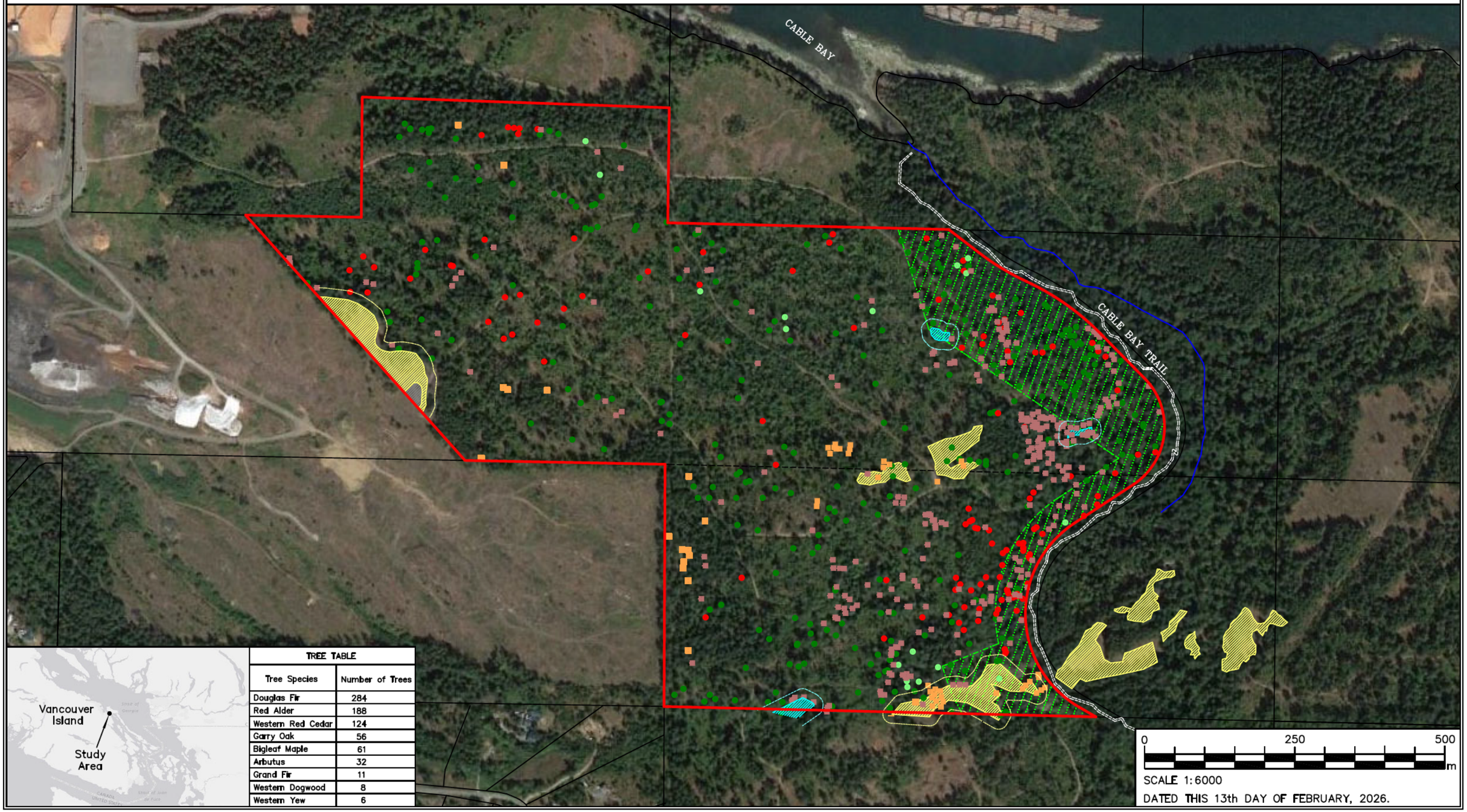
ENVIRONMENTAL ASSESSMENT

CLIENT: NANAIMO FOREST PRODUCTS

ADDRESS: 950 & 1260 PHOENIX WAY, NANAIMO

- DOUGLAS FIR
- WESTERN RED CEDAR
- OTHER CONIFEROUS
- GARRY OAK
- OTHER DECIDUOUS
- TERRESTRIAL HERBACEOUS ESA
- WETLAND
- BUFFER AREA FOR CABLE BAY TRAIL
- STUDY AREA BOUNDARY
- STREAM

Turner & Associates land surveying inc.



