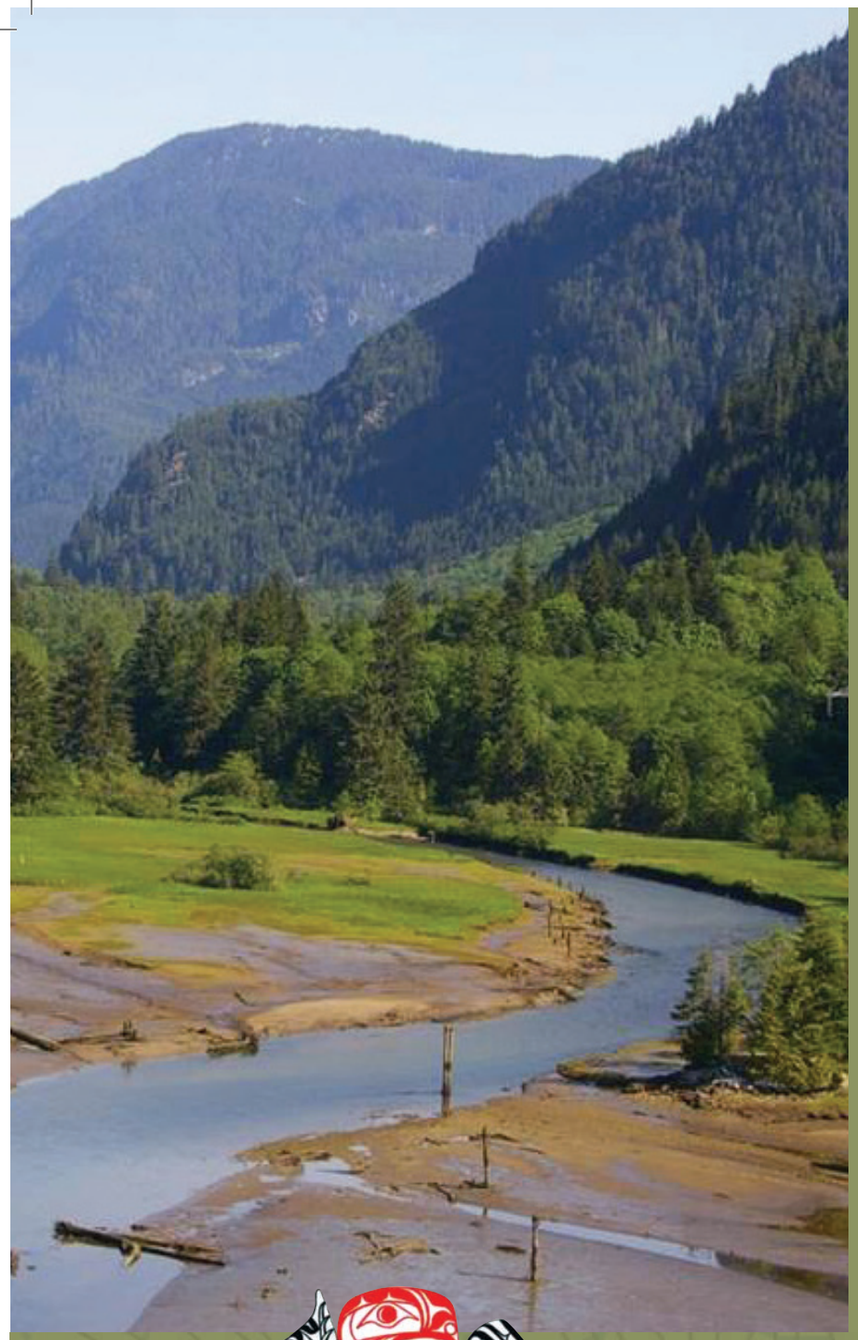

xʔəĺílwətaʔɬ/Indian River Watershed

Integrated Stewardship Plan 2022

Prepared by TSLEIL-WAUTUTH NATION

Meslilloet Creek
Meslilloet Mtn
Don Lake
Young Lake
Joseph Lake
Little Anne Lake
Anne Lake
Norton Lake
Brandt Creek
Indian River
Mt Bonnycastle
Barnes Lake
Belknap Lake
Hixon Creek
Mt Felix
Grand Lake
Fannin Mo

This Plan is dedicated to the memory of:

Herbert (Herb) George
(1946-2018)

The xʔəĺílwətaʔɬ/Indian River Watershed was always a special place for Herb. With his dog Jubilee by his side, Herb walked, hiked and biked almost every corner of the valley. His enduring spirit and vibrant way of life will live on, just as the river runs cool, clean and free.

Ernest (Iggy) George
(1940-2020)

This Plan would not exist if not for the guidance and leadership of Iggy. Iggy's insight and careful attention to ensure Tsleil-Waututh values run through every page of this Plan is a true and lasting legacy.

Acknowledgements

The creation of the xʔəɬílwətaʔɬ/Indian River Watershed Integrated Stewardship Plan (the Plan) could not have been possible without an extraordinary level of teamwork and personal dedication from many individuals.

At the heart of this acknowledgement are the Elders of the Tsleil-Waututh Nation who inspired and guided the project team with their vision and wisdom. Tsleil-Waututh Nation Elders generously gave their stories of the xʔəɬílwətaʔɬ/Indian River Watershed and the village of Inlailawatash to enrich the understanding and commitment towards protecting and conserving this unique place. Special mention goes to Tsleil-Waututh Nation Elders Ernest I. George and Richard George for their countless hours directing and reviewing early drafts of the Plan.

As the Plan took a long windy path to completion, many hands, minds and hearts are connected to this work. From a leadership perspective, gratitude goes out to all the Tsleil-Waututh Councils that supported this work under Chief Justin George, Chief Maureen Thomas, Chief Leah George-Wilson and Chief Jen Thomas. Some of the key Tsleil-Waututh community members, staff and consultants that played a vital role in this process include Leonard George, Ed Thomas, Micheal George, Matt Thomas, Ernie George, Chris Knight, Doug Hopwood, Beverly Suderman, and the TLR team including Bridget Doyle, John Konovsky, and Sarah Dal Santo.

This Plan is also heavily enhanced by the beautiful maps that help tell the stewardship story. Thank you to the many GIS Analysts that have assisted with map development over the years with special mention going to Pano Skrivanos and Allison Hunt who was lead mapper on this final version. Tsleil-Waututh Nation would like to recognize and thank Jason Forsyth as the lead project planner, for his dedication and consistent efforts to ensure this Plan became a reality.

Lastly, the Tsleil-Waututh Nation would like to thank the Province of British Columbia for being committed to innovative land and resource management planning and walking the, at times challenging, but important path of jurisdictional collaboration. Thank you to all the representatives who played a part over the years and specifically to Frank DeGagne, Scott Shaw-Maclaren and the forward-thinking leadership of Dave Southam during the home stretch.

hay čxʷ q ə siʔem

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Takaya Tours Canoe

Tsleil-Waututh Nation
səlilwətaɬ

Message from Chief Jen Thomas

On behalf of Tsleil-Waututh Nation Council and our members, I am deeply honoured to sign off on this extraordinary Plan for such a special part of Tsleil-Waututh territory.

I raise may hands to the tireless efforts of our Elders, leaders, staff and community members who put countless hours into this work. This is a remarkable achievement that will set a high standard for how we make decisions in Tsleil-Waututh territory, now and into the future.

Tsleil-Waututh Nation also recognizes the dedication and strong partnership with the Province of BC. Although this planning process has been a journey that spans many years, governments and programs, we are so pleased to have you stand with us at the finish line. Your continued commitment to a true partnership demonstrates integrity and respect.

This Plan is so much more than beautiful maps and words, it is a symbol of Tsleil-Waututh history and a clear path for how we can protect our values for future generations.

Respectfully,

Chief Jen Thomas

3178 Alder Court, North Vancouver, BC V7H 2V6 **T:** 604 929 3454 **F:** 604 929 4714

Chief Jen Thomas
Tsleil-Waututh Nation
3178 Alder Court
North Vancouver, British Columbia
V7H 2V6

Dear Chief Jen Thomas:

I am honoured to fully endorse the Indian River Watershed Integrated Stewardship Plan, with confidence that through our partnership agreement we will implement this plan with the acknowledgement of our shared responsibility for land and resource stewardship.

The process to achieve this significant milestone was lengthy, and I applaud you and all Tsleil-Waututh Council and Elders who made completing the Plan a priority. The leadership shown by your dedicated staff to realize the collective vision of the Tsleil-Waututh Nation is a model for others.

The Plan guides management of our precious and shared natural resources, and clearly illustrates Tsleil-Waututh's commitment to interconnected stewardship. I acknowledge the sacred trust to your people and responsibility to care for and restore the land, air, and water.

Likewise, as the Province carefully charts new endeavours with other Indigenous Nations through modernized land use planning, our engagement with Tsleil-Waututh Nation in the resolution of this Plan and Agreement provides valuable learning and potential model for others.

I thank you for allowing the Province to walk alongside the Tsleil-Waututh Nation as a partner, and in achieving this success together.

Sincerely,

Honourable Katrine Conroy
Minister

Ministry of Forests, Lands,
Natural Resource Operations
and Rural Development

Office of the Minister

Mailing Address:
PO BOX 9049 Stn Prov Govt
Victoria, BC V8W 9E2

Tel: 250 387-6240
Fax: 250 387-1040
Website: www.gov.bc.ca/for

"Where Life Springs"

Circle of water drops – within each drop another life: eagle, salmon, man, wolf, hawk, whale, woman, deer, showing some which depend on water. The chain of life is easy to break. Take away a link, what happens to the chain?

– Logo and description by Darryl Guss, Tsleil-Waututh member

SECTION 1:
Plan Introduction

1.1. Introduction

Tsleil-Waututh, which means “People of the Inlet,” have lived and prospered in the vicinity of Burrard Inlet, the Fraser River, and adjacent valleys and waters since time out of mind. The Tsleil-Waututh’s traditional territory, which is approximated by the Consultation Area, incorporates urban areas in the south, as well as wilderness watersheds northward to the vicinity of Mount Garibaldi, west to Howe Sound, and east to Coquitlam Lake.

The area at the head of the Indian Arm of Burrard Inlet, the xʔəĺílwətaʔɬ/Indian River Watershed (the Watershed), is extremely important in the history, culture, and economy of the səlilwətaɬ (Tsleil-Waututh) people. Inlailawatash is the name of the Tsleil-Waututh village located near the mouth of the xʔəĺílwətaʔɬ/Indian River, as well as the present name of the two Tsleil-Waututh Indian Reserves (IR 4 and 4A) and Tsleil-Waututh owned fee-simple land. According to Tsleil-Waututh oral history, the village was the site of first contact with Spanish explorers in 1792.

Tsleil-Waututh oral history teaches that the Tsleil-Waututh people have always belonged to, and have accepted responsibility for the care of, the lands and waters within their traditional territory. More recent management by Crown governments has been fragmented, and it has diminished environmental and cultural values.

To reverse this course in the xʔəĺílwətaʔɬ/Indian River Watershed, Tsleil-Waututh convened a restoration conference in 1999. The purpose was to bring representatives of various levels and branches of government together to work with Tsleil-Waututh to bring environmental and cultural health back to a core of the traditional territory.

Seizing the opportunity presented by the Province of British Columbia through the Sea-to-Sky Land and Resource Management Plan process, Tsleil-Waututh proposed a watershed-level planning process for the xʔəĺílwətaʔɬ/Indian River Watershed. In December 2005, Tsleil-Waututh and the Province signed a Partnership Agreement for the collaborative development of an Integrated Stewardship Plan. This process was led by Tsleil-Waututh, and it was one of the first collaborations of its kind in the province.

1.2. Land Use Planning Framework

The Integrated Stewardship Plan (the Plan) is based on a unique framework developed by blending Tsleil-Waututh knowledge with Provincial Watershed Planning Guides[1] to set future management direction.

- Harmonize the interests of Tsleil-Waututh and the Province;
- Identify strategic goals for the Watershed;
- Develop management objectives that are a showcase for sustainability;
- Provide tangible resource management strategies for operational planning and day-to-day resource management decisions; and
- Address cumulative effects of previous development actions in the Watershed.

The Plan has been developed by Tsleil-Waututh in partnership with the Province. With the Plan completed and endorsed by Tsleil-Waututh Council, the Plan’s management objectives and strategies will form the framework for a government-to-government Land Use Planning Agreement and be legally established as required by Tsleil-Waututh and the Province. An additional product associated with this Plan is the Bioregional Atlas for the xʔəĺílwətaʔɬ/Indian River Watershed, which has been produced as a supplementary, stand-alone document.

1.3. Planning Process

The joint planning process included:

- Terms of Reference, adopted in 2007, defining the planning process and guiding principles;
- A steering committee with equal Tsleil-Waututh and Province of BC representation, supported by a joint technical team;
- Scenario impact analysis to understand and quantify potential impacts to natural resource operations, with an emphasis on the forest sector economy;
- Consultation with the Tsleil-Waututh community and outreach to other First Nations, major stakeholders and the general public; and
- A shared vision for a new government-to-government relationship based on respect, recognition, and of Indigenous rights, title, and interests.

[1] Clayoquot Sound Technical Planning Committee, July 2006. Watershed Planning in Clayoquot Sound, Volume 1 Principles and Process. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/clayoquotsound-lud/clayoquot_lud_watershedplanning_principles processes_report.pdf

Province of BC, July 2021. Land Use Planning Policy & Guidance Documents. www.gov.bc.ca/gov/content/industry/crown-land-water/land-use-planning/policy-guidance

1.4. Plan Goals

The xʔəĺílwətaʔɬ/Indian River Watershed Integrated Stewardship Plan goals are based on the project Terms of Reference, identified planning issues, and joint technical team discussions. The goals serve as a reference point for the Plan and will be expanded with specific management direction (Objectives and Strategies) for key watershed values and activities.

The six identified Plan goals include:

1. **Cultural Expression:** Ensure the xʔəĺílwətaʔɬ/Indian River Watershed remains a core area for Tsleil-Waututh cultural expression by protecting past cultural landscapes, celebrating present connections, and nurturing widespread future Tsleil-Waututh use and occupancy for generations to come;

2. **Watershed Integrity and Restoration:** Restore the ecological and hydrological integrity of the xʔəĺílwətaʔɬ/Indian River Watershed;

3. **Biodiversity Protection:** Ensure biodiversity values are carefully considered in all planning activities, and sensitive ecosystems and wildlife habitats are protected;

4. **Economic Opportunity Creation:** Ensure a diversity of viable economic opportunities are available for Tsleil-Waututh in the xʔəĺílwətaʔɬ/Indian River Watershed that protect, respect, and support environmental and cultural values;

5. **Safety and Access Facilitation:** Ensure the xʔəĺílwətaʔɬ/Indian River Watershed provides a safe and secure working and recreational environment; a key safety feature will be to ensure that access infrastructure is environmentally sound, culturally sensitive, and supportive of economic opportunities; and

6. **Jurisdictional Collaboration:** Through integrated stewardship, create an example of jurisdictional collaboration that supports the above goals and provides a showcase for new relationships between First Nation and Crown governments.

1.5. Plan Structure

The xʔəĺílwətaʔɬ/Indian River Watershed Integrated Stewardship Plan is structured into five sections:

Section 1 Introduces the Plan and highlights its goals;

Section 2 Provides the regional context for the xʔəĺílwətaʔɬ/Indian River Watershed and highlights access management, safety,

Section 3 Provides management objectives and strategies for the protection of key environmental and cultural values; these values are combined and used to develop the xʔəĺílwətaʔɬ/Indian River Watershed Reserve Network, a three-tier system of land use designations.

Reserve Zone (100% protection): protected sites of significant environmental and cultural value where most types of economic development activities are not permitted.

Management Zone (minimum 50% protection): sites of environmental or cultural value where a range of economic development activities may be permitted subject to management direction and site level planning.

Stewardship Zone (minimum 25% protection): sites that have not been identified as reserve or management zones are open to economic development, subject to relevant legislation and site level planning.

Section 4 Provides management direction for the main economic development opportunities in the Watershed; and

Section 5 Outlines implementation mechanisms and strategies.

SECTION 2:
Regional Context

xʔəl̓ílwətaʔɬ/Indian River Estuary

SECTION 2:
Regional Context

2.1. Watershed Description

The xʔəĺílwətaʔɬ/Indian River Watershed is located approximately 30 kilometres northeast of Vancouver and is the southernmost fjord on the west coast of North America. It is surrounded by the Seymour, Stawamus, Mamquam, Pitt, and Coquitlam Watersheds.

The Watershed is approximately 219 square kilometres (22,000 hectares) and lies at the head of Indian Arm, a northerly extension of Burrard Inlet, traditionally known as səlilwət. The highest elevation is Meslilloet Mountain, at nearly 2,000 metres above sea level. The topography is typical of Coast Range watersheds, with the headwaters located in steep, alpine terrain and a main U-shaped valley of glacial origin bisecting the approximate centre of the Watershed.

The principal watercourse is the xʔəĺílwətaʔɬ/Indian River, which flows over 26 kilometres and discharges into an estuary with the largest remaining intertidal area in Burrard Inlet.

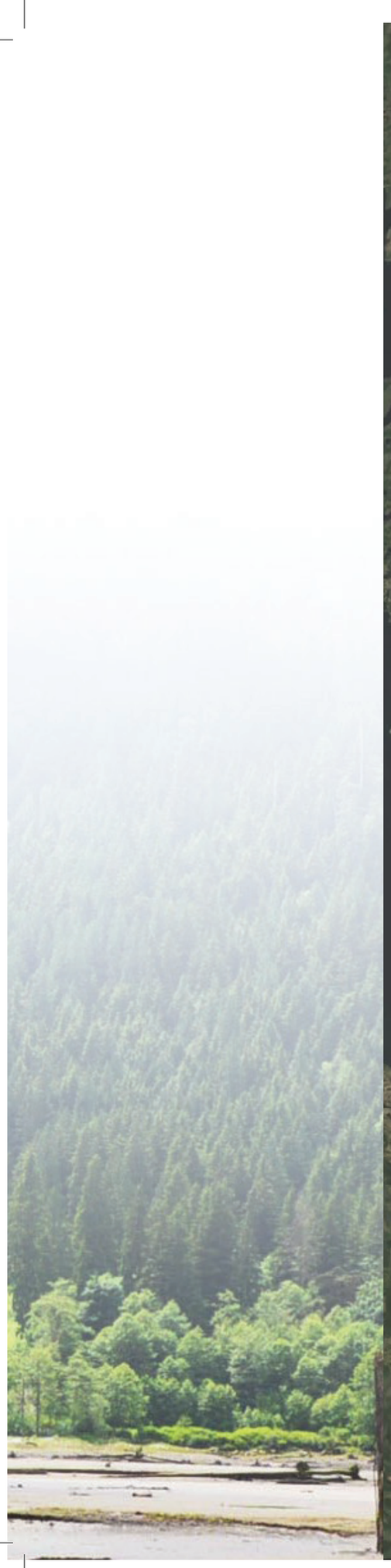
The Watershed hosts over 700 kilometres of stream channels, including major tributaries like Meslilloet, Hixon, Brandt, and Forestry Creeks. The Watershed also has over 200 kilometres of unimproved resource roads.

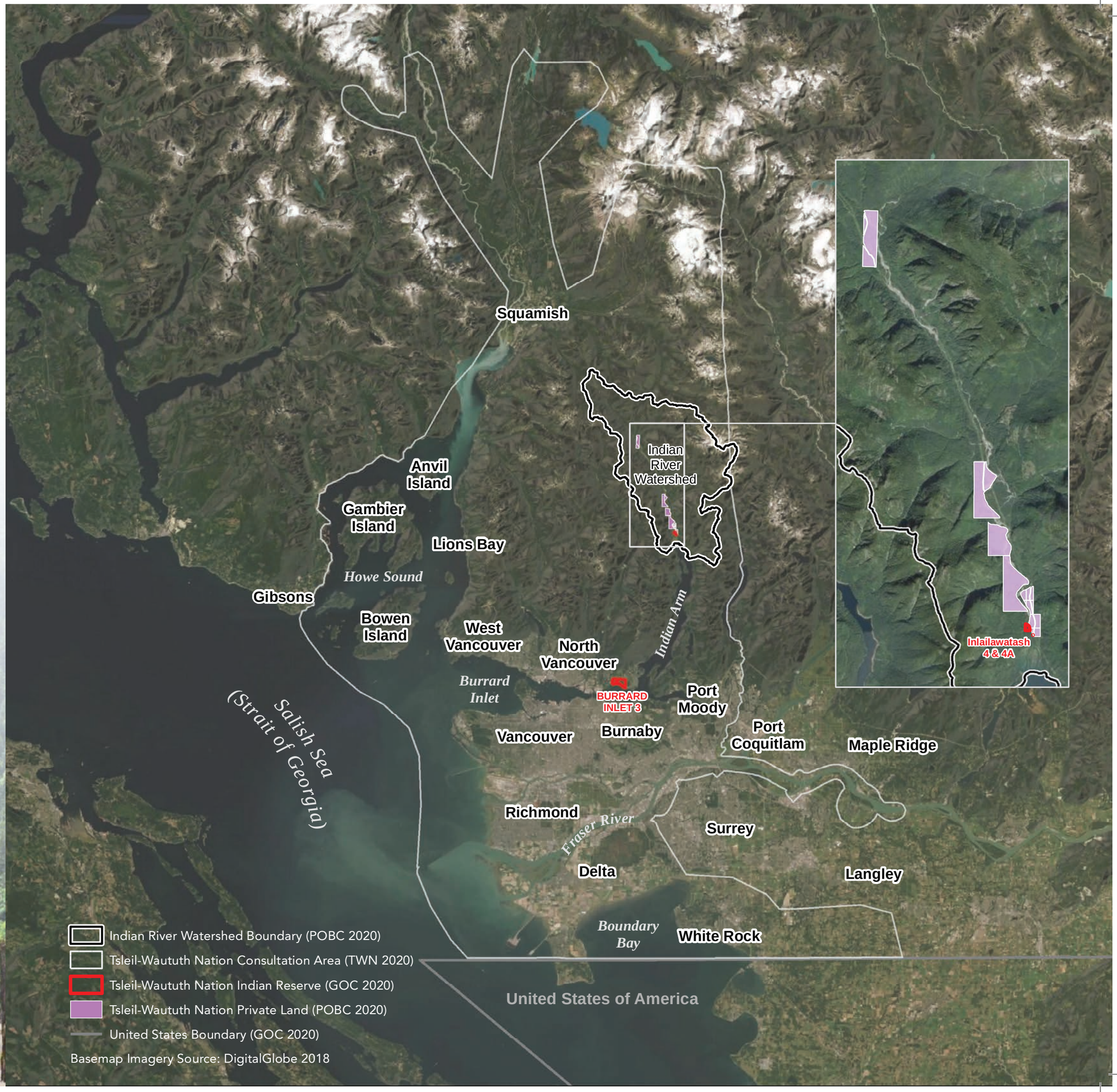
Two provincial parks have lands in the Watershed: Say-Nuth-Khaw-Yum Provincial Park includes lands immediately adjacent to the xʔəĺílwətaʔɬ/Indian River estuary, and Pinecone-Burke Provincial Park covers the higher elevations of the northeasterly portion of the Watershed.

