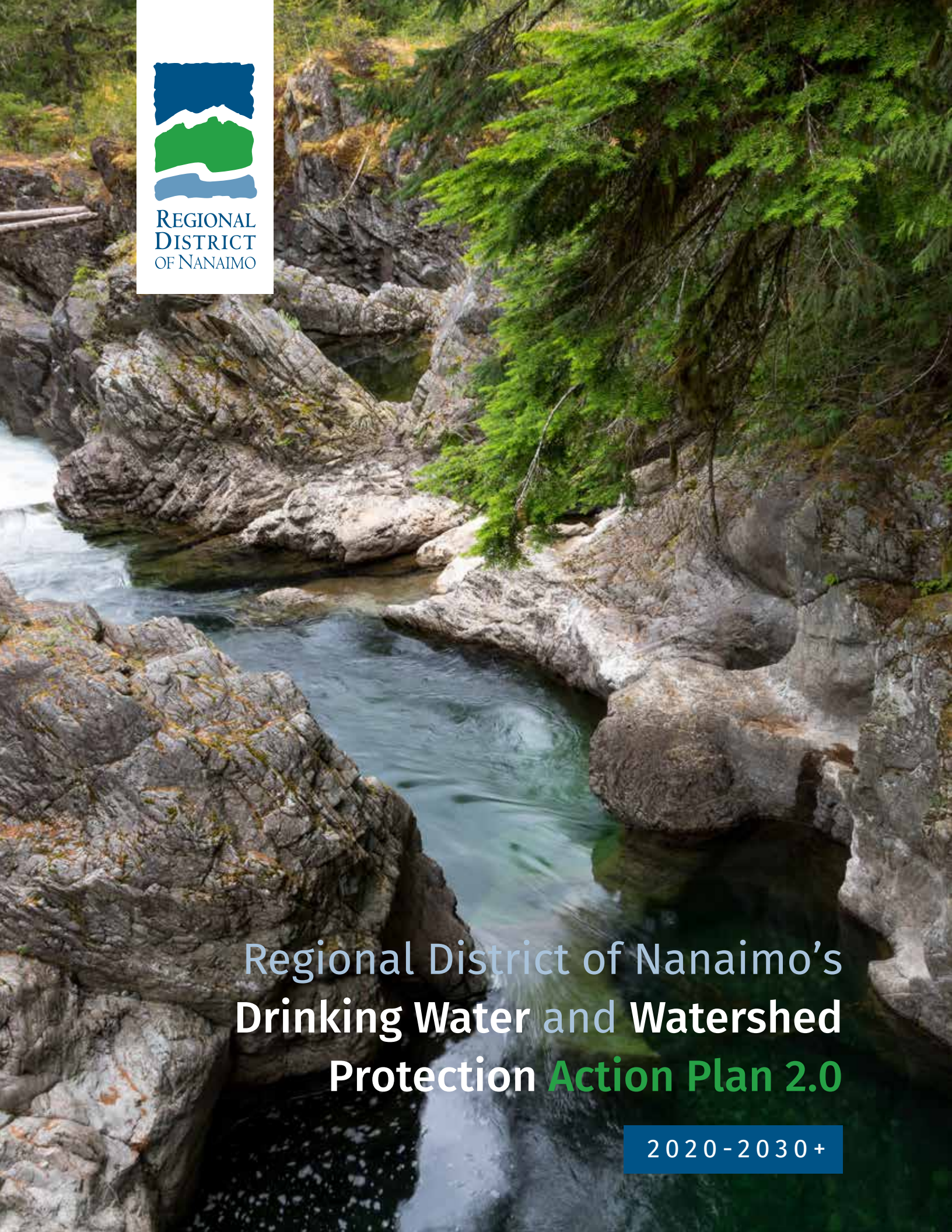
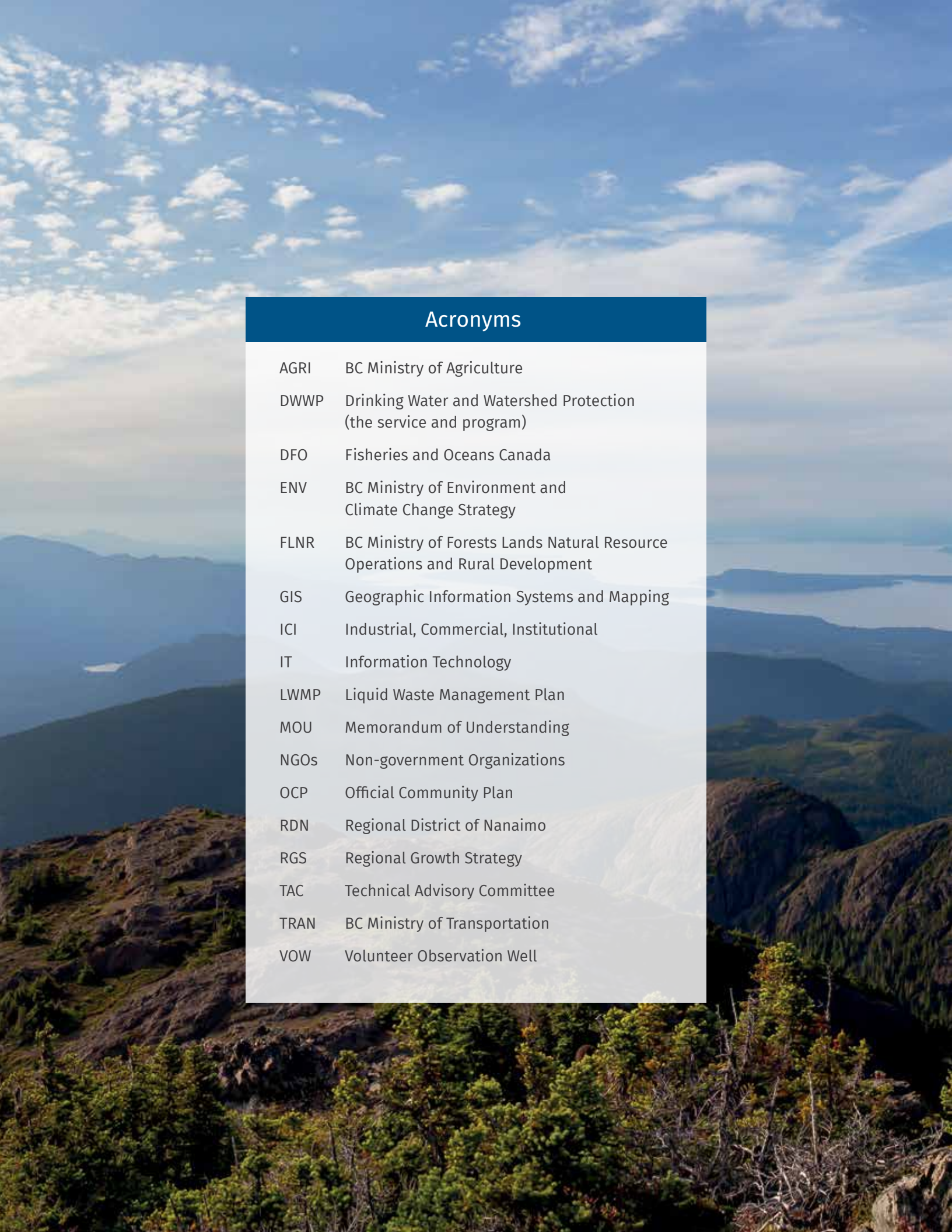


REGIONAL DISTRICT OF NANAIMO

Regional District of Nanaimo's Drinking Water and Watershed Protection Action Plan 2.0

2020-2030+



Acronyms

AGRI	BC Ministry of Agriculture
DWWP	Drinking Water and Watershed Protection (the service and program)
DFO	Fisheries and Oceans Canada
ENV	BC Ministry of Environment and Climate Change Strategy
FLNR	BC Ministry of Forests Lands Natural Resource Operations and Rural Development
GIS	Geographic Information Systems and Mapping
ICI	Industrial, Commercial, Institutional
IT	Information Technology
LWMP	Liquid Waste Management Plan
MOU	Memorandum of Understanding
NGOs	Non-government Organizations
OCP	Official Community Plan
RDN	Regional District of Nanaimo
RGS	Regional Growth Strategy
TAC	Technical Advisory Committee
TRAN	BC Ministry of Transportation
VOW	Volunteer Observation Well

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Executive Summary

Regional District of Nanaimo's Drinking Water and Watershed Protection Action Plan 2.0 | 2020-2030+

No matter where you are in the Regional District of Nanaimo (RDN), you're in a watershed. As water flows across the land, and beneath the ground, it connects upstream and downstream communities. The water in our creeks and rivers comes from a combination of rainfall, groundwater, and sometimes snowmelt. Rivers and lakes support critical ecosystems and biodiversity. And, they need groundwater to keep levels up and temperatures down in the summer. Freshwater supports our livelihoods and economy, enables us to grow food, and provides a wealth of recreational activities and beauty to enjoy. Clean, accessible water enriches our quality of life and is an element that we all need to survive.

The RDN recognizes there are significant challenges facing our watersheds including climate change, land use pressures, and jurisdictional complexity. Drought conditions and low streamflows in the summer stress aquatic species; in some aquifers, declining levels foretell limits to water consumption and water quality concerns indicate a need to work together across jurisdictions.

The RDN first implemented its Drinking Water and Watershed Protection (DWWP) Program in 2009 to proactively address watershed challenges facing the region. For the first decade of the DWWP Program, the RDN's focus was on public education promoting water conservation and protection and establishing systems to collect data and generate information to support sustainable land-use planning. There is an opportunity now as we begin the second decade of the Program to build upon the accomplishments in the first 10-years, including the increased community awareness and the advances in local data, to directly inform planning process and policy related to water protection.

In 2019, the RDN set out to renew its 10-year DWWP Action Plan (the guiding document for the DWWP Program), a commitment in the RDN Board's Strategic Plan for 2019-2022. The approach was to retain alignment with the original Plan yet focus attention on emerging challenges and priorities for the next decade and beyond. The year-long update process involved structured engagement with various stakeholder committees and the public to identify what actions are needed between 2020-2030 to continue to effectively pursue regional water protection.