TREE TABLE	
Tree Species	Number of Trees
Douglas Fir	284
Red Alder	188
Western Red Cedar	124
Garry Oak	56
Bigleaf Maple	61
Arbutus	32
Grand Fir	11
Western Dogwood	8
Western Yew	6

0 250 500 m

SCALE 1:6000

DATED THIS 13th DAY OF FEBRUARY, 2026.

FIGURE 4

WITS & BC GBH ATLAS

FIGURE 3a – WILDLIFE TREE STEWARDSHIP (WiTS) MAP

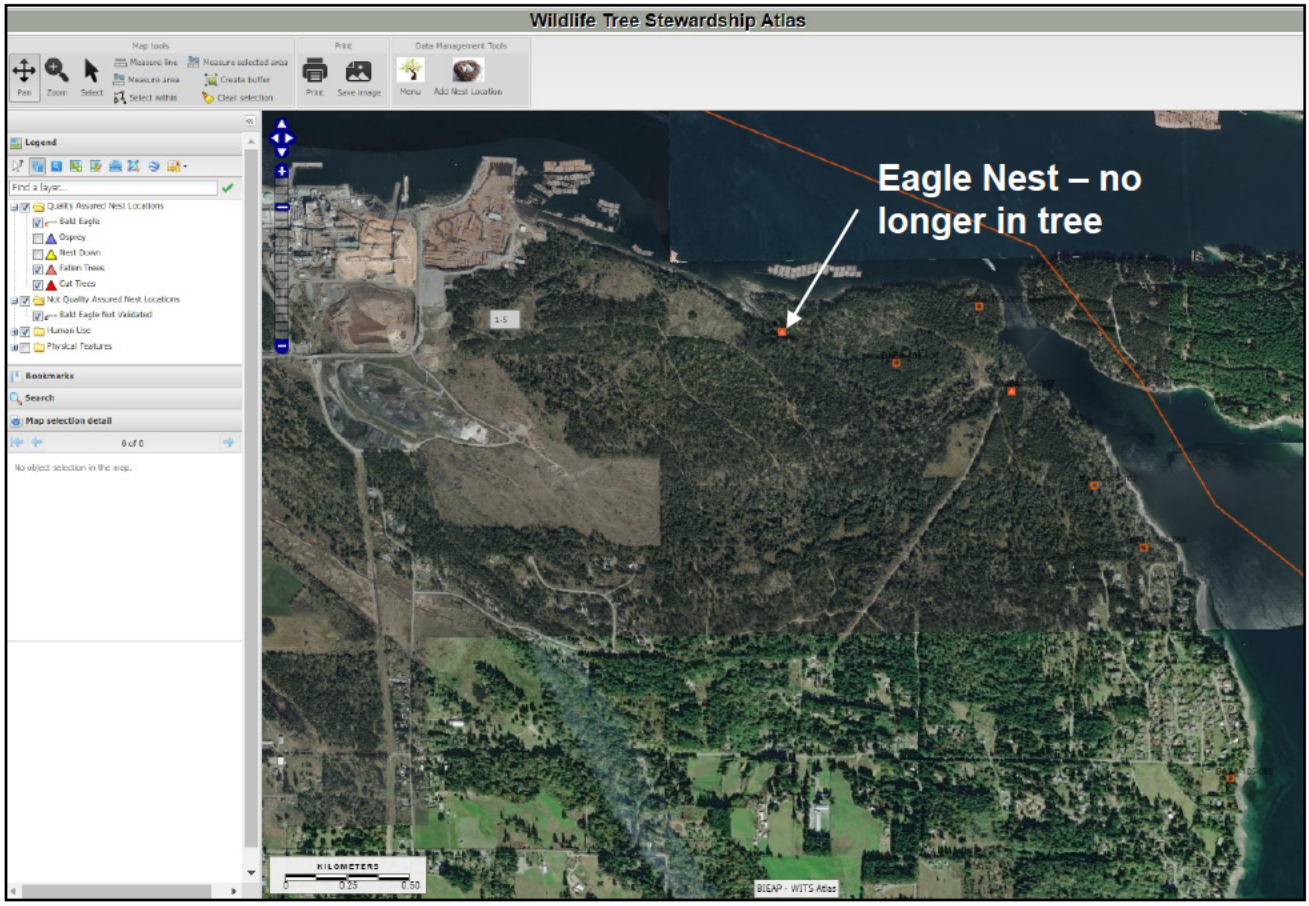


FIGURE 3b – WiTS NESTS SHOWN IN RELATION TO PARCEL BOUNDARIES

FIGURE 5

SENSITIVE ECOSYSTEM INVENTORY MAP

FIGURE 6

TREE INVENTORY LANDMARK TREES

PROPOSED RETENTION & POTENTIAL CLEARING AREAS

NANAIMO FOREST PRODUCTS – PHOENIX WAY INDUSTRIAL LANDS DEVELOPMENT
ENVIRONMENTAL FEATURES & LANDMARK TREE INVENTORY
950 PHOENIX WAY & WEST PORTION 1260 PHOENIX WAY

