CONSERVATION PLAN

DRAFT

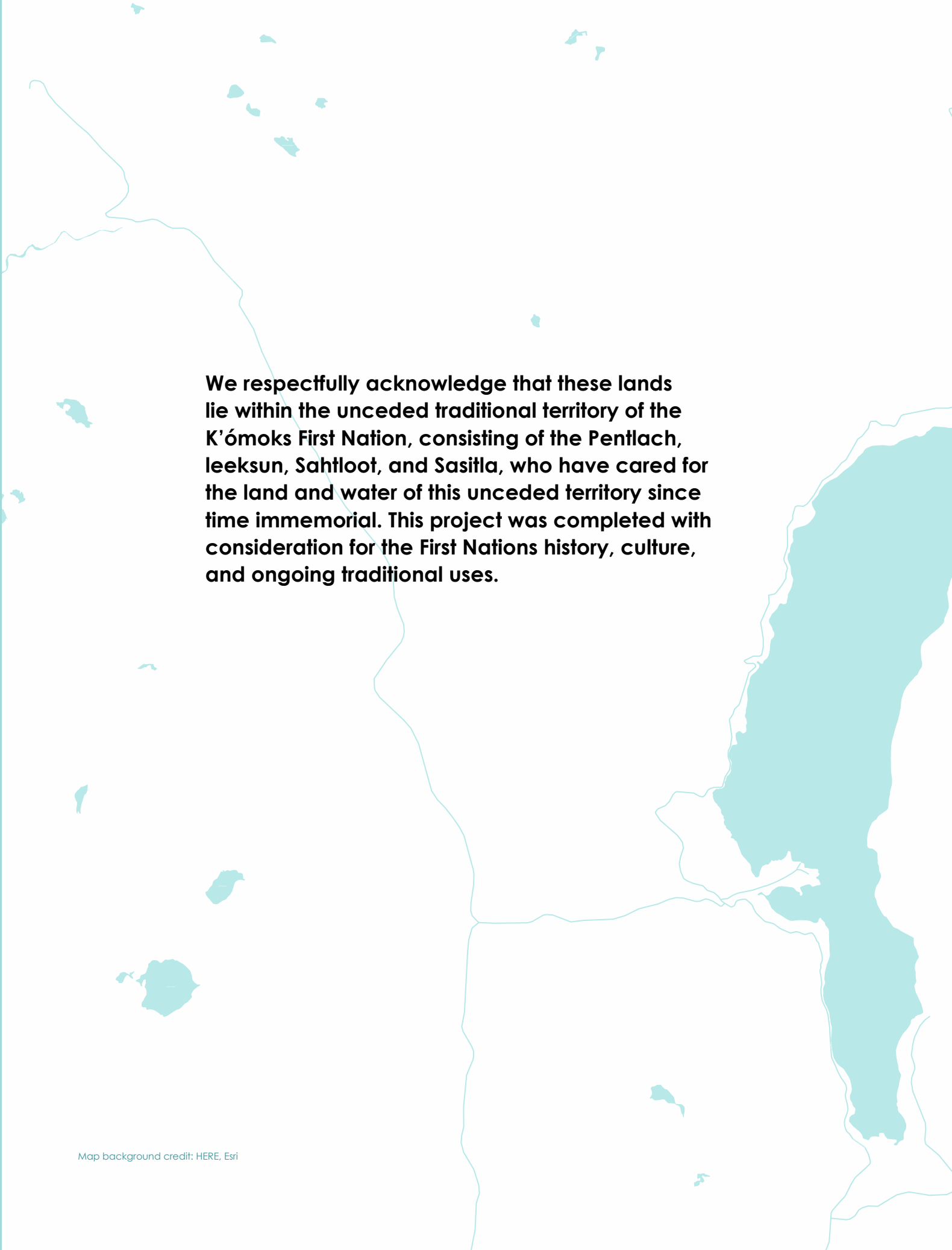
for Lands at Comox Lake and Perseverance Creek

Comox Valley Regional District

Parks & Trails, The Village of Cumberland

Cumberland Community Forest Society

Connected by Water



We respectfully acknowledge that these lands lie within the unceded traditional territory of the K'ómoks First Nation, consisting of the Pentlach, leeksun, Sahtloot, and Sasitla, who have cared for the land and water of this unceded territory since time immemorial. This project was completed with consideration for the First Nations history, culture, and ongoing traditional uses.

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SUMMARY

In 2018, the Comox Valley Regional District (CVRD) purchased a 46-hectare (113-acre) parcel of land at the east end of Comox Lake for watershed protection purposes. In December 2022, the Cumberland Community Forest Society (CCFS purchased the 44-acre Lower Perseverance Creek corridor, immediately adjacent to and providing access to the CVRD property. The corridor is also adjacent to lands owned by the Village of Cumberland (Coal Creek Historic Park and portions of the Wellington Colliery Railway).

Combined, these lands have high ecological, hydrological, and cultural values. There are sensitive terrestrial and aquatic ecosystems. The lands were and are used by K'ómoks for traditional activities. From 1890 to 1935, the lands were cleared and tunnelled for coal mining. These lands are also used informally by the local community for multiple land- and water-based recreation activities.

The goals for the CVRD, CCFS, and Village of Cumberland lands, all of which are located within the Village of Cumberland, are based on the same underlying values – drinking water protection, ecological protection, hydrological function, and cultural values. Therefore, the three parties, with support from others in the community, have decided to prepare one integrated Conservation Plan and parallel Conservation Covenants for these properties through a collaborative planning process.

The following studies have informed the development of this plan:

- An Ecological Inventory
- Archaeological Overview Assessment and Ethnohistoric Summary
- An update of the Comox Lake Watershed Protection Plan (WPP) risk assessment
- A statement of significance for the #4 Mine Site and Coal Beach
- A Proper Functioning Condition Assessment and Fish Habitat for Lower Perseverance Creek
- A Baseline Inventory (human impacts) for the Lower Perseverance Lands
- A Geohazard Evaluation for the CVRD Lands
- A Stage 1 Preliminary Site Investigation of Lake Front Acreage Property on the East Side of Comox Lake

The process involved collaboration with a working group, input from an advisory group, and local community engagement activities. The Conservation Plan includes a description and analysis of water resources and hydrology, environment, culture and heritage, public use, and emergency planning and climate resilience.

The vision is as follows:

The conservation lands protect drinking water quality, fish habitat, biodiversity, sensitive ecosystems, cultural values, and heritage resources. Achieving the vision will require regenerating ecological functions. Public access in keeping with the overall vision is sanctioned.

The objectives are as follows:

1. Maximize drinking water quality and hydrological functions
2. Protect, restore, and enhance fish habitat, biodiversity, and sensitive ecosystems
3. Protect cultural values and heritage resources and support respectful appreciation
4. Provide information to the local community on the land's values and appropriate use
5. Manage for conservation while providing for limited safe public use that respects the land's values
6. Engage with governments, stakeholders, and residents to strengthen the stewardship culture around these lands

Strategies identify how to achieve the objectives. A Conservation Plan / Implementation Plan section identifies land management responsibilities, capital projects and restoration actions, land use management and monitoring actions, and future work.

This Conservation Plan provides important context and next steps for implementing the vision, objectives, and strategies. Unlike typical management plans for public lands, the focus here is on pulling back impacts, letting nature take its course, reducing harm, and supporting regeneration. This will be accomplished through extensive collaboration and local stewardship.

1 BACKGROUND

These lands are part of an interconnected watershed system of mountains, forests, rivers, creeks, and wetlands linking Vancouver Island's mountains with the Salish Sea, in the unceded territory of the K'ómoks First Nation. This watershed has sustained life in this territory since time immemorial, and therefore its value is immeasurable. However, today we engage in watershed protection in the context of a heavily altered landscape. But it is also a landscape in recovery. Its beauty is evident. We are on a journey to help stitch together this altered landscape. It is a journey of hope.

~ Connected by Water, Source Encounters Tours

1.1 Context for a Conservation Plan

In 2018, the Comox Valley Regional District (CVRD) purchased a 46-hectare (113-acre) parcel of land at the east end of Comox Lake for watershed protection purposes. Since that time, the CVRD has been collaborating with K'ómoks First Nation (K'ómoks), other jurisdictions, water-oriented committees, landowners, and stakeholders to build support for a planning process. The CVRD also completed the following:

- A biological inventory[1]
- An ethnohistoric and archaeological survey[2]
- An update of the Comox Lake Watershed Protection Plan (WPP) risk assessment

In December 2022, the Cumberland Community Forest Society (CCFS purchased the 44-acre Lower Perseverance Creek corridor, immediately adjacent to and providing access to the CVRD property. The corridor is also adjacent to lands owned by the Village of Cumberland (Coal Creek Historic Park and Wellington Colliery Railway). This purchase was informed by a desire to protect, restore, and steward these lands in perpetuity and to align the conservation and management plans with neighbouring properties.

Combined, these lands have high ecological, hydrological, and cultural values. There are sensitive terrestrial and aquatic ecosystems. The lands were and are used by K'ómoks for traditional activities. From 1890 to 1935, the lands were cleared and tunnelled for coal mining.

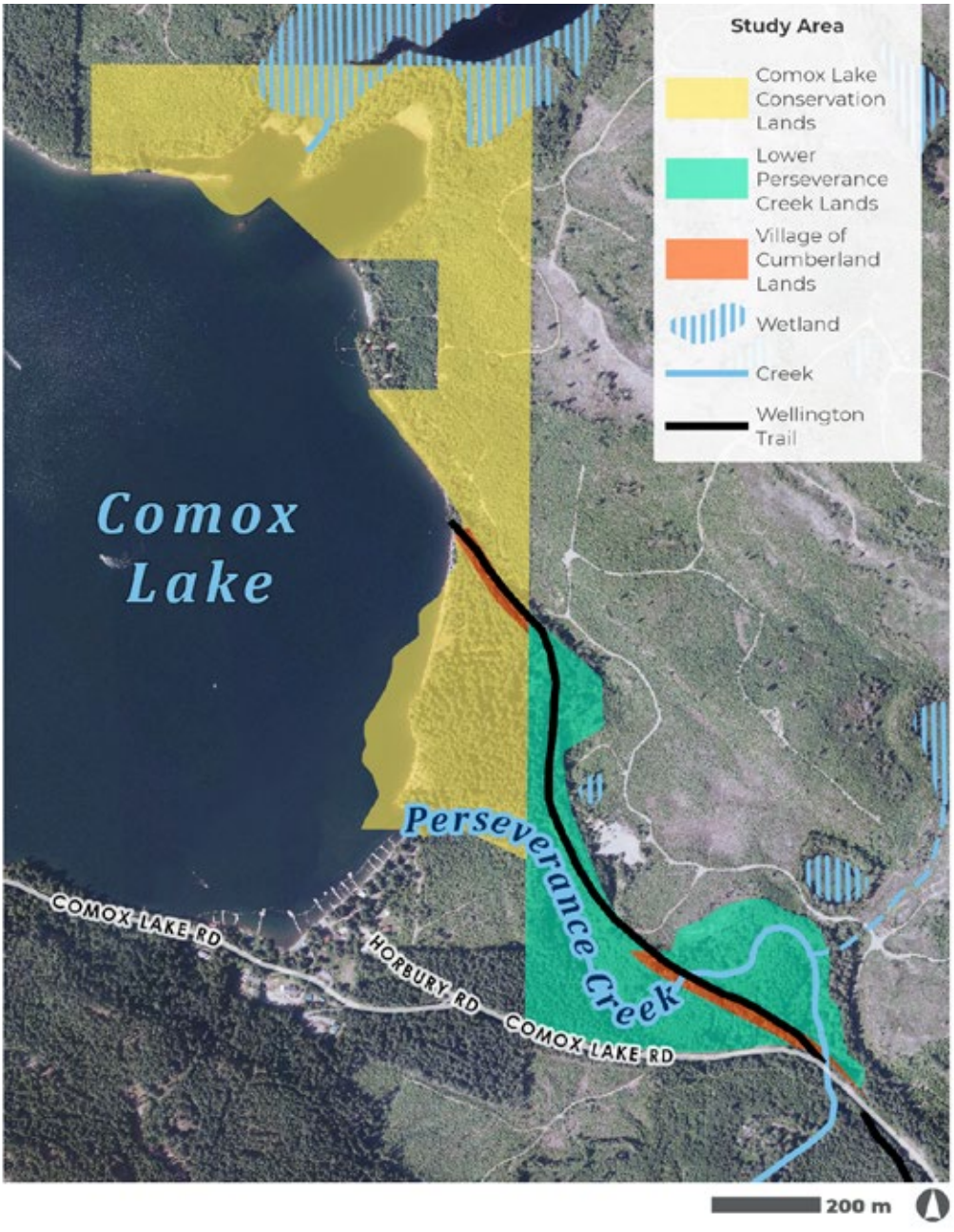
These conservation lands are also used informally by the local community for multiple land- and water-based recreation activities. There are significant legacy impacts from industrial use and human activities that continue today. In the summers of 2019 through 2023, signs placed on the property provided guidance on stewardship. The signs also indicated that a planning process for the property was under way.