Feedback indicated strong support to continue the activities that were most effective from the first 10-years and provided clear direction to take on additional initiatives, driven by the urgency of climate change, regulatory commitments, identified areas of stress, and opportunity for collaboration.

Our vision is for healthy, safe and resilient water resources in the region, enabled through strong partnerships.

Our mission is to provide regional leadership at the watershed scale through coordination of water management, land-use planning and community outreach to support drinking water sustainability, climate adaptation, and healthy ecosystems.

This Action Plan

articulates the goals and objectives relating to water for community needs and for ecosystem requirements, from a lens that recognizes water does not conform to political boundaries, and watershed management needs to include municipalities and Electoral Areas working together, often with external partners. It recommends key regional initiatives and actions to pursue those ends, within the key thematic areas of:

- Water Awareness & Stewardship
- Water Information & Science
- Water-Centric Planning & Policy Support

Water Collaboration

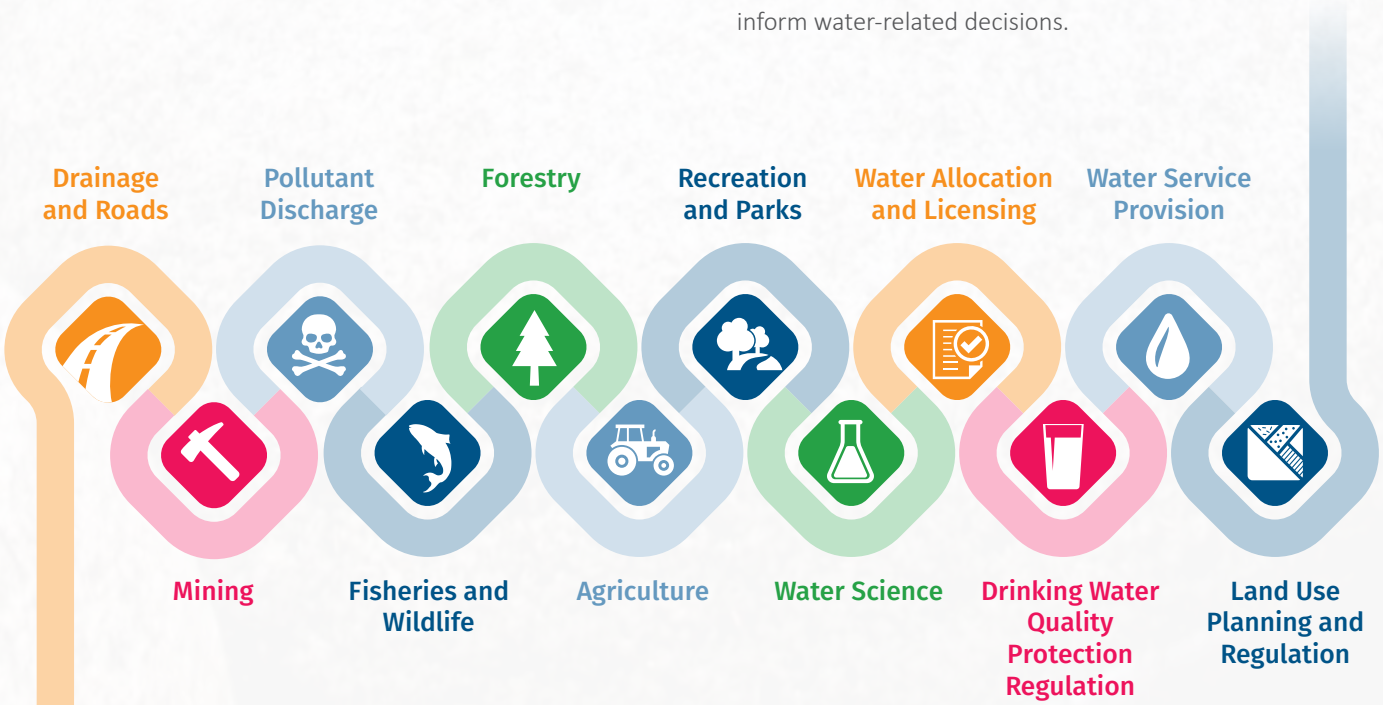
The overarching theme of the DWWP Program is Water Collaboration: To develop productive, long-term and collaborative partnerships across jurisdictions, sectors, departments and geographic areas to leverage resources for implementing initiatives that support effective water management and stewardship.

Jurisdiction, Partnerships, Linkages

The RDN's Drinking Water and Watershed Protection Program

is integral to achieving Board Strategic Priorities related to climate change, the natural environment, land-use planning, and asset management. The DWWP Program is also vehicle by which to efficiently deliver regulatory requirements related to regional rainwater management. The RDN recognizes its potential as an active partner with Indigenous communities in achieving shared objectives around water sustainability and is committed to continuing to build and enhance relationships with First Nations in this respect over the next 10 years and beyond.

Working with partners is critical to advancing shared goals. Within our region there are numerous entities with various roles, expertise and jurisdiction in terms of water and watersheds. The RDN can influence practices outside its scope of authority through positive working relationships. This includes partnerships with external groups as well as interdepartmental cooperation throughout the organization. The role of the RDN DWWP program is to be an information broker, a convener and an advocate – not to take on all the watershed issues alone, but to foster relationships to facilitate and support collective action, through collaborative water initiatives in the region. This includes providing local data and sound science to inform water-related decisions.



Summary of Recommended Actions

Here are the **high-level actions** proposed in this Plan. Sub-actions are described in the full Action Plan document, providing more detail on the initiatives that are continuing or new.

Water Awareness and Stewardship

- **Enhance** water awareness through community-based outreach
- **Incentivize** sustainable practices (rebates)
- **Create** campaigns to target strategic sectors
- **Provide** support for stewardship and restoration activities
- **Coordinate** with water service providers
- **Participate** in advisory committees to enhance regional capacity

Water Information and Science

- **Maintain** robust regional water monitoring networks
- **Analyze** and interpret of data to generate richer understanding of region's water
- **Communicate** water information to decision makers and the public
- **Develop** targets to maintain watershed function

Water-centric Planning and Policy Support

- **Facilitate** integration of water information to planning processes
- **Advance** innovative policies and practices to improve water sustainability

Implementation Priorities 2020–2025

Priorities that have emerged include to: integrate water information into key plans; continue to collect local water data to build long-term datasets; perform trend analysis to inform land use, water allocation, and infrastructure decisions; launch multi-media outreach; review watershed governance structures; develop targets for watershed function; explore valuation of watershed natural assets; model water availability; administer public opinion surveys and community-based social marketing tactics to inform and guide outreach campaigns; increase rebate / stewardship funding; and foster dialogue among youth and the community at-large.

1. Our Region’s Water

Freshwater in our region is integral to where we live, who we are and what makes us thrive.

This region is the **traditional territory** of the Coast Salish peoples. The lands and waters hold significant cultural importance for First Nations communities that have deep connections to this place and the rivers that flow through it. We are all fortunate to live, work, and play together in such a beautiful place.

The geography of the Regional District of Nanaimo (RDN), on the east coast of Vancouver Island, is defined by short distances from mountain top to sea. Glaciation has carved out our river valleys and deposited the geological materials that store water below the ground surface: our aquifers. Many residents rely on groundwater for their domestic water supply, whether from a community system or their own private well. There is no singular water provider in the RDN. The RDN (via nine small systems), the four municipalities, five improvement districts and other private water systems provide community water service to residents across the region. The two largest municipalities – Nanaimo and Parksville – have surface water sources that serve their residents, the Nanaimo River and Englishman River, respectively.

Our rivers are not only community water sources, they are also home to Pacific Salmon and diverse aquatic ecosystems. Countless avid stewards passionately work to maintain healthy creeks and protect keystone species. Water connects upstream and downstream land-uses and communities. It supports biodiversity and provides a wealth of recreational activities and beauty. Freshwater supports our livelihoods and economy, enables us to grow food, and sustains critical ecosystems. Clean, accessible water enriches our quality of life and is an element that we all need to survive.

No matter where you are, you're in a watershed. Watersheds are defined by topography. Upper, mid and lower elevations each have unique characteristics. Upper watersheds in the Regional District of Nanaimo are primarily Private Managed Forest Land, where private companies manage the land base for timber values, as well as for water quality, soil conservation and habitat values. The RDN does not have regulatory jurisdiction over practices on these lands but through positive ongoing working relationships with timber companies, watershed management practices can be mutually beneficial.

Our mid-watersheds are comprised mainly of rural communities and agriculture. Land-use planning and servicing in rural areas within the RDN's authority present the best opportunity to influence watershed protection, complemented by partnerships outside our area of jurisdiction. This includes working collaboratively with provincial agencies, rural residents, and farming groups to achieve water sustainability goals in relation to agricultural practices.

The population is concentrated in the lower watersheds, in our coastal communities, the suburban and urban centres of the four municipalities of Nanaimo, Parksville, Lantzville, and Qualicum Beach. Regional programs delivered by the RDN influence and support services provided in those municipalities, as well as in Electoral Areas A, B, C, E, F, G and H.