N

ENVIRONMENTAL ASSESSMENT
CLIENT: NANAIMO FOREST PRODUCTS
ADDRESS: 950 & 1260 PHOENIX WAY, NANAIMO

- DOUGLAS FIR
- WESTERN RED CEDAR
- OTHER CONIFEROUS
- GARRY OAK
- OTHER DECIDUOUS

SIGNIFICANT TREES

- TERRESTRIAL HERBACEOUS ESA
- WETLAND
- BUFFER AREA FOR CABLE BAY TRAIL
- STUDY AREA BOUNDARY
- STREAM

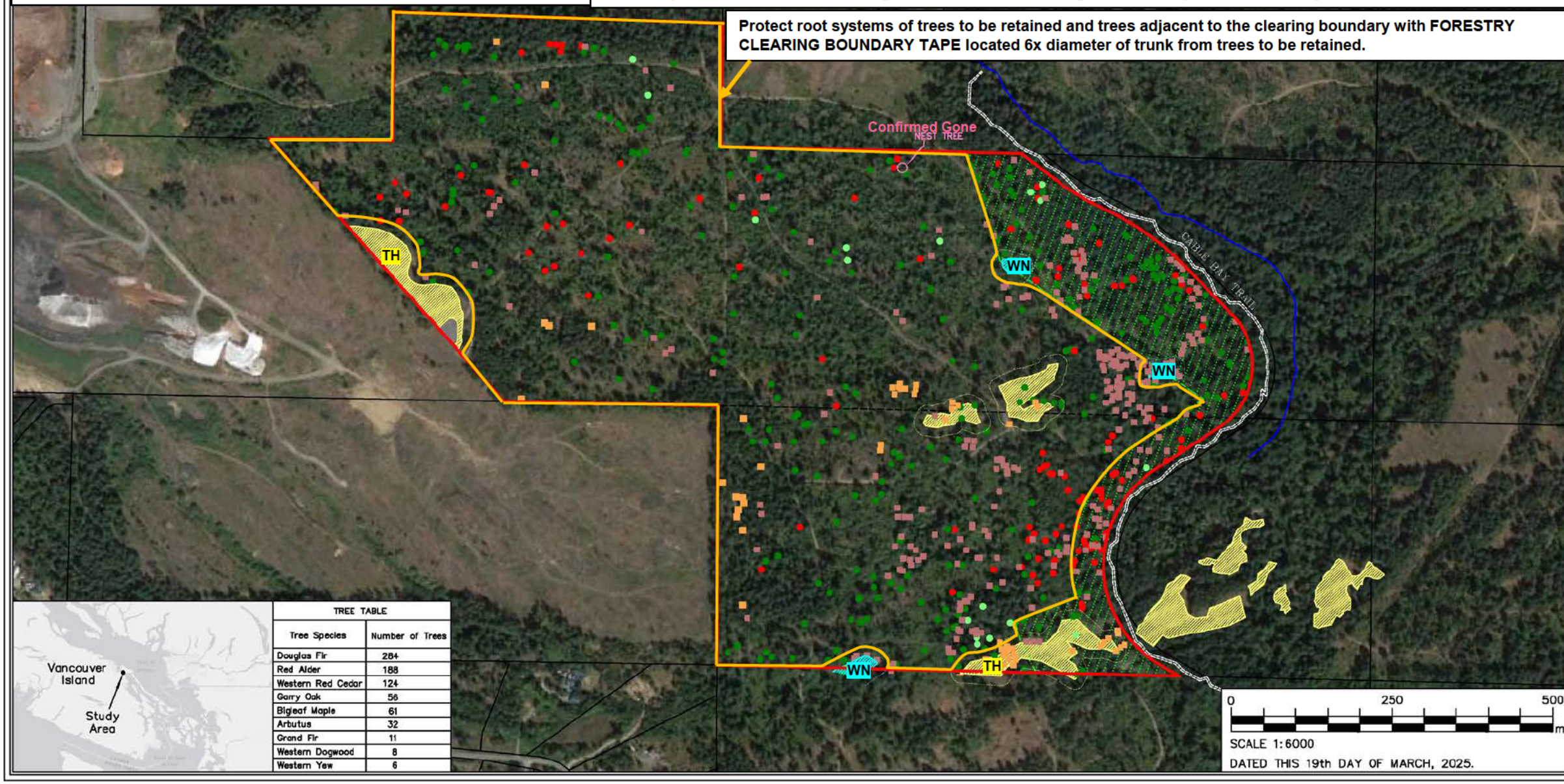
Turner & Associates land surveying

PROPERTY BOUNDARY ~86.5 ha
CLEARING BOUNDARY ~72.95 ha
AVERAGE BUFFER 100m

Retain: 100m average Buffer (11.3ha) + Wetlands (WN) (0.44ha) + Terrestrial Herbaceous (TH) (0.95ha)

Tree Removal Calculation: 100 trees/ha = 7390 Trees
Tree Replacement: 1200 seedlings/ha = 88,680 Seedlings in buffer, perimeter & adjacent land

Protect root systems of trees to be retained and trees adjacent to the clearing boundary with FORESTRY CLEARING BOUNDARY TAPE located 6x diameter of trunk from trees to be retained.



TREE TABLE	
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Arbutus	32
Grand Fir	11
Western Dogwood	8
Western Yew	6

0 250 500 m
SCALE 1:6000
DATED THIS 19th DAY OF MARCH, 2025.

APPENDIX A

SITE PHOTOGRAPHS

APPENDIX A – SITE PHOTOGRAPHS
Photo Sheet 1

Photo 1: Majority of forested habitat on site includes second growth dry Douglas fir forest with scattered mature Douglas fir trees. Photo shows forested slope with northeast aspect near east side of parcel.

Photo 2: Forest is fragmented by disturbed forest openings such as this one. This area appears to have been cleared and potentially used as a staging area as it does not have typical meadow attributes.

Photo 3: Lower topographic area with moist soils support red alder and big leaf maple with western red cedar and dense sword fern understory.

Photo Sheet 2

Photo 4: Several wide dirt roads from previous logging cross through the parcel.

Photo 5: Second growth forest with a low bedrock escarpment west of the Cable Bay trail.