1 Biological information in this plan is from Ecofish Research Ltd., Comox Valley Regional District Coal Beach Property Baseline Inventory Assessment

2 Archaeological and Ethnohistoric information in this plan is from Jesse Morin, PhD, Archaeological Overview Assessment and Ethnohistoric Summary of CVRD's Comox Lake East Lands

The goals for the CVRD, CCFS, and Village of Cumberland lands, all of which are located within the Village of Cumberland, are based on the same underlying values – drinking water protection, ecological protection, hydrological function, and cultural values. Therefore, the three parties, with support from others in the community, have decided to prepare one integrated Conservation Plan and parallel Conservation Covenants for these properties through a collaborative planning process.

Map 1: Study Area



The purpose of the Conservation Plan is to guide the protection of these lands for drinking water protection, ecological protection, hydrological function, and cultural values. Secondary uses compatible with the paramount objectives are also addressed.

The Conservation Plan establishes the context, vision, objectives, strategies, and implementation actions to guide decision-making and future management of the lands. Section 219 Conservation Covenants, which legally enshrine the intentions for long-term management, are also being prepared for the lands per the guidance of the Conservation Plan.

1.3 Planning Process

Working Group

The Conservation Plan was prepared through a collaboration of the following working group:

- Comox Valley Regional District (CVRD)
- Cumberland Community Forest Society (CCFS)
- Village of Cumberland (Village)
- K'ómoks First Nation (invited)

The hope is that these rights holders will endorse the Conservation Plan and implement it in keeping with their respective jurisdictions, and roles and responsibilities as defined herein.

Advisory Group

This Advisory Group was an evolution of the Comox Lake Watershed Advisory Group – Coal Beach Subcommittee. The group has met periodically to provide input per the Terms of Reference outlined in a separate document.

- Lake Park Society
- Comox Valley Land Trust (CVLT)
- Comox Lake Land Corporation
- BC Parks
- Courtenay and District Fish and Game Protective Association (CDFGPA)
- CVRD Parks
- Cumberland Museum and Archives
- Manulife Investment Management

The role of the Advisory Group was to provide input into the Conservation Plan and covenants. It is not a decision-making body so there was no voting. Efforts were made to achieve consensus on important topics, but consensus was not a requirement.

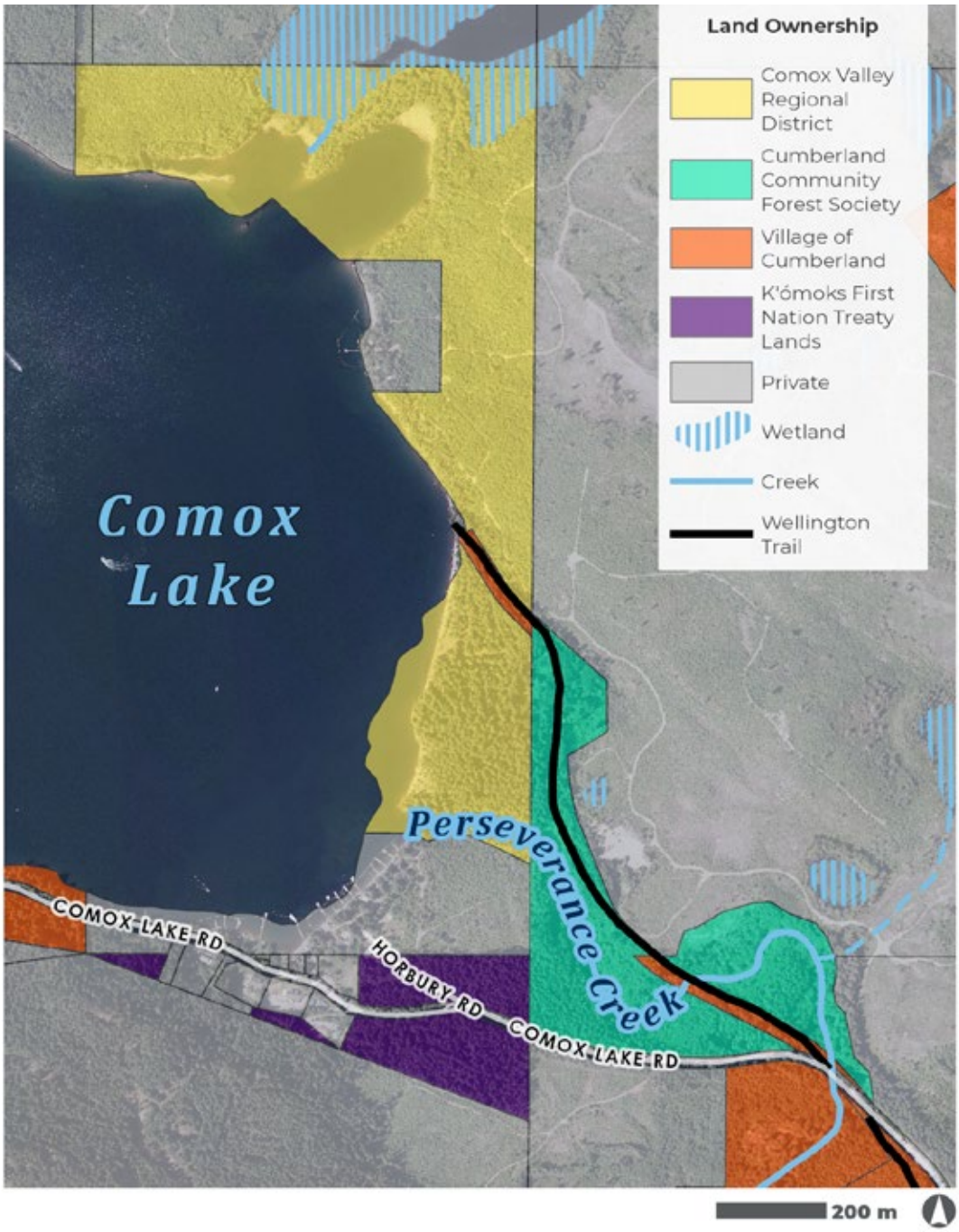
Community Engagement

The process included engagement with many groups who have connections with and interests in the lands. Interest groups and the broader local community were engaged in the process through meetings, information sessions, pop-up tents, guided walks and talks, and public events. The focus of engagement was the local community, as the intent was to build a stewardship ethic among existing visitors to these lands, rather than to attract more use.

1.4 Land Ownership

There are three landowners of the conservation lands (Map 2):

Map 2: Land Ownership



CVRD Parcel

The CVRD land includes approximately two kilometres of the shoreline of Comox Lake and is one of the last remaining, relatively large, and intact waterfront parcels in the most densely populated portion of the watershed. The parcel includes forested areas, a beach (known locally as "Coal Beach"), artifacts and overburden from historic coal mining, Whyte's Bay, a cabin area, and a wetland area that connects Comox Lake to Black Lake.

CCFS Parcel

The CCFS owns a portion of land along Perseverance Creek that was formerly owned by a private forestry company. The land has high values for fish habitat, drinking water, carbon sequestration, biodiversity, mature timber, heritage, and recreation. This area also includes artifacts from Cumberland's coal mining history and a portion of the Wellington Colliery rail corridor. The Perseverance Creek Watershed is a sub-basin of Comox Lake. When these lands were proposed for timber harvesting, the CCFS mobilized quickly to protect them for conservation.

Village of Cumberland

The Village lands include two portions of the historic Wellington Colliery rail corridor that ran from the Cumberland to No. 4 Mine and Scotts Slope. This elevated corridor is now heavily forested and used as a trail to the CVRD lands and Comox Lake.

Other

Other landowners nearby include private individuals, the Courtenay and District Fish and Game Protective Association, and land and forestry corporations. There is also treaty land being held by the Province.

1.5 Plan and Policy Context

Comox Valley Regional District (CVRD)

The CVRD is a federation of three electoral areas and three municipalities – Village of Cumberland, City of Courtenay, and Town of Comox. The CVRD has a wide range of active initiatives and programs that improve quality of life in the Comox Valley, including planning, water, environment, parks and recreation, emergency management, fire, waste management, homelessness support, and transit. The CVRD's role and work related to watershed protection is described in section 2.

The rural areas of the CVRD include 65 parks and conservation areas, 24 marked beach accesses, and many kilometres of maintained trails. These are maintained by the CVRD through their Community Services department.

Over the past several years, there has been a renewed interest in a regional parks service and how it may help the Comox Valley meet some of its regional active transportation, outdoor recreation, and conservation/climate action goals. A background study was completed and the CVRD formally established a Regional Parks Service on September 29th, 2022. The Service was established with consent of region's municipal councils and a full regulatory review by the Province and the CVRD board. The Regional Parks and Trails Service bylaw (No. 719) defines the governance model, funding and operational structures, and regulatory requirements.

CVRD staff are currently involved in a strategic planning process aimed at defining the full mandate and scope of the Regional Parks Service, identifying the types of regional parks to establish, and setting long-term goals and a corresponding timeline for service expansion. This process will include development of a land acquisition strategy identifying priorities related to the protection of regionally significant natural areas and the provision of regional greenways.

Village of Cumberland

The Village's Official Community Plan (OCP) focuses on retaining Cumberland's presence as a community vibrating with activity, surrounded by forests, and a mecca for outdoor recreation. The priorities include recreation, a healthy and active citizenry, protection and enhancement of natural features and functions, and heritage conservation.

The CVRD property at the east end of Comox Lake is designated "Recreation" in the OCP. The intent of this designation is to encourage low impact recreational uses that serve the local and regional area. The adjacent Perseverance Creek lands are designated "Greenway". This designation applies to corridors and areas of land that provide:

- Continuous multi-modal trails, that link existing parks, forest lands, environmentally sensitive lands, wetlands, and other green spaces, including recreational trails, throughout the Village boundaries
- Biodiversity and wildlife connectivity

A process to update the OCP is underway.

2 WATER RESOURCES AND HYDROLOGY

2.1 Comox Lake Watershed

High quality drinking water is produced by healthy functioning ecosystems. To ensure the water reaching our taps is safe and reliable, we need to protect the source. What people do on the land and in the water directly affects the health of the watershed and the quality and quantity of the freshwater within it.

~ Connected by Water, Watershed for Beginners

The Comox Lake watershed is in the traditional territory of the K'ómoks First Nation and is the source of drinking water for residents through the Comox Valley Water System and the Cumberland Water System.

The watershed is 461 square kilometres and reaches to the top of the Comox Glacier and the mountains surrounding Comox Lake. It is an interconnected system of mountains, forests, rivers, creeks, and streams, an ecological corridor that links the Vancouver Island mountains with the Salish Sea. All the snow and rain that falls within the Comox Lake watershed flows through forests, rivers, creeks, and streams into Comox Lake.

Over the past 140 years, the Comox Lake watershed has also been a base for mining, forestry, and recreation activities. While coal mining operations ended in the 1930s, a large portion of the watershed is still privately owned and managed for timber supply. Comox Lake itself is a reservoir controlled by BC Hydro for power generation. Swimming, boating, and camping takes place in designated public access areas.

The watershed provides important habitat for fish and wildlife including species at risk like the Roosevelt elk, little brown bat, and northern red-legged frog. Comox Lake flows into the Puntledge River providing stream flows that support many species of salmon. The watershed also feeds groundwater, aquifers, and wells and supports vibrant aquatic ecosystems.

In September 2021, the CVRD completed its new Water Treatment Facility. Fresh, filtered, and fully disinfected drinking water is now flowing to 50,000 residents in the Comox Valley. Supported with funding from the governments of Canada and British Columbia, and in partnership with K'ómoks First Nation (K'ómoks) through a Mutual Benefit Agreement, water from Comox Lake is now treated. This has resulted in a secure supply of reliable, high quality drinking water for decades to come.

2.2 Comox Lake Watershed Protection Plan

In 2016, the CVRD completed a Watershed Protection Plan to guide the management of the Comox Lake Watershed for the long-term protection of drinking water at the highest possible quality. A Watershed Advisory Group of landowners, land managers, regulators, and technical advisors was established to guide the preparation and implementation of the plan.

A risk assessment was conducted to update both natural and human-caused risks in the context of a deep-water intake in Comox Lake. This assessment formed the basis of 54 recommendations that are intended to act as a road map to a comprehensive watershed management program.