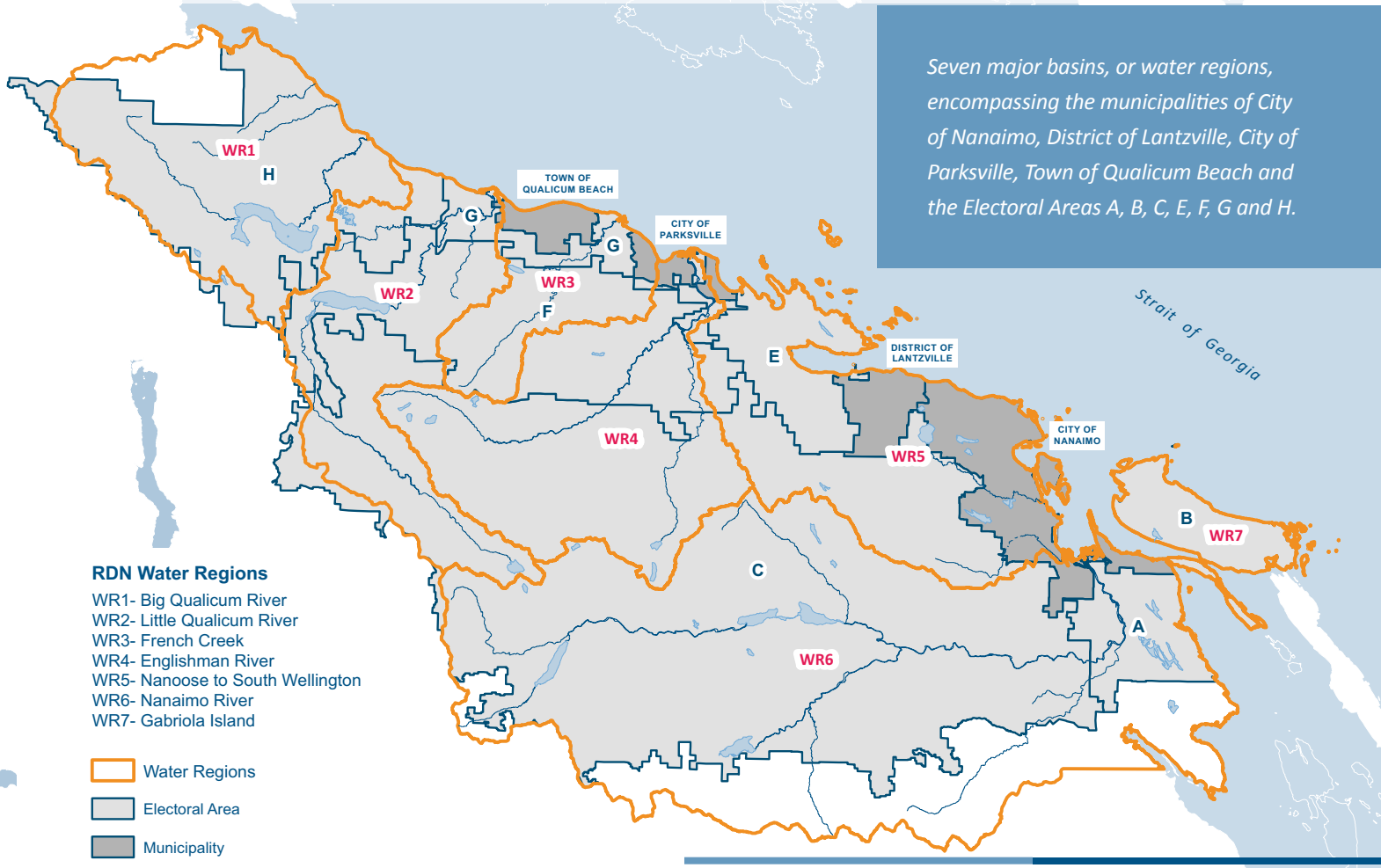
Like many locations around the world, our region's watersheds face significant challenges: a changing climate that affects the timing and amount of precipitation we receive; a complex jurisdictional web

of authorities that have stakes in water management; and, population growth that introduces pressure on this finite resource. Water does not conform to political boundaries; it does not recognize jurisdictional lines on a map. Water is fluid and so water management and planning should be too. A watershed-and-aquifer-based approach recognizes natural boundaries in planning and management, and it lends itself to collaboration across jurisdictional lines. Taking a watershed-based approach recognizes the dynamic linkages between quantity and quality; community needs and ecosystem needs; groundwater and surface water; land management and water infrastructure.

By acknowledging that freshwater connects us all, we can seize the opportunity to collaborate and transform the way we grow, adapt and live, so that everyone can enjoy the benefits of safe, healthy and resilient water sources for generations to come. This watershed lens carries through every aspect of the Regional District of Nanaimo (RDN) Drinking Water and Watershed Protection Program (the 'DWWP Program' or the 'Program') and provides the framework for implementing activities and engaging in projects to support water sustainability in our region. This approach has been successfully established in the past decade and forms a strong base for future work..

The DWWP Program is a vehicle to advance several strategic goals identified in the RDN Board (or 'Board') Strategic Plan for 2019-2022:

- Leadership in **climate change adaptation** and mitigation;
- **Protection and enhancement of the natural environment** including land, water and air for future generations; and,
- Providing **effective regional land use planning and responsible asset management** for both physical infrastructure and natural assets.



Seven major basins, or water regions, encompassing the municipalities of City of Nanaimo, District of Lantzville, City of Parksville, Town of Qualicum Beach and the Electoral Areas A, B, C, E, F, G and H.

1.1 Shared Challenges, Shared Opportunities in our Watersheds

Our region faces the shared challenges of a changing climate, land use pressures, and overlapping jurisdiction. How will water quantity be affected by climate change and growth? Is water quality at risk from our land use activities? How can we preserve our ecosystems so future generations get to enjoy the benefits of healthy watersheds? In order to address these questions, we must continue to learn more about our region's water, have meaningful dialogue, and collaborate on water management and planning.

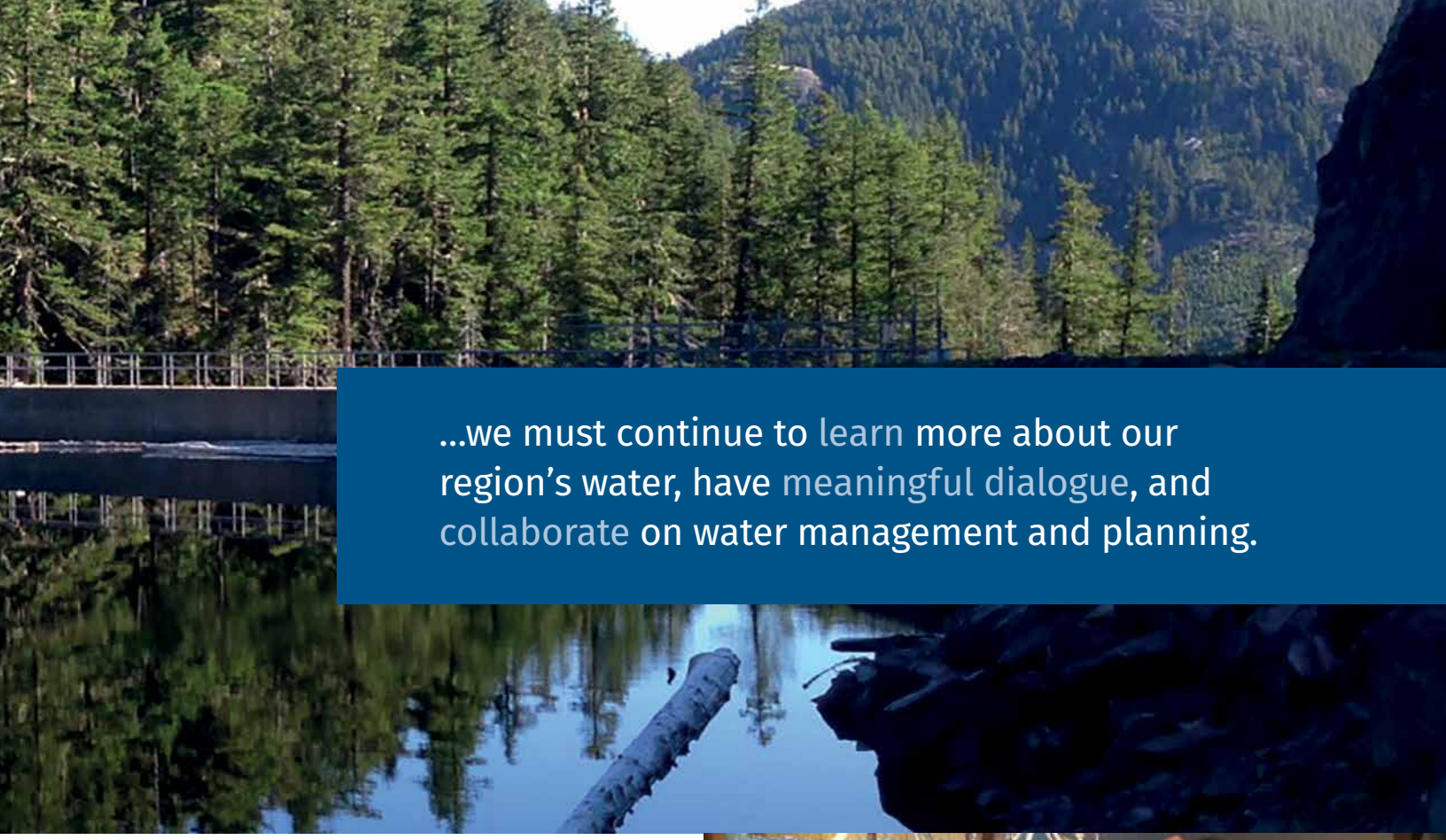
Climate impacts are already occurring in the region:

- Longer, drier, and hotter summers strain water resources for community use, agricultural irrigation, and temperatures and baseflows for fish;
- More intense short-duration storm events bring high volumes of precipitation causing flash flooding and land instability;
- More precipitation falls as rain due to warmer winter temperatures, which results in less snowpack accumulation at elevation. This contributes to both surface water and groundwater impacts.

Land use pressures include ongoing expansion of residential, commercial, and transportation land uses and the effects of industrial practices. Expansion of impervious surfaces and areas cleared for development, can interrupt groundwater recharge and change watershed hydrology. Loss of riparian vegetation, and poorly designed rural road drainage cause erosion and water quality issues in creeks in some rural areas. Some aquifers also show declining water levels due to a combination of reasons including increasing groundwater extraction, decreasing recharge and climate impacts. Saltwater intrusion is also a risk for coastal wells.

Overlapping jurisdiction considers the numerous entities and authorities that have a stake in land and water management, including, but not limited to:

- Municipalities
- Provincial Agencies
- Private Forest Landowners
- Federal Agencies
- First Nations



...we must continue to learn more about our region's water, have meaningful dialogue, and collaborate on water management and planning.

Jurisdictional complexity manifests in many ways. For example, subdivision approval authority in Electoral Areas rests outside the RDN with the Ministry of Transportation and Infrastructure. The Province administers water licenses while zoning for development rests with local government. Additionally, existing zoning for development in unserviced areas (areas without community supplied water and sewer) does not always consider water availability or stress. Complex and shared challenges like these provide an opportunity for inter-jurisdictional coordination to collectively improve the management of our region's freshwater. This opportunity is uniquely suited to the regional level of government, positioned to address local needs, attract Provincial resources, leverage partnerships, and serve as a hub for coordinating across levels of jurisdictions for the benefit of the region.