The Watershed falls in the temperate rainforest along the west coast of British Columbia, including Coastal Western Hemlock and Mountain Hemlock bio-geoclimatic zones, and at higher elevations, the Coastal Mountain-heather Alpine zone. Dominant tree species include hemlock, cedar, and Douglas-fir, with red alder and bigleaf maple at lower elevations along the river.

The xʔəĺílwətaʔɬ/Indian River Watershed is central to Tsleil-Waututh's traditional use and occupancy, and therefore it forms a core area of their interest. Tsleil-Waututh people have occupied the Watershed since time out of mind.

The areas at the head of Indian Arm and the xʔəĺílwətaʔɬ/Indian River are important in the history, culture, and economy of the Tsleil-Waututh people. As part of a yearly round of activity, the Watershed was and continues to be harvested for renewable resources including salmon, deer, elk, cedar, berries, and medicinal plants.




Squamish
Anvil Island
Gambier Island
Lions Bay
Howe Sound
Gibsons
Bowen Island
West Vancouver
North Vancouver
Indian Arm
Burrard Inlet
BURRARD INLET 3
Port Moody
Vancouver
Burnaby
Port Coquitlam
Maple Ridge
Richmond
Fraser River
Surrey
Delta
Langley
Boundary Bay
White Rock
Salish Sea (Strait of Georgia)
United States of America
Indian River Watershed
Inlailawatash 4 & 4A
Indian River Watershed Boundary (POBC 2020)
Tsleil-Waututh Nation Consultation Area (TWN 2020)
Tsleil-Waututh Nation Indian Reserve (GOC 2020)
Tsleil-Waututh Nation Private Land (POBC 2020)
United States Boundary (GOC 2020)
Basemap Imagery Source: DigitalGlobe 2018

2.2. Access Management, Safety, and Enforcement

Despite its close proximity to Metro Vancouver and the District of Squamish, the xʔəl̓ílwətaʔɬ/Indian River Watershed is an isolated wilderness environment that has a unique access system that attracts and supports a variety of different users. There are two main access points into the Watershed: one from the south via a marine dock, and one from the north via the Stawamus-Indian Forest Service Road (FSR). There is also a third, restricted access point that enters from the east (Coquitlam Watershed) via the Hixon Creek FSR.

The marine dock and log dump are located in the xʔəl̓ílwətaʔɬ/Indian River estuary at the southern terminus of the Stawamus-Indian River FSR. The dock currently provides access for Tsleil-Waututh members to utilize Tsleil-Waututh reserves and private lands. The dock also provides a launching point for activities such as forest stewardship, fisheries management, tourism, and energy infrastructure maintenance. The log dump portion has historically been the main departure point for forest products and an entry point for heavy equipment and supplies arriving by barge to the Watershed. The dock and log dump are governed by a water-lot lease with Vancouver Fraser Port Authority and managed in partnership by the Province of BC and Tsleil-Waututh. Use of the dock requires formal authorization by Tsleil-Waututh and the Province. However, unauthorized use of the dock by marine boaters is significant during the summer months, raising both public safety and liability concerns.

The northern access point provides entry into the xʔəl̓ílwətaʔɬ/Indian River Watershed from the District of Squamish via the Stawamus Watershed. The Stawamus-Indian River FSR was built to support forestry operations in both watersheds. While the FSR on the Stawamus side is classified as a Wilderness Road and is open to the public, it is semi-deactivated and seasonally closed at the height of land between the two watersheds due to snow. Access from the pass into the xʔəl̓ílwətaʔɬ/Indian River Watershed is seasonally permitted, subject to road conditions, safety, and Tsleil-Waututh cultural considerations. On the xʔəl̓ílwətaʔɬ/Indian River side of the pass, the road is designated as a Wilderness FSR and is maintained for 4x4 access. Some sections of the Indian FSR are maintained to higher standards subject to road permit holders' requirements.

The eastern access point provides entry from the Coquitlam Watershed. It is a Community Watershed that supplies drinking water to Metro Vancouver. The Watershed is closed to the public, and road use is restricted. Entry into the Coquitlam Watershed is restricted by a control gate at the lower end and a locked gate at the entry to the xʔəl̓ílwətaʔɬ/Indian River Watershed. The Coquitlam Watershed road is well-maintained by Metro Vancouver.

In addition to the FSR and associated secondary resource road infrastructure, there are two major energy transmission rights-of-way in the Watershed. This includes a BC Hydro electric transmission line (5L45) that enters the Watershed at the Stawamus-Indian Divide and exits along the eastern shoreline of Indian Arm. The second piece of infrastructure is the Fortis BC natural gas pipeline that enters via the Coquitlam Watershed and exits via the Stawamus-Indian Divide. The pipeline is subsurface and generally follows the mainline road, crossing the Indian River just north of Forestry Creek.

Notwithstanding the road restrictions and, at times, poor road conditions, the Stawamus-Indian River FSR is heavily utilized by off-road vehicles. The unmaintained sections of the FSR pose substantial safety risks and have resulted in a number of accidents and significant injuries. Emergency responders have limited access and a lack of reliable communication systems, hindering effective response.

In addition to public safety concerns, some members of the public are engaged in illegal activities such as theft, vandalism, wildlife poaching, and environmental damage to sensitive salmon and wildlife habitats. As with emergency responders, agencies responsible for conducting monitoring and enforcement of private property/infrastructure protection, fish and wildlife harvest regulations, and environmental damage are challenged by access to the Watershed.

As a result of the xʔəl̓ílwətaʔɬ/Indian River Watershed's unique access system, a number of issues require consideration on a regular basis to inform access, safety, and enforcement direction. These issues include but are not limited to:

- Privacy for Tsleil-Waututh Cultural Practices,
- Public Safety,
- Limitation of Illegal Activities,
- Reduction of Environmental Impacts,
- Economic Productivity, and
- Coordinated Management.

Dave Thomas

Access Management Map

Restricted Access (TWN 2020)

① Restricted Seasonal Access

② Restricted Access

③ Restricted Boat Access

Indian River Watershed (POBC & TWN 2020)

IRW Forest Service Road (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Metro Vancouver Reservoir Watershed (MV 2019)

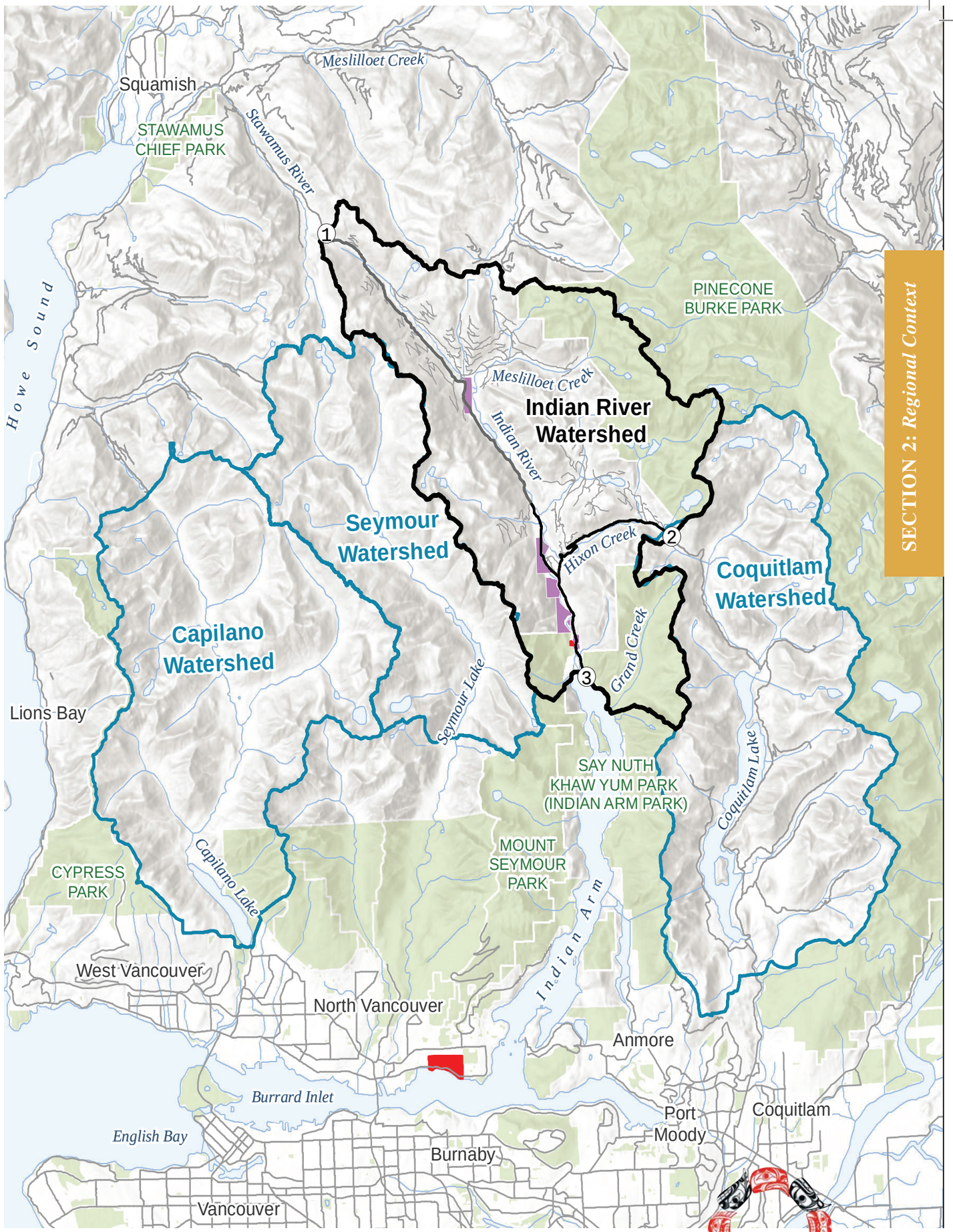
Road (GOC 2020)

Tsleil-Waututh Nation Indian Reserve (GOC 2019)

Tsleil-Waututh Nation Private Land (POBC & TWN 2020)

Park (POBC 2020)

Hillshade Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community.



Access Management, Safety, and Enforcement Direction

	Objectives	Strategies
1.	**Minimize impact to Tsleil-Waututh cultural values associated with public or commercial access.**	**1.1** Use communications tools (e.g., signage, brochures) to increase awareness of Tsleil-Waututh cultural values, in accordance with the Tsleil-Waututh Cultural Communications Strategy and Province of BC guidelines. **1.2** Ensure compliance with and enforcement of access restrictions, the Provincial Heritage Conservation Act, and the Tsleil-Waututh Nation Stewardship Policy's requirement for Cultural Heritage Investigation Permits.
2.	**Ensure access infrastructures (i.e., roads and bridges) meet or exceed provincial construction and maintenance standards.**	**2.1** Update road inventories that describe the condition of the xʔəl̓ílwətaʔɬ/Indian River Watershed access infrastructure. **2.2** Subject to 2.1, develop an annual maintenance schedule and identify funding sources.
3.	**Minimize impact of access infrastructure on wildlife**	**3.1** Limit road construction in areas identified as high-value habitat for wildlife species of concern. **3.2** Complete an appropriate degree of deactivation for access infrastructure not in use.
4.	**Improve access-related communication systems.**	**4.1** Establish and maintain clear and accurate kilometre signs on all FSRs. **4.2** Designate and display a radio frequency for communications within the Watershed.
5.	**Maintain opportunities for non-motorized access.**	**5.1** Allow for non-motorized access when designing access-control infrastructure. **5.2** Address non-motorized access needs when implementing restoration and deactivation plans.
6.	**Coordinate existing and future access infrastructure development and maintenance.**	**6.1** Establish and maintain a Watershed Working Group to coordinate road prescriptions and annual work plans with all FSR user groups.
7.	**Maintain a monitoring and enforcement presence in the Watershed.**	**7.1** Through the Watershed Working Group, develop strategies that include, but are not limited to: » Improving monitoring and enforcement presence; » Preventing illegal and dangerous activities such as theft, vandalism, poaching of fish and wildlife, tenure infractions, and the illegal harvesting of forest products; » Enhancing safety measures and procedures; » Monitoring and enforcement of seasonal restrictions on recreational motorized vehicles; and » Improving access for monitoring, enforcement and emergency response agencies and organizations.
8.	**Coordinate access management plans with access requirements and restrictions of adjacent watersheds.**	**8.1** Provide management direction to inform the implementation of the Sea-to-Sky Land and Resource Management Plan. **8.2** Provide opportunities for major stakeholders in adjacent watersheds to participate in the Watershed Working Group.
9.	**Demonstrate that all activities place a priority on safety.**	**9.1** Companies, organizations, and contractors operating in the Watershed will strive to achieve standards equivalent to those endorsed by the British Columbia Forest Safety Council.
10.	**Reduce risks of wildfire initiation and spread.**	**10.1** Develop a wildfire management and response strategy. **10.2** Coordinate wildfire management strategies with the BC Wildfire Service and staff of the Sea-to-Sky Natural Resource District.

SECTION 3:

Value Articulation

SECTION 3:
Value Articulation

3.1. Tsleil-Waututh Cultural Values

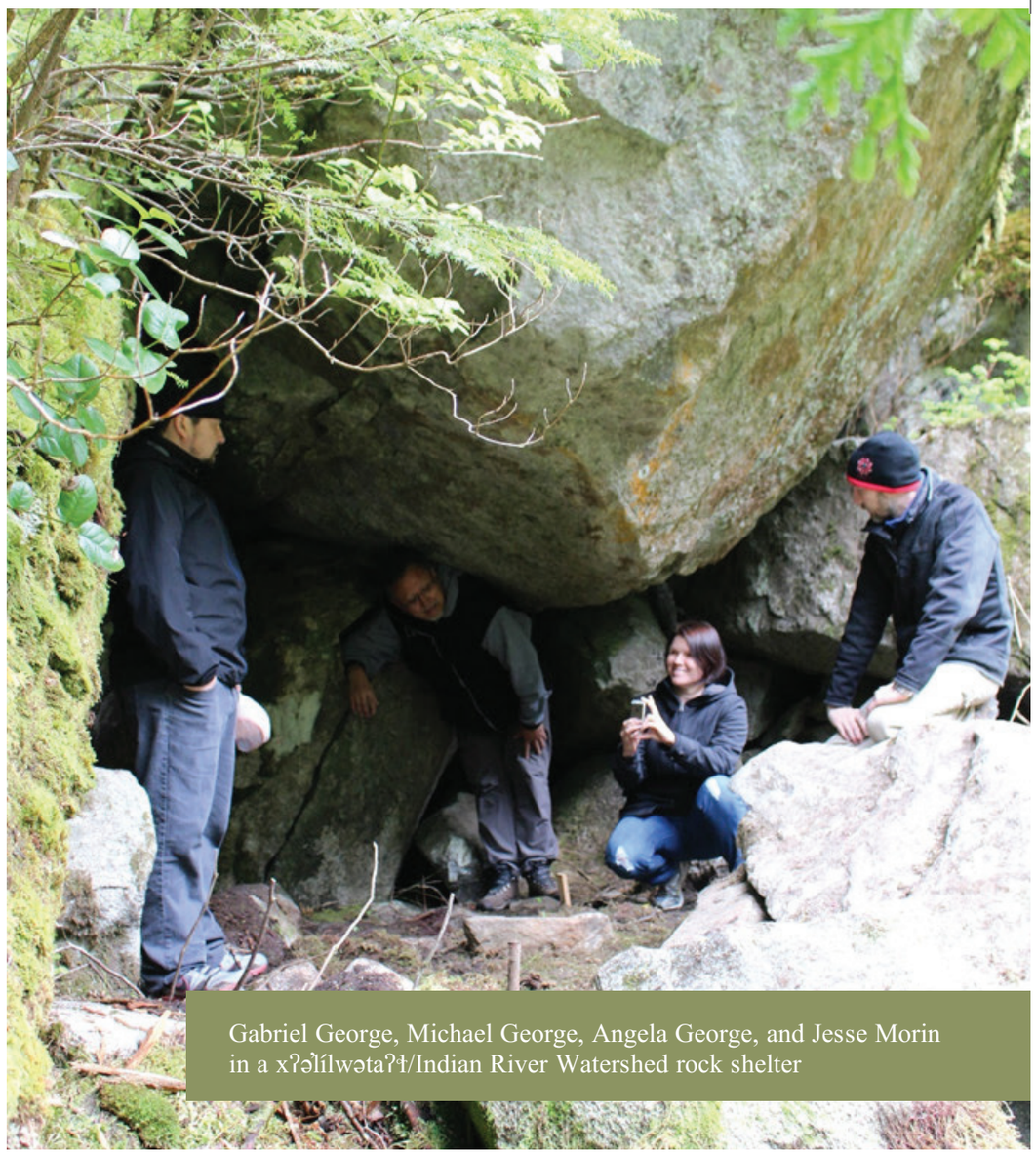
Tsleil-Waututh people have lived and prospered in the xʔəĺílwətaʔɬ/Indian River Watershed since time out of mind. The Watershed represents a core area of the Tsleil-Waututh traditional territory and holds immense cultural and archaeological value.

Although historic industrial activities may have permanently altered or destroyed many archaeological sites, Tsleil-Waututh cultural heritage remains in the form of a village site, trail networks, camps, rock shelters, and culturally modified trees. The Watershed also has evidence of pictographs, quarries, wet sites, middens, lithic scatters, and burial sites. Archaeological research undertaken at high altitudes has revealed additional, previously unknown traditional land use and travel corridor patterns.

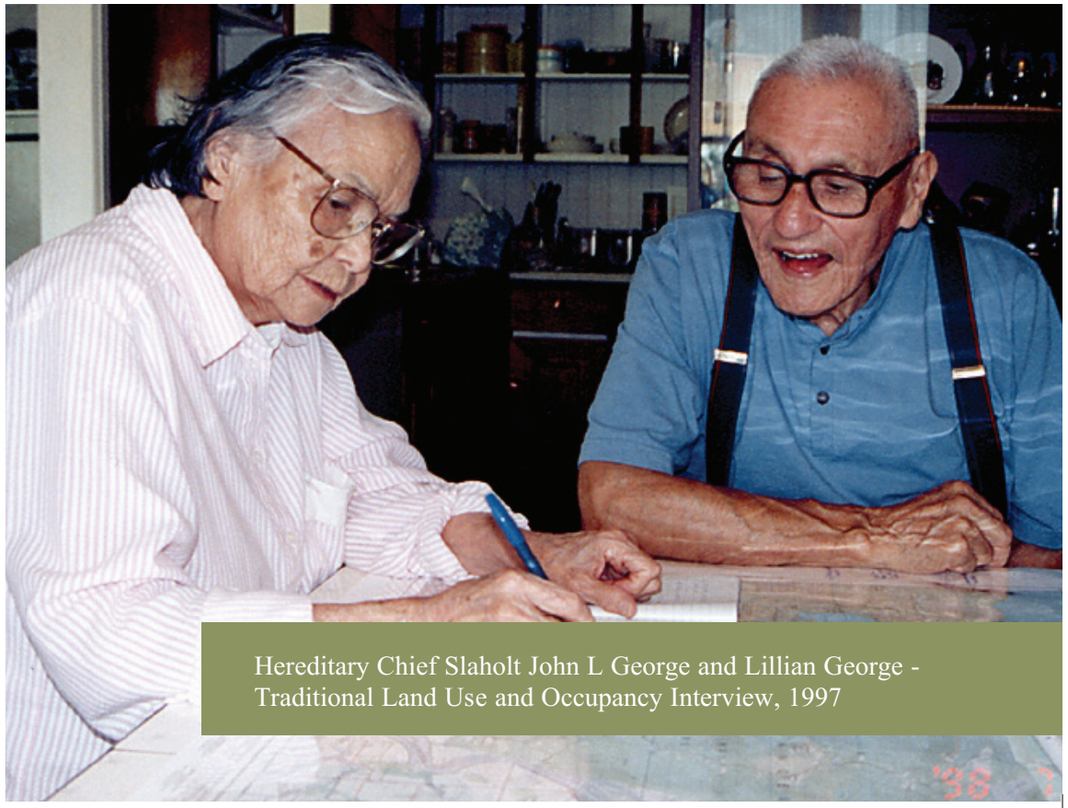
The xʔəĺílwətaʔɬ/Indian River Watershed has undergone few comprehensive archaeological surveys. Consequently, only a few archaeological sites have been formally documented. This low number of recorded archaeological sites makes it difficult to quantify the extent of Tsleil-Waututh land use and occupancy. Until such time when a comprehensive Archaeological Inventory Assessment can be completed, Tsleil-Waututh considers the entire Watershed an area of high archaeological potential.

The xʔəĺílwətaʔɬ/Indian River Watershed is rich with a variety of cultural resources, such as prime fishing and hunting sites, productive berry and medicinal plant patches, and areas of great spiritual significance. Over time, Tsleil-Waututh has completed Traditional Use and Occupancy Studies within the Watershed; displayed as the Concentration of Cultural Use Sites on the adjoining map.

Tsleil-Waututh members continue to use the Watershed for many types of cultural activities. A key objective of Tsleil-Waututh is to ensure that its people maintain undisturbed access to cultural activities, specifically access to healthy, wild foods and medicines.