After considering protective barriers already in place, the hazards that posed the greatest risks to water quality were:

Very High Risk Rating

- Wildfire and associated impacts
- Camping in undesignated areas in the watershed, especially near the lakeshore or other riparian areas
- Augmentation/ concentration of streamflow
- Off Road Vehicle use (ATV's, side-by-sides, dirt bikes, snowmobiles) beyond maintained roads
- Flooding on the order of a 100- to 200- year event

High Risk Rating

- Drought
- Intentional harm to the water source or watershed
- Earthquake resulting in the loss of the BC Hydro Dam
- Aircraft accident on Comox Lake
- Sewage management facilities
- Body contact recreation on Comox Lake (parasites and viruses)
- Trails and non-motorized trail use (hiking, mountain biking, horse riding, cross-country skiing and snowshoeing)
- Timber harvesting- cut block location and extent
- Wildlife contamination of Comox Lake

Key Recommendations

Some of the key recommendations relevant to the Conservation Plan include the following:

- Purchase of land within the Comox Lake Watershed
- Additional disinfection to reduce the risk of pathogens from body contact recreation (e.g., swimming, watersports) and other human sources
- A trail management plan and enforcement for all existing trails
- No new development in the Comox Lake Watershed
- No camping outside of designated campgrounds
- Limit ATV use to maintained logging roads and subject to code of conduct, enforcement, and user agreements with landowners
- An education and outreach program for the local community and visitors relating to watershed health and drinking water source protection

In 2021, based on the installation of a water treatment plant and changing use patterns, the Comox Lake watershed advisory group revised the risk assessment. The final ratings of most risks did not change, but the rationale or likelihoods may have changed. Some of the new considerations included:

- Increase in encampments in unauthorized locations
- Increase in car camping, including along Comox Lake Road, along with fire pits, evidence of human waste, and toilet paper in the forest
- Significant increase in day use of Cumberland Lake Park Campground (CLPC) and Coal Beach
- Increasing fire risk with drought and longer fire seasons
- Catastrophic wildfire/landslides could overwhelm the filtration plant
- Filtration, UV disinfection, and chlorination of water supply address parasite risk
- Higher risk of major storms and atmospheric river conditions
- Cabins have upgraded their septic systems
- Pit toilets at CLPC were replaced with vault toilets, and shoreline campsites were removed

New recommendations include:

- Install and maintain toilets in known areas of high use/need e.g., Coal Beach.
- Take a precautionary approach to increasing lake access

Stage 1 Preliminary Site Investigation Lake Front Acreage Property on the East Side of Comox Lake

Tetra Tech EBA conducted this project in 2016 for due diligence purposes prior to the purchase of the CVRD property on Comox Lake. During the preparation of this Stage 1 PSI, Tetra Tech EBA considered the information reviewed to assess the present conditions and historical site activities at the property and all adjacent sites in the context of evaluating potential environmental concerns.

Based on the findings described in this Stage 1 PSI, two locations of potential environmental concern (APECs) were identified on the property. These included the No. 4 Mine and Scott's Slope, both of which include coal overburden from mining activities. The associated potential contaminants of concern (PCOCs) include LEPH, HEPH, PAHs, metals, chlorinated phenols and associated regulated soil vapour parameters. There was also trash and an abandoned vehicle; the latter has been removed. Special Attention Items also pose risks. These include, but are not limited to, polychlorinated biphenyls, asbestos-containing building materials, lead, urea formaldehyde foam insulation, ozone-depleting substances, mould, and/or mercury.

The Stage 1 PSI recommended carrying out a Stage 2 investigation to better understand whether these potential contaminants exist in these two areas. This work will be carried out in the first quarter of 2024 and is not anticipated to interfere with implementation of the conservation plan.

2.3 Connected by Water

Connected by Water is a CVRD program developed in response to the community education and engagement recommendations in the Comox Lake Watershed Protection Plan. The goal of this program is to build capacity, community, and connection to support watershed protection and water conservation efforts.

Working with community stakeholders and knowledge holders, the Connected by Water team has developed curriculum resources, signage, workshops, projects, watershed tours, presentations, and a framework for discussion and learning.

Connected by Water also provides information on what residents and visitors can do to achieve a climate resilient watershed. These are within the topic areas of connection to place, clean water, ecosystem health, functioning forests and creeks, fire protection, and water conservation.


WHAT MAKES A CLIMATE-RESILIENT WATERSHED?
FUNCTIONING FORESTS & CREEKS
ECOSYSTEM HEALTH
FIRE PROTECTION
CLEAN WATER
WATER CONSERVATION
CONNECTION TO PLACE
LEARN MORE ABOUT HOW YOU CAN HELP PROTECT OUR WATERSHED AT:
COMOXVALLEYRD.CA/WATERSHED | @WEARECONNECTEDBYWATER
Comox Valley REGIONAL DISTRICT
CONNECTED BY WATER

2.4 Opportunities and Challenges

Opportunities	Challenges
Establish regulations that disallow activities that could potentially harm water quality, such as camping, people sheltering, fires, and motorized uses	Resources required to enforce regulations, jurisdictional confusion
Establish environmentally safe toilets at the beach and other key gathering points	Maintenance of toilets will be required
Share information with the public about the watershed and water resources through site signs and ambassadors	Maintenance of signage and resources required for site presence Not everyone will read or comply with the information shared
Engage in creek restoration with local streamkeeper organizations to reduce impacts from extreme weather events, reduce degradation, and build resilience	Resources required for project planning, oversight, coordination
Undertake infrastructure projects (culverts and bridgeworks) to reduce impacts from extreme weather events, reduce degradation, and build resilience	Costs of infrastructure projects and sources of funding

3 ENVIRONMENT

Content in this section is extracted and derived from Coal Beach Property Baseline Inventory Assessment, Ecofish Research Ltd., February 11, 2022, and Perseverance Creek Fish Habitat and Proper Functioning Condition Assessment, Ecofish Research Ltd., January 24, 2019. For more information, refer to the full reports.

We share this watershed with nature. The Comox Lake watershed and Perseverance Creek sub-basin are important habitats for fish and wildlife, including species at risk like Roosevelt elk, Little brown bats, and Northern red-legged frogs. Comox Lake flows into the Puntledge River, which provides stream flows that support many species of salmon. Healthy forests and creeks are also critical to the health of the watershed. Creekside vegetation and soils moderate stream flow, and root systems intercept, filter, hold, and slowly release water, preventing erosion and flooding. Our actions in the watershed directly impact the health of the environment.

~ Connected by Water, Watershed for Beginners

3.1 Terrestrial Ecosystems and Climate

The study area is located in the eastern variant of the very dry maritime subzone of the Coastal Western Hemlock Biogeoclimatic zone (CWHxm1). The ecosystems here are transitional between the temperate rainforests that characterize the majority of the coast of BC, and the sub-Mediterranean "rainshadow" ecosystems of the adjacent Coastal Douglas-fir Biogeoclimatic zone that occupies the majority of the Nanaimo Lowlands Ecosection on the southeast coast of Vancouver Island. Precipitation caused by the Vancouver Island ranges and the marine environment of the Salish Sea create the region's distinct biogeoclimatic characteristics.

The complex geological history and current state of the area is visible in the unique pattern of glacial till and mining material present over deeper marine clay layers visible along the shoreline and road cuts. Nearly all terrestrial, forested ecological communities (including riparian forests) within this unique rain shadow climate of eastern Vancouver Island are currently considered "ecosystems at risk" by the BC Conservation Data Centre (either Blue or Red-listed).

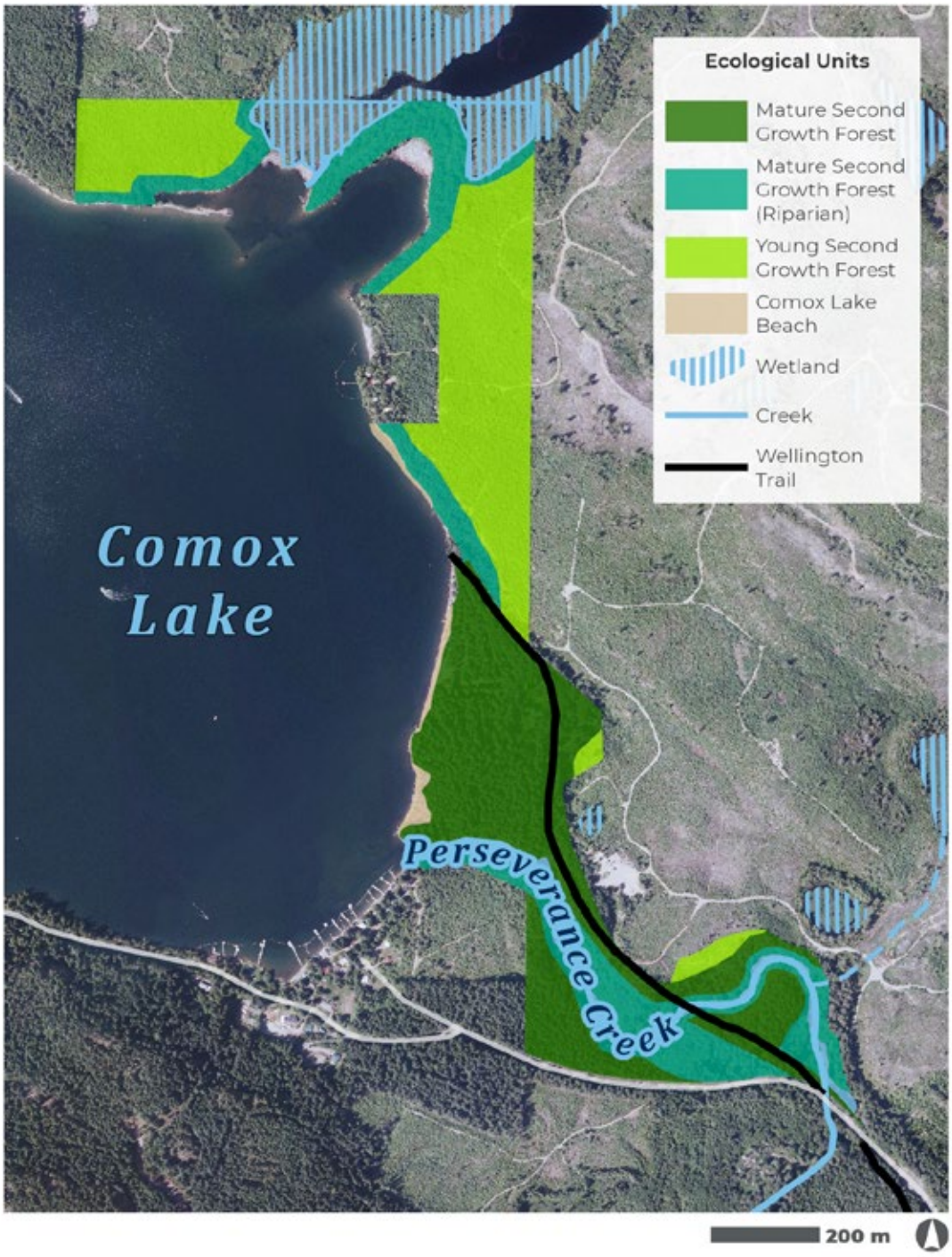
The area has four distinct seasons - cool winters with abundant rainfall, warm spring and fall seasons that experience moderate precipitation, and hot, dry summers. These summer conditions result in a soil moisture deficit for much of July and August. In addition, wildfires cause infrequent, stand-initiating events during summer droughts as a part of the natural disturbance regime.

The following ecosystems were mapped on the site:

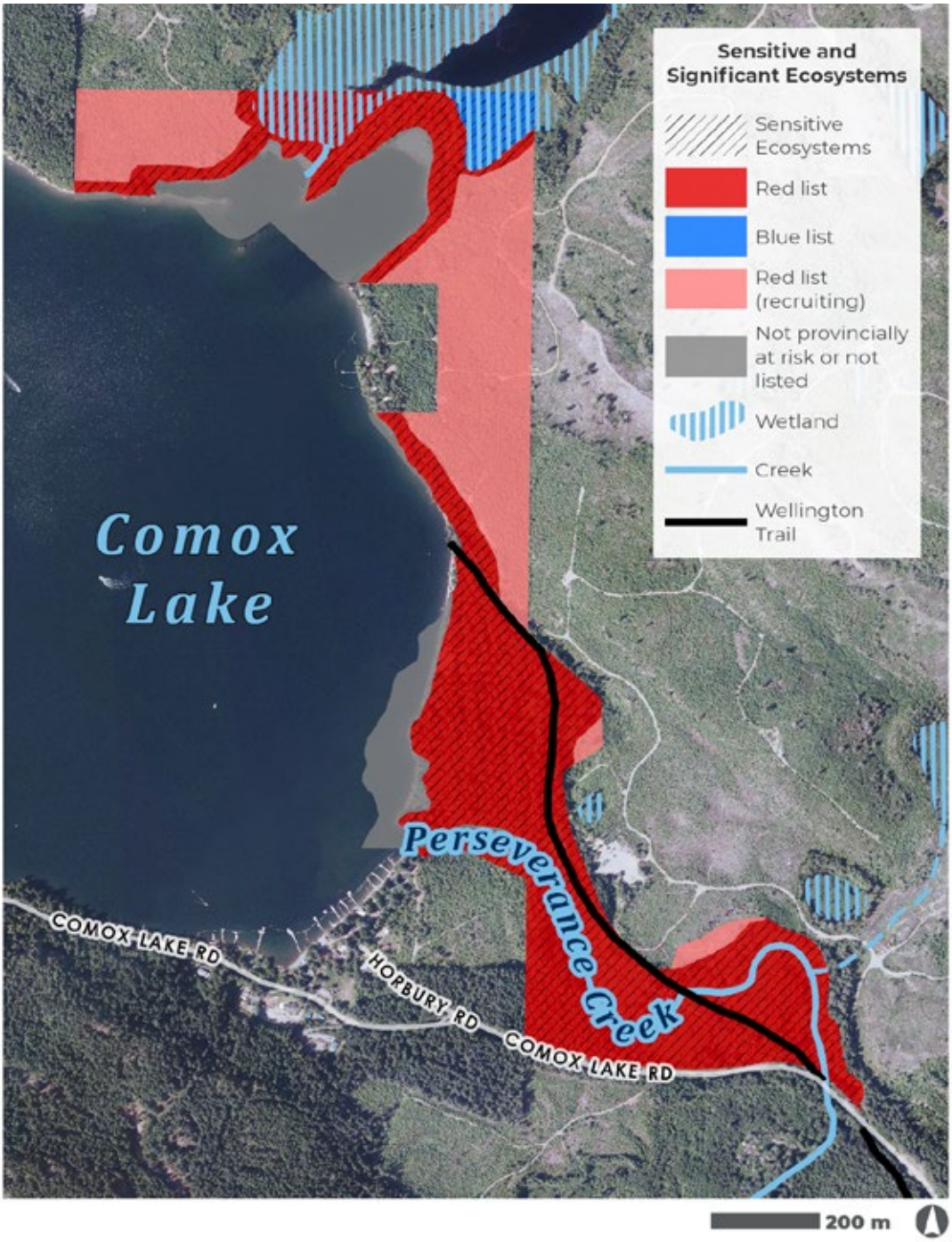
- mature forest growing on mining slag/overburden
- mature selectively logged steep-sloped riparian forest
- young second growth forest (20-year-old pole-sapling forests)
- wetlands – bog, fen, and open water wetlands
- beaches – gravel

Thirty-nine percent of the CVRD property supports sensitive ecosystems including mature second growth coniferous forests (30.83%) and wetlands (8.26%) (Maps 3 and 4). Seventy-six percent of the property supports regionally significant, provincially listed ecosystems at risk, including, red-listed mature second growth forest (35.7%) and pole-sapling second growth forest capable of supporting a red-listed mature forest (36.54%), and mature, blue-listed ecosystems (3.39%). The red list (recruiting) areas will become red-listed ecosystems in the future.