Photo 6: Looking across a hardhack wetland straddling the south parcel boundary.

Photo Sheet 3

Photo 7: A view of the southern hardhack wetland showing saturated ground and woody debris.

Photo 8: A view of the linear wetland located in the central far eastern side of the parcel. Vegetated with grass and rushes, This depression may have formed from an old logging road that has begun to naturalize into a wetland over time.

Photo 9: A view of the small north wetland. Patches of sedge dominate. This wetland would be seasonally inundated.

Photo Sheet 4

Photos 10 & 11: Showing two views within the larger southern ESA previously mapped by Madrone and the provincial SEI mapping. Open meadows with thin, rapidly draining soils over bedrock are characteristic of a terrestrial herbaceous ecosystem.

Photo 12: A small terrestrial herbaceous ESA that is situated to the west of an intersection of dirt roads situated in the central east side of the property where the two parcels join.

Photo 13: Another small terrestrial herbaceous ESA that is situated to the east of the dirt road intersection.

Photo Sheet 5

Photo 14: Abundant shooting star plants growing in the small central east meadow (May 15, 2023 wildflower survey).

Photo 15: Shooting star flower amongst western buttercup and a variety of grasses (May 15, 2023 wildflower survey).

Photo 16: Flat spurred piperia found in the small central meadows (July 3, 2023 wildflower survey).

Photo 17: Rattlesnake plantain before flowering (May 15, 2023 wildflower survey).

Photo Sheet 6

Photos 18, 19 & 20: large diameter Significant Douglas fir trees that have fallen down since Madrone's study in 2009.

Photo 21: An eagle nest tree mapped by Madrone in 2009 appears to be dead and inactive with no nest present. Other trees in this stand appear unsuitable for eagle nesting.