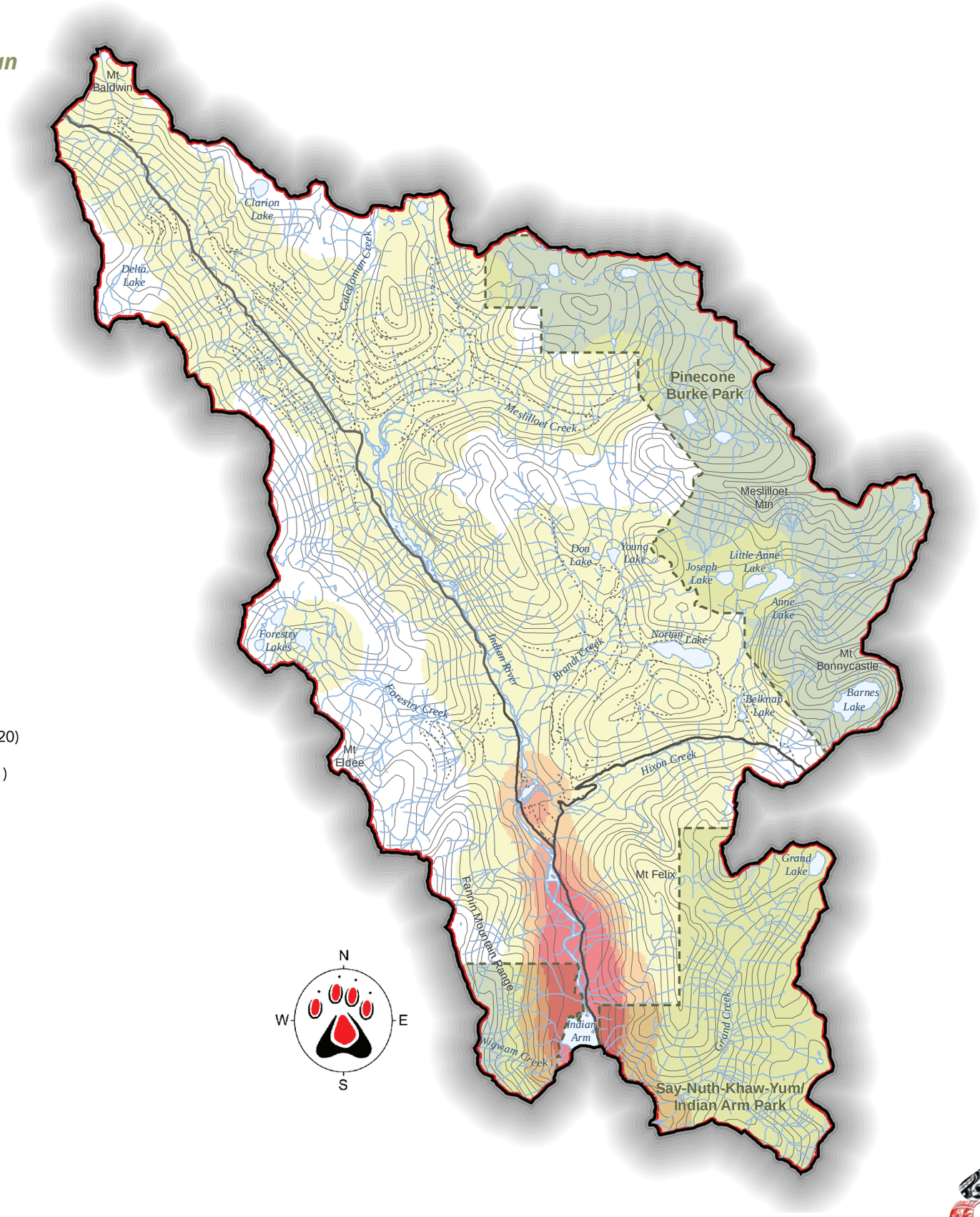


Gabriel George, Michael George, Angela George, and Jesse Morin in a xʔəĺílwətaʔɬ/Indian River Watershed rock shelter



Hereditary Chief Slaholt John L George and Lillian George - Traditional Land Use and Occupancy Interview, 1997

Cultural Values Map



Tsleil-Waututh Cultural Management Area (TWN 2020)

Concentration of Cultual Use Sites (TWN 1998-1999 & 2011)

- Present
- Moderate
- High
- Very High

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

- Maintained Road
- Semi-Permanent Road (Unmaintained)
- Secondary Road (Unmaintained)

Tsleil-Waututh Cultural Values Management Direction

	Objectives	Strategies
1.	**Identify and protect Tsleil-Waututh cultural and archaeological heritage resources.**	**1.1** All tenure and permit applications for maintenance (roads, power lines, gas lines) or development activities, including forestry, mining and energy, and commercial tourism, are subject to a Tsleil-Waututh Cultural Heritage Review. Tsleil-Waututh will administer this review in accordance with its regulations, policies, and procedures. **1.2** Create an Archaeological Potential Model and an Archaeological Inventory Assessment for the entire Watershed to inform cultural heritage review and development planning processes.
2.	**Preserve and safeguard Tsleil-Waututh cultural and archaeological resources in their natural condition and setting.**	**2.1** Restrict public access to protect all archaeological sites and areas identified as culturally sensitive, unless otherwise specified by Tsleil-Waututh. **2.2** Protect intangible cultural sites used for seclusion, transformation, and/or other spiritual activities.
3.	**Identify and protect culturally modified trees.**	**3.1** Trees that are identified as culturally modified will be considered cultural heritage features subject to the Tsleil-Waututh Cultural Heritage Review process. **3.2** Create a management zone of sufficient size to protect the integrity of culturally modified trees. **3.3** If areas are identified as having a high concentration of culturally modified trees, consider the creation of Culturally Modified Tree Areas that will be reserved from development.
4.	**Respect and promote Tsleil-Waututh contemporary cultural expression.**	**4.1** Encourage Tsleil-Waututh people to visit the Watershed, and promote activities such as hunting and/or gathering of wild foods and medicines. **4.2** Establish and maintain clear and accurate kilometre signs on all Resource Roads. **4.3** Designate and display a radio frequency for communications within the Watershed. **4.4** Explore opportunities to celebrate Tsleil-Waututh's traditional language through place-making and directional signage in the Watershed.

Ernie Nicolas George paddling up the xʔəl̓ílwətaʔɬ/Indian River, circa 1950

Tsleil-Waututh children at Inlailawatash, BC Archives

3.2. Visual Landscape Quality

The visual quality of the xʔəĺílwətaʔɬ/Indian River landscape is extremely important to Tsleil-Waututh members. In its role as steward of traditional lands and waters, Tsleil-Waututh takes immense pride in the careful management of the xʔəĺílwətaʔɬ/Indian River Watershed, including its viewscapes.

In British Columbia, visually sensitive areas are identified through a Visual Landscape Inventory. Management of visual resources in sensitive areas requires the designation of Scenic Areas and the establishment of Visual Quality Objectives (VQO). The following categories of VQO are prescribed, each according to the extent of alteration resulting from land development activity:

Visual Quality Objective	Description
Preservation	Alteration is very small in scale and not easily distinguishable from the pre-harvest landscape.
Retention	Alteration is difficult to see, small in scale, and natural in appearance.
Partial Retention	Alteration is easy to see, small to medium in scale, and natural and not rectilinear or geometric in shape.
Modification	Alteration is very easy to see and is large in scale and natural in its appearance, or small to medium in scale but with some angular characteristics.
Maximum Modification	Alteration is very easy to see and is large in scale and natural in its appearance, or small to medium in scale but with some angular characteristics.

Once VQOs have been established, development activities such as timber harvesting require the skillful application of visual landscape design principles. The use of field assessments or effectiveness evaluations informs the project planning necessary to ensure that VQO designations are implemented appropriately.

A Visual Landscape Inventory conforming to provincial standards was completed in partnership with Tsleil-Waututh in 2016. This comprehensive inventory included the identification and analysis of 16 different viewpoints that were established by Tsleil-Waututh based on:

- Traditional and contemporary cultural use areas;
- Nature and location of cultural activities;
- Future aspirations and desired cultural activities; and
- Spiritual and other important features relevant to the cultural experience.

The findings of the Visual Landscape Inventory confirmed that the entire xʔəĺílwətaʔɬ/Indian River Watershed is visually sensitive and, in Tsleil-Waututh's view, should be designated as a Scenic Area. As part of the inventory work, Recommended Visual Quality Classes (RVQCs) have been developed to guide the level of management that is appropriate, given the area's visual sensitivity.

xʔəĺílwətaʔɬ/Indian River Watershed Plan

Visual Quality Objectives Map

Preservation Reserve Zone (TWN 2017)

Retention Management Zone (TWN 2017)

Partial Retention Stewardship Zone (TWN 2017)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Visual Landscape Quality Management Direction

	Objectives	Strategies
1.	**Protect visual quality values.**	**1.1** Designate the Watershed's visually important areas as Scenic Areas pursuant to Section 7.1 of the Forest and Range Practices Act: Government Actions Regulation. **1.2** Establish Visual Quality Objectives as per the categories of altered forest landscape prescribed under Section 1.1 of the Forest and Range Practices Act: Forest Planning and Practices Regulation. Where feasible, these objectives will also apply to other non-forestry development activities. **1.3** Formal Visual Quality Objectives will utilize the Recommended Visual Quality Classes, as defined on adjoining map.
2.	**Manage development activities to achieve the categories of altered forest landscape, as prescribed by the VQO.**	**2.1** Conduct Visual Impact Assessments from significant or relevant viewpoints as part of the operational planning process to demonstrate that development activities are consistent with established VQO. **2.2** Apply visual landscape design concepts and principles to all operational harvest or developmental plans within designated Scenic Areas. **2.3** Employ forest harvesting methods that will achieve the level of altered forest landscape prescribed by VQO (e.g., variable retention or partial cutting). **2.4** Apply the VQO designations to natural resource modelling exercises such as watershed-level timber supply analysis.

Twin Bridges view point facing North, xʔəl̓ílwətaʔɬ/Indian River

3.3. Salmon Stewardship

Salmon is a keystone species for Tsleil-Waututh culture, the xʔəĺílwətaʔɬ/Indian River Watershed, and the entire Salish Sea. Since time out of mind, Tsleil-Waututh people have been stewards of xʔəĺílwətaʔɬ/Indian River salmon and have lived and prospered, in part, as a result of this resource.

The river hosts five different salmon species, predominantly pink and chum, some coho, small numbers of chinook, and occasional sockeye. The river is accessible to salmon up to the cascades, which creates an impassable barrier approximately seven kilometres upstream from the mouth of the xʔəĺílwətaʔɬ/Indian River. Salmon also access Hixon Creek, about six kilometres upstream of the xʔəĺílwətaʔɬ/Indian River mouth.

xʔəĺílwətaʔɬ/Indian River pink salmon appear every other year and sometimes as early as July. They spawn from early September to October, with a peak in late September. Every year chum arrive in early October and remain in the system through December, with peak spawning in mid-November. Coho are similar to chum, but they may spawn until January. Limited numbers of sockeye and chinook return to the river to spawn in September to October.

Different salmon species require different freshwater habitats. Pink salmon dominate the low-gradient main stem and big pools downstream of the Hixon Creek confluence. Chum salmon utilize the whole river and side channel systems, focusing on areas of upwelling groundwater. Coho rely on side channel habitats for overwintering, especially pools with low water velocities and significant amounts of large woody debris.

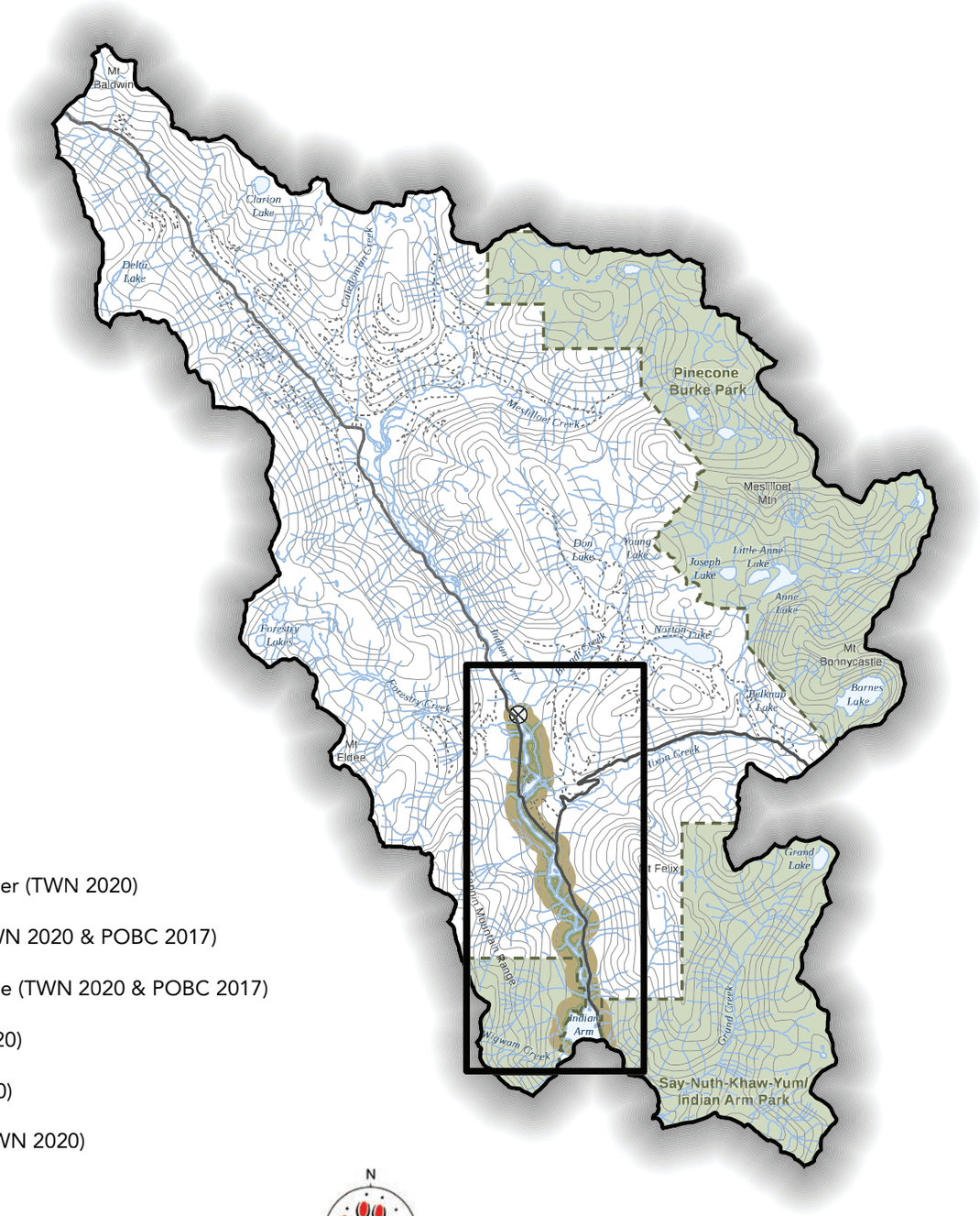
Salmon habitat in the xʔəĺílwətaʔɬ/Indian River Watershed has been degraded by extensive logging, the placement of a high-voltage hydroelectric transmission line in the flood plain in 1968, and the construction of a natural gas pipeline in 1991. These activities increased the sediment load in the river through accelerated stream bank erosion, road failures, and landslides, creating a highly unstable system. These impacts, in combination with factors external to the Watershed, significantly diminished populations of all salmon species.

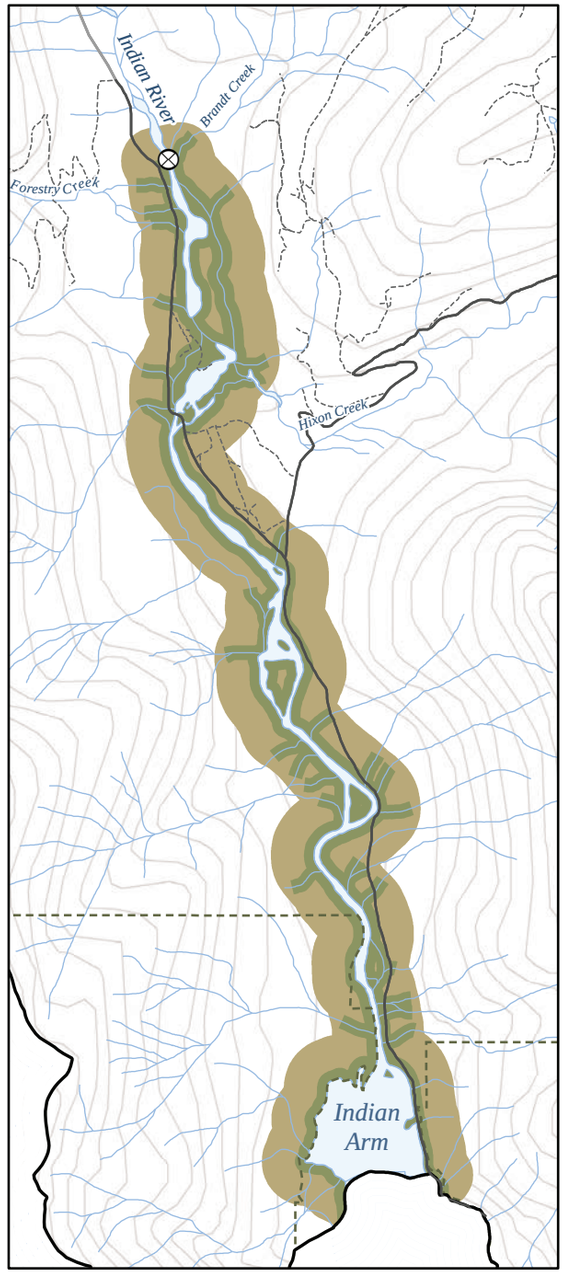
Beginning in the 1980s, salmon stocks in the xʔəĺílwətaʔɬ/Indian River began to slowly recover, primarily due to the completion of a number of habitat improvement projects, improved forest management practices, and modest hydrologic recovery. Recent monitoring and enhancement efforts spearheaded by Tsleil-Waututh and Fisheries and Oceans Canada have demonstrated continued recovery but have not achieved historic abundance.

Salmon Stewardship Management Direction

	Objectives	Strategies
1.	**Protect salmon habitat and Tsleil-Waututh culturally significant fishing sites and trails.**	**1.1** Create a Salmon Stewardship Area that encompasses the entire lower xʔəĺílwətaʔɬ/Indian River flood plain and estuary, as defined on adjoining map. **1.2** Conduct a riparian assessment for the Salmon Stewardship Area, based on section 3.5.1. **1.3** In the absence of a riparian assessment, establish a Salmon Reserve Zone in the Salmon Stewardship Area » 70 metres on each side of the xʔəĺílwətaʔɬ/Indian River. » 50 metres on each side of the tributaries (up to 250 metres from the xʔəĺílwətaʔɬ/Indian River). **1.4** In the absence of a riparian assessment, establish a Salmon Management Zone in the Salmon Stewardship Area » 230 metres on each side of the xʔəĺílwətaʔɬ/Indian River main stem Salmon Reserve Zone.
2.	**Restore and enhance critical habitats in the Salmon Stewardship Area.**	**2.1** Undertake salmon restoration and enhancement projects, including, but not limited to: » Creation of additional side channel habitat for coho; » Assessment of steelhead and other resident trout species, including possible reintroduction; » Assessment of native and hatchery stock chinook populations; » Re-establishment of conifers in the riparian forest and flood plain; » Enhancement of large woody debris concentration; » Restoration of river and flood plain geomorphic stability and resilience; » Assessment and restoration of estuary ecological functions; » Erosion control; » Removal of contaminated wood waste; » Water quality improvements; and » Removal of man-made fish barriers.

Salmon Stewardship Map





⊗ Anadromous Stream Barrier (TWN 2020)

Salmon Reserve Zone (TWN 2020 & POBC 2017)

Salmon Management Zone (TWN 2020 & POBC 2017)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

3.4. Cedar Stewardship

From the Tsleil-Waututh perspective, the most important tree species for cultural and practical use is cedar. In the xʔəl̓ílwətaʔɬ/Indian River Watershed, the use of western redcedar and yellow-cedar are inherently linked to Tsleil-Waututh culture. Western redcedar is usually found in moist, shaded sites at lower elevations; yellow-cedar is usually found in moist, rocky sites at higher elevations.

According to practices passed down through generations, virtually every part of the cedar tree was traditionally used by the Tsleil-Waututh people. The bark was used for clothing and matting, roots for rope, pitch for medicinal preparations, and boughs for insulation and spiritual purposes. Cedar wood was used for building homes, carving artwork, and a variety of household implements. Very large logs were used to create the dominant symbol of Tsleil-Waututh culture: the canoe.

Due to the variety of modern cultural uses for cedar, Tsleil-Waututh requires a diversity of tree ages in cedar stands—from saplings to large monumental cedars greater than two metres in diameter. Unfortunately, past intensive timber harvesting activities focused extraction on cedar species, resulting in fewer cedar leading stands and potential destruction of culturally modified trees. (See the Tsleil-Waututh Cultural Values section 3.1 for management for management direction for culturally modified trees.)

Given the limited extent of cedar forests, especially low-elevation old-growth forests, Tsleil-Waututh requires measures to ensure cedar species are given special consideration.

Cedar Stewardship Management Direction

Objectives	Strategies
1. **Maintain cedar for Tsleil-Waututh cultural uses.**	**1.1** Old-growth forest stands with leading species compositions of western redcedar or yellow-cedar will be reserved from resource development. Single-tree selection harvesting of cedar trees from these stands will be permitted for Tsleil-Waututh cultural use. **1.2** Restrict resource development in second-growth forest stands with leading species compositions of western redcedar or yellow-cedar. The silviculture prescription for these stands is to maintain or increase the cedar component in perpetuity and to promote the development of old-growth characteristics. Single-tree selection harvesting of cedar trees from these stands will be permitted for Tsleil-Waututh cultural use. **1.3** Monitor the effects of climate change on cedar health.
2. **Promote cedar in all silviculture and restoration strategies.**	**2.1** Consider cedar establishment in all silviculture and restoration plans. **2.2** Consider old-growth cedar recruitment for harvest block retention

xʔəĺílwətaʔɬ/Indian River Watershed Plan

Cedar Stewardship Map

Cedar Reserve Zone (TWN & POBC 2020)

Cedar Management Zone (TWN & POBC 2020)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

3.5. Watershed Integrity Values

3.5.1. Riparian Ecosystems

Tsleil-Waututh people believe that water is the lifeblood of their traditional territory. A core of that territory, the xʔəĺílwətaʔɬ/Indian River Watershed, hosts numerous steep streams that flow from alpine headwaters like capillaries. They combine to form a very productive river in the valley bottom.

The entire watershed system is a key foundation for Tsleil-Waututh culture. It provides prime habitat for numerous populations of fish, wildlife, and plant species. At its lower end, the river system flows out through a shellfish-rich estuary to feed Indian Arm, Burrard Inlet, and the rest of the Salish Sea.