Map 3: Ecological Units



Map 4: Sensitive and Significant



Forests on the Land are typically wet to mesic. Deciduous and mixed forests dominate the riparian areas of Perseverance Creek. These are dominated by Red Alder, Western Redcedar and Black Cottonwood. Upland forests are dominated by Douglas-fir and Western Hemlock. Both forest types provide important habitats for a variety of wildlife. Clusters of dead standing trees along with abundant coarse woody debris throughout the land offer significant wildlife habitats.

The ecological integrity of these communities can range from low to very high depending on their seral stage and other factors. In the CWHxm1 within the Comox Valley Regional District, nearly all late-seral (>250-year-old) forested ecological communities have been lost to historical logging activity or associated wildfires, agricultural land conversion or residential, industrial, or urban development. Mature mid-seral forests (~80-250 years) in the CWHxm1 are therefore a conservation priority, particularly where they are not degraded (e.g., by fragmentation from roads, trails and utility corridors or invasive, non-native species).

Significant portions of the lands provide an excellent example of mid-seral forested ecological communities which are globally, provincially, and regionally at risk. These mature forests are beginning to recover some of the characteristics and habitat features typical of older forests such as large-diameter branches, multi-storied canopies, and gaps in the forest cover resulting from natural disturbances (e.g., windthrow, insects or fungal infections).

3.2 Fish and Wildlife

Perseverance Creek flows from southeast to northwest through the lands. The morphology of the creek is relatively consistent and low-gradient meandering through floodplain forests. It includes spawning and rearing habitat for Coho Salmon. In addition to fish, Perseverance Creek includes habitat for hydrophilic plants such as Devil's Club, and aquatic obligate species such as the Giant Water Bug and American Dipper.

Perseverance Creek and adjacent lands have been heavily used and modified by people over the past century and a half, altering the quality of the creek's fish habitat and the functioning condition of the hydro-riparian area. Construction of the dam at Comox Lake in 1913 eliminated all anadromous fish from all tributaries to Comox Lake for at least 80 years until a fishway was constructed and functional.

The results of the fish habitat and proper functioning condition assessment (PFC) indicate that the overall current PFC is 'Functional-at-Risk' that there is a downward trend in fish habitat quality and the PFC of the creek. This is because high fall and winter flows degrade the channel morphology by eroding the stream banks and transporting bedload materials downstream, where they accumulate at great depths in the channel, and behind large log jams (that have also been created by high flows), leading to a more uniform morphology. Subsequently, low summer flows remain largely below the accumulated bedload, only surfacing in residual pools.

The modified channel condition degrades fish habitat in that upstream migration is impeded by high flows and lack of refuge habitat in the fall and winter, and by lack of connected surface flows during low water in the summer. Overwintering and rearing habitat is also compromised, and low summer flows likely lead to the stranding and mortality of fish.

Perseverance Creek also has attributes that contribute to high quality fish habitat and a high functioning system. These include a maturing young forest, a large floodplain, old large woody debris in the stream, scour pools on hard pan clay, and sufficient water quality to support fish. These ecological assets help to protect, maintain, and conserve the quality and quantity of surface and subsurface water.

Comox Lake and the mouth of Perseverance Creek support Kokanee Salmon, Chum Salmon, Coho Salmon, Cutthroat and Rainbow Trout, Dolly Varden, and Sculpin. The distribution of these species along the upper reaches of Perseverance Creek varies with the season and associated access to suitable habitats. However, at a minimum, Coho and resident trout are known to migrate from up the creek.

The property supports suitable habitat for several federally and provincially listed at-risk wildlife species. Two bat species and three bird species at-risk were confirmed to occur there, and several others were confirmed nearby and have a high likelihood of using the site. The property also provides amphibian habitat in Black Lake, includes the mouth of Perseverance Creek that provides fish habitat and a gateway to the fish-bearing waters above, and it provides aquatic and riparian habitat along the shores of Comox Lake.

The area supports a diversity of valuable habitats for birds to breed, forage and live, including tall canopied mature forest, large diameter wildlife trees with cavities, multi-canopied riparian habitats, a fish-bearing creek, protected open water wetland, as well as moss and shrub dominated wetland types, and a lake. A total of 87 species of bird have been reported on or near the area. Three bird species at risk are confirmed to occur – the blue-listed Northern Pygmy-owl, Olive-sided Flycatcher, and Great Blue Heron.

Blue-listed Roosevelt Elk may use the site as a migration corridor around Comox Lake. Blue-listed American Water Shrew may use the natural waterways of the lands. Several other mammal species were confirmed to or are likely to use the area. Sitka Black-tailed Deer are frequent in all terrestrial habitats, cougar frequent the area and have been sighted on the railway ROW, and American Black Bear also likely roam through the lands. American Beaver sign was noted in Black Lake, and American Mink have been observed feeding on fish in Perseverance Creek.

The portion of the lands owned by CCFS has few trails or recreation use, and it Is therefore a quiet refugia for wildlife that may be easily disturbed by the presence of humans and their pets. These at-risk and sensitive ecological communities provide habitat for numerous species of plants, lichens, fungi, animals, and other wildlife. Habitat features are diverse and varied and include large-diameter trees (both alive and dead), coarse woody debris, watercourses, and waterbodies (both permanent and ephemeral).

3.3 Opportunities and Challenges

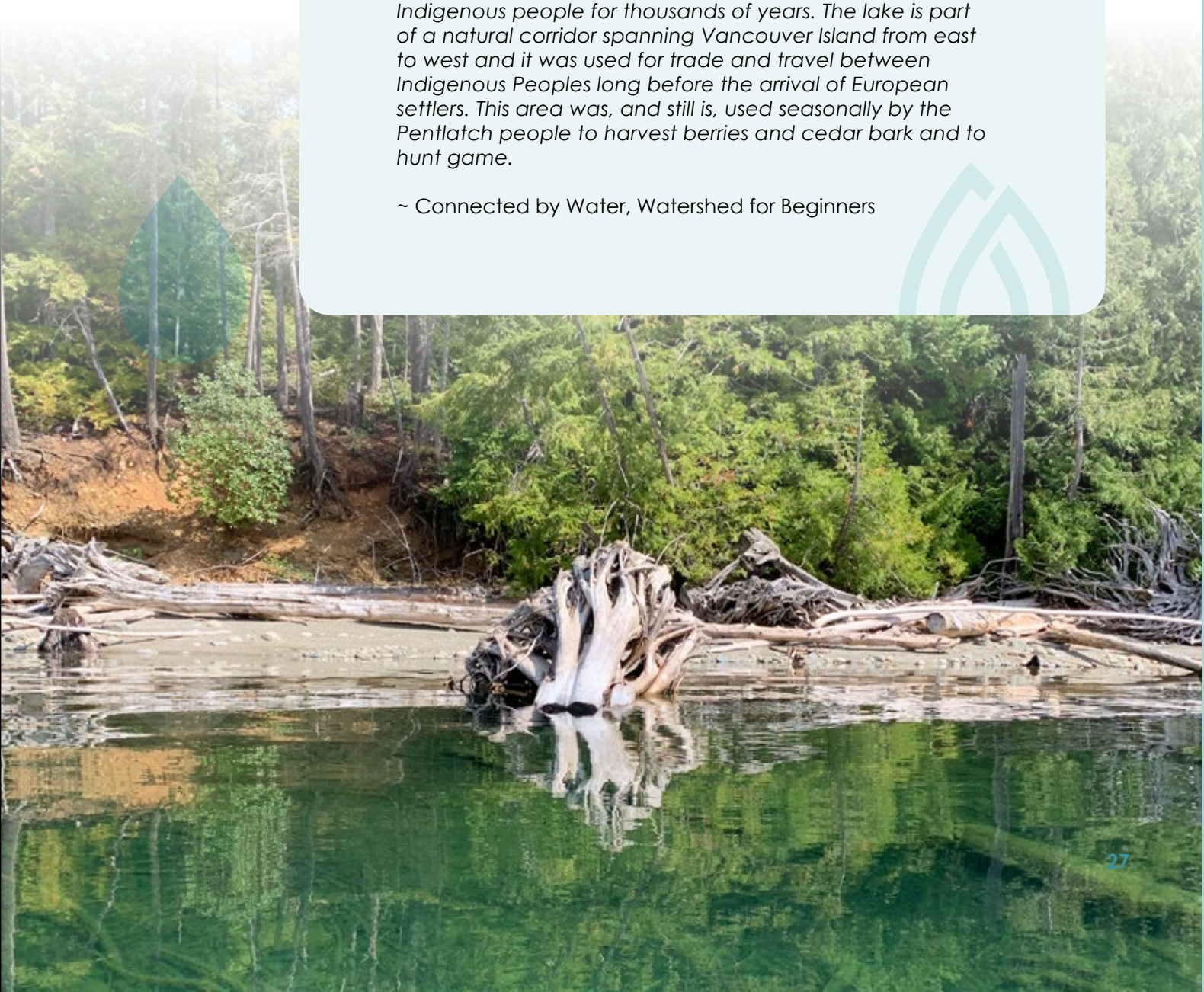
Opportunities	Challenges
Establish regulations that disallow activities that could potentially harm environmentally sensitive areas	Ability to enforce regulations
Decommission and redesign trails through area to protect ecologically sensitive areas	People are accustomed to full access and having dogs off leash
Share information with the public about the environmental resources through site signs	Resources required to create, install, and maintain signage Not everyone will read or comply with the information shared
Ecological restoration and revegetation throughout the site	Resources required
Manage invasive species potentially through volunteer stewardship activities	Resources required for project planning, oversight, coordination
Protect and enhance fish habitat through measures such as timber retention, wetland creation, armoring banks for erosion control, ensuring continued fish passage (e.g., with new culverts), creating groundwater fed back channels, and shading of the creek; working in partnership with CDFGPA, Perseverance Streamkeepers, K'ómoks First Nation Guardians	Resources required for project planning, oversight, coordination

4 CULTURE AND HERITAGE

Content in this section is extracted and derived from Jesse Morin, PhD, Archaeological Overview Assessment and Ethnohistoric Summary of CVRD's Comox Lake East Lands. For more information, refer to the full report.

The Comox Lake watershed has been the home of Indigenous people for thousands of years. The lake is part of a natural corridor spanning Vancouver Island from east to west and it was used for trade and travel between Indigenous Peoples long before the arrival of European settlers. This area was, and still is, used seasonally by the Pentlatch people to harvest berries and cedar bark and to hunt game.

~ Connected by Water, Watershed for Beginners



4.1 First Nations Culture and History

The area of eastern Vancouver Island, Denman Island and Hornby Island from about Cape Lazo to Deep Bay was the territory of the Pentlatch people. Pentlatch is a Northern Coast Salish language, closely related to Comox/ Ayajuthum and Sechelt. While the language of the Pentlatch people was clearly Coast Salish in affiliation, many if not most aspects of traditional Pentlatch culture were more closely related to their Kwakwala-speaking neighbours to the north than to their Coast Salish-speaking neighbours to the south. All evidence indicates that the Pentlatch people were part of a hybrid culture including both Coast Salish and Kwakwaka'wakw traits, and it appears that this is a rather ancient pattern, and not as a result of historical acculturation.

The pre-contact Pentlatch people lived in several large settlements located around Comox Harbour, along the Courtenay, Puntledge and Tsolum rivers, and on Denman Island and Hornby Island. Like all Indigenous peoples of pre-contact British Columbia, Pentlatch people relocated to different settlements or camps throughout the year to take advantage of locally abundant resources.

It is expected that in the summer, Pentlatch people would have travelled to and camped around Comox Lake from their primary villages in Comox Harbour to harvest berries and cedar bark, and to hunt small game. In the late fall and winter, they would have travelled to and camped around Comox Lake to hunt large game, such as deer and elk, who descend from higher elevations during the winter. The waters of Comox Lake should not be viewed as a boundary, but rather as a travel corridor for canoe travel around the lake.