The illustration, on the following page, outlines a network of jurisdictions that have roles and responsibilities with water.

Overlapping Water-Related Jurisdictions in the Region

Note: This does not include the other layers of First Nations rights and title and community-based stewardship groups and NGOs.

Land Use Planning and Regulation

RDN

Municipalities

Islands Trust

Ministry of Transportation and Infrastructure (TRAN)

Water Service Provision

RDN

Municipalities

Private Purveyors

Individual Well Owners

Drinking Water Quality Protection Regulation

Island Health

Ministry of Health

Water Allocation and Licensing

Ministry of Forests Lands Natural Resource Operations and Rural Development (FLNR)

Water Science

Ministry of Forests Lands Natural Resource Operations and Rural Development (FLNR) – *groundwater and surface water*

Ministry of Environment and Climate Change Strategy (ENV) – *surface water*

Natural Resources Canada (NRCAN) and Geological Survey of Canada (GSC) – *groundwater*

Water Survey of Canada – *surface water*

Recreation and Parks

Regional District of Nanaimo

Municipalities

BC Parks (ENV)

Agriculture

Ministry of Agriculture

Agricultural Land Commission

Forestry

Ministry of Forests Lands Natural Resource Operations and Rural Development (FLNR)

Managed Forest Council

Mosaic Forest Management

Fisheries and Wildlife

Department of Fisheries and Oceans

Ministry of Environment and Climate Change Strategy (ENV)

Ministry of Forests Lands Natural Resource Operations and Rural Development (FLNR)

Pollutant Discharge

Ministry of Environment and Climate Change Strategy (ENV)

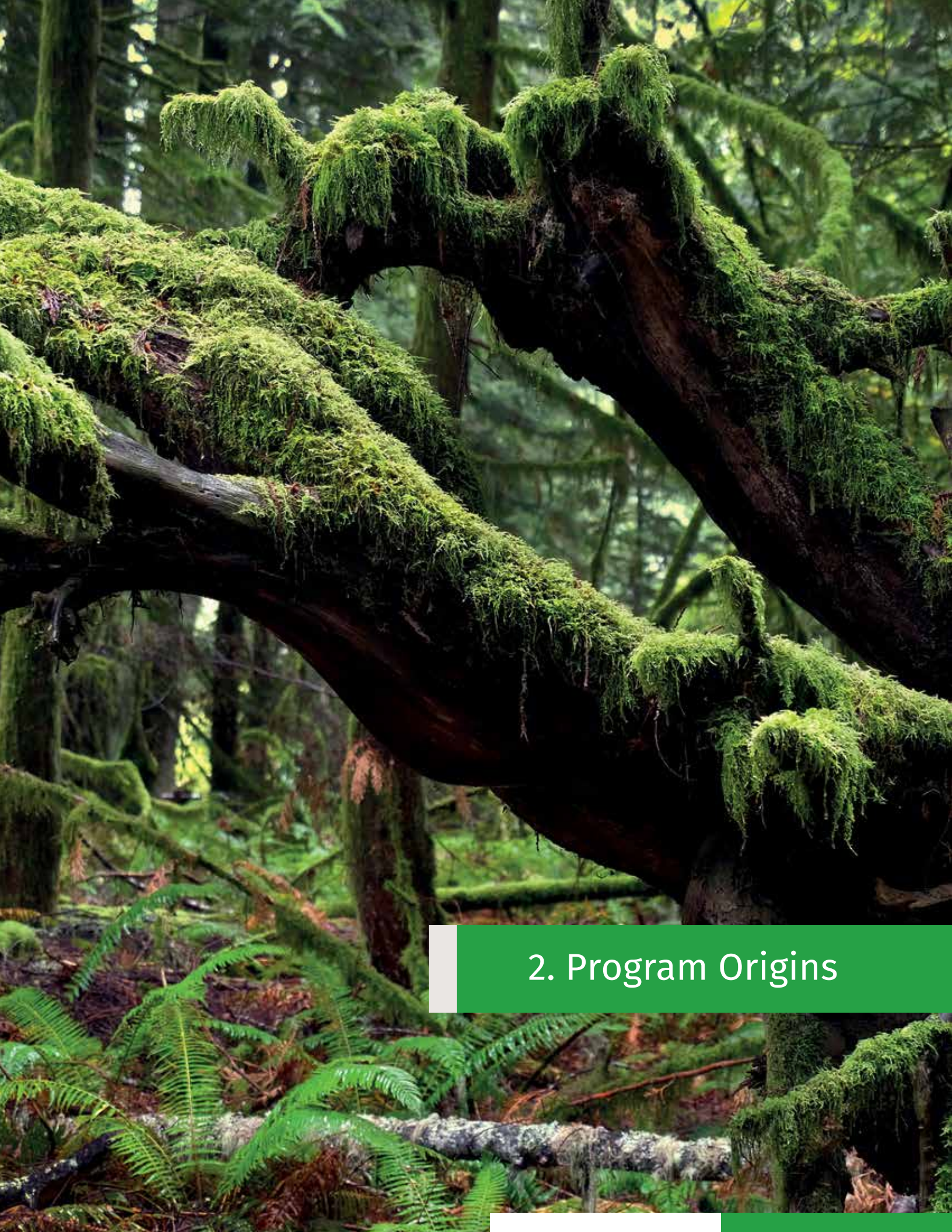
Mining

Ministry of Energy Mines and Petroleum Resources

Drainage and Roads

Municipalities

Ministry of Transportation and Infrastructure (TRAN)



2. Program Origins

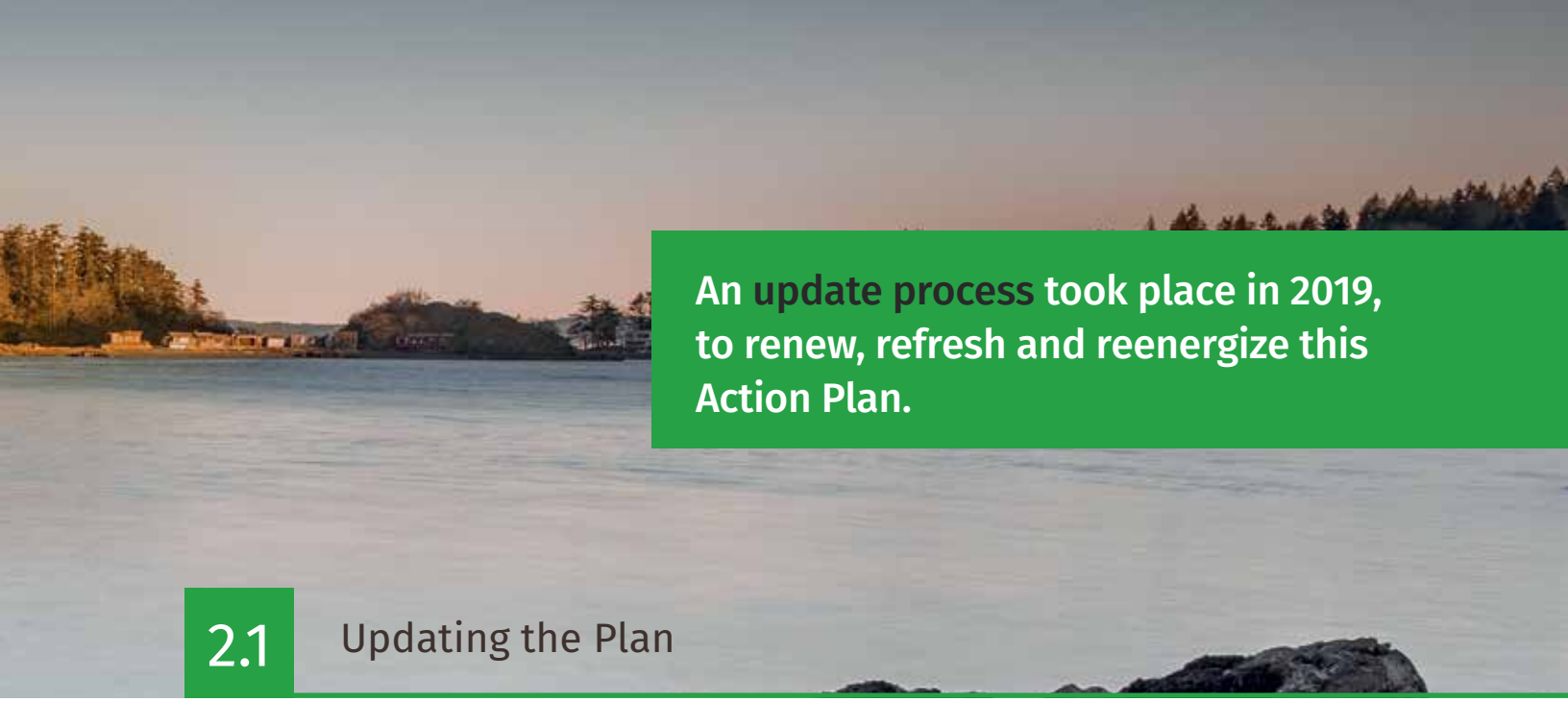
Facing the realities of a **changing climate**, the Board recognizes the need to address water protection.

The RDN has a long-standing interest in regional water protection. It started with visionary foresight in the early 2000s when elected officials, the community, stakeholders, and staff identified the pressures on water resources as a priority for focused attention.

A committee with broad representation of organizations and sectors with an interest in water sustainability oversaw preparation of the RDN Drinking Water and Watershed Protection Action Plan, completed in October 2007. This seminal document guided the Program through its first decade. The Action Plan was adopted by the RDN Board in 2008, with direction to hold a referendum to get elector assent on a watershed protection service area across all Electoral Areas to fund the implementation of the plan. Ultimately, residents approved the creation of this new service and parcel tax, which came into force through RDN Bylaw 1556-0 in 2008. The service launched in 2009 with these objectives:

- increase the level of knowledge regarding drinking water sources to support the long-term sustainability of the resource;
- coordinate efforts of provincial and local governments and non-governmental organizations with respect to drinking water source protection;
- increase the level of public awareness regarding drinking water and watershed protection requirements and strategies.