Riparian ecosystems represent a combination of aquatic features (streams, lakes, and/or wetlands), adjacent land and associated vegetation influenced by those features. In the xʔəĺílwətaʔɬ/Indian River Watershed, the main type of riparian ecosystem is found along stream courses and river flood plains. This system supports vital ecological functions by flushing water, sediment, large woody debris, organisms, and nutrients through the Watershed.

The forested portions of riparian ecosystems serve to stabilize stream banks and filter sediments moving toward the water bodies. These riparian forests are essential to maintaining critical in-stream habitat for fish and other aquatic life. They provide shade to regulate temperature and dissolved oxygen, and they supply food through litter and insect fall. They also contribute to stream channel complexity because the forests are the source of large woody debris. Once in the river, the debris gives lower gradient streams and rivers a characteristic pool-riffle structure that fish and other aquatic organisms favour.

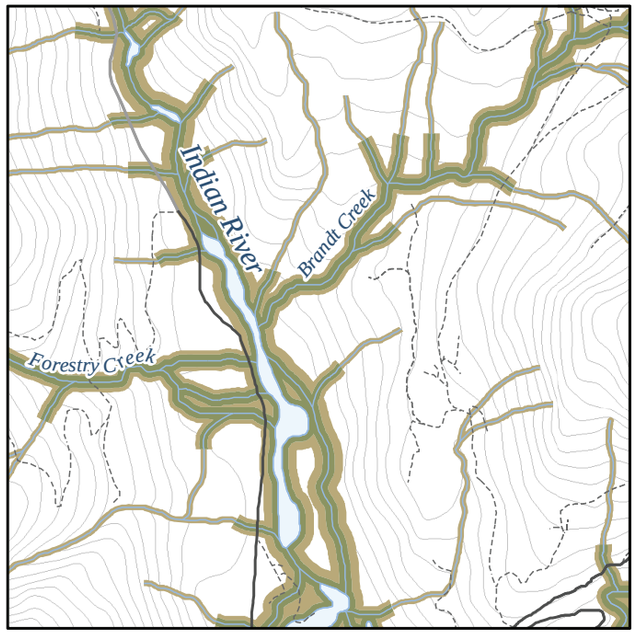
Riparian ecosystems extend vertically into the hyporheic zone. This is a zone just under the river bottom where water is exchanged freely with surface flow. This zone also provides a conduit to and from deeper aquifers. The deeper groundwater can upwell to maintain the flow of cool water into the streams and river. This ecological function is especially critical during late summer and fall months after snowmelt has ceased to provide a source of stream flow.

The full range in variability of the natural flow regime is necessary to maintain the connections between all the disparate elements of the riparian ecosystem. Surface water from the river must flood at least occasionally in order to sustain both the river and the adjacent riparian forest. Frequently, water must barely top the stream banks, but occasionally, it must make it all the way to the farthest edges of the flood plain. This flooding cycle maintains riparian health and creates a natural progression of channel movement back and forth across the flood plain.

Channel migration is a natural process driven by the flow regime. However, it is often accelerated by anthropogenic activity driving change beyond the ability of the riparian ecosystem to make incremental adjustments. Large-scale, geomorphic change driven by human activity can disrupt ecological integrity and threaten the survival of fish, wildlife, and plant species.

Tsleil-Waututh recognize that riparian ecosystems are a critical component to restoring and maintaining the ecological integrity of the xʔəĺílwətaʔɬ/Indian River Watershed.

Riparian Ecosystems Map



- Riparian Reserve Zone (TWN 2020 & POBC 2017)
- Riparian Management Zone (TWN 2020 & POBC 2017)
- Provincial Park (POBC 2020)
- 100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

- Maintained Road
- Semi-Permanent Road (Unmaintained)
- Secondary Road (Unmaintained)

Riparian Ecosystem Management Direction

	Objectives	Strategies
1.	**Maintain the integrity of riparian ecosystems.**	**1.1** Apply Riparian Management Standards to all water bodies.[2] **1.2** Map preliminary fixed-location Riparian Reserve and Management Zones. **1.3** Conduct a riparian site-specific assessment as part of operational planning for all maintenance or development activities. **1.4** Following any assessments, revise riparian zone designations, utilizing the assessment/budget approach as per the Riparian Management Standards.[3]
2.	**Maintain the hydrological regime of the Watershed.**	**2.1** Ensure forest harvesting activities consider rate of cut levels for all sub-drainage basins in the Watershed.
3.	**Increase knowledge of hydrological features and processes.**	**3.1** Undertake riparian and water use studies in the Watershed. Studies should include but not be limited to: **3.1.1** Inventorying and classifying all hydrological features; **3.1.2** Understanding natural flow regimes and changes over time; **3.1.3** Establishing riparian assessment and management priorities; and **3.1.4** Developing detailed riparian zone designations, monitoring effectiveness, and employing adaptive management.

[2,3] Forest Stewardship Council Canada. 2005. Forest Stewardship Council Regional Certification Standard of British Columbia – Appendix B: Requirements for Riparian Management. https://ca.fsc.org/en-ca/standards/forest-management-standards

Tsleil-Waututh people believe that water is the lifeblood of their traditional territory.

3.5.2. Terrain Stability

The xʔəĺílwətaʔɬ/Indian River Watershed is representative of typical coastal watersheds: steep, wet, and prone to natural terrain instability. A Tsleil-Waututh elder who spent his childhood in the Watershed remembers listening to the rocks fall at night. Tsleil-Waututh usage of the Watershed was adapted to this instability. Tsleil-Waututh rock shelters, homes, cabins, and other structures were built away from the cliffs while being mindful of the potential for river flooding and debris torrents.

The naturally unstable character of the Watershed has been aggravated by intensive timber harvesting and associated road development. A comprehensive study completed in the late 1990s determined that the Watershed is prone to landslides due to the nature of the bedrock and soils, as well as the steepness of the terrain. The study also predicted that the majority of future landslides would originate from logging roads. The development of a detailed deactivation and stabilization plan is recommended. Despite some progress on plan implementation, extreme seasonal storms continue to impact the Watershed, with multiple landslides occurring every year.

Tsleil-Waututh commissioned a reconnaissance study in 2005 to assess terrain stability using the following classification system:

Stability Class	Management Implications
Stable Terrain (Class I)	No specific stability problems.
Stable Terrain (Class II)	Very low likelihood of landslides following timber harvesting or road construction.
Stable Terrain (Class III)	Low likelihood of landslides following timber harvesting or road construction.
Potentially Unstable Terrain (Class IV)	Contains areas with a moderate likelihood of landslide initiation following timber harvesting or road construction.
Unstable Terrain (Class V)	Contains areas with a high likelihood of landslide initiation following timber harvesting or road construction.

Based on this preliminary analysis of the Watershed outside of provincial parks, approximately 13% is mapped as unstable (Class V) and 20% is mapped as potentially unstable (Class IV). A future comprehensive landslide inventory is necessary to fully evaluate and manage the xʔəĺílwətaʔɬ/Indian River Watershed.

A landslide caused by the failure of an old road bed

xʔəl̓ílwətaʔɬ/Indian River Watershed Plan

Terrain Stability Map

Unstable Terrain Reserve Zone (Timberline 2005)

Potentially Unstable Terrain Management Zone (Timberline 2005)

Terrain Data Unavailable

Landslide (Pre 2008) (TWN 2008)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Terrain Stability Management Direction

	Objectives	Strategies
1.	**Enrich Tsleil-Waututh knowledge with improved scientific understanding of terrain stability and soil erosion potential.**	**1.1** Develop and implement a landslide monitoring program, including a review of the role of forest roads as an origin of landslides. **1.2** Undertake detailed mapping of terrain stability and soil erosion potential. **1.3** Carry out a complete geomorphic study of the Watershed, documenting glacial history, landslide counts, river channel evolution, flood plain development, and estuary progression.
2.	**Limit the risk of landslides and soil erosion.**	**2.1** Reserve all unstable terrain (Class V) and areas of very high soil erosion potential from all development. Boundaries of unstable terrain or high erosion reserves may be amended based on detailed Site-Specific Terrain Assessments. **2.2** Complete a Site-Specific Terrain Assessment during resource development planning in potentially unstable terrain (Class IV). The prevention of landslides or soil erosion must be addressed prior to the initiation of development activities. **2.3** On stability classes I-III, operational planning will assess potential terrain stability or soil erosion issues.
3.	**Revise and implement restoration plans.**	**3.1** Complete deactivation and restoration activities as prescribed by completed reports[4], and revise as required.

Landslides in logging blocks of Hixon Creek

Landslide associated with a logging road and clearcuts

[4] Cordilleran Geoscience. 2017. Indian River Watershed Forest Service Road Access Restrictions Review. Forsite Engineering and Geoscience Ltd. 2009. Indian River Forest Service Roads Upgrades and Deactivation Prescriptions. SNC Lavalin. 1997. Indian River Watershed Restoration Project: detailed condition assessment and deactivation prescriptions.

3.6. Biodiversity Values

3.6.1. Plant Communities at Risk

It is a strong Tsleil-Waututh belief that humans must live in harmony with all beings in the web of life. Tsleil-Waututh people feel that the only way to protect all life is to plan and execute activities from a holistic perspective. In essence, everything is connected to everything else, and to lose even one connection threatens the well-being or survival of the whole. In this regard, all species—including shrubs, herbs, and mosses—hold immense value.

Similarly, in British Columbia, a key strategy for maintaining biological diversity is the protection of plant communities at risk. Typically, a focus on animal species is favoured, but increasingly, rare and threatened plant communities are highlighted for protection. A plant community has a characteristic variety in species composition, specific diagnostic species, and a defined range of habitat conditions.

In BC, the status of plant communities has been colour-coded as red, blue, and yellow. In the xʔəl̓ílwətaʔɬ/Indian River Watershed, the following known plant communities are red listed: Sitka sedge / peat-mosses, dune wildrye - beach pea, and Sitka spruce / salmonberry Very Wet Maritime.[5] The following known plant communities are blue listed: amabilis fir - Sitka spruce / devil's club, black cottonwood - red alder / salmonberry, Labrador-tea / western bog-laurel / peat-mosses, Sitka willow / Sitka sedge, western redcedar - Sitka spruce / skunk cabbage, western redcedar - western hemlock / sword fern, western hemlock - amabilis fir / deer fern, and western hemlock - amabilis fir / deer fern.[6]

Colour	Classification
Red-listed	Any species or ecosystem that is at risk of being lost (extirpated, endangered, or threatened.
Blue-listed	Any species or ecosystem that is of special concern.
Yellow-listed	Any species or ecosystem that is at the least risk of being lost.

https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/red-blue-yellow-lists

[5, 6] BC Conservation Data Centre. 2020. BC Species and Ecosystems Explorer. BC Ministry of Environment, Victoria, BC. Available: http://a100.gov.bc.ca/pub/eswp/

xʔəl̓ílwətaʔɬ/Indian River Watershed Plan

Plant Communities At Risk

	Biogeoclimatic Variant	Site Series
Red Listed Plant Communities Reserve Zone	CWHvm1	09
Blue Listed Plant Communities Management Zone	CWHvm1	03, 04, 08, 10, 14
	CWHvm2	03, 04

Red Listed Plant Communities Reserve Zone (TWN 2020 & POBC 2006)

Blue Listed Plant Communities Management Zone (TWN 2020 & POBC 2006)

Plant Community Data Unavailable

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Plant Communities at Risk Management Direction

	Objectives	Strategies
1.	**Protect rare and threatened plant communities.**	**1.1** Areas identified as supporting red-listed plant communities will be reserved from resource development. Reserve boundaries may be amended based on operational site-level planning. **1.2** Areas identified as supporting blue-listed plant communities will be subject to resource development constraints, with the target of preserving a minimum of 50% of the total area. Boundaries of blue-listed plant communities may be amended based on operational site-level planning.
2.	**Prevent the spread of invasive species.**	**2.1** Create an invasive species management strategy for the Watershed and apply it to all developments and operations.

Salmonberry

Skunk Cabbage

Sword fern

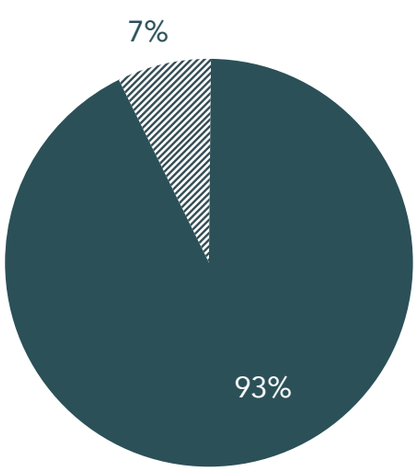
3.6.2. Old-Growth Forests

Old growth forests[7] represent a powerful record of history in the xʔəĺílwətaʔɬ/Indian River Watershed, with some trees, such as yellow-cedar, living up to 1,500 years. Due to the past intensity of timber harvesting, Tsleil-Waututh places an extremely high value on preserving remaining old growth forests. From the Tsleil-Waututh perspective, these are the forests of their ancestors and are sacred.

The Province of BC has established Old Growth Management Areas (OGMAs) to protect biodiversity values across a range of landscapes. Except in clearly defined circumstances, timber harvesting is not permitted in OGMAs. As one of the objectives of establishing OGMAs was to have minimal impact on timber supply, the OGMAs are largely located in areas already protected or deemed inoperable to timber harvesting (40% of the OGMAs within the Watershed are within provincial parks).

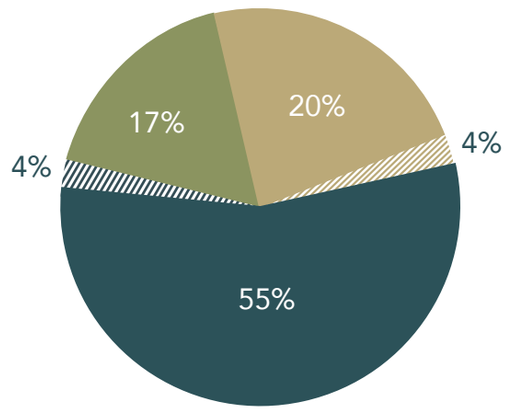
Through the various protection measures in this Plan, Tsleil-Waututh has built on the OGMA process to augment old growth forest protection. Under the Plan 93% (over 9,300 ha) of remaining old growth forest are designated as protected or inoperable. The remaining 7% (~700 ha) are within Watershed management zones and are deferred from timber harvesting until further site level planning is conducted.

When implemented, this Plan will exceed the targets highlighted in the strategies below with over 55% of Watershed's total forested area designated as protected old growth (15% over the 40% minimum outlined in Strategy 1.1). Furthermore, under the Plan an additional 17% of the Watershed's forest area is protected second growth forest. Future old growth recruitment efforts will prioritize rich valley bottom ecosystems (CWHvm1 bio-geoclimatic variant), given this ecotype is currently underrepresented in protected areas.



Old Growth Forest Status

- Protected Old Growth (9,300 ha)
- Deferred Management Zone Old Growth (700 ha)



Protected Forest by Total

- % Protected Old Growth
- % Old Growth within Management Zone
- % Protected Second Growth
- % Second Growth Within in Management Zone
- % Second Growth Within in Stewardship Zone

[7] Old Growth Forest is defined in this Plan as forest stands with an age class of 8 or above (>140 years old)

Old-Growth Forest Map

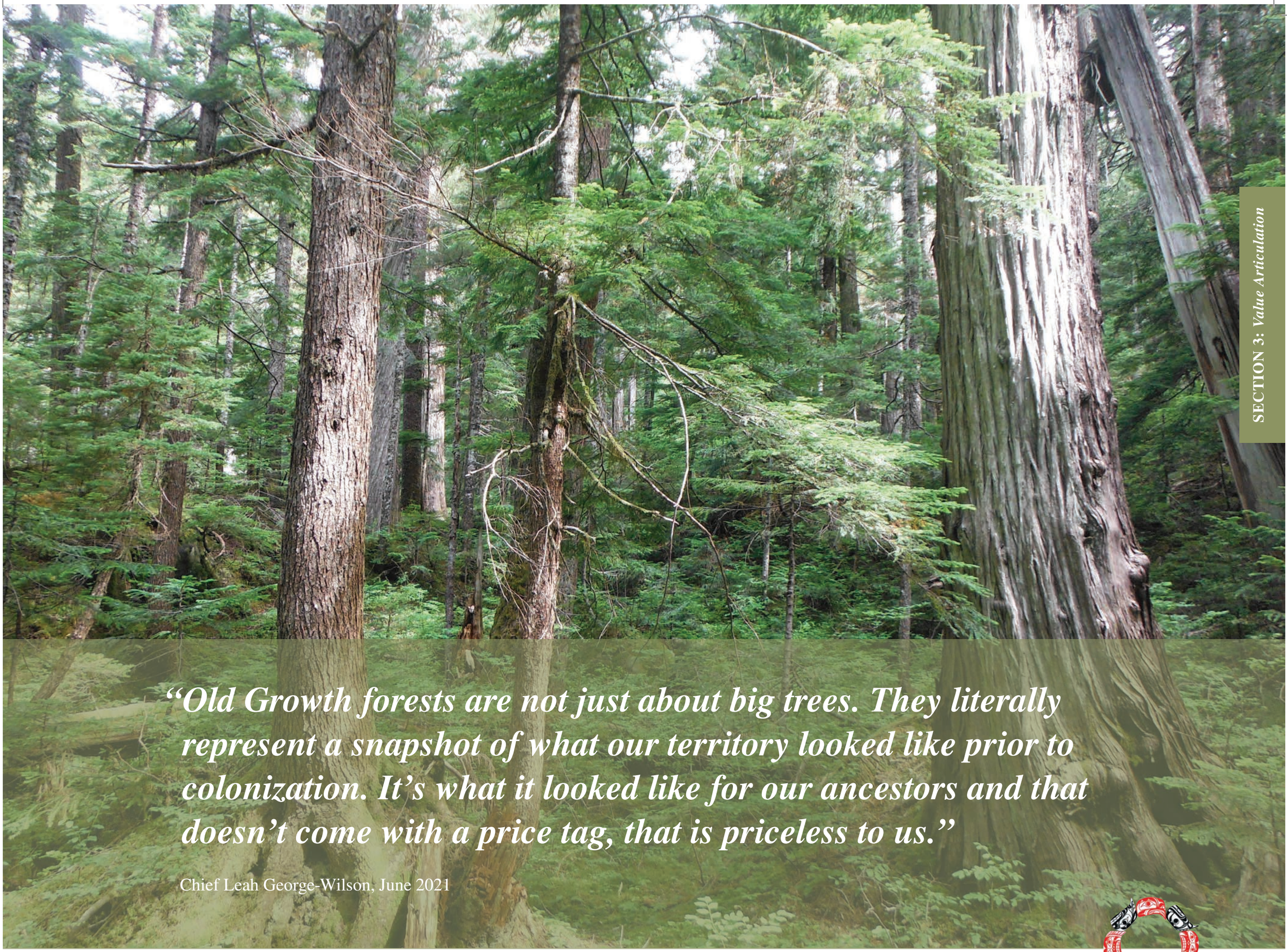
- Old Growth Within Protected/Inoperable Timber Harvesting Landbase
- Old Growth Within Management Zone
- Second Growth Within Protected/Inoperable Timber Harvesting Landbase
- Second Growth Within Management Zone
- Second Growth Within Stewardship Zone
- Provincial Park (POBC 2020)
- 100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

- Maintained Road
- Semi-Permanent Road (Unmaintained)
- Secondary Road (Unmaintained)

Old-Growth Management Direction

Objectives	Strategies
1. **Protect remaining old-growth forest.**	**1.1** Ensure that a minimum of 40% of the Watershed's total forested area is in old growth forest condition (greater than age class 8; >140 years old) and: **1.1.1** The old-growth forest is within a designated, set-aside watershed reserve; or **1.1.2** The old-growth forest is retained within the operable or inoperable watershed land base. **1.2** Ensure that all remaining old growth forests that are not retained in the watershed reserves, operable or inoperable areas, or other watershed management zones are deferred from timber harvesting and classified as Research and Restoration Areas (See page 69 for definition). **1.2** Ensure that the representation of protected old growth forest is proportional to the amount of forested ecosystem types (assessed at the bio-geoclimatic variant level) in the Watershed.
2. **Recruit old-growth forest in select second-growth areas.**	**2.1** Identify gaps in old-growth forest representation. **2.2** Identify gaps in old growth forest linkages and increase connectivity between old-growth stands. **2.3** Quantify the extent of second-growth forest. **2.4** Designate second-growth forest as old-growth recruitment areas, based on 2.1, 2.2, and 2.3. **2.5** Identify old-growth recruitment areas in the Watershed that would benefit from silviculture or stand tending.



"Old Growth forests are not just about big trees. They literally represent a snapshot of what our territory looked like prior to colonization. It's what it looked like for our ancestors and that doesn't come with a price tag, that is priceless to us."

Chief Leah George-Wilson, June 2021

3.6.3. Wildlife

The protection and stewardship of wildlife is an important value to Tsleil-Waututh. The xʔəl̓ílwətaʔɬ/Indian River Watershed has always hosted a rich array of wildlife that utilize forest, alpine, aquatic, and marine ecosystems. Along with salmon, cedar, and medicinal plants, this high wildlife and habitat diversity makes the area an extraordinary place. It provides Tsleil-Waututh with sustenance, and it also nurtures their cultural and spiritual well-being.

Tsleil-Waututh has always held all wildlife, and their intricate web of interactions with the environment, in high esteem. Since time out of mind, Tsleil-Waututh people have actively hunted deer, bear, goat, and elk; they also hunted and trapped fur-bearing species such as hare, porcupine, mink, raccoon, beaver, squirrel, muskrat, marten, weasel, coyote, fox, marmot, otter, and wolverine, all without disrupting the natural order of the ecosystem. Grizzly bears, cougars, and wolves were generally avoided.

The Tsleil-Waututh people have a long, close association with wolves. According to their oral history, the Creator transformed the Wolf into the first Tsleil-Wautt and made him responsible for this land.

Developing sound management direction for wildlife takes a two-step strategy geared toward maintaining ecological integrity; overall biodiversity; and healthy, sustainable populations. The first step is to apply a landscape management approach to the whole watershed that focuses on general terrestrial and aquatic ecosystem representation. This involves achieving and maintaining the natural range and variability in habitats, successional processes, and disturbance regimes.

The second step is a fine-scale management approach to wildlife protection that addresses the site-specific habitat-management needs of specific keystone species that have a fundamental influence on ecosystem functions. Therefore, keystone species management can aid in the overall protection and maintenance of ecological health and biodiversity. This section on wildlife is organized into two subsections: the first focuses on general wildlife management for the entire watershed, and the second outlines the habitat requirements of keystone species that are of special significance to Tsleil-Waututh.