Between AD 1842 and 1852, several K'ómoks groups or tribes relocated from the Discovery Passage area to the Comox Valley and Denman Island. Shortly after arriving in the Comox Valley area, K'ómoks and Pentlatch people began living side-by-side in the same village at the mouth of the Courtenay River, with distinct clusters of houses belonging to individual K'ómoks tribes and the Pentlatch (the future IR No.1). In AD 1876 the three K'ómoks tribes living at IR No.1 (the SaLaLt, Säsitla and Eiksan) were amalgamated into the Comox Indian Band, now called K'ómoks First Nation. Based on this timeline, regular use of the Comox Lake area by K'ómoks people likely began around AD 1850, when the surviving K'ómoks tribes had relocated to the Comox Valley.

Beginning prior to the K'ómoks relocation, perhaps by AD 1810, the Pentlatch became the subject of a series of overland raids from the Nuu-Chan-Nulth speakers of Alberni Inlet. The route taken in these overland raids originated in Alberni Inlet, headed north along the west flank of the Beaufort Range to Comox Lake via the Puntledge River, around Comox Lake and finally to the Courtenay area (i.e., the Alberni Trail). Given this history, the Comox Lake area must have been a relatively dangerous place to be in the first half of the 19th century, and this may have dissuaded Pentlatch people from travelling here as frequently as they likely previously had.

Early Euro Canadian descriptions of Comox Lake provide some insight into local ecology and Indigenous land use. Pidcock described an abundance of beaver around where the Puntledge River drains Comox Lake, where they were hunted or trapped by the Pentlatch people. This description indicates that swamp and wetland environments preferred by beaver must have been much more extensive at Comox Lake than they presently are. Elk were seasonally abundant around Comox Lake and were hunted by Pentlatch people. There were also signs of culturally modified trees (CMTs) and an old canoe. This evidence suggests that the Comox Lake area was used on a seasonal basis by resident Pentlatch people whose villages were around Comox Harbour.

Comox Lake is described in a well-known Pentlatch oral history describing the great flood and the origin of the Comox Glacier. In this oral history, after a great flood that covered the land, "a whale remained stranded high up on the mountain near Pe'ntlatc Lake. The water up there froze and the whale was unable to get away again. The whale can still be seen there today and that is why the glacier in the Pe'ntlatc Valley is called K·onē'is" (K·onē'is = whale, 'Queneesh'). K·onē'is, the white whale, is currently understood to be a profoundly spiritual being, a protector of the Pentlatch people, and remains an important symbol of K'ÓMOKS identity to this day.

The Comox Glacier drains into the Upper Puntledge River, Comox Lake, into the other Puntledge River, the Courtenay River, and finally into Comox Harbour. Thus, this spiritual being literally feeds the watershed of the Comox Valley and provides the means by which salmon can ascend the Courtenay River, enabling Pentlatch and later K'ómoks people to harvest these fish when they return.

4.2 K'ómoks First Nation Indigenous Use

K'ómoks First Nation holds a large body of confidential information in Indigenous knowledge and use describing recent and ongoing use of the territory by K'ómoks people. The TUS information includes locations where people have undertaken harvesting activities (hunting, fishing, gathering), camping, and cultural or spiritual activities. There is also cultural or historical information about the landscape, including Indigenous place names and historical sites.

K'ómoks First Nation TUS data indicates that there are considerable recent and ongoing harvesting activities undertaken by K'ómoks members in the study area. Hunting and fishing activities are well represented, and gathering activities are less common. The species hunted include deer, grouse, and elk, and the species fished include trout, kokanee, and salmon. Various species of berries were harvested in this area. Any planned or proposed developments in this study area could have the potential to impact K'ómoks's Aboriginal rights (i.e., the right to fish and hunt), and should therefore include consultation with K'ómoks at the earliest feasible planning stages.

4.3 Archaeological Background and Sites

The history of archaeological investigation of eastern Vancouver Island has been strongly oriented towards coastal areas, where the remains of past indigenous settlements and camps in the form of highly visible shell middens are abundant. Surveys of Comox Lake and other regional lakes have CMTs, lithic sites, and rock art. Surveys indicate that archaeological sites exist around Comox Lake and should be anticipated in un-surveyed areas.

Given our understanding of pre-contact Pentlatch settlement patterns, recorded archaeological sites around Comox Lake, and historic descriptions of Indigenous use of the area, several types of archaeological sites should be anticipated in the conservation lands. These include lithic sites, including lithic scatters and isolated finds, CMT sites, and rock art sites. The lithic sites would include the remains of camps, butchery sites, and kill sites.

Archaeological Survey of Comox Lake East Beach

On February 26th, 2020, Jesse Morin and Krissy Brown (K'ómoks First Nation Guardian Watchmen) undertook a non-permitted, pedestrian preliminary field reconnaissance (PFR) archaeological survey of the shoreline area of the Comox Valley Regional District's (CVRD's) recently acquired property at the east end of Comox Lake. It extended from the mouth of Perseverance Creek in the south, to the CVRD property boundary with the Courtenay Rod and Gun Club to the north. This area was investigated because it holds the highest archaeological potential of the CVRD Comox Lake east property.

Given the results of Baseline's earlier archaeological survey of Comox Lake, and comparable archaeological surveys around Lower Campbell, Upper Campbell and Buttle Lake, the vast majority of archaeological sites are clustered very close to historic, pre-dam lake levels, and are inundated most of the time. This means that the survey of East Comox Lake could not access most of the historic shoreline, the area with the greatest potential to contain archaeological materials.

Much of the southern portion of the shoreline is completely or largely blanketed in historic coal slag/tailings. The archaeological survey was successful in identifying a single artifact, a flake, and in assessing the archaeological potential of the various parts of this shoreline. Lands adjacent to Perseverance Creek and Black Lake have high archaeological potential – assuming that they are not covered in mining debris. Relatively high water levels, compared to historic pre-dam levels, precluded review of most of the historic shoreline of Comox Lake, shoreline that is now 10 to 100 m offshore. An additional archaeological survey was conducted during November 2022 when lake water levels were at a recent low due to drought conditions. No additional artifacts were found. It is also strongly recommended that additional archaeological survey is undertaken during the lowest possible water levels in advance of any ground disturbance or construction activities in the area.

Assessment of Archaeological Potential of Adjacent Inland CVRD Lands

The inland CVRD lands at Comox Lake all have much lower archaeological potential than the shoreline and inundation zone. If the lands in question were pristine or unmodified by modern forestry and mining, they would have considerable potential for CMT sites and lithic scatters. However, there has been profound historic alteration of these lands.

There is no old growth within these lands, and most of the property has been recently commercially logged for the second time. The oldest standing timber is less than 100 years old and is growing on the coal tailings from No. 4 Mine. The coal tailings from No. 4 Mine cover approximately one-quarter to one-third of the CVRD lands. This intensive modification by forestry and mining means there is no chance for pre-AD 1846 CMTs to be present on the inland portion of the property (CMTs may exist in the inundation zone). There is high archaeological potential near Perseverance Creek where there are no coal tailings.

4.4 Early Settler History

Content in this section is extracted and derived from Stage 1 Preliminary Site Investigation Lake Front Acreage Property on the East Side of Comox Lake (Tetra Tech EBA) and Coal Beach and No. 4 Mine Site Village of Cumberland Statement of Significance (Becky Thiessen)

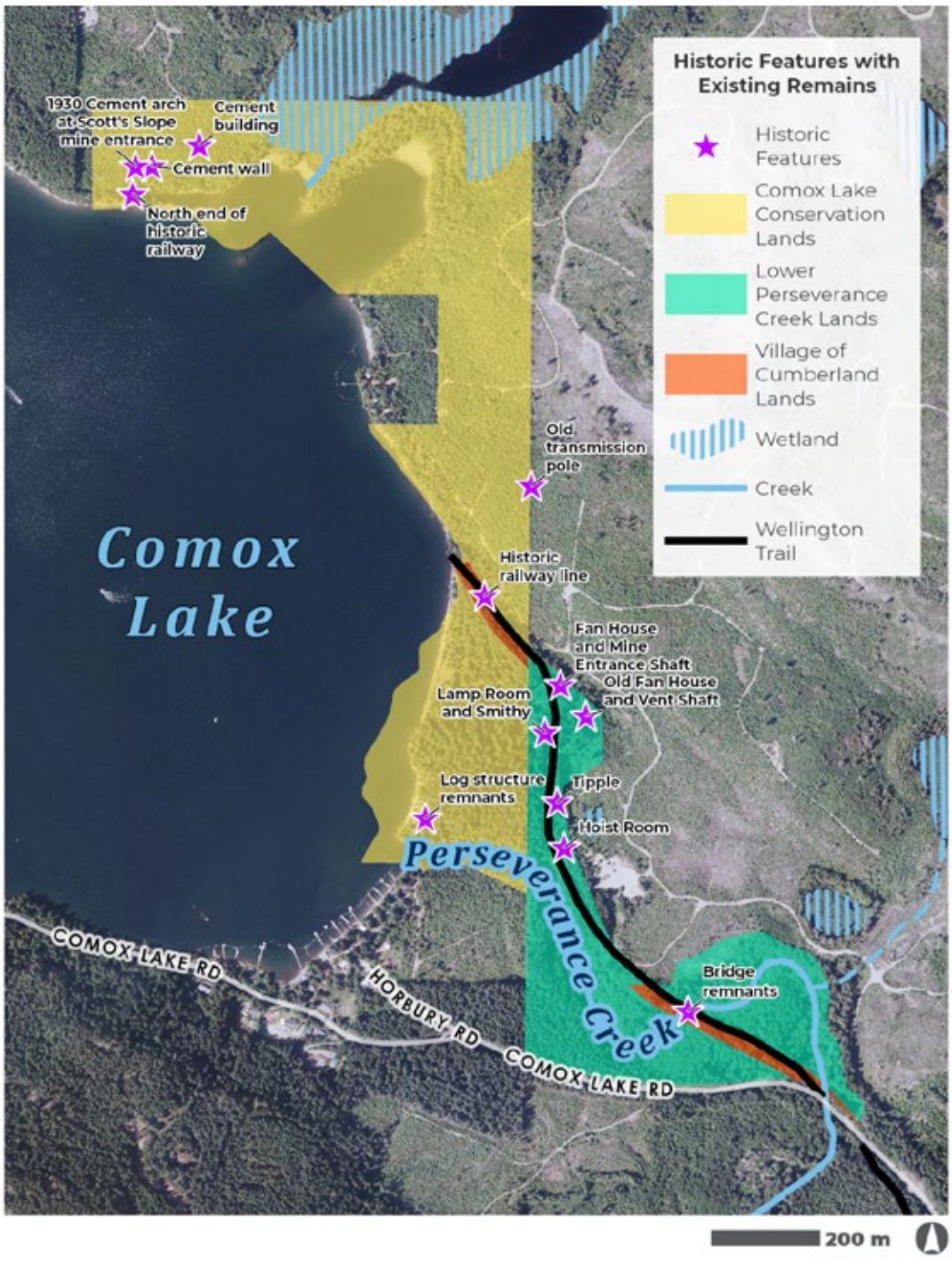
The Union Colliery Company developed the No. 4 Mine Site around 1890 and it soon became the most productive coal mine in the Comox Valley. Workers and their families came to the area, marking the beginnings of Cumberland and a development boom. Various camps, such as the No. 1 Japanese Townsite and Black Townsite were built to support the No. 4 mine. This huge mile-long slope mine with mazes of tunnels was productive for almost 50 years.

The No. 4 Mine spanned around 650 hectares of coal seams on and beyond what is now the CVRD property acres, and it supplied 6,500,000 tonnes of coal. Coal was hauled out on mine cars that formed trains connected to heavy cables that were pulled by a winch from the engine room. The Old Colliery Mainline (1889 – 1913) and the Colliery Mainline (post 1913) carried coal by rail from the tipple towards Cumberland.

Fire in 1905 destroyed the blacksmith and machine shops; however, the pithead, engine, and fan houses were saved. A new pithead and tipple were constructed in 1919. In 1926, a second mine entrance, Scott's Slope, opened on the north portion of the property. Scott's Slope was connected to the main pithead by a narrow-gauge track. Coal was hauled to the tipple for screening in trips of 30 mine-cars by steam dinky locomotive. The No. 4 Mine was abandoned in 1935 after it flooded with lake water during a heavy storm and was deemed too costly to pump out.