By 2012, all four member municipalities, City of Nanaimo, District of Lantzville, City of Parksville and Town of Qualicum Beach had joined the DWWP service, making it a truly regional program. The mechanisms were in place to deliver region-wide water education programming through Team WaterSmart, collect data through newly established regional water monitoring networks, and begin to inform water policy and planning. This provided the foundation for achievements between 2012-2018, with relationships and partnerships taking shape to advance the regional objectives. To date, the RDN DWWP Program has been recognized as a leader across BC for developing and administering this innovative service.



An update process took place in 2019, to renew, refresh and reenergize this Action Plan.

2.1 Updating the Plan

In 2018, as the Program reached its 10-year anniversary of implementation, a comprehensive review was completed by third-party consultants. Due in large part to effective collaboration, the sustainable funding model and the regional nature of the program, the 10-year Action Plan Implementation Review (see Appendix A) concluded that the DWWP Program had been "remarkable and highly successful" at achieving what it set out to do. It also offered recommendations based on feedback from key stakeholders and a desktop review of program materials.

This review in 2018 was an important pre-cursor to the update process that took place in 2019, to renew, refresh and reenergize this Action Plan. The approach was to retain alignment with the original objectives yet focus attention on emerging challenges and priorities for the next decade and beyond. Key informants to the process included:

- the RDN DWWP Board Steering Committee*;
- the multi-stakeholder DWWP Technical Advisory Committee (TAC)*;
- an RDN Interdepartmental Working Group*;
- public survey respondents online and at events;
- attendees at the April 4th Water Stewardship Symposium in Parksville; and,
- technical experts from *Econics* and *Compass Resource Management*.

First Nations were also approached to encourage their engagement on this Action Plan update. Engaging with First Nations on Drinking Water and Watershed Protection actions and strategies is an ongoing focus in the implementation of this updated Plan, recognizing that the extent and nature of participation from First Nations will be defined by the various communities' needs and perspectives.

For a detailed overview of the process used to update this Plan, please see the document Summary Report- Structured Decision Making Workshops- DWWP Action Plan Update July 2019 (Appendix B).

*Members of the Board Steering Committee, Technical Advisory Committee and Interdepartmental Working Group are identified in Section 8.1 *Acknowledgements*.

2.2 Links to Other Plans

Other RDN plans also contain objectives related to watershed protection. This reflects that water is an integral organizational priority. The purpose of the DWWP Program is to implement and advance actions related to regional drinking water and watershed protection, which concurrently also supports:

- **RDN Board Strategic Plan 2019-2022** – with priorities related to climate change, the natural environment, land-use planning, and asset management, the Plan drives departmental workplans and resource allocations;
- **Regional Growth Strategy** – with targets for growth management based on water availability and water quality and watershed function considerations;
- **Liquid Waste Management Plan (LWMP)** – the RDN's provincial regulatory authorization to discharge wastewater which now includes a mandatory rainwater management component, and commits to DWWP Action Plan initiatives as of its last amendment in 2014;
- **Regional Parks and Trails Strategy** – with the role parks can play in protecting watershed function and educating the public, and the information the DWWP Program can provide to support parkland acquisition or infrastructure;
- **Agricultural Area Plan** – with overlapping goals for environmental sustainability and improving on-farm water resource management; and,
- **Asset Management Policy** – which includes natural assets such as watersheds and aquifers in its definition of 'assets', and commits to realizing the optimal value of assets for present and future.

The most explicit link between the DWWP Action Plan and another RDN Plan is the Liquid Waste Management Plan (LWMP). Commitments under the LWMP Program 5: *Rainwater Management / Drinking Water and Watershed Protection*, state the following targets:

1. *Develop a regional strategy on rainwater management in coordination with member municipalities*
2. *Implement rainwater management initiatives as detailed in the Drinking Water and Watershed Action Plan*

The DWWP Program is a vehicle by which to efficiently deliver on these regulatory requirements through regional collaboration. Many DWWP Program actions developed through this Plan update engagement process, listed in Section 5, align with the commitments under Program 5 of the LWMP. This demonstrates an interdepartmental synergy, offers a means to operationalize commitments, and delivers cost-savings rather than duplication of efforts.

3. Importance of Partnerships

Within our region's watersheds there are numerous entities with various roles, expertise and jurisdiction, as described in Section 1.1. Working with partners is critical to advancing shared goals. The RDN can influence practices outside its scope of authority through positive working relationships and collaboration with other agencies, companies, and organizations. The guiding principle of DWWP partnerships is to build mutually beneficial working relationships that add value and help achieve common objectives. This includes interdepartmental collaboration throughout the organization as well as partnerships with external groups. A sampling of specific key partner agencies and organizations is found in Table 1.

Table 1: Sample of Key Partners in Drinking Water and Watershed Protection Program Implementation

Federal Government
- Department of Fisheries and Oceans
- Geological Survey of Canada

Provincial Government
- Ministry of Environment
- Ministry of Forest, Lands, Natural Resource Operations and Rural Development
- Ministry of Transportation and Infrastructure

First Nations
- Qualicum First Nation
- Snaw-naw-as First Nation
- Snuneymuxw Nation
- Other First Nations with overlapping territories

Local Government
- City of Nanaimo
- District of Lantzville
- City of Parksville
- Town of Qualicum Beach

Academia
- Vancouver Island University
- University of Victoria (POLIS Project)
- Simon Fraser University

Other Agencies
- Cowichan Valley Regional District
- Comox Valley Regional District
- Islands Trust
- Island Health
- Regional Water Purveyors and Improvement Districts
- School Districts 68 and 69

Industry
- Mosaic Forest Management
- Vancouver Island Real Estate Board
- Hydrogeologist and hydrologist sector
- Water well drilling sector
- Agricultural sector
- Irrigation and landscaping sector

Not-for-Profit Sector
- Coastal Water Suppliers Association
- Mid Vancouver Island Habitat Enhancement Society
- Partnership for Water Sustainability in BC
- Nanaimo and Area Land Trust
- Over 12 local stewardship and stream keeper groups

Efforts to engage with First Nations will be an **ongoing focus** in the implementation of this Plan.

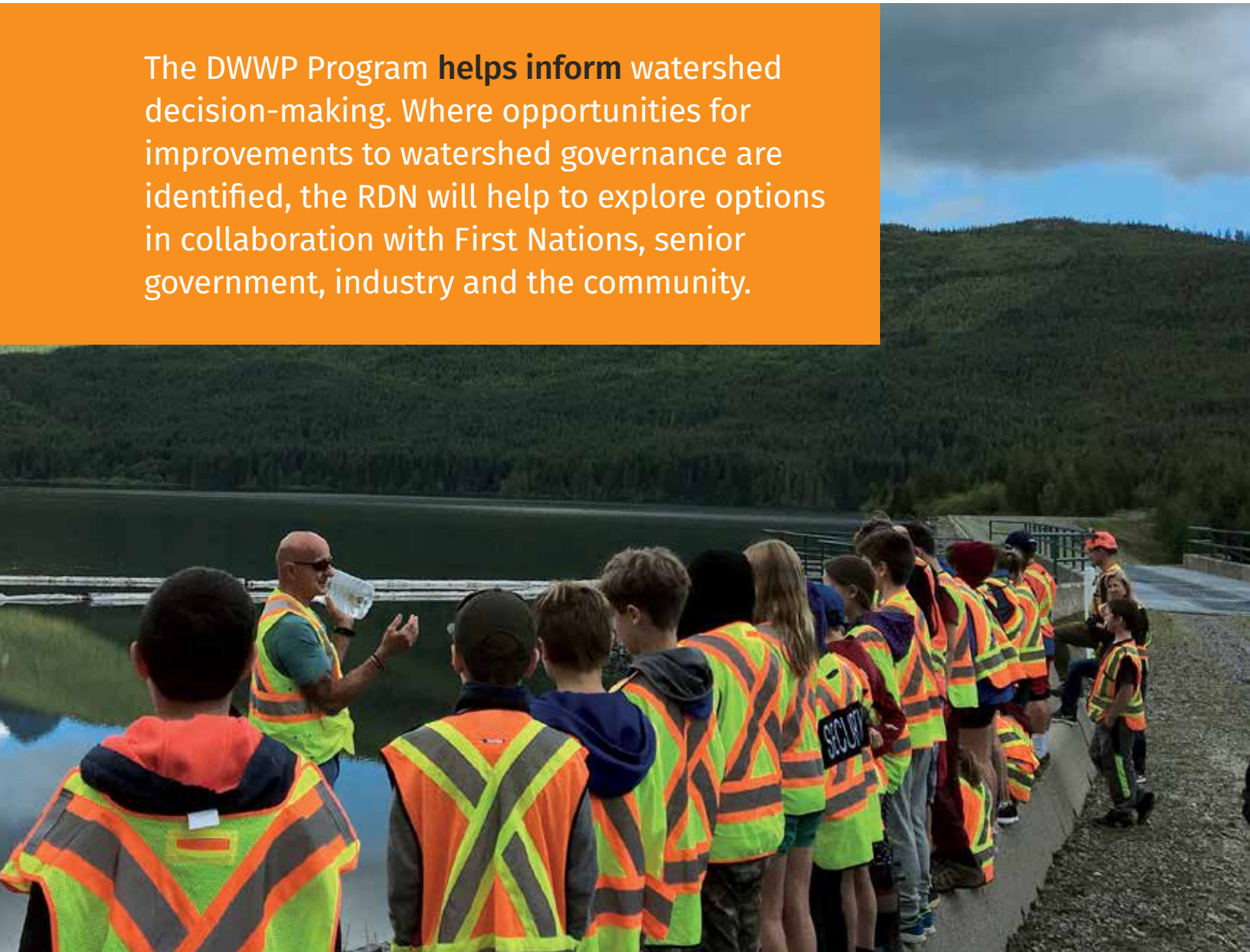
3.1 Meaningful Engagement with First Nations