General Wildlife Management

The general approach to wildlife management includes initiatives that will conserve the greatest diversity of species. The strategies include providing a natural distribution of forest seral stages across the Watershed and protection of critical or high value habitat types and features. Some examples of the latter include: low elevation old growth forests; mature, second growth forests; wildlife trees; cliffs and cave structures; and aquatic systems including associated riparian areas and large woody debris recruitment processes.

Another conservation approach requires the retention of larger, more resilient habitat patches (smaller patches do not sustain as many species) linked by forested migration corridors. This approach supports wildlife species that thrive only in the interior of large patches, and species that disperse across the landscape under forest cover.

Black Bear

General Wildlife Management Direction

Objectives	Strategies
1. **Conserve ecological integrity and biological diversity of terrestrial and aquatic ecosystems.**	**1.1** Within the Watershed Reserve Network and site-level plans, monitor key wildlife biodiversity indicators such as: » diversity of habitat types, » seral stages, » species richness, » habitat connectivity, and » rare habitat types and unique ecosystem features. **1.2** Through the Watershed Working Group, coordinate with relevant regional, provincial, and federal initiatives to promote biodiversity. **1.3** Monitor and restrict the spread of invasive plant and wildlife species (e.g., American Bullfrog). **1.4** Monitor the impacts of climate change on wildlife and ecosystem health, and consider opportunities and adaptive strategies to reduce risk to biodiversity and species survival. **1.5** Protect sensitive riparian and aquatic habitats and prevent erosion and sedimentation into water courses. See the objectives and strategies that are highlighted in the Riparian and Terrain Stability section 3.5.
2. **Improve knowledge of existing wildlife population levels and their habitat requirements.**	**2.1** Conduct wildlife research studies including, but not limited to: » Inventorying identified wildlife species and species of special significance to Tsleil-Waututh; » Assessing populations, trends, habitat associations, and survival requirements of species of concern; » Incorporating any regional habitat suitability models that were created for wildlife species; » Identifying degraded areas within critical habitat areas for species of concern; » Monitoring keystone species as measures of watershed health; and » Evaluating the feasibility of monitoring genetic diversity of species with disjunct populations such as Roosevelt Elk. **2.2** Create partnerships and coordinate research activities with relevant provincial agencies, institutions, industries, and individuals. **2.3** Identify collaborative funding and research opportunities to fill knowledge gaps.
3. **Maintain viable, healthy, and diverse populations of all local wildlife species.**	**3.1** Develop detailed management strategies for protecting wildlife populations at the Watershed and site levels. **3.2** Establish target habitat areas to protect at all times within Watershed Reserve and Stewardship Zones. **3.3** During site-level planning, establish strategic, contiguous habitat linkages between Watershed Reserve Zones, Stewardship Zones, and adjacent watersheds.
4. **Reduce conflicts between wildlife and human activity.**	**4.1** Determine location of roads and intensity of development activities to limit human encroachment and disturbance in critical or sensitive habitat areas. **4.2** Implement guidelines and seasonal windows to limit or prohibit intrusive activities during critical periods such as breeding seasons. **4.3** Establish buffer zones to protect or limit disturbance to known raptor nests, heron rookeries, other roosting areas, calving/kidding grounds, Tailed Frog breeding reaches, or other sensitive wildlife areas. **4.4** Minimize habitat fragmentation caused by human structures and disturbances. **4.5** Develop guidelines specific to the Watershed for setting species-specific hunting limits. **4.6** Develop and implement guidelines for recreational vehicle use. **4.7** Promote public education programs to foster appreciation of wildlife and their habitat. **4.8** Promote law enforcement initiatives that protect wildlife and their habitat.

3.6.4. Tsleil-Waututh Keystone Species

Healthy populations of keystone species require explicit conservation planning for habitat patch size and landscape connectivity, both of which contribute to ecosystem integrity and biodiversity.

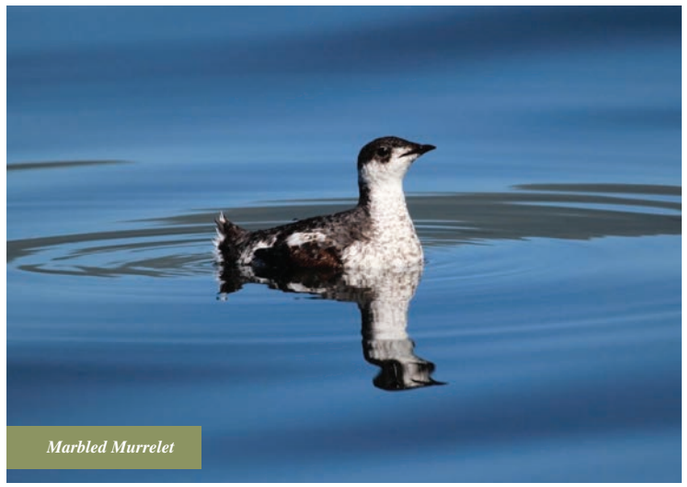
Keystone wildlife species in the xʔəl̓ílwətaʔɬ/Indian River Watershed include:

» Mountain Goat—a symbol of healthy high elevation and subalpine ecosystems.
» Roosevelt Elk—an icon of the edges between healthy ecosystems.
» Marbled Murrelet—an emblem of productive, valley bottom old-growth forest.
» Northern Goshawk—an icon of mature second- and old-growth forest health and connectivity.
» Northern Spotted Owl—a symbol of large patch size ian old-growth forest.
» Coastal Tailed Frog—a symbol of stream health and riparian connectivity.

The keystone species-specific focus will be applied in conjunction with the General Wildlife Management objectives and strategies (coarse filter) to provide a fine-filter approach to conserving habitats in the Watershed.


Mountain Goat


Roosevelt Elk


Marbled Murrelet


Northern Gohawk


Northern Spotted Owl


Coatal Tailed Frog

Ungulate Map

Goat Winter Range Reserve Zone (POBC 2020)

Deer Winter Range Management Zone (POBC 2020)

Elk Summer & Winter Range Stewardship Zone (Diamondhead 2007)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Mountain Goat *(Oreamnos americanus)*

Mountain Goats in coastal areas are found on steep slopes near sea level where exposure to full sunlight exists. Goats move up and down with the seasons. In the spring, they live in the lower end of their home ranges to take advantage of the earliest flush of deciduous vegetation. They migrate up to the timberline during the summer and fall to feed in avalanche chutes, alpine meadows, grassy boulder patches, and on vegetated cliff ledges. In winter, goats migrate back to low elevation to find thermal refuge, security, and food. Although Mountain Goats avoid heavy snow, they will venture into harvest blocks and second-growth stands near their winter ranges during low-snowpack years to forage.

Most Mountain Goat habitat occurs in inoperable forest areas and is naturally maintained. Escape terrain is vital to healthy goat populations. It includes steep, rocky cliffs where goats can tread but predators cannot access. Proximity to escape terrain is an important feature of goat habitat in all seasons. Site fidelity is very high, and individuals rarely move more than 400 to 500 metres from escape terrain.[8]

Conservation at high elevation mainly involves restricting human disturbance around steep cliffs used during kidding season. This is particularly true for helicopter activity; aerial disturbances can cause goats to spend an inordinate amount of time in escape terrain rather than foraging. Precautions are necessary in areas where timber harvesting overlaps with goat winter ranges. Although young forests are used for forage, a relatively high proportion of mature and old forest needs to be maintained as cover, especially during harsh winters.

Timber harvesting should never occur within goat winter ranges that serve as nurseries, nor should it occur in goat winter range areas with low snow interception. Thirteen provincially designated Mountain Goat Winter Ranges have been identified in the Watershed and will be included in the Watershed Reserve Network.

Common Name	**Mountain Goat**
Latin Name	*Oreamnos americanus*
Home Range	Less than 250 ha[10]
Seasonal Migration	<2 km and 500 m in elevation in coastal areas[8,10]
Rutting/Breeding Season & Winter Range	November – April (Moderate to lower elevations in forested habitats)[8]
Gestation Period	November to late May/ early June (178 days)[9]
Kidding/Early Rearing Season	May 1 to July 15[8]
Summer Range	Alpine and sub-alpine meadows that have rich forage and nearby escape terrain[8]
BC Conservation Status	Blue

[8] Mountain Goat Management Team. 2010. Management Plan for the Mountain Goat (Oreamnos americanus) in British Columbia. Prepared for the BC Ministry of Environment, Victoria, BC. 87 pp.

[9] BC Conservation Data Centre. 1994. Species Summary: Oreamnos americanus. BC Ministry of Environment. Available: http://a100.gov.bc.ca/pub/eswp/.

[10] Wilson, S.F. 2005. Desired conditions for coastal Mountain Goat winter range. BC Ministry of Water, Land and Air Protection, Biodiversity Branch, Victoria, BC. Working Report No. WR-107. 6 pp.

Mountain Goat Management Direction

	Objectives	Strategies
1.	**Manage the Mountain Goat population and habitat to ensure long-term viability of the herd.**	**1.1** Establish low-risk windows of operation (July 16 to October 31) and suitable buffers for any human activity; for helicopter activity, maintain separation of at least 1,500m horizontal and 500m vertical separation. **1.2** Incorporate all identified goat winter ranges into the Watershed Reserve Network. **1.3** In forest harvesting operations adjacent to goat winter ranges, harvest small portions through group selection or variable retention tree removal to provide summer forage and winter forage in low snow years. **1.4** Monitor goat distribution and abundance in altered and unaltered areas of their winter ranges, to understand the effects of canopy removal on the local population and allow for adaptive management.

Roosevelt Elk *(Cervus elaphus roosevelti)*

Roosevelt Elk are considered vulnerable to extirpation in British Columbia without special habitat and species management. They are distributed on Vancouver Island and in small, isolated areas of the southwest mainland coast. Current mainland populations are the result of several reintroductions, first in the Sechelt Peninsula from 1987 to 1989 and subsequently to other locations, including the xʔəĺílwətaʔɬ/ Indian River Watershed in 2006.

Elk vary in their use of habitats depending on seasons and related life requisites. They require thermal cover, security, breeding and calving grounds, and good forage quality and quantity. In the winter, elk seek either flood plains with cover from snow or gentle to moderate south-facing forests with small, scattered openings such as wetlands, rock outcrops, or forest clearings where they can forage. Usually coniferous forests greater than 10 metres in height and 70% canopy closure suffice for thermal cover in low snowpack areas; old growth is necessary in high snowpack areas.[11]

During the growing season, the elk feed largely on herbs and shrubs and can be found in coniferous and deciduous-dominated forests, riparian zones, and in more open habitats such as wetlands, estuaries, and vegetated landslides. Roosevelt Elk are generally considered an edge species, preferring to stay with relatively easy access to forage in open areas, and to cover in dense tree stands. They will feed in forest harvest blocks but generally stay within 200 metres of the forest edge.[12]

Habitat quality is the primary limiting factor for the successful establishment of elk populations. Other threats to elk include loss and fragmentation of adequate habitat, predation (primarily cougars and wolves), as well as hunting and poaching by humans. Management of this species requires a combination of strategies, including the addition of critical elk habitat to the Watershed Reserve Network and the dynamic management of natural resources to ensure that there is spatial and temporal distribution of forage and cover habitats at all times.

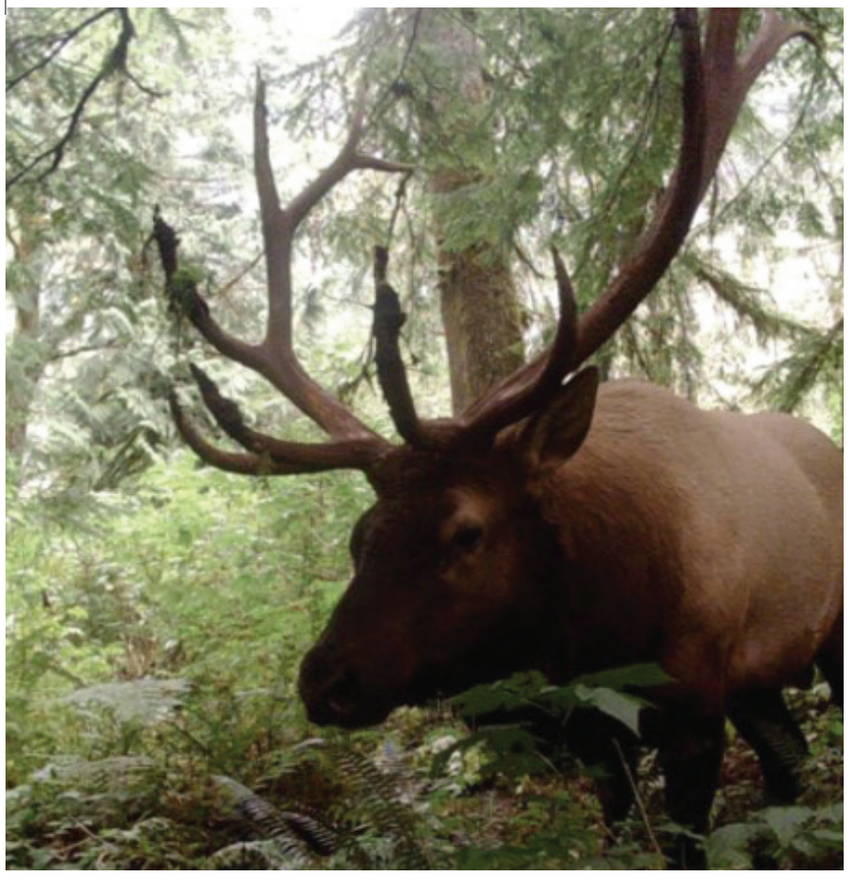
High-suitability range has been identified for winter and summer in areas where recent terrestrial and vegetation inventories were available. Park areas within the Watershed were excluded because these lands are already protected.

Common Name	**Roosevelt Elk**
Latin Name	Cervus elaphus roosevelti
Home Range	3,000 ha[12]
Seasonal Migration	1,500 m in elevation[12]
Winter Range	November to March (0–600m elevation)[12]
Spring Range	February to April[11]
Summer Range	April to November (400–1,500m elevation)[12]
Rutting/Breeding Season Start	Mid-September[9]
Gestation period	September to late May/early June (8 months)[13]
BC Conservation Status	Blue

[11] Wilson, S.F. 2005. Desired conditions for coastal Mountain Goat winter range. BC Ministry of Water, Land and Air Protection, Biodiversity Branch, Victoria, BC. Working Report No. WR-107. 6 pp.

[12] Brunt, K.R. 1990. Ecology of Roosevelt Elk. Pages 65–98 in: J.B. Nyberg and D.W. Janz (editors). Deer and elk habitats in coastal forests of southern British Columbia. BC Ministry of Forests and BC Ministry of Environment, Victoria, BC. https://www.for.gov.bc.ca/hfd/pubs/Docs/Srs/Srs05/Srs05_Chapter3.pdf

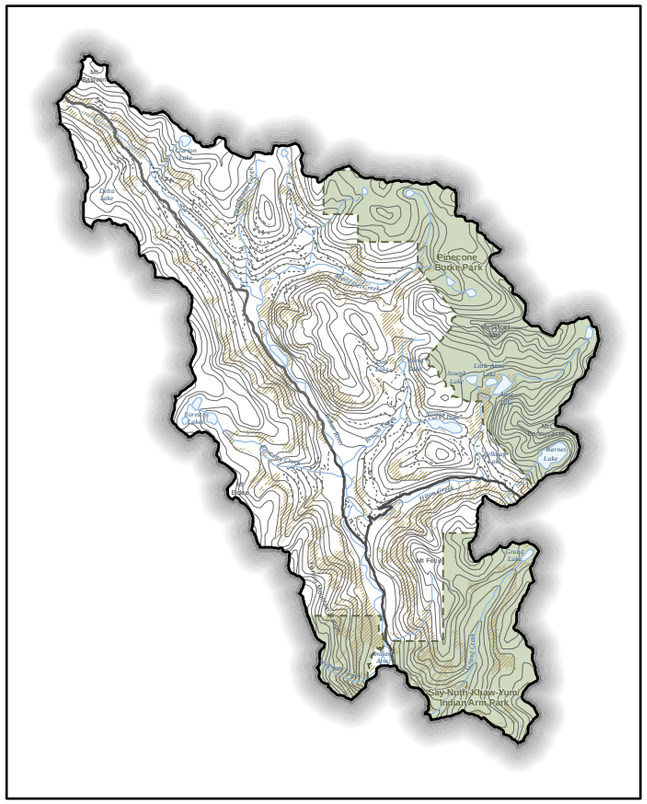
[13] Blood, D. 2000. Elk in British Columbia. BC Ministry of Environment, Lands and Parks, Wildlife Branch. http://www.env.gov.bc.ca/wld/documents/elk.pdf



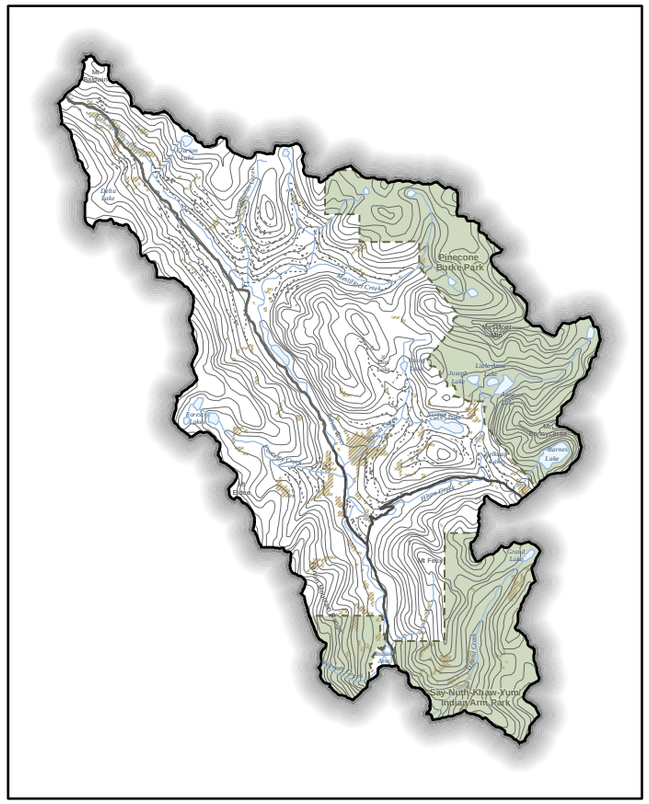
Roosevelt Elk Management Direction

Objectives	Strategies
1. **Manage the Roosevelt Elk population and habitat to ensure long-term viability of the herd.**	**1.1** Develop hunting guidelines and establish an annual allowable harvest quota based on population size. **1.2** Develop target areas to be retained for forage, winter habitat, and security cover. This will include reserve areas as well as managed forests. The distribution of target areas should extend throughout the Watershed and be managed dynamically through forest operations. **1.3** Map all remaining old-growth forests on south-facing, windward slopes, and consider incorporation into the Watershed Reserve Network. **1.4** During site-level forest harvest planning: **1.4.1** Identify high-quality winter elk habitat, and ensure that thermal capabilities of the stand are maintained and that small clearings with irregular shapes are promoted to increase the quantity of secure winter forage; **1.4.2** Identify, enhance, or protect seasonal migration corridors between winter and summer habitat; and **1.4.3** Identify low passes that represent potential migration corridors between the xʔəl̓ílwətaʔɬ/Indian River Watershed and adjacent watershed, and enhance/maintain such corridors. **1.5** In heavily used areas, expect browse of planted seedlings by elk. Use protective measures around seedlings during planting. **1.6** Reduce the distribution of slash cover in forest harvest blocks to promote elk access. **1.7** Preserve visual buffers from forest harvest blocks and forage areas to adjacent roads. **1.8** Monitor and report all cases of suspected wildlife poaching or illegal harvesting.

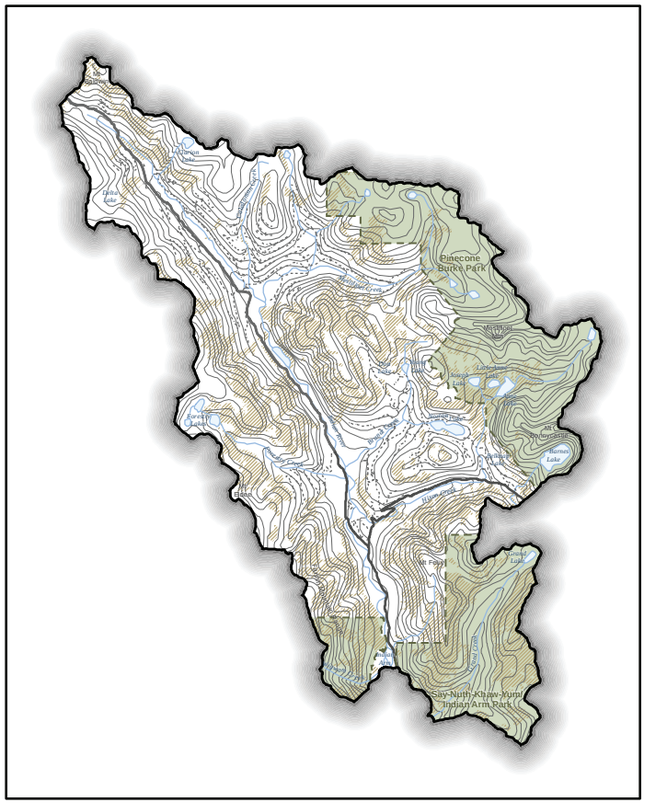
Bird Maps



Marbled Murrelet Nesting Habitat Stewardship Zone (POBC 2020)



Northern Goshawk Breeding Habitat Stewardship Zone (FLNRORD 2015)



Spotted Owl Nesting Habitat Stewardship Zone (FLNRORD 2019)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

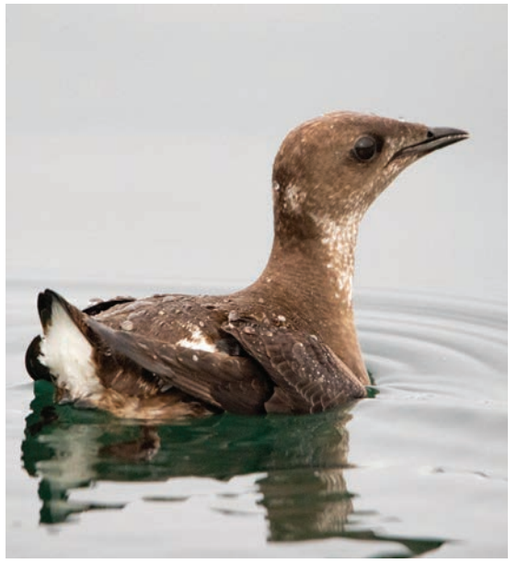
Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Marbled Murrelet *(Brachyramphus marmoratus)*



Marbled Murrelets are small diving seabirds that inhabit inland waters of the northeastern Pacific Ocean. They feed on fish, crustaceans, and mollusks in the marine environment, but they nest in coastal forests up to thirty kilometres away from the ocean.[14] Nests are usually in the large, mossy limbs of big trees in old-growth forests. The forests must have canopies with high vertical complexity. Topographic variability (e.g., rock outcrops, gullies) is thought to contribute to habitat suitability, as it breaks up canopy uniformity. Most nests are found between 170 to 1,100 metres in elevation; occupancy decreases with increasing elevation.[15] Nests are generally away from hard edges such as roads and young forest boundaries.