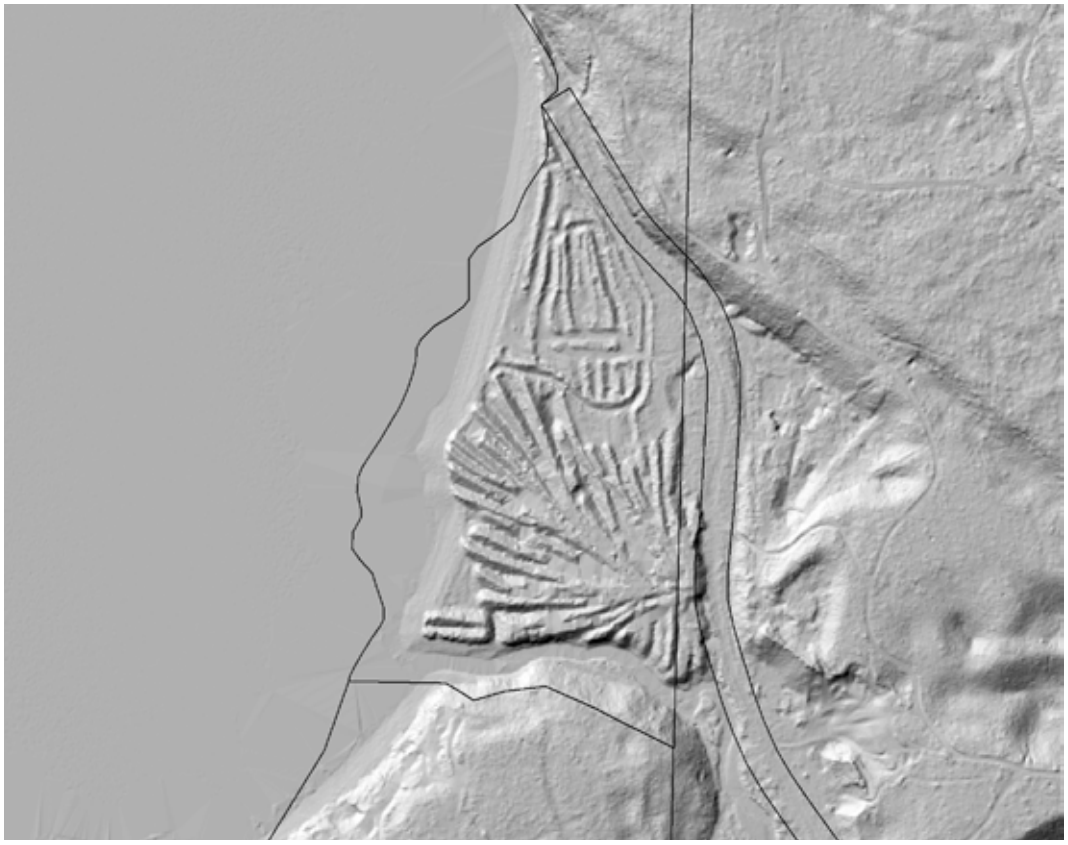
From that time onwards, there was very little change to the mine. Many of the mining structures remain and are gradually deteriorating. There are significant berms of mine tailings on the CVRD property and the adjacent beach. Mining remnants include the elevated train route (now used as a trail), the concrete foundation and walls of the former No. 4 mine fan house, and the adjoining collapsed fan shaft. Scott's Slope is on the northern portion of the property west of White's Bay. It contains the collapsed entrance to Scott's Slope and the foundation of an adjoining substation. These mining remains are historically and culturally significant to Cumberland (Map 5).

Map 5: Historic Buildings with Existing Remains



Cabins were built on the lake during the late 1800s and early 1900s. While the time of their construction is unclear, they were known to exist during the "Big Strike" in 1912 to 1914.

In 1929, Cumberland was granted land at Jock's Point for a public park (now Cumberland Lake Park and Campground). The park facilities were developed by 1946 and have not changed significantly since then. After the closure of the mine, families spent many afternoons picnicking and swimming at the adjacent beach. In 1960, Weldwood of Canada bought all the Colliery lands outside the village boundary of Cumberland and buried the mine entrances in 1974.



The site is a reminder of the difficult, discriminatory, and back-breaking work of the coal miners. The No. 4 mine was full of toxic gases and prone to flooding and explosions. Miners worked underground in three-foot spaces on hands and knees and other times waist deep in water. Several major explosions left the people of Cumberland to mourn en masse. An explosion on August 22, 1922, caused a cave-in, killing 18, and an explosion in February 1923 took the lives of 31 miners, injuring many others and leaving 25 children fatherless.

The site provides an excellent perspective of exploration over geological time, cumulative human impacts, and climate change.

4.5 Opportunities and Challenges

Opportunities	Challenges
Engage with K'ómoks First Nation to support the work of story tellers and knowledge holders	Interest of K'ómoks in engaging in this project unknown at this time
Support future archeological research by K'ómoks First Nation	Some management of public activities may be required and much of the archaeological evidence is likely flooded
Protect sensitive ecosystems and enhance habitat to support First Nations access to fish, wildlife, and plant resources	Resources required
Share settler stories related to mining, logging, and recreation in the Comox Lake Watershed	Keeping the public safe Ensure heritage revitalization standards and practices are followed
Showcase the site's history of exploration of geological time, cumulative human impacts, and climate change.	Resources required

5 PUBLIC USE

For generations, families have visited Comox Lake for camping, picnics, boating, swimming, and off-road motorized activities. These privately owned lands were accessed informally or through lease agreements with private timber companies. As the Comox Valley population has grown, so has the demand for access to "blue spaces" (water). Almost all the access to Comox Lake is still privately owned, creating "pinch points" like at Cumberland's Lake Park, which is the only formal public access to Comox Lake. The subject lands at Comox Lake and Lower Perseverance have served as an informal overflow for people wanting access to the lake. But in recent years, visitation, drier summers, fires, and off-road vehicle use have all increased, putting the lands at risk. Now that these lands are owned and established as conservation areas, we have a path forward to protect the conservation values.

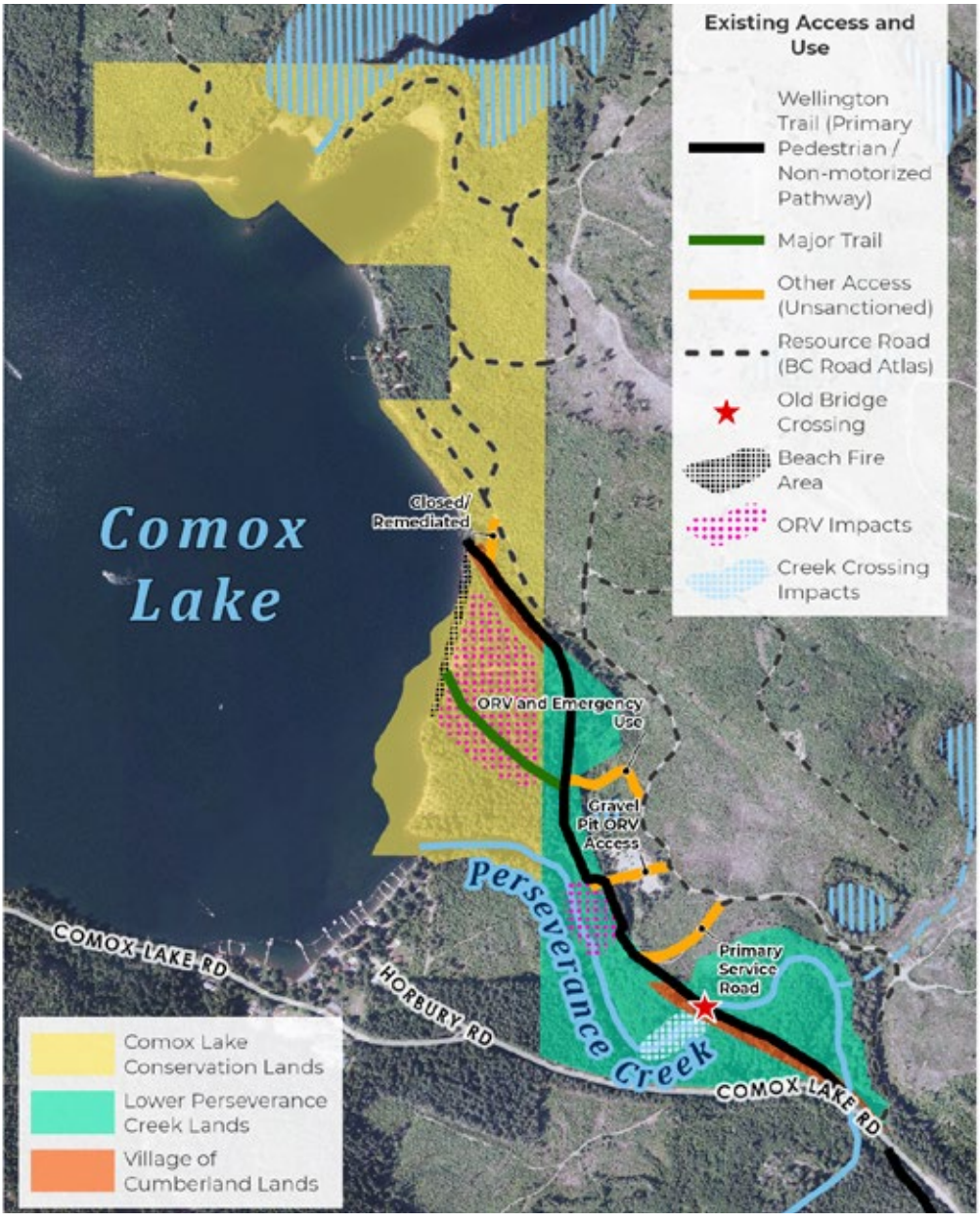
~ Connected by Water, Watershed for Beginners

5.1 Past and Current Use

The conservation lands have been used informally over many years, mainly by local residents (Map 6). The lands are attractive for their natural values – nature appreciation – and for the historic artifacts. The primary uses are walking, beach activities, and off-road vehicles (ORVs) such as off-road motorcycles and quads. There have been some attempts to restrict use with barricades at the main trail head, but park visitors have found ways to remove or circumvent the barriers. Many of the residents who use these lands treasure them and there is a growing stewardship community.

Many visitors park along Comox Lake Road and walk, run, walk dogs, or cycle in along a route that was once a part of the Wellington Colliery railway right-of-way. This route, which is also used by ORVs, connects with a major trail to the beach. The elevated trail passes through mature forest and Perseverance Creek. Historic uses have also included off-road vehicle and dirt bike use of the coal overburden heaps located near the beach. These users enjoy the freedom of the area and the fun of the heap formations.

Map 6: Existing Access and Use



The beach, currently called "Coal Beach", is a primary destination as it offers a quieter and more natural alternative to the popular beach at Cumberland Lake Park. A significant number of people access the beach from the water, coming by motorized and non-motorized boats from cabins or boat launches. Once at the beach, activities include swimming, picnicking, and typical beach activities, including fires. Historically, some people have camped on or near the beach. Smaller boats can venture some distance up Perseverance Creek when water levels are high.

A private resource road call the Whyte's Bay Main runs roughly parallel with the Conservation Lands on the northeast side. There were and are several unsanctioned access points from that road into the Conservation Lands. A connection at the north end down a steep slope has recently been closed and remediated. The next road to the south is used for emergency use. South of that is a road through a gravel pit, and the southernmost road is a primary service road. All of these roads are used by ORVs.

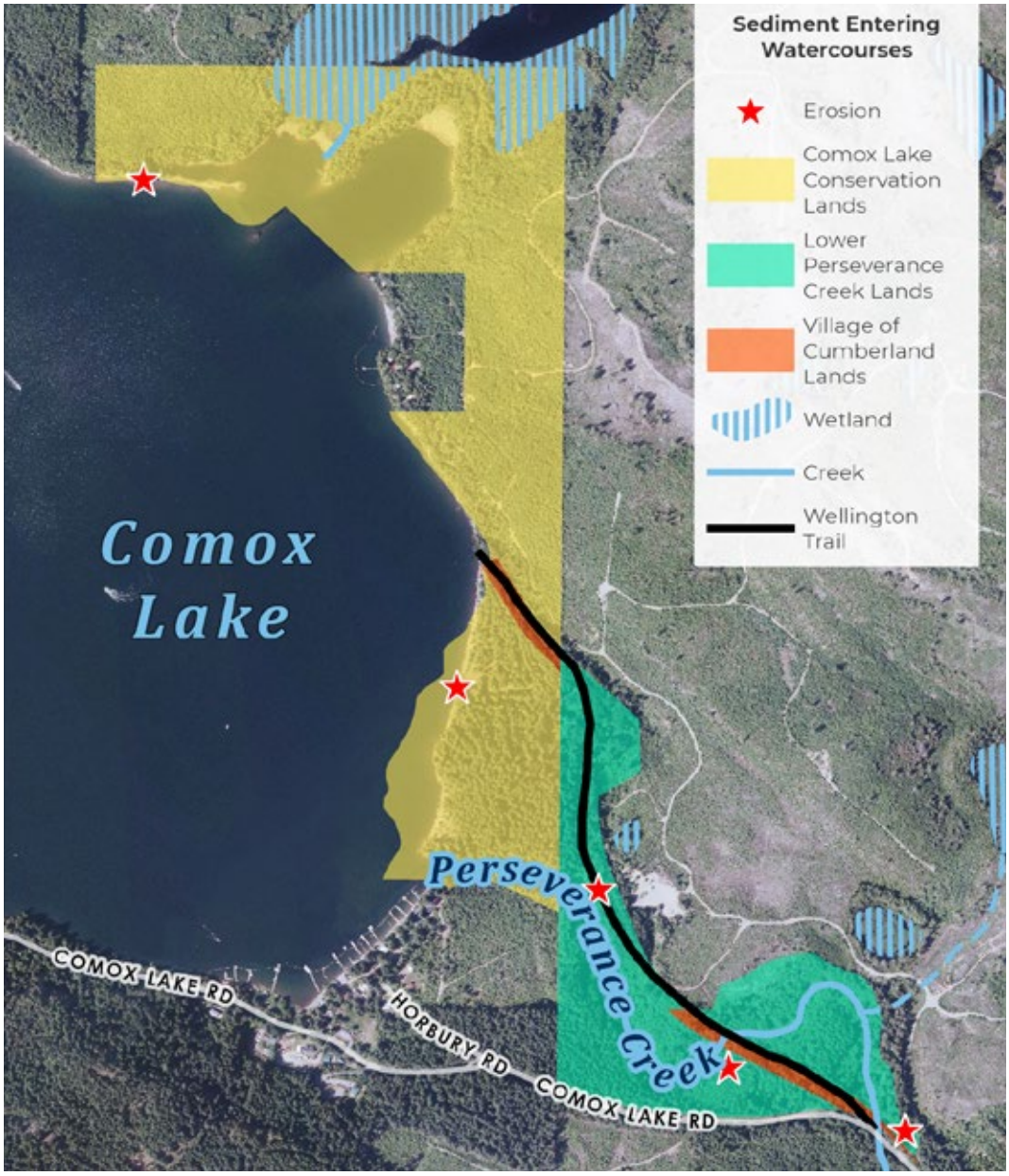
Use of the site appears to be increasing, and impacts have occurred. At times there have been waste bins (not placed by any organization) along with accumulations of litter. In addition to being unsightly, the litter can be a wildlife attractant and risk to wildlife. The lack of washrooms has led to human waste near use areas. Some of the coal overburden heaps and surrounding areas have been almost completely denuded of natural vegetation.