Photo Sheet 7

February 27, 2025 winter survey of central meadows to confirm drainage:

Photos 22 -24: West central meadow following period of heavy precipitation. Feb. 27, 2025 survey. No seeps or vernal pools identified.

Photo 25: Only water feature identified in west central meadow was small pit of water with decaying grass in the bottom and insect larvae (Photo 26).

Photo Sheet 8

Photos 27-30: East central meadow following heavy precipitation. No seeps or vernal pools observed during the Feb. 27, 2025 survey.

Photo 31: Showing the watercourse flowing during the Feb. 27, 2025 survey indicating recent high precipitation.

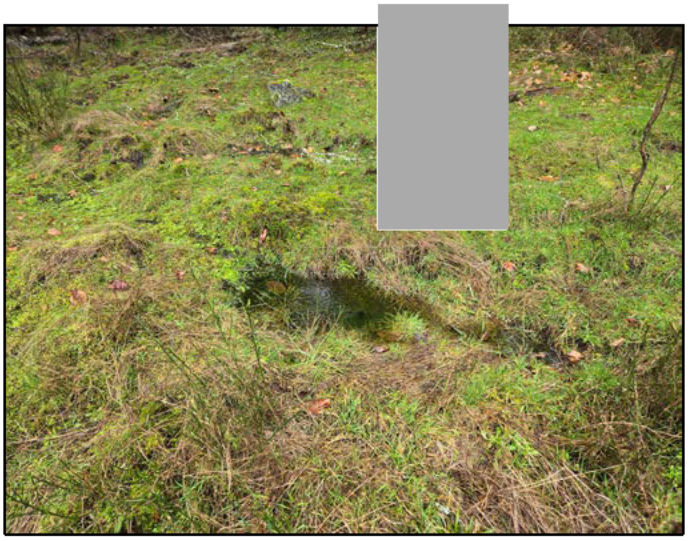
Photo 32: In comparison, this is an example of a spring-fed seep and vernal pool located in the main meadow to the east of Cable Bay Trail *outside* of the subject parcel. Feb 27, 2025.

Photo Sheet 9

Photo 33 - 38: The western meadow has extensive damage but still retains areas of thin soils and moss supporting flowering species and several vernal seeps (March 2025).