The Marbled Murrelet is thought to be imperiled and very susceptible to extirpation, primarily because of old-growth forest habitat loss, but also due to the combined and cumulative effects of climate-related changes in the marine ecosystem and human maritime disturbances.

Habitat suitability mapping was completed for the British Columbia coast as part of the Canadian Marbled Murrelet Recovery Team strategy; it is a combination of "predicted suitable habitats from a wide-scale algorithm using elevation, distance inland, forest cover tree height and age as well as two separate regional nesting habitat models" (Province of BC Data Catalogue 2020).

Common Name	**Marbled Murrelet**
Latin Name	Brachyramphus marmoratus
Home Range	30–50 km from marine capture and foraging sites; 0–1,500 m elevation[16]
Breeding Season	Late April to September[16]
Incubation Period	30 days[15]
Nestling Period	28 days[15]
BC Conservation Status	Blue

Marbled Murrelet Management Direction

	Objectives	Strategies
1.	**Manage the Marbled Murrelet population and habitat.**	**1.1** Conduct a Marbled Murrelet survey to determine their distribution and ground-truth existing habitat suitability ratings. **1.2** Create reserve zones (200 metres) around any active nests. **1.3** During site-level forest harvest planning, identify and consider protection of forests >140 years old that contain trees of significant size and with features such as large horizontal limbs suitable for nesting platforms. **1.4** Maintain a mix of large (>200 hectares), medium (50–200 hectares), and small (<50 hectares) tree patches within managed forests, as recommended by the Canadian Marbled Murrelet Recovery Team in their 2003 Assessment.[17]

[14] British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development. 2018. Implementation plan for the Marbled Murrelet (Brachyramphus marmoratus) in British Columbia. Victoria, BC. 23 pp.
[15] Blood, D. 1998. Marbled Murrelet. BC Ministry of Environment, Lands and Parks, Wildlife Branch. https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/species-ecosystems-at-risk/brochures/marbled_murrelet.pdf
[16] Burger, Alan. 2004. Accounts and Measures for Managing Identified Wildlife: Marbled Murrelet. http://www.env.gov.bc.ca/wld/frpa/iwms/documents/Birds/b_marbledmurrelet.pdf
[17] Canadian Marbled Murrelet Recovery Team. 2003. Marbled Murrelet Conservation Assessment 2003, Part B: Marbled Murrelet Recovery Team Advisory Document on Conservation and Management. Canadian Marbled Murrelet Recovery Team Working Document No. 1.

Northern Goshawk *(Accipiter gentilis laingi)*

The Northern Goshawk is a monogamous raven-sized hawk found in temperate forests. Northern Goshawks show a preference or large forest patches with natural rather than hard, artificial edges. Late seral coniferous forests are preferred because their open understories and high canopy cover are easier for the large birds to maneuver through. The presence of large woody debris; snags; stumps; and large, low, thick-limbed trees are important structural features, as they support many prey species.

Breeding territories are comprised of mature and old-growth forest dominated or co-dominated by western hemlock or Douglas-fir; all but the subalpine and extreme coastal variants can be inhabited. The territories include the core nesting area, which has one or more nests that the pair will alternate between; the adjoining post-fledgling area; and the surrounding adult foraging area.

The Northern Goshawk feeds in most of the forested land base around Coastal British Columbia. Its populations are threatened by forest fragmentation, the loss of mature or old-growth forest nesting habitat, and the loss of habitat and structural diversity—all of which ultimately reduces their prey base.

Common Name	**Northern Goshawk**
Latin Name	Accipiter gentilis laingi
Territory Size	Approximately 3,800 hectares[18]
Breeding Range	46–263 ha[19]
Breeding Season	February 15 to September 15[19]
Incubation Period	April 20 to May 25[19]
Nestling & Fledgling Period	May 25 to September 15[19]
BC Conservation Status	Red

Northern Goshawk Management Direction

	Objectives	Strategies
1.	**Manage for Northern Goshawk habitat.**	**1.1** Conduct a multiple-year Northern Goshawk inventory to determine if there are any pairs inhabiting the Watershed. **1.2** Create interim reserve zones around any active nests as per the adjacent table depending on activity, pending the establishment of a Wildlife Habitat Area in collaboration with the Province. **1.3** Develop management strategies for breeding territories beyond core nesting or post-fledgling areas that aim to create old-growth features and structures, and that soften forest edges next to harvest blocks. This includes initiatives such as biodiversity thinning and wildlife tree creation. **1.4** Limit disturbance next to nest site and post-fledgling areas to low-risk windows (September 16 to February 14). **1.5** Interconnect mature and old forest patches from valley bottoms to mid-elevation levels. **1.6** In the absence of actively breeding goshawks, flag high-potential breeding areas and create old-growth features and appropriate stand structure through forestry operations.

[18] McClaren, E.L., F.I. Doyle, and T. Mahon. 2009. Northern Goshawk (Accipiter gentilis laingi). In Horn, H.L. (ed.). Part 3: Knowledge base for focal species and their habitats in coastal British Columbia. Report 3 of the EBM Working Group Focal Species Project. BC Integrated Land Management Bureau, Nanaimo, BC. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/westcoast-region/great-bear-rainforest/ei02c_report_3_kb_focal_species_habitat.pdf

[19] McClaren, E.L., T. Mahon, F.I. Doyle, and W.L. Harrower. 2015. Science-Based Guidelines for Managing Northern Goshawk Breeding Areas in Coastal British Columbia. Journal of Ecosystems and Management 15(2): 1–91. Published by the Journal of Ecosystems and Management: http://jem-online.org/index.php/jem/article/viewFile/576/506

Recommended minimum distance to keep activities away from the nearest active coastal goshawk nest site during periods of high and moderate risk (February 15 to September 15)

Likelihood of impact	Activity	Timing restriction distance*
Very high	» Repeated low-elevation flights (< 305 m) » Blasting » Continuously operating drilling rig or well flaring	More than 1 km
High	» Road-building (without blasting) » Timber Harvesting » Pipeline and well-site construction » Detonation of seismic charges » Wind tower construction » Seismic line cutting (mechanical)	More than 500 m
Moderate	» Hauling and road maintenance (logs, heavy equipment, etc.)	More than 100 m
Low	» Silviculture activities (e.g. planting and site preparation) » Seismic line cutting (manual) » Industrial and public traffic	More than 50 m, where practicable, individual birds and young may be affected by these activities. If birds seem distressed (i.e. continuous calling, birds staying away from active nest, aggressive behaviours toward people/equipment, etc), then the activity should cease until at least July 1.

*This is the distance from the known nest site within which timing restrictions should be applied. Any activities that are further away than this distance do not need to apply timing restrictions. Individual goshawks will vary in their response to disturbance levels, depending on several factors that include habitat characteristics, breeding chronology, age, and individual variation.

McClaren, E.L., T. Mahon, F.I. Doyle, and W.L. Harrower. 2015. Science-Based Guidelines for Managing Northern Goshawk Breeding Areas in Coastal British Columbia. Journal of Ecosystems and Management 15(2): 1–91. Published by the Journal of Ecosystems and Management: http://jem-online.org/index.php/jem/article/viewFile/576/506

Northern Spotted Owl *(Strix occidentali)*

The Northern Spotted Owl is a monogamous resident species in the temperate coniferous forests of southwestern British Columbia. Suitable forests are within the Coastal Western Hemlock, Mountain Hemlock, Interior Douglas Fir, and Englemann Spruce–Subalpine Fir Zones below 1,370m elevation.[20] Stands must be dominated by large, overstory trees and snags with various deformities to serve as below-canopy nest and roost sites; these features are most commonly found in old-growth and mature forests. With their high site fidelity, protection of breeding range is critical.

Spotted Owls are preyed upon by ravens and raptors, including the Great Horned Owl, Red-tailed Hawk, and the Northern Goshawks. The Barred Owl is a major competitor for habitat and prey species. It is considered critically imperiled and extremely susceptible to extirpation because of its small population size and the loss of large, low-elevation old-growth forests upon which it relies for survival. The population is predicted to continue to decline over the next 20 years.[21]

Due to overlap between habitat needs and high productivity timber areas, an Inter-agency Northern Spotted Owl Steering Committee (INSOSC) was formed in 2007 to address recovery strategies, including captive breeding and Barred Owl management plans. The INSOSC, along with its habitat and population management teams, has taken responsibility for all Spotted Owl management and research.

Common Name	**Northern Spotted Owl**
Latin Name	Strix occidentali
Home Range	3,200 ha[22]
Breeding Range	1,600 ha[22]
Breeding Season	Late February/March to April[20]
Incubation Period	April to early May (30 Days)[20]
Nestling Period	Late May to early July (35 days)[20]

Northern Spotted Owl Management Direction

Objectives	Strategies
1. **Manage the Northern Spotted Owl population and habitat.**	**1.1** Support INSOSC survey, research, and management initiatives in and next to the xʔəl̓ílwətaʔɬ/Indian River Watershed. **1.2** Contribute to management efforts by incorporating 80 hectares around any identified active nest sites into the Watershed Reserve Network. **1.3** Create old-growth features and stand structure through forestry operations in high-capability habitat areas (older forests with >20% Douglas-fir). This includes initiatives such as biodiversity thinning and wildlife tree creation.

[20] Dupuis, L. 1998. Northern Spotted Owl. BC Ministry of Environment, Lands and Parks, Wildlife Branch. https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/species-ecosystems-at-risk/brochures/northern_spotted_owl.pdf

[21] COSEWIC. 2008. COSEWIC assessment and update status report on the Spotted Owl Strix occidentalis caurina subspecies, in Canada. Committee on the Status of Endangered Wildlife in Canada Ottawa. vii + 48 pp.(www.sararegistry.gc.ca/status/status_e.cfm).

[22] BC Conservation Data Centre. 1995. Species Summary: Strix occidentalis. BC Ministry of Environment. Available: http://a100.gov.bc.ca/pub/eswp/ (accessed Feb 25, 2020).

Coastal Tailed Frog *(Ascaphus truei)*

The Coastal Tailed Frog inhabits perennial mountain streams, though it generally breeds in tributaries. Creeks draining smaller catchments have more suitable discharge rates and typically display the step-pool stream channel morphology preferred by this species. Step-pool morphology provides stability against large disturbance events such as sediment floods and debris flows. It also provides ample foraging substrates and refuge sites.

Tadpoles thrive best in moderately steep catchments. Very steep channels are unstable; low-gradient streams are more prone to sediment accumulation. The level of fine sediment in a channel bed is a particularly strong influence on tadpole survival.

Tailed Frog juveniles and adults are terrestrial. They live and feed in riparian zones but are known to wander well away from streams when conditions are moist. They are strongly tied to moist, stable forests with high wood, herb, and fern cover, and they thrive in old forests.

Management of Tailed Frog streams is generally geared toward minimizing sediment influx by retaining bank-stabilizing riparian buffers and adopting strict erosion and sediment control measures along and upstream of breeding reaches.

Retaining riparian buffers along breeding streams protects all life stages. Riparian connectivity between headwaters and valley bottoms is equally important to terrestrial life stages. Such a forest network provides potential dispersal routes and is an important aspect of population dynamics of the Coastal Tailed Frog.

Coastal Tailed Frog Management Direction

	Objectives	Strategies
1.	**Manage streams and riparian zones for Coastal Tailed Frog viability.**	**1.1** During site-level forest harvest planning, conduct surveys for Coastal Tailed Frogs. **1.2** For confirmed breeding reaches and upstream of them, extend the Riparian Reserve Zone to at least 15 metres and apply a Riparian Management Zone of at least 10 metres, as per general guidelines in the Riparian section 3.5.1. **1.3** Near confirmed breeding reaches, maximize connectivity of terrestrial habitats by retaining a forest connection between Tailed Frog Riparian Reserve Zones and other nearby streams, wetlands, and seeps. **1.4** Maintain the hydrological regime of the Watershed to limit the frequency of extreme discharge events and mortality of Tailed Frogs during floods. **1.5** Minimize roads and stream crossings in (or upstream of) Tailed Frog Riparian Reserve Zones. **1.6** Minimize site disturbance during harvesting in terrain with a high-sediment transfer potential to Tailed Frog Riparian Reserve Zones. **1.7** Avoid cross-stream yarding and slash loading of channels upstream of Tailed Frog Riparian Reserve Zones. **1.8** Retain forest cover in low divides between the xʔəl̓ílwətaʔɬ/Indian River Watershed and adjacent watersheds to facilitate dispersal of Coastal Tailed Frogs.

3.6.5. Ecosystem Representation

The xʔəĺílwətaʔɬ/Indian River Watershed hosts a variety of ecosystem types: coniferous forests, deciduous forests, mountain alpine, rocky outcrops, lakes, wetlands, riparian areas, and a major estuary. Ecosystems are functional units consisting of all the living factors (plants, animals, microbes), all the non-living factors (air, water, soil), and their interactions. All these factors and interactions are linked together through nutrient cycling and energy flow.

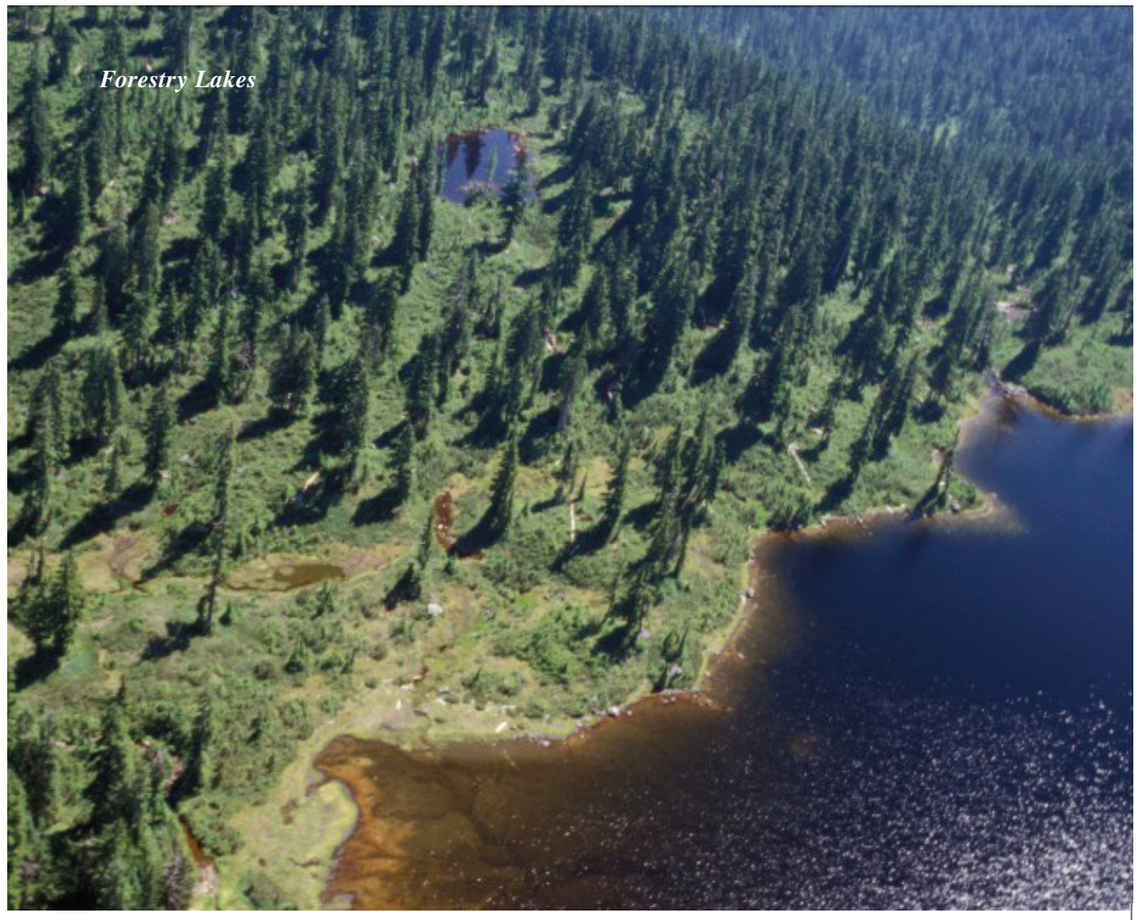
Tsleil-Waututh people believe that the only way to protect all life is to plan and execute activities in a holistic manner. From this perspective, planning in the xʔəĺílwətaʔɬ/Indian River Watershed must ensure that the entire range of ecosystems that were present before contact with settlers is conserved to provide plants, animals, and other organisms with their specific habitat requirements. Providing adequate representation of all ecosystems is also an essential strategy for conserving biological diversity.

Ecosystem Representation Management Direction

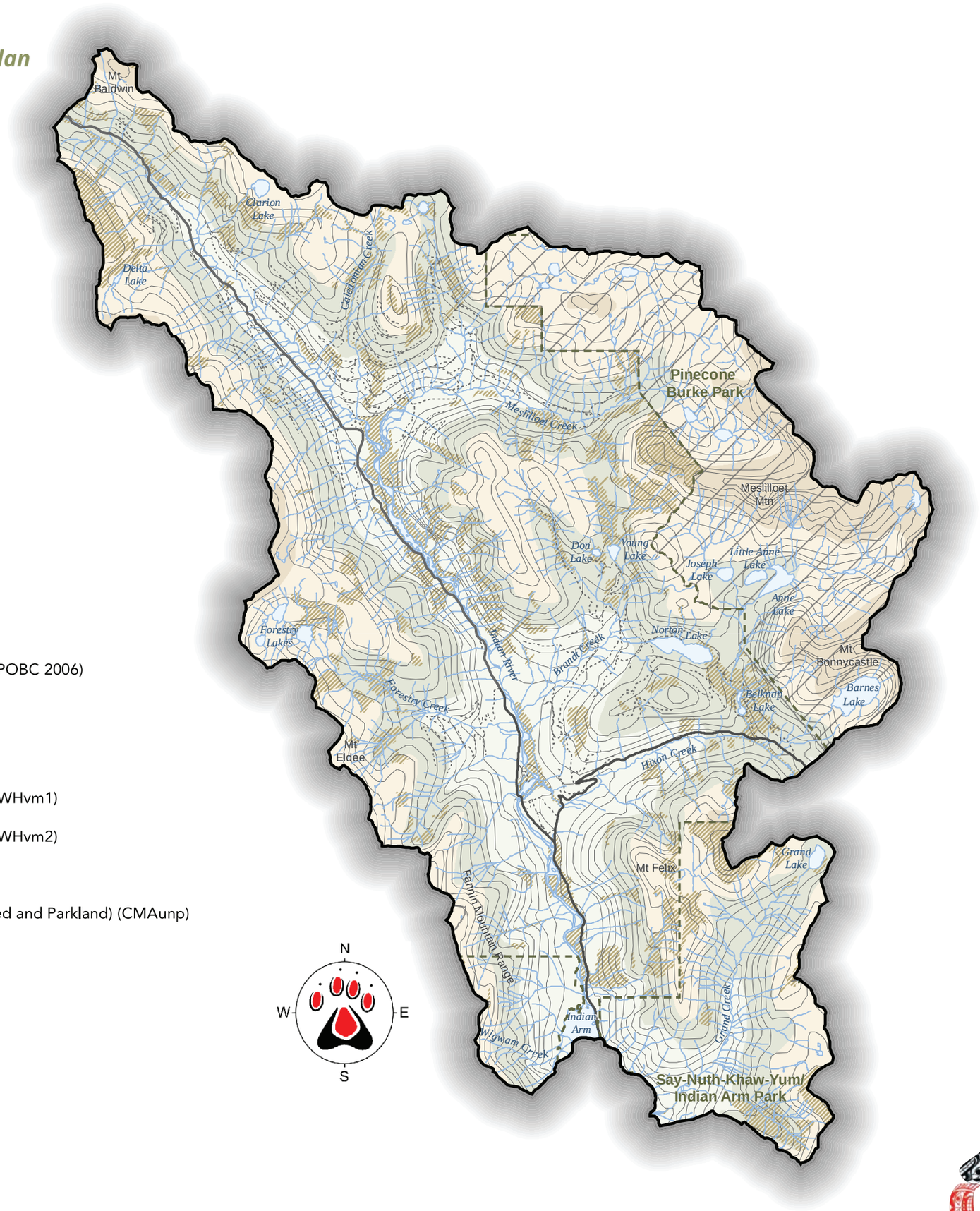
Objectives	Strategies
1. **Ensure that the natural range and variability of ecosystems is conserved to protect biological diversity.**	**1.1** Assess the Watershed Reserve Network and, as necessary, incorporate additional areas into the Rare Site Series presented in the adjoining map to meet ecosystem representation requirements.

The following site series represent less that 2% of the land base where data is available (Site series spatial data was derived from 2006 TEM following 1998 Standards)

» MHmmp
» MHmm1 (03, 04, 05, 06, 07, 08, 09)
» CWHvm1 (00, 02, 04, 06, 09, 14)
» CWHvm2 (00, 02, 04, 06, 07, 09, 11)


Forestry Lakes

Ecosystem Map



Rare Site Series Stewardship Zone (TWN 2020 & POBC 2006)
(each site represents <2% of forested area)

Site Series Data Unavailable (POBC 2006)

Biogeoclimatic Zone (POBC 2020)

Coastal Western Hemlock (Very Wet Maritime) (CWHvm1)

Coastal Western Hemlock (Very Wet Maritime) (CWHvm2)

Mountain Hemlock (Moist Maritime) (MHmm1)

Coastal Mountain-Heather Alpine (Undifferentiated and Parkland) (CMAunp)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

3.7. Watershed Reserve Network

The blending of all values articulated in this section results in a Watershed Reserve Network for the xʔəl̓ílwətaʔɬ/Indian River Watershed. The Watershed Reserve Network is an overall management direction that describes permitted land uses by zone. The Watershed Reserve Network was created by overlapping all of the mapping layers highlighted in the value articulation sections of the Plan. As a result, the Watershed Reserve Network captures the cultural, watershed integrity, and biodiversity values across the landscape. This network, as presented in the adjoining map, designates three distinct zones: Reserve Zone, Management Zone, and Stewardship Zone.