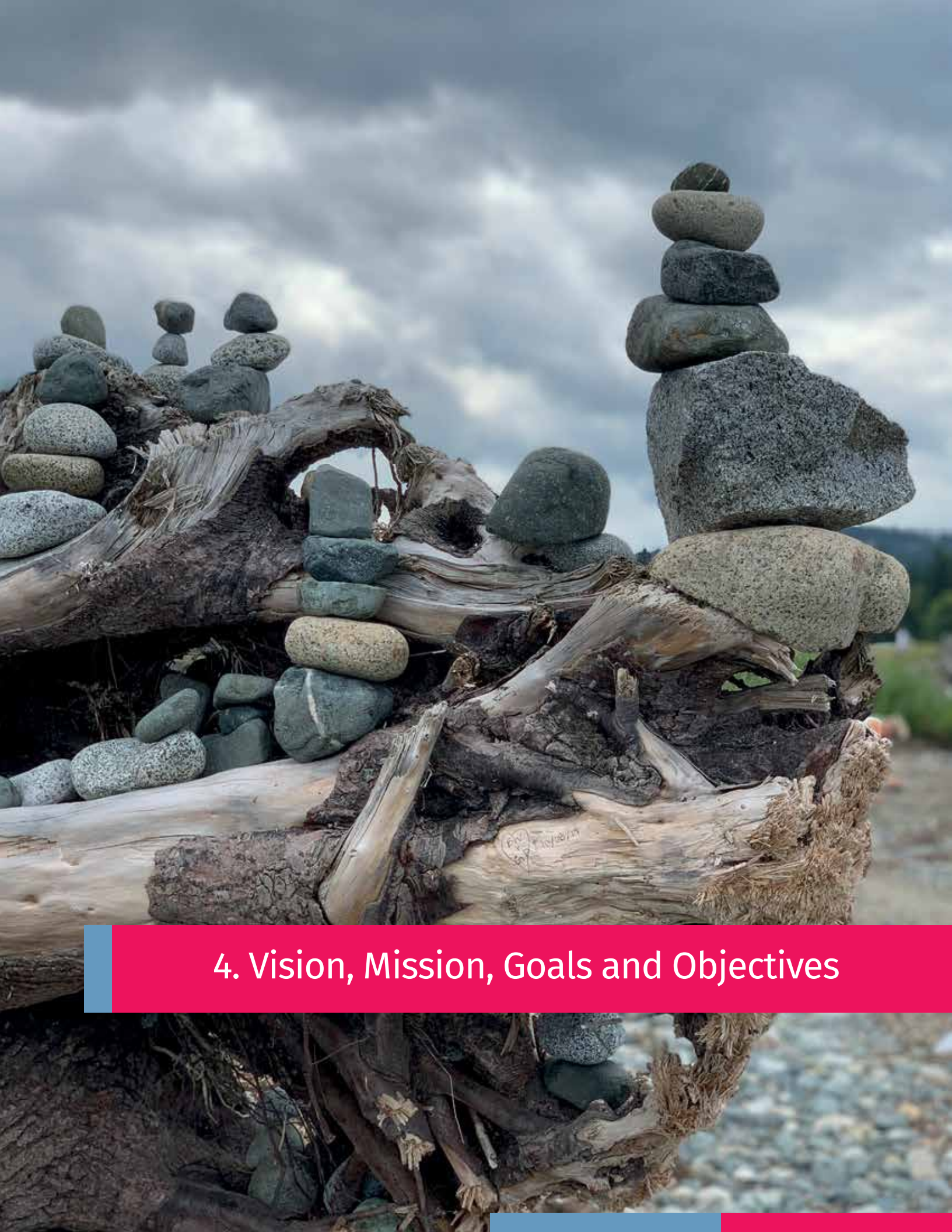
The RDN Board is committed to continuing to build and enhance relationships with First Nations. Although the first ten years of the DWWP Program saw some project-level partnership on specific initiatives, there is room for much more collaboration to occur. Water issues are of deep cultural relevance and socioeconomic interest to Indigenous communities. The RDN recognizes its potential as an active partner with First Nations communities in achieving shared objectives around water sustainability. Each First Nation will have perspectives on how or whether to participate in DWWP Program actions, which will ultimately guide what the engagement looks like. Recognizing that good relationships take time to build, meaningful engagement with First Nations is an ongoing commitment of this RDN program, based on a foundation of shared learning, respect, and collaboration.

3.2 Watershed Governance

Watershed governance is the process and institutions through which decisions are made that affect water. It involves better aligning decision-making approaches across jurisdictions with ecological (watershed) boundaries. The DWWP Program helps inform the existing governance structure, where generally, the Province is the regulator for all things water and the local governments are the land use planning authority outside of resource lands. The DWWP Technical Advisory Committee (discussed in Section 7.2) reports to the RDN Board, providing the basis for evidence-based watershed scale decisions and collaborative solutions on water issues. Provincial water decisions are also informed through provision of local data and policy advocacy. The RDN will continue to contemplate the watershed governance structure that exists and, where opportunities for improvements are identified, the RDN will help to explore options in collaboration with First Nations, senior government, industry, and the community.

The DWWP Program **helps inform** watershed decision-making. Where opportunities for improvements to watershed governance are identified, the RDN will help to explore options in collaboration with First Nations, senior government, industry and the community.





4. Vision, Mission, Goals and Objectives


RIPARIAN
RESTORATION

4.1 Purpose of this Action Plan

This Action Plan recommends key initiatives to help the region navigate towards a more integrated way of managing water and watersheds. It is not a water supply plan. It is not a protection plan. It is a strategic plan and guiding document to advance the updated vision, mission, goals, and objectives for Drinking Water and Watershed Protection as a regional collective effort. Its actions support the range of water purveyors; land, resource and asset managers; planners; decision-makers; and, community members in joint water sustainability efforts. It aims to capture the guidance from the collaborative engagement process that spawned this updated plan, while still allowing for learning and responsiveness in implementation.

Our vision is for healthy, safe, and resilient water resources in the region, enabled through strong partnerships.

Our mission is to provide regional leadership at the watershed scale through coordination of water management, land-use planning, and community outreach to support drinking water sustainability, climate adaptation, and healthy ecosystems.

The vision and mission provide the overarching aim of the program – a shared purpose for diverse interests in the region to convene around. Below, the goals and objectives elaborate on what the DWWP Program is trying to achieve. The goals serve as the "ends" and the objectives are more the "means" by which the goals can be reached.

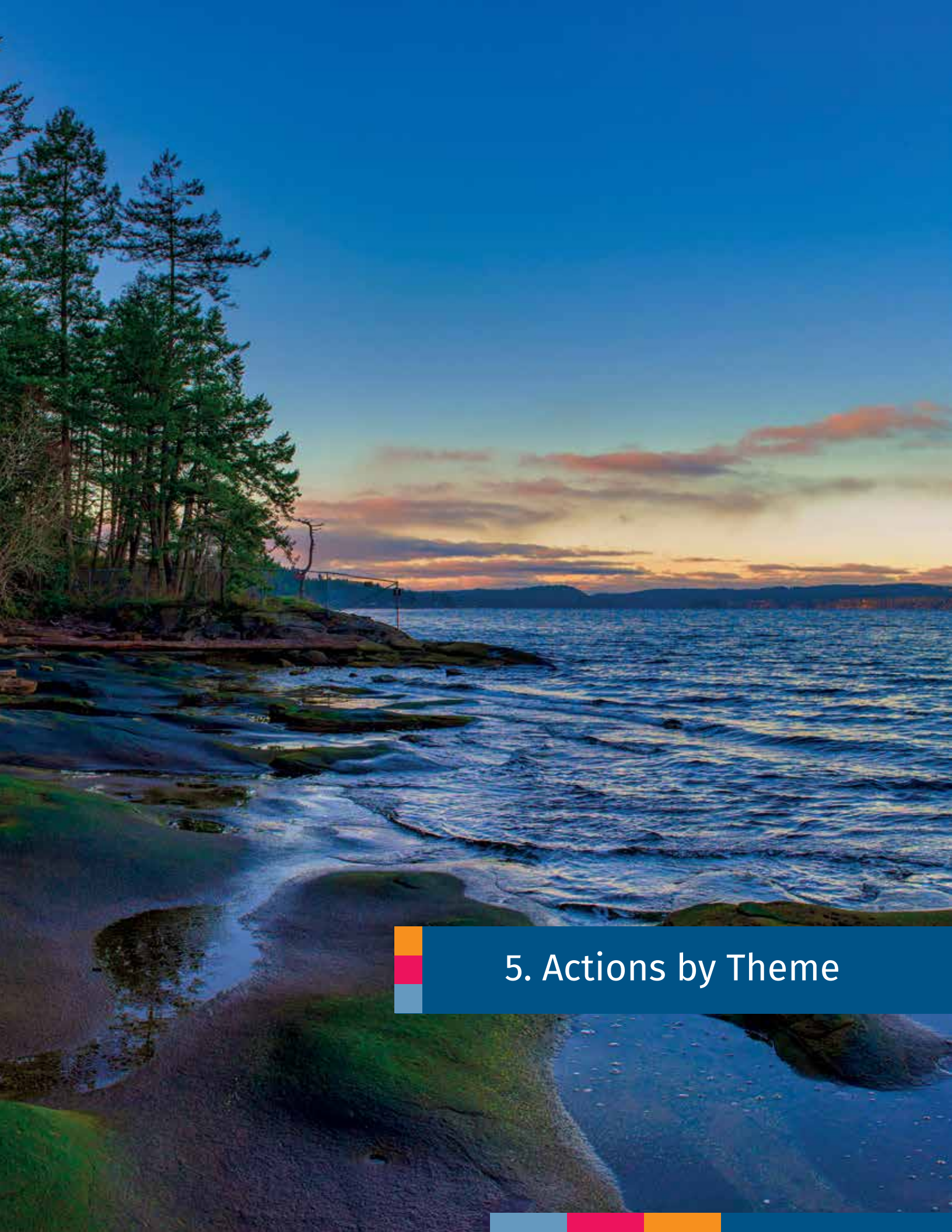
4.2 Program Goals

The RDN's Drinking Water and Watershed Protection program goals are to facilitate and/or support regional initiatives that:

- Protect, manage and restore **ecosystems** and the overall health and functioning of our watersheds and aquifers.
- Safeguard and manage **source waters** used for drinking water supply.
- Increase water-use efficiency and optimize **infrastructure** investments for water and wastewater systems.
- Foster the enjoyment and protection of **social, cultural, and recreational values** and amenities in our watersheds to maintain well-being and quality of life.
- Mitigate and better **prepare for climate change** impacts on the region's water resources.