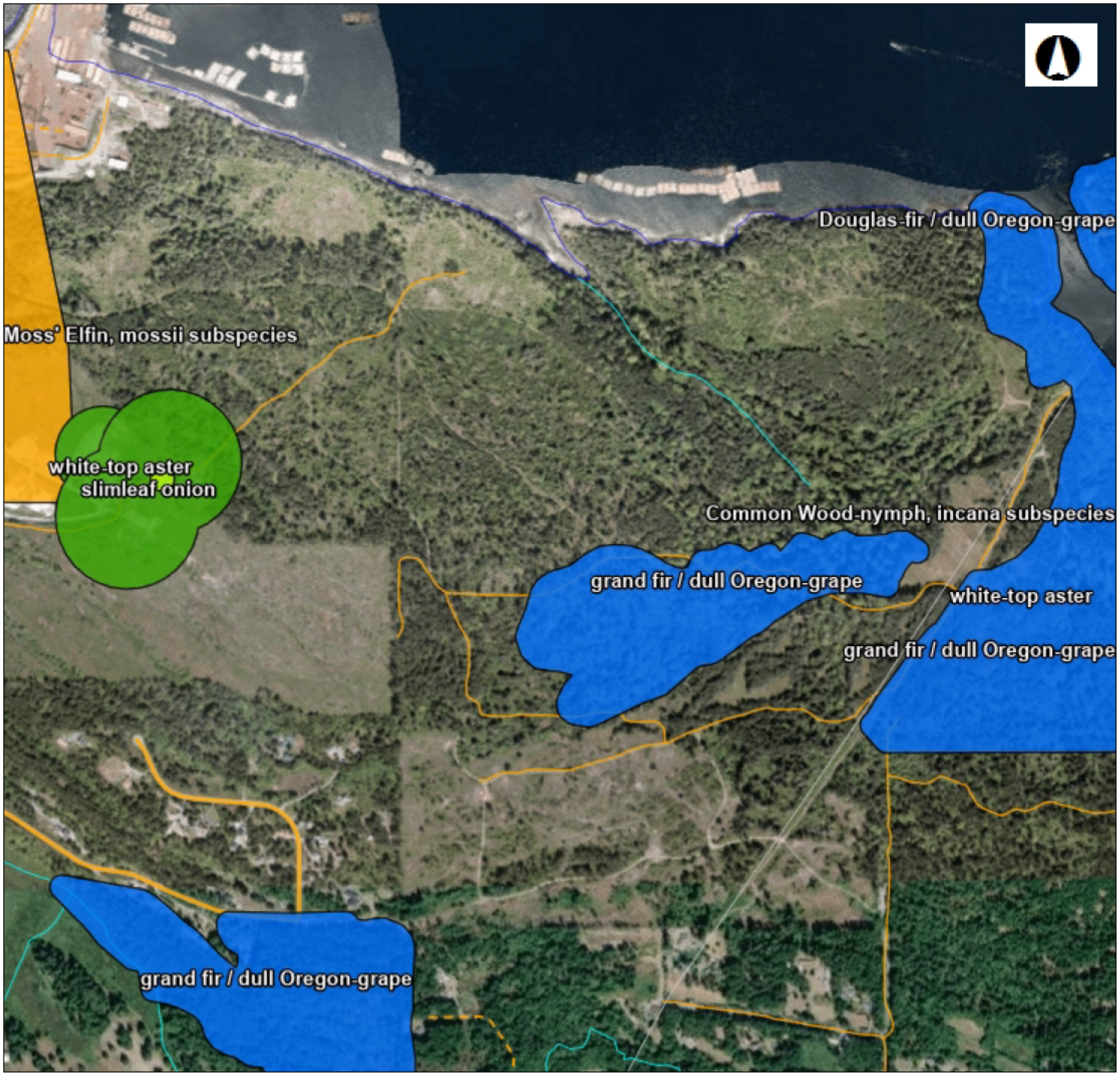
Photo Sheet 10

Photo 39-43: The southern meadow also has historical damage but still retains extensive areas of thin soils and moss supporting flowering species and several vernal seeps (March 2025). Scotch broom is also found within and adjacent to this meadow.



APPENDIX B

BC CDC SEARCH RESULTS



BRITISH COLUMBIA

CDC Occurrence Map

Legend

Species and Ecosystems at Available Occurrences - CD

FEATURE_CODE

- Animal - Vertebrate
- Animal - Invertebrate
- Plant - Vascular
- Plant - Non-vascular
- Ecological Community

Water - Rivers, Creeks, Sho (1:20,000)

FCODE

- Canal
- Dam
- Dam - Beaver
- Ditch

0 0.37 0.73 km

1: 18,056

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CAUTION: Maps obtained using this site are not designed to assist in navigation. These maps may be generalized and may not reflect current conditions. Uncharted hazards may exist. DO NOT USE THESE MAPS FOR NAVIGATIONAL PURPOSES.

Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

BC Species and Ecosystems Explorer Search Results **55 records**

Close

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Accipiter gentilis laingi	Northern Goshawk, *laingi* subspecies	CDF CWH	S2 (2010)	Red	G5T2 (2016)	T	1-T (2003)	Y		Y	
Allium amplectens	slimleaf onion	CDFmm CWHxm	S3 (2019)	Blue	G4 (1988)					Y	
Allogona townsendiana	Oregon Forestsnail	CDF CMA CWH ESSF MH	S2 (2015)	Red	G3G4 (2010)	E	1-E (2005)			Y	Y
Ardea herodias fannini	Great Blue Heron, *fannini* subspecies	CDF CWH	S3B,S4N (2022)	Blue	G5T4 (2016)	SC	1-SC (2010)	Y		Y	
Balsamorhiza deltoidea	deltoid balsamroot	CDFmm CWHxm	S2 (2019)	Red	G5 (1988)	E	1-E (2003)			Y	Y
Buteo swainsoni	Swainson's Hawk	BG BWBS CDF ICH IDF MS PP SBS	S2B (2022)	Red	G5 (2016)					Y	

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Cardellina canadensis	Canada Warbler	BWBS CDF CWH	S3B (2022)	Blue	G5 (2016)	SC	1-T (2010)			Y	
Carychium occidentale	Western Thorn	CDF CWH	S3 (2015)	Blue	G3G4 (2002)						
Cercyonis pegala incana	Common Wood-nymph, *incana* subspecies	CDF CWH	S2? (2021)	Red	G5T4T5 (2003)					Y	
Chordeiles minor	Common Nighthawk	BG BWBS CDF CWH ESSF ICH IDF MH MS PP SBPS SBS SWB	S3S5B (2022)	Blue	G5 (2016)	SC	1-SC (2023)				
Claytonia washingtoniana	Washington springbeauty	CDFmm CWHdm CWHxm IDFww	S3 (2022)	Blue	G2G4 (2001)					Y	