Reserve Zone (100% protection)

The reserve zone encompasses ~12,100 hectares (55%) of the total area in the Watershed. This zone represents protected areas and sites of significant environmental and cultural value where some types of economic development activities are not permitted. Prohibitions generally include timber harvesting and energy generation infrastructure (including dams/weirs, penstocks, powerhouses, turbines, new roads, and transmission lines). As many of the existing developed areas in the Watershed, such as transmission and pipeline rights-of-way and roads, are located within reserve zone areas, site-specific plans will be developed for future maintenance activities.

Activities permitted in the reserve zone include Tsleil-Waututh cultural harvesting of forest products, commercial recreation or tourism, and mineral development. Although mineral development is permitted in this zone, mining-related activities will be restricted, as per the management direction provided in this Plan.

Management Zone (minimum 50% protection)

The management zone encompasses ~6,125 hectares (28%) of the total area in the Watershed, of which ~1,775 hectares is within Research and Restoration Areas. This zone represents sites of environmental or cultural value where a range of economic development activities are permitted. Economic development is subject to the management direction provided in this Plan and relevant provincial and federal legislation.

Stewardship Zone (minimum 25% protection)

The stewardship zone encompasses ~3,633 hectares (17%) of the total area of the Watershed. This zone represents areas that have not been identified as reserve or management zones and is open to economic development, subject to relevant legislation. Development permitted in this zone includes, but is not limited to, timber harvesting, mineral and energy development, and commercial recreation or tourism. Activities in this zone will be undertaken in a manner that provides for the long-term sustainability of cultural, environmental, recreational, and economic values, consistent with relevant legislation and management direction provided in this Plan.

Watershed Reserve Network Map

Watershed Reserve Zone
(100% Protection)

>Visual Quality Preservation Reserve Zone
>Salmon Reserve Zone
>Cedar Reserve Zone
>Riparian Reserve Zone
>Unstable Terrain Reserve Zone
>Red Listed Plant Communities Reserve Zone
>Old Growth Reserve Zone
>Goat Winter Range Reserve Zone
>Recreation Site
>Proposed Recreation Site
>Provincial Park

Watershed Management Zone
(Minimum 50% Protection)

>Visual Quality Retention Management Zone
>Salmon Management Zone
>Cedar Management Zone
>Riparian Management Zone
>Potentially Unstable Terrain Management Zone
>Reserach and Restoration
>Blue Listed Plant Communities Reserve Zone
>Deer Winter Range Reserve Zone (Site Specific Netdown)

Watershed Stewardship Zone
(Minimum 25% Protection for Site Specific Values)

>Visual Quality Partial Retention Stewardship Zone
>Elk Summer and Winter Range Stewardship Zone
>Spotted Owl Stewardship Zone
>Marbled Murrelet Stewardship Zone
>Goshawk Nesting Habitat Stewardship Zone
>Rare Site Series Stewardship Zone

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

I100 Block Harvested - Inlailwatash LP.

SECTION 4:
Economic Development Opportunities

SECTION 4:
Economic Development Opportunities

4.1. Tourism and Recreation

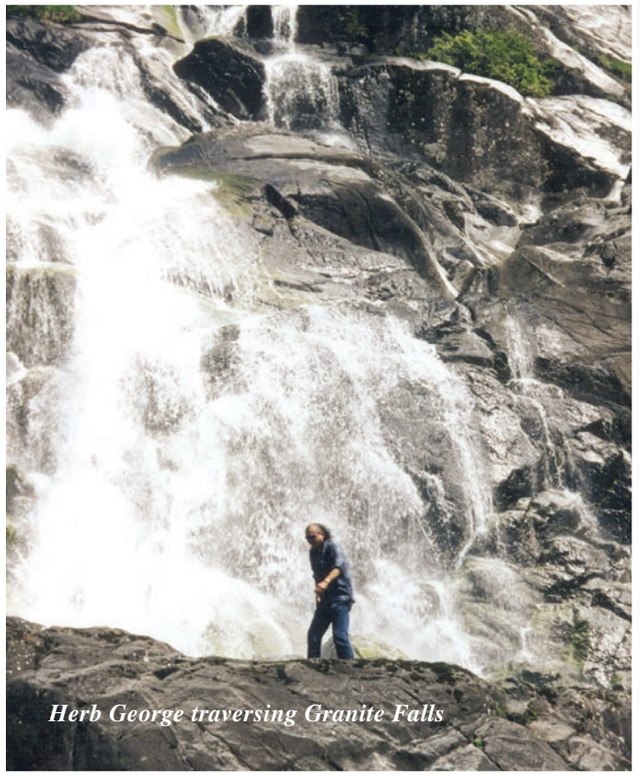
In addition to Tsleil-Waututh land use and occupancy, the xʔəl̓ílwətaʔɬ/Indian River Watershed has also served as an important spiritual and recreational place for Tsleil-Waututh people. The clean and healthy rivers, lakes, and forests are shared with a variety of wilderness recreation enthusiasts. In the summer months, recreational fishers are attracted to the runs of wild salmon that return annually and to the lakes that have been stocked with rainbow trout. Recreational hunters arrive in the fall, seeking predominately bear, deer, and elk. During all seasons, backcountry hikers and campers use forested and alpine areas.

To support all of these activities, forest recreation campsites have been established at Norton and Young Lakes, but they are currently not maintained. Unfortunately, some of the individuals and groups that access the Watershed behave in a highly irresponsible manner. Vandalism and theft is a concern, unsafe and illegal use of firearms is evident, salmon habitat is routinely damaged by all-terrain vehicles, and trash is liberally scattered. Tsleil-Waututh people often feel threatened in the heart of their own territory.

To remedy this situation, Tsleil-Waututh articulated a vision for tourism and recreation that focuses on the Watershed's environmental and cultural wonders. Tsleil-Waututh has commissioned several ecotourism-related studies, in addition to launching their own ecotourism company, Takaya Tours, in 2001. Tsleil-Waututh also co-manages Say-Nuth-Khaw-Yum (Indian Arm) Provincial Park, Belcarra Regional Park, and Whey-Ah-Wichen (Cates Park, District of North Vancouver) along Indian Arm.

Similarly, the Province is a strong advocate for safe and enjoyable recreational experiences on Crown land and in provincial parks. The rugged and spectacular landscape of the xʔəl̓ílwətaʔɬ/Indian River Watershed provides ample opportunities for visitors to enjoy wilderness experiences. Combined with the wealth of Tsleil-Waututh cultural knowledge, the Watershed has tremendous potential for a variety of tourism and recreational opportunities. These opportunities are especially heightened because of the close proximity to the Sea-to-Sky Corridor, Say-Nuth-Khaw-Yam Provincial Park, and the Metro Vancouver area.

Dennis Thomas (Whonoak) leading Takaya Tour group – Takaya Tours



Herb George traversing Granite Falls

Photo taken on a live camera

xʔəl̓ílwətaʔɬ/Indian River Watershed Plan

Recreation Map

- Existing Campsite (TWN 2020)
- Proposed Campsite (TWN 2020)
- Existing Trail (TWN 2020)
- Proposed Trail (TWN 2020)
- Recreation Site (POBC 2020)
- Proposed Recreation Site (TWN 2020)
- Provincial Park (POBC 2020)
- 100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

- Maintained Road
- Semi-Permanent Road (Unmaintained)
- Secondary Road (Unmaintained)

Tourism and Recreation Management Direction

	Objectives	Strategies
1.	**Increase visibility of and respect for Tsleil-Waututh culture and heritage through tourism and recreational programming.**	**1.1** Tsleil-Waututh will complete and implement a Cultural Communications Strategy. **1.2** In accordance with the Cultural Communications Strategy and provincial guidelines: **1.2.1** Incorporate Tsleil-Waututh designs, motifs, and relevant cultural information into tourism and recreational programming, facilities, and signage; and **1.2.2** During permitting for commercial tourism, the Province will consult Tsleil-Waututh on incorporation of Tsleil-Waututh designs, motifs, and relevant cultural information.
2.	**Improve awareness and understanding of Tsleil-Waututh stewardship values through tourism development and programming.**	**2.1** Identify and pursue opportunities to develop tourism or recreational programming that highlights environmental stewardship projects.
3.	**Limit impacts of tourism, recreational activities, and infrastructure on environmental and cultural values.**	**3.1** Use appropriate communication tools (e.g., pamphlets, signage) to provide information on environmentally and culturally sensitive areas in the Watershed. **3.2** Consistent with provincial guidelines, address wildlife issues for proposed tourism and recreational activities. **3.3** Strive to construct tourism-related infrastructure and facilities according to "green" building standards.
4.	**Improve knowledge of and appreciation for nature and environmental values through tourism programming.**	**4.1** Consider any tourism or recreational permit applicant's ability to support environmental values and nature interpretation programs as a criteria in evaluation.
5.	**Expand public recreational opportunities.**	**5.1** Re-establish access and improve infrastructure at the Norton Lake Recreation Site. **5.2** Establish new Recreation Sites in the Watershed that include, but are not limited to, the Cascades and Forestry Lakes, as identified on the adjoining map. **5.3** Establish new trails in the Watershed that include, but are not limited to: the Norton-Young-Anne Lake Loop Trail, the Forestry Lakes Trail, and the Grand Lake to Norton Lake Trail, as identified on the adjoining map.
6.	**Enhance Tsleil-Waututh economic opportunities for tourism and recreational developments.**	**6.1** Provided that wildlife populations permit a sustainable harvest, Tsleil-Waututh will be given the right of first refusal to enter into an area-based guide outfitter licence. **6.2** Provide Tsleil-Waututh with the exclusive authority to deliver cultural interpretation programs. **6.3** Ensure that tourism and recreational economic opportunities give priority consideration to training and employing Tsleil-Waututh people. **6.4** Seek opportunities to develop appropriate infrastructure and facilities to support tourism and recreational programs and activities.
7.	**Ensure that all tourism and recreational development projects involve Tsleil-Waututh.**	**7.1** Tourism and recreational project proposals will adhere to provisions outlined in the Tsleil-Waututh Nation Stewardship Policy.
8.	**Ensure that the recreational harvesting of fish, wildlife, and botanical forest products is lawful.**	**8.1** Regulate and strictly enforce the recreational harvesting of fish, wildlife, and botanical forest products by visitors, tenure holders, and permit holders, as per the Access Management, Safety, and Enforcement section 2.2.
9.	**Integrate tourism and recreational activities with other stewardship initiatives occurring within the Watershed and surrounding areas.**	**9.1** Coordinate tourism and recreational activities with the Watershed Working Group as required.

4.2. Mineral and Aggregate Development

Given the inherent geology, proximity to rich mineral seams, and active gravel recruitment to the flood plain, the xʔəĺílwətaʔɬ/Indian River Watershed contains high potential for mineral and aggregate resources. This potential is especially relevant due to the close proximity of the port of Squamish and the navigable waters of Indian Arm. Detailed accounts of geology, mineral potential, and current tenures are highlighted in the Bioregional Atlas for the xʔəĺílwətaʔɬ/Indian River Watershed.

Mineral Development

British Columbia recognizes the mining industry as a vital component of the regional and national economy. In 2003, the Province made a commitment to aggressively revitalize mineral exploration and development. It introduced an online mineral claims system and implemented new policies to increase investor confidence. One such policy is the "two-zone" land use system for mineral exploration and development. Under the system, lands are classified as Protected Zone (crown lands closed to mineral development) or Mineral Zone (land open to mineral claims, exploration, or development). The two-zone policy clearly states that most land use planning designations not resulting in formal protected area status fall into the mineral zone classification.

To date, mineral development in the xʔəĺílwətaʔɬ/Indian River Watershed has consisted mostly of claim staking. Mineral claims increased twofold following the introduction of the online system, and claims continue to fluctuate on a regular basis. Two sites in the Watershed have undergone limited exploration, and one site underwent intensive exploration in the 1980s.

Aggregate Development

Aggregates refer to all types of quarry material—such as sand, gravel, and rock—used to construct and maintain physical infrastructure. Aggregate development is regulated under the British Columbia Land Act. In evaluating applications and monitoring tenures, the Province considers safety standards, land use compatibility, and environmental sensitivities. Currently, no aggregate tenures exist in the xʔəĺílwətaʔɬ/Indian River Watershed. In 2000, a large (over 2,500 hectare) permit was rejected by the Province due to concerns raised by Tsleil-Waututh and Fisheries and Oceans Canada.

Mineral and Aggregate Management Direction

Tsleil-Waututh has expressed concerns over mineral and aggregate development from both an ecological and an Indigenous rights and title perspective. Ecologically, Tsleil-Waututh questions whether mineral or aggregate extraction activities are consistent with their stewardship goals and in particular, the health of wild fish populations and habitat. From an Indigenous rights and title perspective, Tsleil-Waututh does not support the process by which mineral claims have been and continue to be allocated without any form of consultation.

Additionally, Tsleil-Waututh has concerns with the rigidity of the two-zone system, as it does not provide for site-specific protection from restricted mineral development outside of formal protected areas.

Notwithstanding these issues, Tsleil-Waututh will work with the Province to establish management direction for mineral and aggregate resource development.

A mining claim tag near the west end of Norton Lake – Tsleil-Waututh Nation

Mineral and Aggregate Management Directions

	Objectives	Strategies
1.	**Protect Tsleil-Waututh cultural values and interests in all phases of mineral and aggregate development.**	**1.1** Mineral and aggregate exploration or development projects will adhere to the management direction highlighted in the Tsleil-Waututh Cultural Values section 3.1. **1.2** Tsleil-Waututh will work with the Province to revise the mineral tenure policies to include Indigenous consultation as part of the mineral claiming process and allow for site-specific protections as part of the provincial two-zone land-use system. **1.3** Subject to 1.1 and 1.2, prevent disturbance to cultural values and resources from subsurface resource exploration by utilizing low-impact methods.
2.	**Ensure mineral and aggregate development activities preserve Watershed integrity.**	**2.1** Mineral and aggregate exploration and development activities will meet or exceed British Columbia Mineral Tenure Act requirements by addressing the following issues during an environmental review process: » Ecological and hydrological integrity of the Watershed; » Terrain stability and flood plain management; » Acid rock drainage; » Groundwater quantity and quality; » Fish and wildlife habitat; » Wildlife sensitivities; » Road access and erosion control requirements; » Air quality; and » Noise.
3.	**Address mitigation and restoration requirements for exploration and development during the tenuring or permitting process.**	**3.1** Complete a Restoration Assessment that meets or exceeds British Columbia Mineral Tenure Act standards prior to tenure approval. **3.2** Subject to 3.1, restoration activities will be carried out by the responsible mineral tenure holder. **3.3** Where the responsible mineral tenure holder does not exist, the Province and Tsleil-Waututh will seek resources to complete restoration activities.
4.	**Limit mineral and aggregate exploration and development to prevent damage to environmentally sensitive areas.**	**4.1** Address protection and mitigation measures for environmental values identified in the Watershed Reserve Network during the tenuring or permitting process.
5.	**Ensure that mineral and aggregate development projects accommodate Tsleil-Waututh.**	**5.1** Mineral and aggregate project proposals will adhere to the Tsleil-Waututh Nation Stewardship Policy.
6.	**Maximize Tsleil-Waututh training and employment opportunities in all mineral and aggregate development projects.**	**6.1** Mineral and aggregate project proposals will demonstrate how projects will provide training and employment opportunities to to Tsleil-Waututh people and business partners.
7.	**Integrate mineral and aggregate development activities with other stewardship initiatives occurring within the Watershed and surrounding areas.**	**7.1** Coordinate mineral and aggregate activities with the Watershed Working Group.

4.3. Fisheries and Marine Resources

Fisheries and marine resources have always been an integral part of the Tsleil-Waututh way of life. Tsleil-Waututh members actively fish for pink, chum, and coho salmon, as well as traditionally fishing steelhead and other trout species. Shellfish such as butter and littleneck clams were regularly dug at beaches throughout the Traditional Territory, including the xʔəl̓ílwətaʔɬ/Indian River estuary. Other marine resources such as kelp, seaweed, sea onion (squalnuth), and sea urchin (squadzi) were gathered for sustenance and trade. These resources have been managed in a sustainable way according to the laws and customs of the Tsleil-Waututh people for thousands of years.

This form of traditional resource management conserves and protects fish and aquatic resources while at the same time enhancing Tsleil-Waututh culture. The location of villages and the overall prosperity of communities is closely linked to the abundance and quality of fish, shellfish, and other marine resources. For example, smokehouses were established at the mouth of the xʔəl̓ílwətaʔɬ/Indian River in the village of Inlailawatash for preparing fish for the winter months.

Not only are these resources an important source of food, but they have always formed an important part of the Tsleil-Waututh economic base. It remains a priority of Tsleil-Waututh to continue to be an active participant in fisheries management, as well as in the commercial fishing and aquaculture industries. These activities are seen as both a legitimate expression of ongoing sovereignty within Tsleil-Waututh territory and an important component of sustainable economic development. Tsleil-Waututh, is committed to working in partnership with Fisheries and Oceans Canada and the British Columbia Ministry of Environment to restore and enhance fishery and aquatic resources in the xʔəl̓ílwətaʔɬ/Indian River Watershed.

Fisheries and Marine Resources Management Direction

Objectives	Strategies
1. **Seek opportunities to improve knowledge about the quantity and quality of salmon, shellfish, and other Tsleil-Waututh marine foods.**	**1.1** Conduct stock assessments for salmonids in the xʔəl̓ílwətaʔɬ/Indian River and tributaries. **1.2** Sample shellfish tissue quality and conduct intertidal population assessments in the xʔəl̓ílwətaʔɬ/Indian River estuary.
2. **Promote awareness of the Tsleil-Waututh cultural connection to salmon and other marine species.**	**2.1** Incorporate Tsleil-Waututh cultural content into Nation and provincial communications materials (e.g., signs and literature) on marine stewardship, in accordance with the Cultural Communications Strategy and provincial guidelines.
3. **Enhance Tsleil-Waututh economic opportunities for fishery and aquaculture developments.**	**3.1** Investigate the potential for a Tsleil-Waututh commercial xʔəl̓ílwətaʔɬ/Indian River fishery. **3.2** Investigate the feasibility of establishing fisheries enhancement or land-based commercial aquaculture facilities. **3.3** Provide priority consideration to employing Tsleil-Waututh people for fishery and aquaculture enterprises.
4. **Integrate fisheries and marine resources development with other stewardship initiatives.**	**4.1** Coordinate fisheries and marine activities with the Watershed Working Group as required.

4.4. Energy Infrastructure

Due to the close proximity to highly developed regions of the Lower Mainland, the xʔəĺílwətaʔɬ/Indian River Watershed has been identified as a transmission corridor for energy infrastructure. In addition, the Watershed's steep topography and wet climate make it a good candidate for small-scale water power production.

Transmission Infrastructure

The two major energy transmission infrastructures in the Watershed include a BC Hydro electric transmission line (5L45) and a Fortis BC natural gas pipeline.

The BC Hydro electric transmission line connects the Cheekeye Substation near Squamish with the Meridian Substation in Port Moody. The line segment is about 26 kilometres in length and represents BC Hydro's highest operating voltage at 500 kilovolts. From a provincial perspective, the line is very important, as it serves to transport hydroelectricity generated in the Peace River region to the Lower Mainland.

The line enters the Watershed at the Stawamus-Indian Divide and exits along the eastern shoreline of Indian Arm. Clearing the line's right-of-way began in 1968, and by 1971 it was energized and brought into operation. Seventy-four towers are present, with several of them constructed directly in the riverbed or adjacent to the stream banks.

The Fortis BC natural gas pipeline connects natural gas storage facilities in the Lower Mainland with the Sea-to-Sky region, the Sunshine Coast, and Vancouver Island. The pipeline segment that transects the xʔəĺílwətaʔɬ/Indian River Watershed is about 25.5 kilometres in length and 12 inches in diameter. The pipeline enters via the Coquitlam Watershed and exits via the Stawamus-Indian Divide. The pipeline is subsurface and generally follows the mainline road, crossing the xʔəĺílwətaʔɬ/Indian River just north of Forestry Creek.

Tsleil-Waututh has always had significant concerns regarding the placement of energy infrastructure in the Watershed. These projects were planned and built without consultation, consent and consideration of Tsleil-Waututh interests. As a result, these projects have caused significant cultural and environmental harm.

For example, as a direct result of the construction of the electric transmission line and road system, the lower four kilometres of the xʔəĺílwətaʔɬ/Indian River channel changed course in 1972. That caused significant riverbank erosion, increased sedimentation, and damage to culturally significant sites. The harm from the transmission line, in combination with other factors, greatly reduced populations of all salmon species and continues to affect sensitive habitats. The transmission line also creates a safety risk, particularly when the lines sag, getting too close to water, trees, and other features.

Power Generation

Several streams in the xʔəĺílwətaʔɬ/Indian River Watershed have potential for water power production. This generally refers to small hydroelectric developments with a production capacity of less than 20 megawatts (1 megawatt is enough to power 100 households per year)[23]. These developments are designed as "run-of-the-river" systems because the facilities divert a portion of the stream flow for electricity generation and then return the water downstream.

Since the late 1990s, Tsleil-Waututh has expressed an interest in developing a Nation-led water power project and has been supportive of appropriate independent power production in the xʔəĺílwətaʔɬ/Indian River Watershed. In 2003 and 2015, Tsleil-Waututh commissioned water power feasibility studies. These studies highlighted options for energy supplies and included an initial investigation into potential small water power projects at several locations in the Watershed.