Where the Wellington Colliery right-of-way crosses Perseverance Creek (on Village of Cumberland property), there is no longer a proper and safe crossing as the old bridge is gone. Park visitors have formed a series of trails from the elevated rail grade into the floodplain to facilitate crossing Perseverance Creek when it is dry during the summer months. There is also a tree used as a crossing. Similarly, trails extend further into the floodplain forests to cross Perseverance Creek along the top of a log jam in the adjacent area of the Wellington crossing. These crossings by pedestrians, bikes, and ORVs expose mineral soils in the floodplain that would otherwise be vegetated with riparian shrubs and herbs and likely contribute fine sediments such as fluvial silts to the creek during high flows.

Unsanctioned trails, creek crossings, and off-road vehicle routes are causing sedimentation of watercourses (Map 7). Where Comox Lake Road crosses Perseverance Creek near the southeastern corner of the lands, there is a site of erosion that likely generates silts, clay, and other sediments to Perseverance Creek. The crossing is an arched concrete culvert superficially resembling a bridge on adjacent land, which focuses and directs the flow of Perseverance Creek under the road towards a steep cut-bank of clay and other surficial materials located on the lands. The rate of erosion of this cut-bank appears to be rapid and is likely attributable in part to the design of the road crossing on the adjacent property.

Another site where fine sediment appears to enter Perseverance Creek is directly west of the gravel pit. Here an off-road vehicle access route has developed between the Wellington Colliery and Perseverance Creek. At low water levels, off-road vehicles can access the shoreline, gravel bars, and shallow waters of Perseverance Creek directly. Evidence of off-road vehicle tire tracks was observed both up and downstream of the access point. This area is characterized as the low-bank floodplain of Perseverance Creek where it enters Comox Lake and thus a receiving zone for the deposition of fine sediments, which can more easily be mobilized when impacted by off-road vehicles. In this same area, broken concrete and asphalt has been placed as riprap to armour the cutback from erosion.

Map 7: Sediment Entering Watercourses



There are also ongoing environmental impacts related to activities on adjacent lands. One example is the parking pullout along Comox Lake Road that appears to be used frequently by people camping in vehicles. Garbage and waste are evident on the lands in this location. There has also been garbage along Comox Lake Road that appears to have been thrown from moving vehicles.

Access and parking are challenges for the Village of Cumberland and cabin owners in the area. During peak recreation times such as summer weekends, there can be significant congestion along Comox Lake Road, mainly from people going to Cumberland Lake Park. Parked vehicles near the trailhead to Coal Beach exacerbate the congestion. This can make it difficult for some property owners to get to and from their cabins. It is also a concern for emergency access and safety.

Beginning in 2019, the CVRD, subsequently with CCFS, placed signs informing the public that the lands were purchased by the CVRD to protect drinking water, and that public access and use is not sanctioned. There were also people hired to monitor use and inform visitors about appropriate behaviour, e.g., no fires, no camping, carry out waste. Since 2022, a more detailed sign provides more information on the values of the lands and guidance on use – pack out what you pack in, stay on established trails, no motorized vehicles, no fires, no camping.

5.2 Opportunities and Challenges

Opportunities	Challenges
Post signs about the purpose of the lands, regulations, that recreation use is secondary to drinking water and ecosystem protection, and that responsible day use (described) will be necessary to the continuation of access	Not everyone will read or abide by signs
Contain use areas and reduce access and trail expansion into more ecologically intact areas	Requires concerted communication and signage with current users and resources for projects
Establish and support a stewardship culture and program on the lands	Resources are required to manage program and volunteers Not all users respect a stewardship approach
Provide facilities to reduce environmental impacts, especially toilets	Costs of facilities and required maintenance and management
Work with motorized users to explain why motorized use is not acceptable in this location and to support a shift of site use	It is difficult to constantly monitor the site and to change use patterns
Engage in advocacy in support the development of other public access to fresh water in the Comox Valley and efforts to redistribute visitors at a regional level	Limited public access to fresh water recreation sites currently exists and will likely require land acquisition
Work with adjacent landowners including CDFGPA, Manulife, and future Bevan Industrial Lands owners to manage and reduce access points to the lands	Adjacent lands are extensive with multiple access points making management difficult
Encourage non-motorized access from parking areas within Cumberland to the trailhead, and discourage parking on roads	There is minimal safe parking available for those wanting to drive to this site

6 EMERGENCY PLANNING AND CLIMATE RESILIENCE

Climate change is creating challenges for this watershed with extreme weather events like atmospheric rivers and droughts becoming increasingly common. Fire risk is increasing annually with summer droughts and heat domes placing stresses on local ecosystems. We witness evidence of this in the dying cedar trees, and the low lake and river levels. We can feel overwhelmed by all the challenges we face and that makes it hard to take action. But if we galvanize relationships, use our creativity, and build community to respond to issues, there is much reason for hope. The level of collaboration humming in our community right now is unprecedented.

~ Connected by Water, Source Encounters Tour

6.1 Access

Emergency access to the Lands at Comox Lake and Perseverance Creek has been an ongoing challenge. Official road access is limited to resource roads on lands owned by Manulife Investment with an access agreement for the Comox Lake lands on a year-to-year basis. The more recent acquisition of the Lower Perseverance Lands included the negotiation of an easement agreement for the CCFS for 10 years for restoration and land management activities (including emergency access).

The lower road (part of the Wellington Colliery) is in poor condition, with legacy asphalt in areas, deep depressions holding water, and road widening from visitors on foot and on wheels avoiding wet areas. Emergency vehicle access to the beach itself is also challenging due to terrain.

Unauthorized OMV access via these private resource roads continues to exacerbate degradation, risk of accidents, and fire risk on the lands. Significant increases in local population and demand for access to fresh water "blue space" in the face of COVID, heat domes, and longer hotter summers are contributing to increased risk and cumulative impacts on the land.

6.2 Fire Risk

Fire risk, which is the greatest risk to the Comox Lake Watershed as a whole, remains high from both beach fires and motorized activity. This risk is only increasing with recent droughts and tinder dry forests. In July of 2023 a large fire on the beach at the north end of the Comox lake Lands became a catalyst for discussion between the Cumberland Fire Department, CVRD, Village of Cumberland and the CCFS about fire protection access to the site, by boat or by road, and issues with the access roads (both Manulife owned access roads and CCFS and VOC portions of the Wellington) which hinder the capacity of local fire protection services to respond to fire on the lands.

6.3 Extreme Weather Events

The Lands at Comox Lake and Lower Perseverance Creek are impacted by extreme weather events, including both heavy precipitation and droughts. During heavy precipitation events / atmospheric rivers Perseverance Creek has high velocity flows (flashing) which exacerbate erosion along the creek. These events are becoming more and more frequent and often follow long periods of drought. Restoration works on Perseverance Creek, including the management of woody debris and culvert replacement, will be critical to ensure the integrity of the lower system.

Drought conditions also impact these lands. Not only do they increase the already high fire risk, but extended droughts also result in stranded salmonids in Perseverance Creek. Low creek levels also lead to increased OMV access to the gravel within the creek itself which damages habitat and increases erosion in the creek and riparian areas.

6.4 Other Risks

The Lands at Comox Lake and Lower Perseverance are also vulnerable to the impacts of earthquakes. Specifically, Perseverance Creek has steep and unstable banks in several locations in the lower corridor, as well as significant bank integrity issues in the upper creek that could impact the lower sections should large amounts of earth give way. Many of the unstable banks are high in silt and clay content, and this material could cause turbidity and water quality issues. Historic records also indicate that an earthquake could create a lake tsunami which could also impact the lands.

6.5 Access Management

In response to a beach fire in summer of 2023, the increased risk of fire overall, and increased human impacts on the site, an Access Management Project was undertaken to reduce fire risk, improve fire protection access, clarify property boundaries and use changes, and begin to address the cumulative negative impacts to the ecological health of the lands. This project has been a first step in addressing immediate threats to the landscape and will benefit long-term conservation planning and projects.

6.6 Opportunities and Challenges

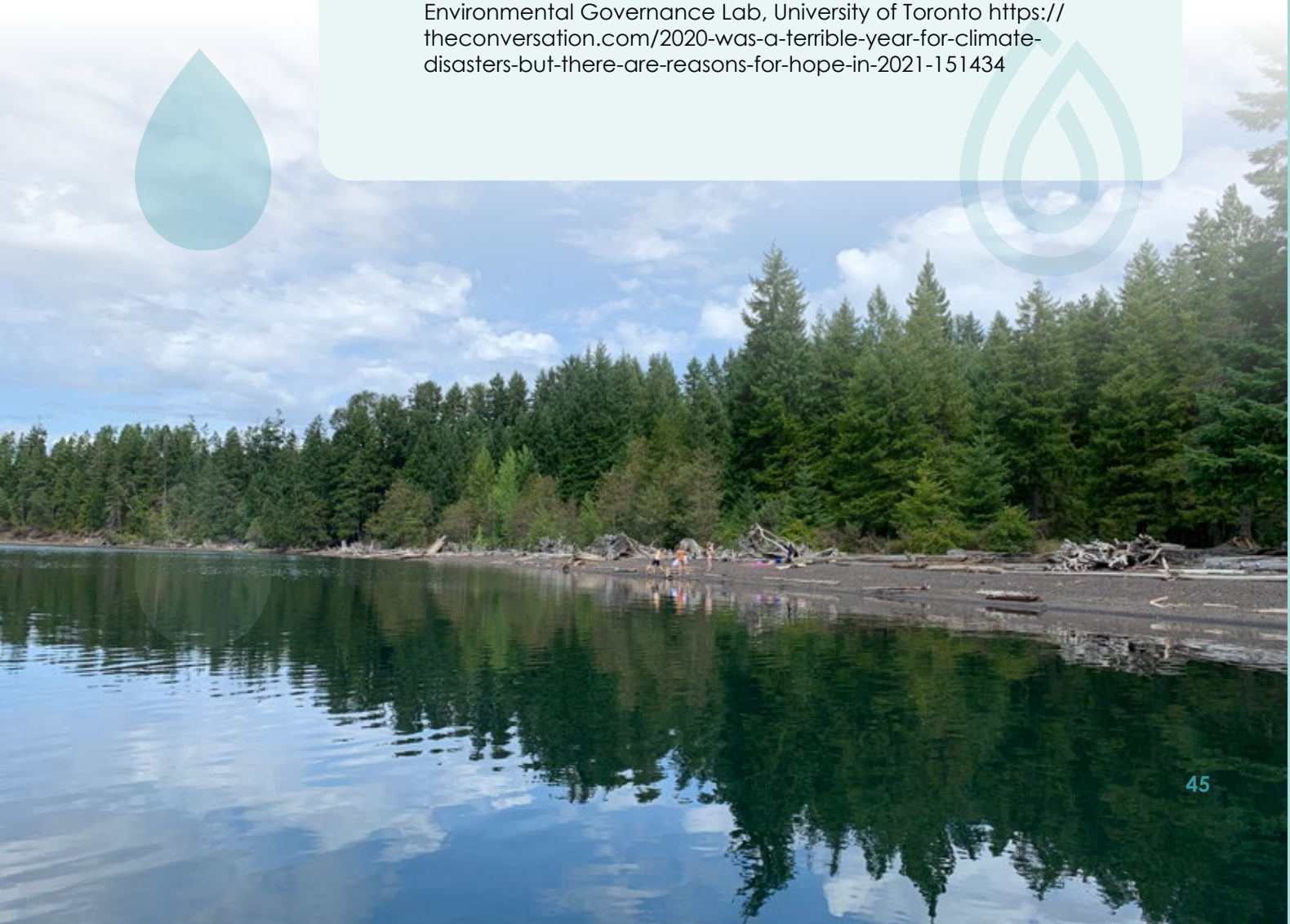
The Lands at Comox Lake and Lower Perseverance Creek have been heavily impacted by human activity and are vulnerable to climate risks, wildfire and human emergencies. However, there are also significant opportunities for restoration, planning and access management to reduce vulnerabilities and strengthen the health and functioning of the lands.