4.3 Program Objectives

Theme	Objectives
Water Awareness and Stewardship	To increase awareness and stewardship of watersheds and drinking water resources across the region.
Water Information and Science	To support high quality and reliable long-term data collection, analysis, and science that generates information required to understand the region's water resources.
Water-centric Planning and Policy Support	To better integrate water management and land-use planning through the adoption of policies, plans, and practices that recognize water-related constraints. To identify and advocate for external regulations and policies that will enable efficient water use, water quality protection and maintenance or restoration of watershed function.
Water Collaboration	To develop productive, long-term and collaborative partnerships across jurisdictions, sectors, departments and geographic areas to leverage resources for implementing initiatives that support effective water management and stewardship.



5. Actions by Theme


WATER AWARENESS AND STEWARDSHIP
WATER INFORMATION AND SCIENCE
WATER-CENTRIC PLANNING AND POLICY SUPPORT
WATER COLLABORATION
WATER COLLABORATION
WATER COLLABORATION

Actions for the next operational period of this Plan include both existing successful program elements that are retained, along with new actions that respond to new challenges. In the first ten years, DWWP actions were often organized under the broad categories of: Education, Science, and Planning. These general themes continue to serve the RDN well. In this updated Plan we refer to the **themes** with more precision as:

- Water Awareness & Stewardship
- Water Information & Science
- Water-Centric Planning & Policy Support

Water Collaboration

Many of the actions presented on the following pages could be categorized into more than one theme. Each theme supports the others, meaning the program would not be effective without action in all of them. The overarching theme and common thread that runs through all these areas is water collaboration, recognizing that the program's success is highly dependent on the cooperation of many key partners. The actions outlined below have been identified to achieve the RDN's water protection goals and objectives identified in Section 4.

Table 2, on pages 26 and 27, summarizes the actions by theme, sorts them as either 'continuing' (i.e. included in the first Action Plan) or 'new', and identifies key implementation partners for each action as an easy reference. Some continuing actions are marked with an asterisk (*) to denote that there are specific enhancements or expansions planned for those actions moving forward, based on insights from the engagement process. Note that, as previously mentioned, First Nations partnerships will be explored at every opportunity.

The overarching theme that runs through all these areas is **water collaboration...**

Table 2: Summary Table of DWWP Actions by Theme

	Action	Continuing Sub-Actions (*with enhancements)	New Sub-Actions	Water Collaboration (not exhaustive)
Water Awareness and Stewardship	5.1.1 **Enhance** Water Awareness Through Community-Based Team WaterSmart Outreach	▶ Tours ▶ Community events ▶ Curriculum-connected school materials* ▶ Irrigation Check-ups ▶ Workshops	▶ Community-based Social Marketing program design ▶ Multi-media engagement ▶ Interpretive signage and demonstration sites ▶ Youth water leadership projects ▶ Public surveys	▶ Municipalities ▶ RDN Parks ▶ Mosaic Forest Management ▶ Stewardship groups ▶ School Districts
	5.1.2 **Incentivize** Sustainable Practices (Rebates)	▶ All current rebates	▶ Explore new rebate options i.e. water flow meters for wells	N/A
	5.1.3 **Create** Team WaterSmart Campaigns to Target Strategic Sectors	N /A	▶ Agricultural water stewardship ▶ Commercial, Institutional, Industrial water stewardship	▶ Province - AGRI / ECCS ▶ BC Climate Action Initiative ▶ Municipalities
	5.1.4 **Provide** Support for Stewardship and Restoration Activities	▶ Seed funding for restoration* ▶ Tool lending library	▶ Networking opportunities for water stewardship organizations	▶ Stewardship groups
	5.1.5 **Coordinate** with Water Service Providers	▶ Support small water systems ▶ Coordinate regional watering restrictions communications	▶ Support regional water conservation plans	▶ RDN Utilities ▶ Municipalities ▶ Improvement Districts ▶ Island Health
	5.1.6 **Participate** in Advisory Committees to Enhance Regional Capacity	▶ Technical Advisory Committee coordination ▶ Participation in existing watershed roundtables	▶ Participate in new roundtables and committees that emerge as needed	▶ Various
Water Information and Science	5.2.1 **Maintain** Robust Regional Water Monitoring Networks	▶ Community Watershed Monitoring Network ▶ Volunteer Observation Well Network ▶ Hydrometric and Climate Monitoring Partnerships ▶ Data Management Framework Implementation*	▶ Explore potential for biological monitoring (i.e. benthic invertebrates) to complement water chemistry data ▶ Explore long-term wetland monitoring and mapping options ▶ Explore voluntary groundwater use monitoring in connection with rebate program	▶ Province - ENV / FLNR ▶ Stewardship groups ▶ Vancouver Island University ▶ RDN IT & GIS ▶ Mosaic Forest Management ▶ RDN Wastewater
	5.2.2 **Analyze** and Interpret Data to Generate Richer Understanding of the Region's Water	▶ Water Budget Modelling ▶ Trend Analysis ▶ Watershed / Aquifer Prioritization	▶ Rainwater management modelling ▶ Quantifying watershed natural assets and ecosystem services ▶ Support enhanced snowpack modelling	▶ Consulting Professionals ▶ Municipalities ▶ Province - ENV / FLNR ▶ Vancouver Island University ▶ Mosaic Forest Management ▶ RDN Wastewater
	5.2.3 **Communicate** Water Information to Decision Makers and the Public	▶ GIS Water Map* ▶ Publications*	▶ Data visualization through dynamic graphs ▶ Informing updates to provincial mapping and characterization	▶ RDN IT & GIS ▶ RDN Planning ▶ Province - ENV / FLNR
	5.2.4 **Develop** Targets to Maintain Watershed Function	N/A	▶ Develop performance targets and standards to mitigate the impacts of land development on watershed function	▶ Consulting Professionals ▶ Municipalities ▶ Province - ENV / FLNR /TRAN ▶ RDN Planning ▶ RDN Wastewater
Water-Centric Planning and Policy Support	5.3.1 **Facilitate** Integration of Water Information into Planning Processes	▶ Informing long term plans* ▶ Informing current operations*	▶ Expand integration of regional water information to RDN Parks and Emergency planning, and municipalities ▶ Develop a Regional Rainwater Management Strategy	▶ Multiple RDN Departments ▶ Municipalities
	5.3.2 **Advance** Innovative Policies and Practices to Improve Water Sustainability	▶ Review and advise on internal policy ▶ Strategic external advocacy	▶ Research to identify best policies and practices in North America	▶ RDN Planning ▶ Municipalities ▶ Various external agencies

NOTE: Some continuing actions are marked with an asterisk (*) to denote that there are specific enhancements or expansions planned for those actions moving forward, based on emphasis from the engagement process. Also note that, as mentioned above, First Nations partnerships are considered a priority. They will be explored at every opportunity and are yet to be defined.

5.1 Water Awareness and Stewardship

Public awareness on where our drinking water comes from, what is the current health of our aquatic ecosystems, and how can we best take care of this precious resource is essential to promote water conservation and generate support for innovative water policy. The public plays a critical role in stewarding water resources throughout the region. This was an important area of focus in the first ten years of the DWWP. Clear successes emerged like positive contact with the community and declines in water demand over that period. Actions and initiatives under this theme have evolved to center around both water-use efficiency (conservation of quantity) and ecosystem stewardship (protection of quality and quantity). Activities that demonstrated value in the first decade will continue and evolve based on progress and emerging priorities. This suite of actions encourages a renewed water ethic in our region – one of respect and care, that prioritizes not only human needs but also the requirements of freshwater ecosystems.

5.1.1 Enhance Water Awareness Through Community-Based Team WaterSmart Outreach

Team WaterSmart is the community engagement component of the DWWP program. It is a long-running, successful, and valued part of the RDN Program. Its staff are the friendly faces at community events with an interactive display on water, the energetic coordinators of free water-related workshops, and the helpful home-visitors to assist with increasing efficiency of outdoor watering systems. Feedback gathered during both the 2018 program review and 2019 DWWP update process indicated overwhelming support for Team WaterSmart initiatives. This outreach will continue across the region, complemented by new actions and efficiency enhancements. Opportunities to expand coordination with between RDN departments and across programs (e.g., Parks, Emergency Services) will also be explored.

Continued actions:

- **Tours** of watershed areas and features, parks and key water infrastructure.
- **Interaction** at select community events across the region.
- **Curriculum-connected** materials and school workshops in partnership with School Districts and First Nations Schools.
- **Workshops** on a variety of water stewardship related topics for rural and urban audiences.
- **Residential irrigation** check-ups to help high water users improve outdoor watering efficiency.

New and enhanced actions:

- **Periodic surveys** of residents to measure success and gather key insights to guide further actions of the program.
- **Use community-based** social marketing principles to review WaterSmart campaign design in order to enhance region-wide engagement in sustainable water behaviour.
- **Multi-media engagement** to increase reach and effectiveness by i.e. social media, videos, dynamic graphs, blogs etc.
- **Interpretative signage** and demonstration sites that illustrate best practices (e.g. low impact landscaping, riparian restoration), at RDN and municipal facilities and parks, and potentially also with external partners.
- **More focus on supporting** youth water leadership projects, dialogue, and engagement.

5.1.2 Incentivize Sustainable Practices (Rebates)

Encouraging water conservation and protection cannot be achieved solely by information and education. Financial assistance helps residents overcome cost barriers to engaging in sustainable behaviours. In the first ten years of DWWP over 2,600 rebates were issued[1]. Residents across the region in both urban and rural communities are eligible for these rebates that focus on water efficiency and water protection. RDN rebates were consistently cited as highly supported, and continuation or expansion of rebate programs was encouraged by many of the stakeholders consulted during the review process that took place in 2018.