5L45 transmission line through river valley – Inlailawatash LP

[23] https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/financial-reports/annual-reports/BCHydro-Quick-Facts-20190331.pdf

xʔəĺílwətaʔɬ/Indian River Watershed Plan

Infrastructure Map

- BC Hydro Transmission Structure (ICIS 2020) *as labeled on map
- BC Hydro Transmission Line 5L045 (POBC 2020)
- Fortis BC Gas Right of Way (OGC & ICIS 2020)
- Watershed Reserve Zone (TWN 2020)
- Watershed Management Zone (TWN 2020)
- Watershed Stewardship Zone (TWN 2020)
- Provincial Park (POBC 2020)
- 100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

- Maintained Road
- Semi-Permanent Road (Unmaintained)
- Secondary Road (Unmaintained)

Energy Infrastructure Management Direction

	Objectives	Strategies
1.	**Protect Tsleil-Waututh cultural values and interests in energy generation and infrastructure development.**	**1.1** Energy and infrastructure projects will adhere to management direction highlighted in the Tsleil-Waututh Cultural Values section 3.1.
2.	**Mitigate and restore the impacts of energy infrastructure on riparian habitats.**	**2.1** Tsleil-Waututh will work with the Province to study the feasibility of relocating existing transmission towers from areas identified in the Watershed Reserve Network.
3.	**Identify opportunities for water power production, and increase the scientific understanding of impacts on stream systems.**	**3.1** During the project assessment process, proponents will meet or exceed provincial requirements for describing location, size, and in-stream impacts of the proposed development.
4.	**Limit impacts of energy generation and infrastructure development on environmentally sensitive areas, and on plant, fish, and wildlife species.**	**4.1** Limit the development footprint of new energy generation projects and related infrastructure within the Watershed Reserve Network to less than 2% of the total area. **4.2** Study the effects of energy infrastructure on plants, wildlife, fisheries, and other aquatic life. **4.3** Develop energy generation projects and infrastructure in a way to achieve more than a "no net loss" for important fish and wildlife habitat. Strive for a "net gain" in habitat. **4.4** Evaluate proposed energy generation developments from a watershed or landscape perspective to assess cumulative impacts.
5.	**Limit the impact of maintaining energy infrastructure rights-of-way on plants, fish, wildlife, and other values identified in the Value Articulation Section of this Plan.**	**5.1** Use principles of Integrated Pest Management for vegetation control associated with energy infrastructure rights-of-way; herbicide use should be a last resort management option and should never be used near any water bodies. **5.2** Assess the environmental impact of any future energy infrastructure developments in the main stem flood plain and implement a plan to mitigate all adverse effects.
6.	**Enhance Tsleil-Waututh economic opportunities for energy and infrastructure developments.**	**6.1** Establish a Tsleil-Waututh water reservation that supports all Tsleil-Waututh domestic, commercial, and industrial uses of water, including the generation of hydroelectricity. **6.2** Develop a Tsleil-Waututh right-of-first-refusal policy for all Water Act and associated Land Act tenures. **6.3** Energy or related infrastructure project proposals must demonstrate how projects will provide significant training and employment opportunities to Tsleil-Waututh people and business partners.
7.	**Ensure energy and infrastructure development projects accommodate Tsleil-Waututh.**	**7.1** Energy and infrastructure project proposals must adhere to provisions outlined in the Tsleil-Waututh Nation Stewardship Policy.
8.	**New energy projects will supply clean energy for Tsleil-Waututh community expansion and development.**	**8.1** During the project assessment process, new energy proponents must demonstrate how projects will provide a portion of the energy required for the Tsleil-Waututh community.
9.	**Integrate energy and infrastructure activities with other stewardship initiatives.**	**9.1** Coordinate energy and infrastructure activities with the Watershed Working Group. The Working Group will consider, but not be limited to, issues such as: **9.1.1** Safety associated with any activities under or near transmission infrastructure; **9.1.2** Potential health risks for people working under or near transmission infrastructure; **9.1.3** Coordination of vegetation management, related right-of-way maintenance activities, and access requirements; and **9.1.4** Planning for emergency response to energy infrastructure failure, accidents, and vandalism.

4.5. Forest Stewardship and Restoration

Forest stewardship refers to the culturally, environmentally, and socially responsible use and management of forest resources in order to maintain and enhance forest values for present and future generations. As stewards of the forest, Tsleil-Waututh and the Province collectively manage the forest resources in the xʔəĺílwətaʔɬ/Indian River Watershed on behalf of the Tsleil-Waututh people and the general public.

For the purposes of this plan, forest stewardship activities include carbon sequestration projects, botanical forest product harvesting, as well as the many facets of forestry, including management planning, research and inventory, engineering, timber harvesting, silviculture, and stand tending. Tsleil-Waututh and the Province recognize that the Watershed has good economic potential for ongoing forest stewardship activities, despite the challenges from previous timber harvesting practices.

The xʔəĺílwətaʔɬ/Indian River Watershed has previously experienced intensive timber harvesting. The most accessible tracks of old-growth and mature forests have been converted to young, immature forests. Consequently, over 88% of the forest land available for timber harvesting is less than 80 years old. In the words of a Tsleil-Waututh elder, "The valley was logged stem to stern." This activity, in combination with the 1968 construction of a high-voltage power transmission line and a 1991 natural gas pipeline, has resulted in increased landslide activity and environmental degradation.

The intensive timber harvesting activity has also had impacts on wildlife habitat, water flow regimes, slope stability, fisheries, visual quality, and the availability of culturally important trees such as cedar. These concerns are compounded by the extensive road network that was developed to facilitate previous timber harvests.

For decades, Tsleil-Waututh has advocated for the xʔəĺílwətaʔɬ/Indian River Watershed to be managed as a holistic management unit with a focus on forest and ecosystem restoration. Although a number of restoration projects have already been completed, such as deactivation of logging roads, replanting of riparian areas, and salmon habitat enhancements, these projects represent a small start to this important work.

Despite the present condition of forests, Tsleil-Waututh and the Province are committed to developing forest restoration strategies that will protect important environmental and cultural values, while providing opportunities to improve forest productivity and economic viability over the long term. One such initiative has been to identify Research and Restoration Areas that will be assessed on an area by area basis to better understand the nature of each area and to develop site-level prescriptions.

Forest Stewardship & Restoration Management Direction

	Objectives	Strategies
1.	**Protect Tsleil-Waututh cultural values and interests in all types of forest stewardship activities.**	**1.1** Forest stewardship activities, including carbon sequestration and timber or botanical forest product harvesting, will adhere to management direction highlighted in the Tsleil-Waututh Cultural Values section 3.1.
2.	**Maintain and restore opportunities for forest-based Tsleil-Waututh cultural activities.**	**2.1** As required, provide access to all forest land, including the Watershed Reserve Network, for Tsleil-Waututh cultural purposes.

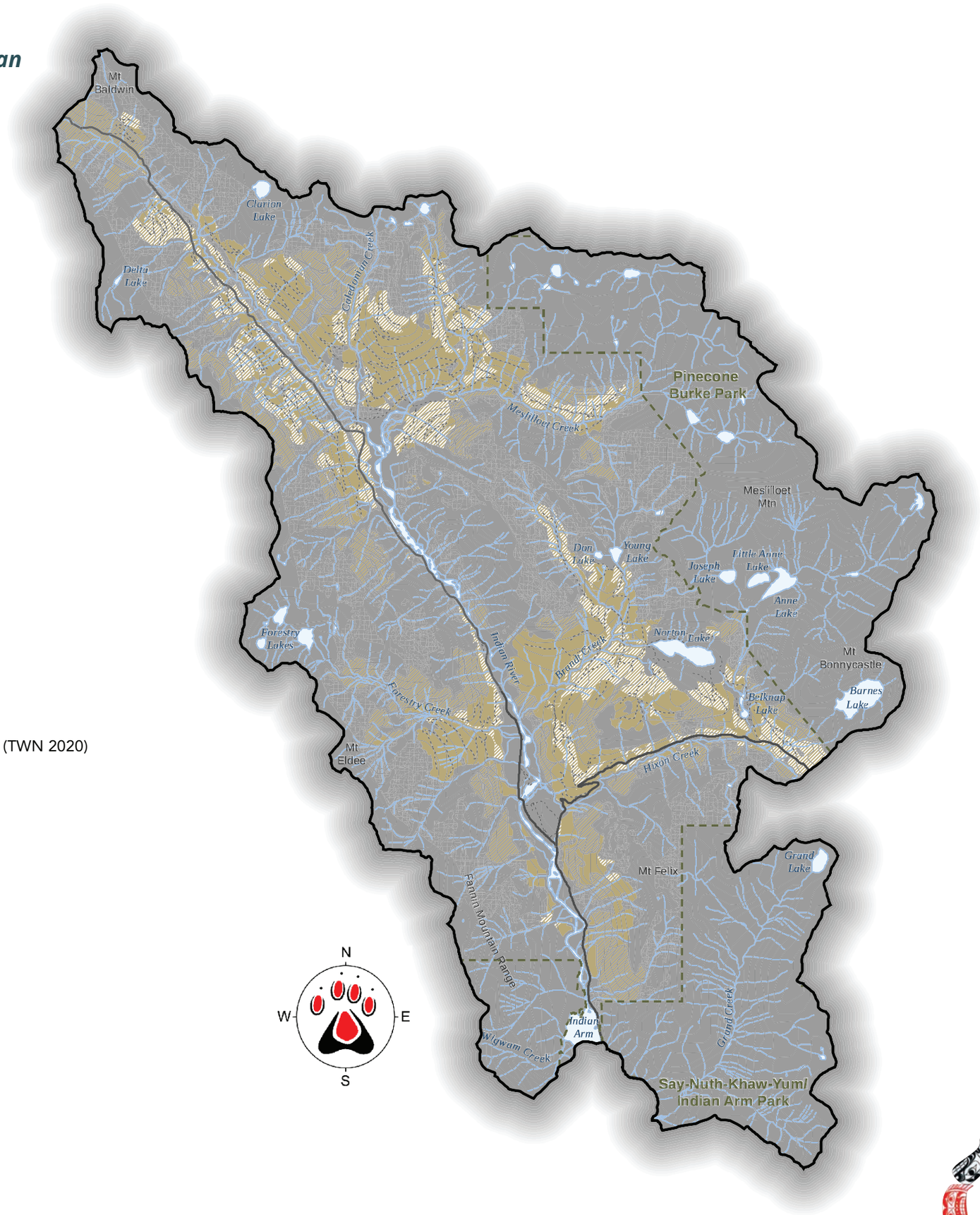
	Objectives	Strategies
3.	**Maintain and restore forest conditions to reflect the natural range of variability.**	**3.1** Conduct Restoration Assessments for the identified Research and Restoration Areas, with emphasis on areas proposed for future developments. **3.2** Design timber harvesting areas and restoration plans to be consistent with the natural disturbance regime for the Watershed (NDT1—ecosystems with rare stand-initiating events, as per the British Columbia Forest Practices Code Biodiversity Guidebook). **3.3** Where feasible and environmentally appropriate, restore forest stands to tree species compositions favoured at the Bio-geoclimatic Ecosystem Classification (BEC) site series level. **3.4** Where feasible and environmentally appropriate, conduct Restoration Assessments for sites impacted by landslides and mass wasting events.
4.	**Maintain healthy and resilient forest ecosystems.**	**4.1** Monitor forest health conditions, and where forest health issues exist (e.g., damaging disease, insects, or abiotic disturbances), implement appropriate remediation actions. **4.2** Restrict the establishment of monocultures, and prevent introduction of new invasive species. **4.3** Monitor and limit existing invasive wildlife and plant species. **4.4** Monitor the impacts of cumulative effects and climate change on forest ecosystems.
5.	**Enhance biodiversity and wildlife habitat values during forest stewardship activities.**	**5.1** Maintain or enhance a diversity of interior, edge, clearing, and riparian habitats. **5.2** Retain a minimum of 25% of total stand volume per harvest block in all BEC Subzones.[24] **5.3** Promote a diversity of native species and stand structures in reforestation and silviculture plans. **5.4** Use principles of integrated pest management in forest stewardship activities.
6.	**Enhance forest productivity.**	**6.1** Maintain a comprehensive forest resources inventory, including accurate data on site and stand productivity. **6.2** Maintain and improve the value and productivity of the timber resource and growing stocks through silviculture practices.
7.	**Conduct forest stewardship operations in an economically viable manner.**	**7.1** Consider economic operability to assist in defining the Timber Harvesting Land Base, as depicted on the adjoining map. **7.2** Consider creating an Allowable Annual Cut (AAC) partition for areas that are not classified as economically operable.[25]
8.	**Enhance forest stewardship economic opportunities for Tsleil-Waututh.**	**8.1** Tsleil-Waututh to pursue an opportunity to establish an area-based forest tenure. **8.2** Seek opportunities to pursue forestry-related carbon offset projects. **8.3** Maximize Tsleil-Waututh training and employment opportunities during forest stewardship activities.
9.	**Increase utilization and the value of timber resources.**	**9.1** Seek opportunities to assess the feasibility of utilization and value-added projects such as, but not limited to: » Operating a portable sawmill in the Watershed and seeking opportunities for value-added manufacturing of forest products; » Conducting timber salvage activities; » Conducting commercial thinning activities; » Ornamental tree plantations under sections of the BC Hydro right-of-way; and » Alternatives to slash burning.
10.	**Provide a positive example of sustainable forest stewardship.**	**10.1** Promote forest stewardship activities in a diversity of public forums. **10.2** Host regular Tsleil-Waututh community meeting to showcase forest stewardship and restoration activities.
11.	**Integrate forest stewardship activities with other initiatives occurring in the Watershed and surrounding areas.**	**11.1** Coordinate Forest Stewardship activities with the Watershed Working Group.

[24] Total stand level retention per harvest block is equal to the sum of all reserve and management areas (e.g., riparian, wildlife, terrain, etc.).

[25] The ACC partitions would be based on the economic operability mapping and would divide the timber harvesting land base into independent economic harvest quotas. See Coast Forest Region Operability Review (2006) for more detail.

xʔəĺílwətaʔɬ/Indian River Watershed Plan

Forest Stewardship Map



Protected/Inoperable Timber Harvesting Landbase (TWN 2020)

Watershed Management Zone (TWN 2020)
(Minimum 50% Protection)

Watershed Stewardship Zone (TWN 2020)
(Minimum 25% Protection for Site Specific Values)

Restoration & Research (TWN 2020)
(Minimum 50% Protection)

Provincial Park (POBC 2020)

100m Contour (GOC 2020)

Forest Service Roads (POBC & TWN 2020)

Maintained Road

Semi-Permanent Road (Unmaintained)

Secondary Road (Unmaintained)

Hixon Creek – Inlailawatash LP

SECTION 5:
Implementation

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Implementation

5.1. Implementation Strategy

Mutual Interests

Tsleil-Waututh and the Province share a number of interests in terms of the implementation of the xʔəl̓ílwətaʔɬ/Indian River Watershed Plan. In general, the Parties wish to:

- Develop a formal Land and Resource Partnership Agreement that capture the spirit, intent, and key management directions contained within the Plan;
- As required, enact provincial regulations and update the Tsleil-Waututh Nation Stewardship Policy to be consistent with the Plan direction;
- Communicate the provisions of the Plan and associated regulations to other First Nations, jurisdictional agencies, industries, and tenure/permit holders;
- Establish a process to monitor the effectiveness of the Plan and the degree to which it is achieving its goals, objectives, and strategies;
- Develop effective processes to review and decide on proposed land uses that are consistent with the Plan, including dispute-resolution mechanisms to deal with proposed land uses that are deemed inconsistent with the Plan; and
- Identify the post-approval implementation priorities in terms of further studies and other undertakings that have been identified in the Plan, and develop mechanisms for resourcing those activities.

Plan Implementation Structure

To achieve these interests, the following institutional structures will be developed to guide effective implementation of the Plan:

Watershed Stewardship Council

Representation on the Watershed Stewardship Council will parallel the former Planning Steering Committee, with at least two representatives from Tsleil-Waututh and at least two from the Province.

The Stewardship Council will meet at least annually to review Plan implementation, provide strategic direction for implementation priorities, and consider proposals for land use that may be inconsistent with the Plan's direction, but which may offer benefits in a larger land and resource use context.

Resourcing for the Stewardship Council would be provided by participating organizations on an in-kind basis.

Watershed Working Group

The Watershed Stewardship Council will be supported by the more informal and flexible Watershed Working Group. The Watershed Working Group will be made up of a core team from Tsleil-Waututh Nation and the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. The Working Group will also engage other First Nations, government agencies, and private sector and non-government organizations as required. The adjoining table describes some of the identified Working Group key stewardship topics and highlights possible organization collaborations for each topic.

The Watershed Working Group will create a Terms of Reference that will outline operational requirements and highlight the specific implementation initiatives to be reviewed and recommended to the Watershed Stewardship Council. It is anticipated that the Working Group will meet on a quarterly basis or as required. Resourcing for the Working Group will be provided by participating organizations on an in-kind basis. Specific projects undertaken by the Working Group will be funded on a project-by-project basis.

Working Group Key Topics	Member Organizations	
Access, Safety, and Enforcement	» Tsleil-Waututh Nation » Ministry of Forests, Lands and Natural Resource Operations » Fortis BC » BC Hydro » Inlailawatash Limited Partnership	» Other relevant forest or commercial tenure holders » Ministry of Environment » Fisheries and Oceans Canada » Royal Canadian Mounted Police » Northshore Search and Rescue
Tourism and Recreation	» Tsleil-Waututh Nation » Ministry of Community, Sport and Cultural Development » Ministry of Environment – BC Parks	» Fisheries and Oceans Canada » Takaya Tours
Mineral and Aggregate Development	» Tsleil-Waututh Nation » Ministry of Energy, Mines and Natural Gas	» Ministry of Agriculture
Fisheries and Marine Resources	» Tsleil-Waututh Nation » Fisheries and Oceans Canada	» Ministry of Environment
Energy Infrastructure	» Tsleil-Waututh Nation » Ministry of Energy, Mines and Natural Gas » Ministry of Forests, Lands and Natural Resource Operations	» Fortis BC » BC Hydro » Inlailawatash Limited Partnership
Forest Stewardship	» Tsleil-Waututh Nation » Ministry of Forests, Lands and Natural Resource Operations	» Inlailawatash Limited Partnership » Other relevant forest tenure holders

The TWN and the Province will coordinate reporting on implementation updates and progress from the Working Group to the Stewardship Council.

Disclaimer

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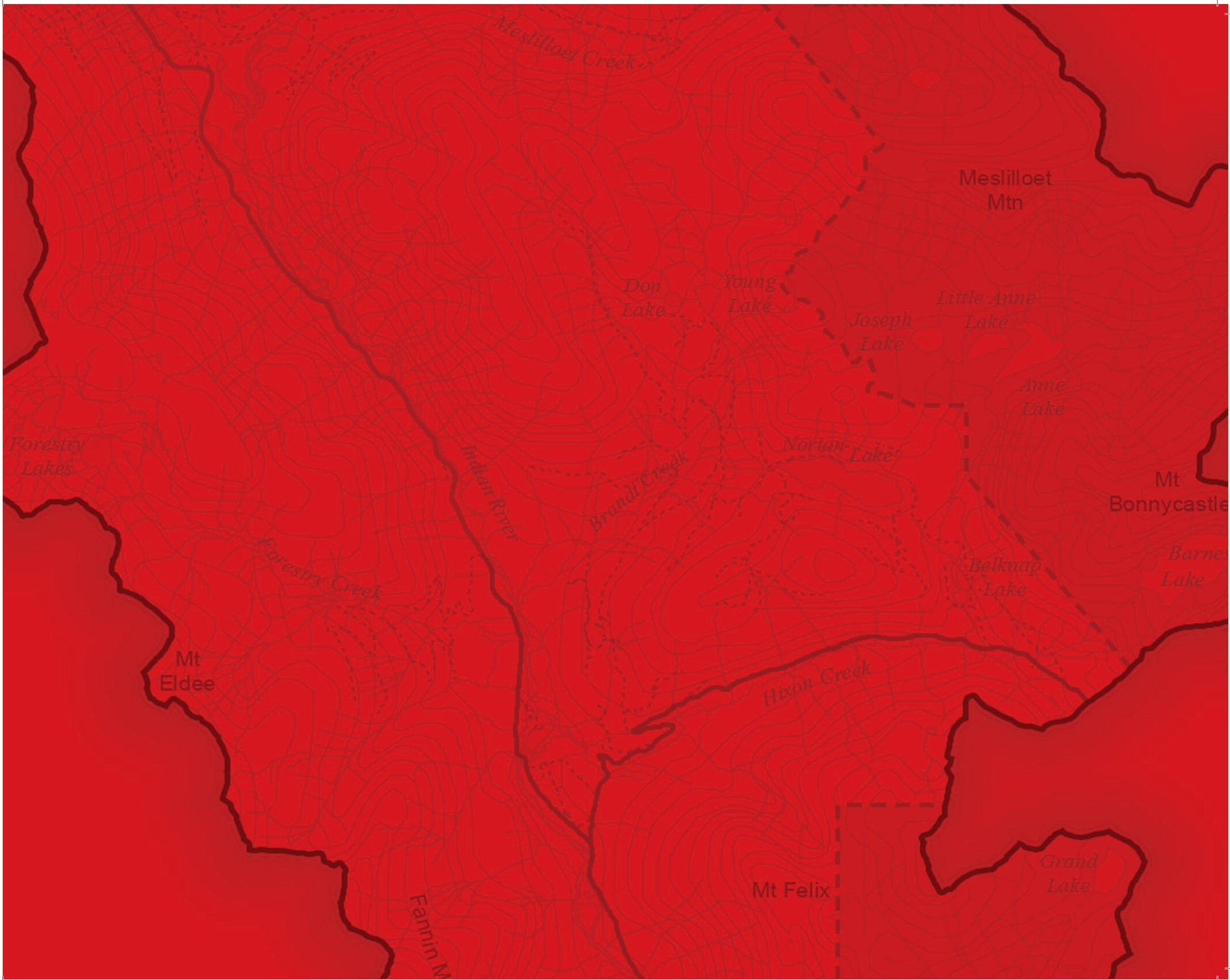
This Plan is a living document and will be amended and refined by the Tsleil-Waututh Nation over time. This Plan and the Plan Information are not meant to dictate where development should or should not occur, as that will be in the discretion of the Tsleil-Waututh Nation. The Plan is not to be construed as fulfilling the duty of the Crown to consult and accommodate the Tsleil-Waututh Nation on any proposed project within its territory. This Plan does not define, or confine, the area encompassed by the Tsleil-Waututh Nation's aboriginal rights, including title, and is not a limit on land and resource negotiations with the Crown that may take place in the future.


Meslilloet Creek
Meslilloet Mtn
Don Lake
Young Lake
Joseph Lake
Little Anne Lake
Anne Lake
Forestry Lakes
Indian River
Brandir Creek
Norton Lake
Mt Bonnycastle
Barnes Lake
Belknap Lake
Forestry Creek
Mt Eldee
Hixon Creek
Mt Felix
Grand Lake
Fannin M