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Coccyzus americanus	Yellow-billed Cuckoo	BG CDF CWH ICH PP	SXB (2022)	Red	G5 (2016)						
Coenonympha california insulana	Common Ringlet, *insulana* subspecies	CDF CWH	S1 (2021)	Red	G5T3T4 (1998)					Y	
Contia tenuis	Common Sharp-tailed Snake	CDF CWH	S1S2 (2018)	Red	G5 (2016)	E/T	1-E (2003)			Y	Y
Corynorhinus townsendii	Townsend's Big-eared Bat	BG CDF CWH ICH IDF PP	S3 (2022)	Blue	G4 (2016)					Y	Y
Cryptomastix devia	Puget Oregonian	CDF CWH	SX (2015)	Red	G2 (2017)	XT	1-XT (2005)				
Dryopteris arguta	coastal wood fern	CDFmm	S3 (2019)	Blue	G5 (2011)	SC	1-SC (2003)			Y	
Epargyreus clarus	Silver-spotted Skipper	CDF CWH ESSF ICH IDF MH MS PP	S3 (2020)	Blue	G5 (2020)						

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Erynnis propertius	Propertius Duskywing	CDF CMA CWH MH	S2 (2020)	Red	G5 (2020)					Y	
Euphagus carolinus	Rusty Blackbird	BG BWBS CDF CWH ESSF MS PP SBPS SBS SWB	S3S4B (2015)	Blue	G4 (2016)	SC	1-SC (2009)				
Eurybia radulina	rough-leaved aster	CDFmm CWHxm	S2 (2022)	Red	G4G5 (1988)					Y	
Glaucidium gnoma swarthi	Northern Pygmy-owl, *swarthi* subspecies	CDF CWH MH	S3S4 (2018)	Blue	G4G5T3T4Q (2019)			Y		Y	
Hemphillia glandulosa	Warty Jumping-slug	CDF CWH	S2? (2015)	Red	G3G4 (2005)	SC	1-SC (2005)			Y	
Icteria virens	Yellow-breasted Chat	BG CDF CWH ICH IDF PP SBS	S2B (2018)	Red	G5 (2016)	E	1-E (2003)	Y		Y	Y

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Lasiurus cinereus	Hoary Bat	BG BWBS CDF CWH ICH IDF MS PP SBS	S3S4 (2022)	Blue	G3G4 (2016)						
Lepus americanus washingtonii	Snowshoe Hare, *washingtonii* subspecies	CDF CWH	S1 (2011)	Red	G5T3T5 (1996)					Y	
Lomatium dissectum	fern-leaved desert-parsley	CDFmm	S2 (2019)	Red	G4T4 (2003)					Y	
Megascops kennicottii kennicottii	Western Screech-Owl, *kennicottii* subspecies	CDF CWH MH	S2S3 (2017)	Blue	G4G5T4 (2016)	T	1-T (2005)			Y	
Melanerpes lewis	Lewis's Woodpecker	BG CDF CWH ICH IDF PP SBS	S2S3B (2022)	Blue	G4 (2016)	T	1-T (2012)	Y		Y	Y
Mustela frenata altifrontalis	Long-tailed weasel, *altifrontalis* subspecies	CDF CWH MH	SH (2011)	Red	G5TNR						

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										Public	Confidential
Mustela richardsonii anguinae	Ermine, *anguinae* subspecies	CDF CWH MH	S3 (2010)	Blue	G5T3 (2016)					Y	Y
Myotis lucifugus	Little Brown Myotis	BG BWBS CDF CWH ESSF ICH IDF MH MS PP SBPS SBS SWB	S3S4 (2022)	Blue	G3G4 (2021)	E	1-E (2014)				
Nearctula sp. 1	Threaded Vertigo	CDF CWH	S3 (2015)	Blue	G3G5 (2006)	SC	1-SC (2012)			Y	