Opportunities	Challenges
Conduct creek restoration and habitat enhancement projects to build resiliency	Creek erosion and degradation, stranded salmonids, bank destabilization
Undertake infrastructure projects (culverts and bridgeworks) to reduce impacts from extreme weather events, reduce degradation, and build resilience (per section 2.4)	Costs of infrastructure projects and sources of funding Improved ease of access with installation of infrastructure may lead to increased visitation and associated impacts
Continue Emergency Access Management Project, road Improvements, and new access opportunities with adjacent landowners	Limited emergency vehicle and land management access
Install clear signage and property delineation on access roads and changes to permitted activities	Unmanaged dirt bike and motorized vehicle access to lands and increased degradation
Add clear communications and site design to encourage low-impact visitation	Increased visitation and associated impacts

7 PLAN FOR THE FUTURE

"All this bad climate news has the potential to generate climate despair, numbing those watching the next tragedy unfold….To be clear, climate despair does not square with current scientific understandings. We are in trouble, not screwed….So hope is good science, and that's good for politics. Opportunities to expand the space of uncertainty at the root of hope are right in front of us… Rejecting despair, embracing the uncertainty of hope, is the least that individuals, communities and societies that are relatively safe from climate change owe vulnerable communities."

~ From "2020 was a terrible year for climate disasters, but there are reasons for hope in 2021" By Matthew Hoffmann, Professor of Political Science and Co-Director Environmental Governance Lab, University of Toronto https://theconversation.com/2020-was-a-terrible-year-for-climate-disasters-but-there-are-reasons-for-hope-in-2021-151434



7.1 Vision

Overall Vision

The conservation lands protect drinking water quality, fish habitat, biodiversity, sensitive ecosystems, cultural values, and heritage resources.

Achieving the vision will require regenerating ecological functions.

Public access in keeping with the overall vision is sanctioned.

7.2 Objectives

1. Maximize drinking water quality and hydrological functions
2. Protect, restore, and enhance fish habitat, biodiversity, and sensitive ecosystems
3. Protect cultural values and heritage resources and support respectful appreciation
4. Provide information to the local community on the land's values and appropriate use
5. Manage for conservation while providing for limited safe public use that respects the land's values
6. Engage with governments, stakeholders, and residents to strengthen the stewardship culture around these lands

7.3 Strategies

Environment

1. Protect and enhance sensitive ecosystems, including mature forest, creeks, riparian areas, and wetlands
2. Stabilize and improve hydrological functions and enhance habitat in Perseverance Creek
3. Stabilize eroding shorelines and riparian areas
4. Take action to promote revegetation of degraded areas, especially riparian and coal mine overburden areas
5. Take measures to mitigate wildfire risk
6. Manage invasive species
7. Contain access to protect the most sensitive and significant ecosystems from human impacts
8. Develop facilities and infrastructure that will reduce impacts on environmental resources

Facilities / Infrastructure

1. Provide the following facilities:
    - Limited and defined primary and secondary trails
    - Fencing for safety and protection of specific resources
    - Regulatory and interpretive signage
    - Environmentally appropriate toilets
    - Pedestrian bridge across Perseverance Creek to avoid foot and wheel passage through the creek
    - Service access
    - Other infrastructure as required for conservation management

Management of Public Access

1. Encourage responsible use at the site through ongoing community engagement at the local level and the development of a stewardship culture and activities
2. Disallow private vehicles and off-road vehicles within the property
3. Work with adjacent landowners to ensure management of areas providing emergency access to the property
4. Disallow motorized vessels landing on the beach through information at boat launches
5. Limit and contain human access and uses to defined trails and use areas
6. Disallow access into environmentally sensitive areas
7. Establish regulations for site etiquette, including the following:
    - Pack out what is packed in
    - Disallow motorized vehicles
    - Disallow fires
    - Disallow camping
    - Dogs must be on leash
8. Ensure any mapping, parks, or tourism publications and other resources identify the site as a "Conservation Area" (with a definition of that)

Do not publicize this site beyond the local level.

Land Management

1. Conduct human impact baseline studies and complete conservation covenants for the lands
2. Complete action plans for the lands, including restoration plans, infrastructure plans, and access management plans with phasing, costing, and monitoring details
3. Continue education and compliance activities
4. Support existing and develop new stewardship programs and activities
5. Work with adjacent landowners to secure long term access for emergency access and land management
6. Document and remove debris from historic activities as appropriate

8 CONSERVATION PLAN / IMPLEMENTATION PLAN

This Conservation Plan provides important context and next steps for implementing the vision, objectives, and strategies. Unlike typical management plans for public lands, the focus here is on pulling back impacts, letting nature take its course, reducing harm, and supporting regeneration.

This plan sets a high-level direction and strategy for the lands and is therefore intended to be a long-term plan, serving ideally for 20 years. This plan will be congruent with a Section 219 Conservation Covenant to be applied to the lands. The covenant will provide a clear framework, including restricted and reserved rights, that will guide any future management plans and projects to take place on the lands.

The following are the steps that will be part of implementing this plan:

Land Management Responsibilities

Partnerships and collaboration are key to the implementation of this conservation plan. The following are some of the next steps:

- Develop a matrix to establish or confirm the groups to be responsible for ongoing management that includes clarity regarding landowner and jurisdictional authority, responsibilities, and guidelines.
- Define a decision-making process for how the partners will work together and make decisions.
- Integrate the above, as applicable, into evolving regional parks and trails processes.
- Work together to identify and pursue funding opportunities for capital projects.

Capital Projects and Restoration Actions

There are several capital projects needed to manage public use, reduce environmental impacts, and enhance biodiversity. The following are some of the next steps:

- Identify and implement a trail plan, including trails to be retained, improved, and decommissioned. Consider key access (with potential future links to other properties and trail systems), short heritage and nature loops or spurs, and a trail behind/along the beach with defined access points.
- Decommission or redesign access points to Perseverance Creek to disallow passage through the creek by feet, wheels, and especially motorized vehicles.
- Define and implement a plan for servicing and emergency vehicular access, including vehicular access from the Bevan / CDFGPA side, recognizing that the old Wellington Colliery rail line cannot support vehicular use. Narrow and contain the road width to the minimum required for emergency access.
- Design and install signage that includes wayfinding, regulatory, and interpretive information. At existing and potential access points, use physical features plus signage to provide clarity about ownership boundaries and use regulations.
- Plan and design new infrastructure to reduce environmental impacts, including a pedestrian bridge and toilet.
- Implement projects based on priorities. Projects include protecting cultural sites, signage, road construction, trail improvements, a pedestrian bridge over Perseverance Creek, toilets, deactivation and restoration of degraded sites and random trails, upgrading culverts, restoring erosion sites, removal of historic debris, and native plant restoration.

Land Use Management

Action plans and guidelines are needed to direct capital projects and manage public use. The following are some of the next steps:

- Complete the Section 219 Conservation Covenants for the lands.
- Establish guidelines for public use that identify permitted and prohibited activities, including guidelines for e-bikes that mirror the rest of the local network.
- Invite K'ómoks to work on ways to integrate reconciliation into the facilities, management, and programs on the lands and adjacent waters.
- Collaborate with the Village of Cumberland and Lake Park on parking and safety issues along Comox Lake Road in efforts to reduce congestion and ease access at peak times.
- Establish guidelines for construction such as the following:
  - Prohibit removal of significant trees with diameter at breast height (dbh) over 20 cm
  - Follow best practices for trail construction, e.g., per Whistler trail standards
  - Prohibit storage of materials under the canopy of trees
- Establish guidelines for protection, risk management, and interpretation of cultural resources, including opportunities for cultural appreciation, location and types of protective fencing, safe access to historic features, and cataloguing and removal of historic debris that may pose risks.
- Develop a stewardship program in collaboration with adjacent owners and other Comox Lake stewards including coordinated online information, signage, and education programs for adults and children.
- Work with adjacent landowners to identify opportunities to bring more lands into similar ownership and/or management, which would enable the plan to be stronger.

Monitoring

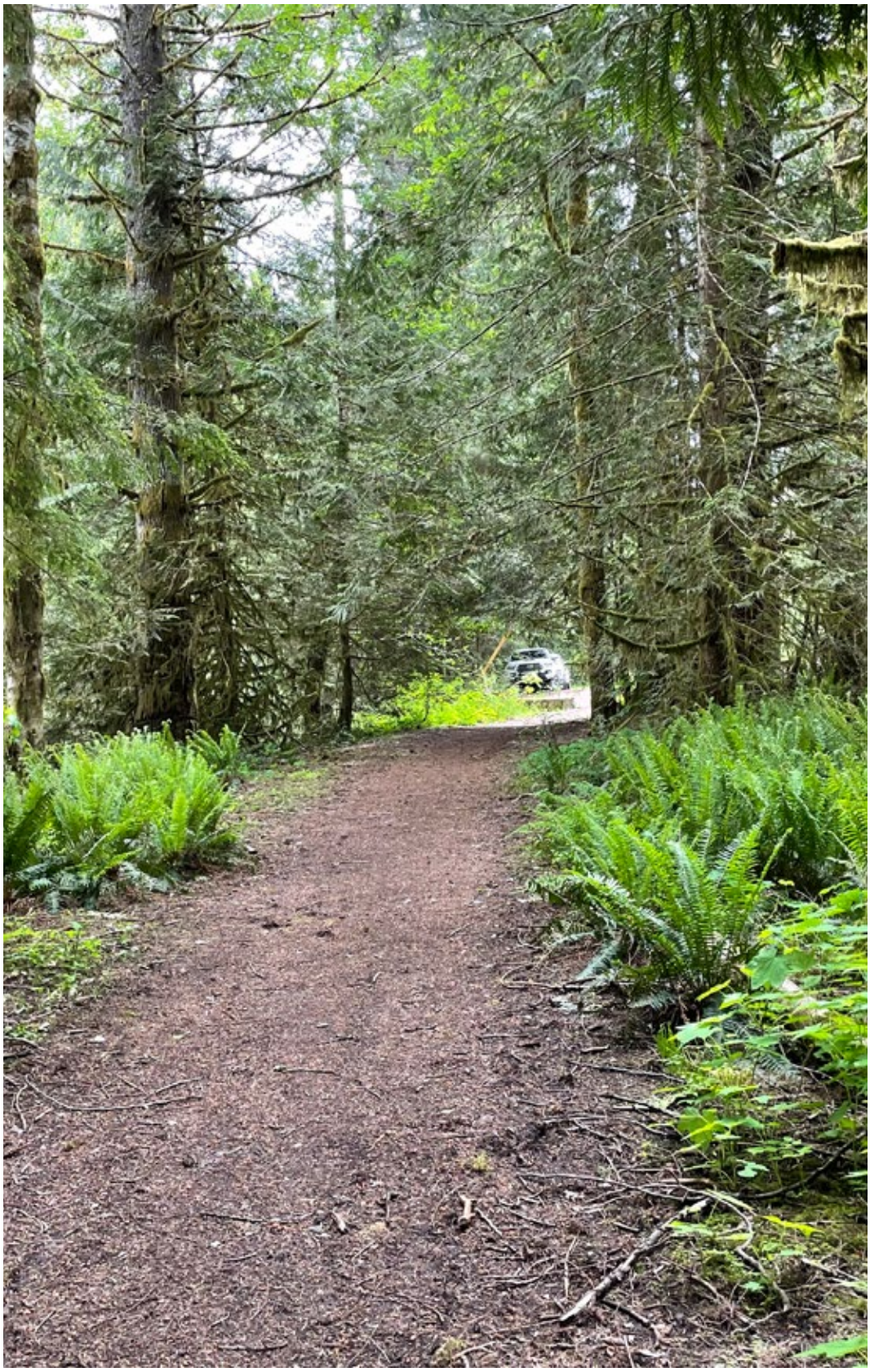
It will be critical to monitor the health of the ecosystem, amount of use, and impacts of recreation use. The following are some of the next steps:

- Prepare a monitoring plan that includes performance indicators, measures, and thresholds, and adapt these over time as needed. The following are potential indicators:
  - Water quality
  - Public use – trail counters, fire rings, photopoints, garbage
  - Erosion areas – reduction and regeneration in disturbed areas
  - Presence and quantities of species at risk
  - Vegetation test plots
- Develop a stewardship pilot project to implement the monitoring program and provide public information during peak season. Seek long-term sustainable resources among partners to continue this work.

Future Work

More knowledge will support more targeted management and ongoing improvements to the health and biodiversity of the lands and waters. The following are some of the next steps:

- Establish budgets for future studies and monitoring and the implementation of a permanent stewardship program, and work among the partners to secure funding.
- Use the information from monitoring to revisit and refine the conservation plan and associated restoration, access, and infrastructure plans, if necessary, based on impacts.
- Conduct additional environmental studies that further knowledge to guide restoration activities.
- Secure resources for creek restoration to improve hydrological and ecological functioning.
- Review this plan every ten years and update it as needed unless a situation arises that triggers an earlier review.



Comox Valley
REGIONAL DISTRICT

PARKS & TRAILS
THE VILLAGE OF
CUMBERLAND

CUMBERLAND
COMMUNITY
FOREST
SOCIETY

CONNECTED
BY WATER