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Oreamnos americanus	Mountain Goat	BAFA BG BWBS CDF CMA CWH ESSF ICH IDF IMA MH MS PP SBPS SBS SWB	S3 (2015)	Blue	G5 (2016)						
Patagioenas fasciata	Band-tailed Pigeon	CDF CWH ICH IDF MS SBS	S3S4 (2022)	Blue	G4 (2016)	SC	1-SC (2011)				
Platanthera ephemerantha	white-lip rein orchid	CDFmm CWHvh	S3 (2019)	Blue	G3? (2012)					Y	
Pristiloma johnsoni	Broadwhorl Tightcoil	CDF CWH MH	S3 (2015)	Blue	G3 (2013)						
Progne subis	Purple Martin	BWBS CDF CWH ICH	S3S4B (2022)	Blue	G5 (2016)					Y	

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										Public	Confidential
Prophysaon coeruleum	Blue-grey Taildropper	CDF CWH	S2S3 (2015)	Blue	G3G4 (2010)	T	1-T (2019)			Y	
Sabulina pusilla	dwarf sandwort	CDFmm	S1 (2019)	Red	G3G5 (2004)	E	1-E (2005)			Y	
Sanicula bipinnatifida	purple sanicle	CDFmm CWHxm	S2 (2019)	Red	G5 (1990)	T	1-T (2003)			Y	
Sericocarpus rigidus	white-top aster	CDFmm CWHxm	S3 (2019)	Blue	G3 (2007)	SC	1-SC (2003)			Y	
Setophaga virens	Black-throated Green Warbler	BWBS CDF CWH ESSF ICH SBS	S3B (2015)	Blue	G5 (2016)			Y		Y	
Silene scouleri ssp. *scouleri*	coastal Scouler's catchfly	CDFmm	S1 (2019)	Red	G5T3T5 (2002)	E	1-E (2005)			Y	
Sorex rohweri	Olympic Shrew	CDF CWH	S2? (2015)	Red	G4G5 (2007)					Y	
Sorex trowbridgii	Trowbridge's Shrew	CDF CWH	S3 (2015)	Blue	G5 (2016)					Y	
Sympetrum vicinum	Autumn Meadowhawk	CDF CWH	S3S4 (2015)	Blue	G5 (2015)					Y	
Syntrichia laevipila	twisted oak moss	CDFmm	S3 (2015)	Blue	GNR	SC	1-SC (2005)			Y	Y

Scientific Name	English Name	Biogeoclimatic Units	Provincial	BC List	Global	COSEWIC	SARA	Provincial FRPA	Land Use Objectives	CDC Mapped Locations	
										Public	Confidential
Tonella tenella	small-flowered tonella	CDFmm	S3 (2019)	Blue	G5 (1990)	E	1-E (2005)			Y	Y
Triteleia howellii	Howell's triteleia	CDFmm	S1 (2005)	Red	G4G5T3T4Q (2020)	E	1-E (2005)			Y	
Tyto alba	Barn Owl	BG BWBS CDF CWH ICH IDF PP	S3 (2022)	Blue	G5 (2016)	T	1-T (2018)				
Uropappus lindleyi	Lindley's microseris	CDFmm	S1S2 (2019)	Red	G5 (1990)	E	1-E (2010)			Y	
Viola howellii	Howell's violet	CDFmm CWHmm CWHxm MHmm	S1S2 (2019)	Red	G4 (1988)					Y	
Viola praemorsa var. *praemorsa*	yellow montane violet	CDFmm CWHxm	S1 (2019)	Red	G5T3T5 (2000)	E	1-E (2003)			Y	
Zeltnera muehlenbergii	Muhlenberg's centaury	CDFmm	S1 (2019)	Red	G5? (1996)	E	1-E (2010)			Y	

Search Criteria

Animals OR Plants
AND BC Conservation Status:Red (Extirpated, Endangered, or Threatened) OR Blue (Special Concern)
AND 'Municipalities':Nanaimo

AND Habitat Subtypes: Conifer Forest - Dry,Garry Oak Woodland,Mixed Forest (deciduous/coniferous mix)
AND BGC Zone: CDF
Sort Order:Scientific Name Ascending

Notes

1. Citation: B.C. Conservation Data Centre. 2023. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: https://a100.gov.bc.ca/pub/eswp/ (https://a100.gov.bc.ca/pub/eswp/) (accessed Apr 13, 2023).

2. The data contained in the Results Export in BCSEE are provided under the Open Government License - BC (http://www.data.gov.bc.ca/local/dbc/docs/license/OGL-vbc2.0.pdf).

3. We welcome your comments at cdcdata@gov.bc.ca.