Going forward, incentive programs will continue to target both water quality and quantity objectives. Where appropriate, the rebate programs will link to data collection while concurrently promoting sustainable practices. For example, the well water quality testing rebate includes an option for participants to share their results, which in turn builds the groundwater information base in the RDN. We will consider barriers to participation and targeting rebates and other innovative incentives to better address financial need. Rebates may include but are not limited to:

- Rainwater harvesting
- Greywater reuse
- Soil improvements
- Low water needs landscape conversion
- Irrigation efficiency
- Rain gardens and infiltration swales
- Water meters for well owners
- Wellhead protection upgrades
- Well water testing

[1] Includes the toilet rebate that was offered between 2009-2013 and the ongoing rebates for rainwater harvesting, wellhead upgrades, well water testing, irrigation efficiency and soil improvements.

Going forward, incentive programs will continue to target both water quality and quantity objectives.

5.1.3 Create Team WaterSmart Campaigns to Target Strategic Sectors

This action broadens the focus of the Team WaterSmart outreach that primarily targets residential water use to other sectors where opportunities for enhanced awareness and stewardship: agriculture and industrial-commercial-institutional (ICI) appear to exist. The team-based approach reflects the understanding that water is a shared resource, and participation of all sectors in conservation and protection activities provides mutual benefit.

► Agricultural Water Stewardship

The agriculture sector is uniquely at risk from and negatively affected by drought associated with climate change. The RDN has little jurisdiction over agricultural activities, yet poor agricultural practices can affect the economic viability of this sector and can threaten water quality and quantity. The RDN's Agricultural Area Plan identifies on-farm water-related infrastructure as a priority and implementation of sustainable farm practices and technologies as an objective. Associated roles for the RDN include supporting regional feasibility studies and encouraging farmers to access funding from provincial and/or federal sources for these types of projects.

Team WaterSmart can coordinate on-farm water related workshops, broker information from other initiatives (e.g., the BC Climate Action Initiative for Agriculture) and actively share water data with the agricultural sector to help them respond to water impacts and opportunities.

► Industrial, Commercial, Institutional (ICI)

ICI water users are often varied in their water needs as well as their water awareness and management practices. Relatively little is known about ICI water use at the regional scale. Most ICI water users are within the member municipalities. Efficiency programs with individual ICI water users or groups of users (e.g. restaurants) can sometimes achieve meaningful reductions in water consumption or help reduce impacts on wastewater. Since outreach to this sector relies on data from and partnerships with municipalities, this action should be initiated as a pilot project with an interested municipal partner to validate effectiveness before scaling up region-wide.

5.1.4 Provide Support for Stewardship and Restoration Activities

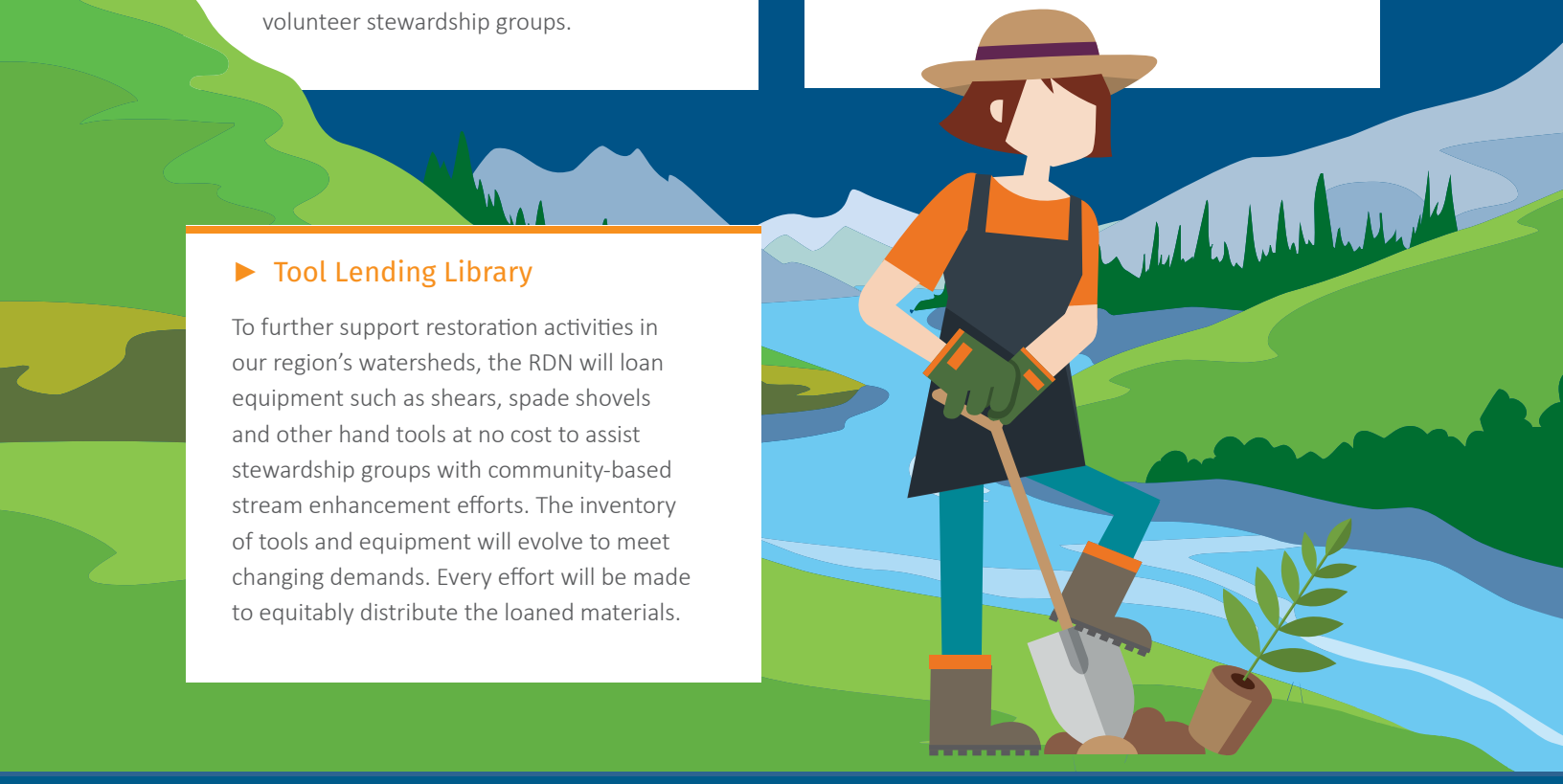
Stewardship groups and volunteers play a pivotal role in watershed enhancement projects at the local level. From collecting data on quality and quantity (see section 5.2.1), to spearheading streamside plantings, to spreading the message about stewardship to their neighbours, community volunteers are valuable partners in water sustainability. The RDN will continue to support these efforts across the region's watersheds, particularly where there are already active stewardship groups and interested landowners.

► Seed Funding for Restoration

Healthy and functioning watershed ecosystems are integral to climate resilience and provide a buffer to floods, droughts and other extreme events. Modest seed money for plans, streamside planting and aquatic habitat enhancement measures can catalyze tangible actions to restore watershed ecosystem features (e.g. riparian areas, streams, wetlands) on private land, where there is need due to historic impacts and an interest from current owners. The RDN will continue to support smaller community-based initiatives that access other grant funds or private landowner investment, and that involve local volunteer stewardship groups.

► Facilitate Networking Among Water Stewardship Organizations

The RDN will facilitate communication among the various community-based Streamkeeper and water stewardship groups to build capacity and promote better coordination of watershed protection activities. This will provide space and opportunities to discuss issues, ideas, and brainstorm solutions on water sustainability in the region. Initiatives under this action could take the form of networking sessions with inspiring presentations, organized coffee meetups to share ideas, training sessions, newsletters, or online hubs.



► Tool Lending Library

To further support restoration activities in our region's watersheds, the RDN will loan equipment such as shears, spade shovels and other hand tools at no cost to assist stewardship groups with community-based stream enhancement efforts. The inventory of tools and equipment will evolve to meet changing demands. Every effort will be made to equitably distribute the loaned materials.

5.1.5 Coordinate with Water Service Providers

Unlike other regions, there is no singular water provider in the RDN. The RDN, the four municipalities, five improvement districts, and other private water systems provide community water service to residents across the region. Among the achievements of the first DWWP Action Plan was the RDN's success in establishing and implementing a regional framework for watering restrictions, which improved regional consistency in water conservation messaging. In addition to ongoing administration of this regional framework, other opportunities to coordinate will be explored with regional water service providers.

► Support Small Water Systems

The Water Purveyor Working Group has served as a forum for discussion and exchange of ideas among small water system operators since 2010. Annual sessions assist water purveyors with achieving long-term sustainability of their systems. It will remain active under the updated Plan. Topics for these forums include water conservation, managing water quality risk, water pricing measures, sustainable alternative water sources, presented by experts. As part of this initiative, the RDN will continue to facilitate easier access to resources and materials for small water systems interested in improving their practices and enhancing their management.

► Support Regional Water Conservation Plan(s)

The Province encourages water utilities to have a Water Conservation Plan that maps out a strategy for demand management. These plans enable eligibility for infrastructure funding from the BC Government. The RDN DWWP Program can support community water service providers (municipalities, improvement districts, RDN small systems) to set, track, meet and report on conservation targets. Benefits of a regional approach include opportunities to share resources, and more effective, consistent and prominent branding and communication with residents.

5.1.6 Participate in Advisory Committees to Enhance Regional Capacity

The RDN has a crucial role in facilitating and participating on watershed committees and roundtables given its mission to provide regional water leadership. Convening regularly with key partners and stakeholders to exchange information across organizations is vital to raise awareness of ongoing priorities and projects, and strike new partnerships that leverage resources and increase efficiency for all involved. In the coming decade, the RDN's availability and willingness to participate in additional, emerging, community-led roundtables formed in response to local-level water concerns is critical for coordination of local and regional activities. The RDN-led DWWP Technical Advisory Committee (TAC) will continue to play an integral role in overseeing implementation of this Plan going forward and reporting to the RDN Board. This is discussed in more detail in Section 7.2 on *Reporting Structure*.

5.2 Water Information and Science

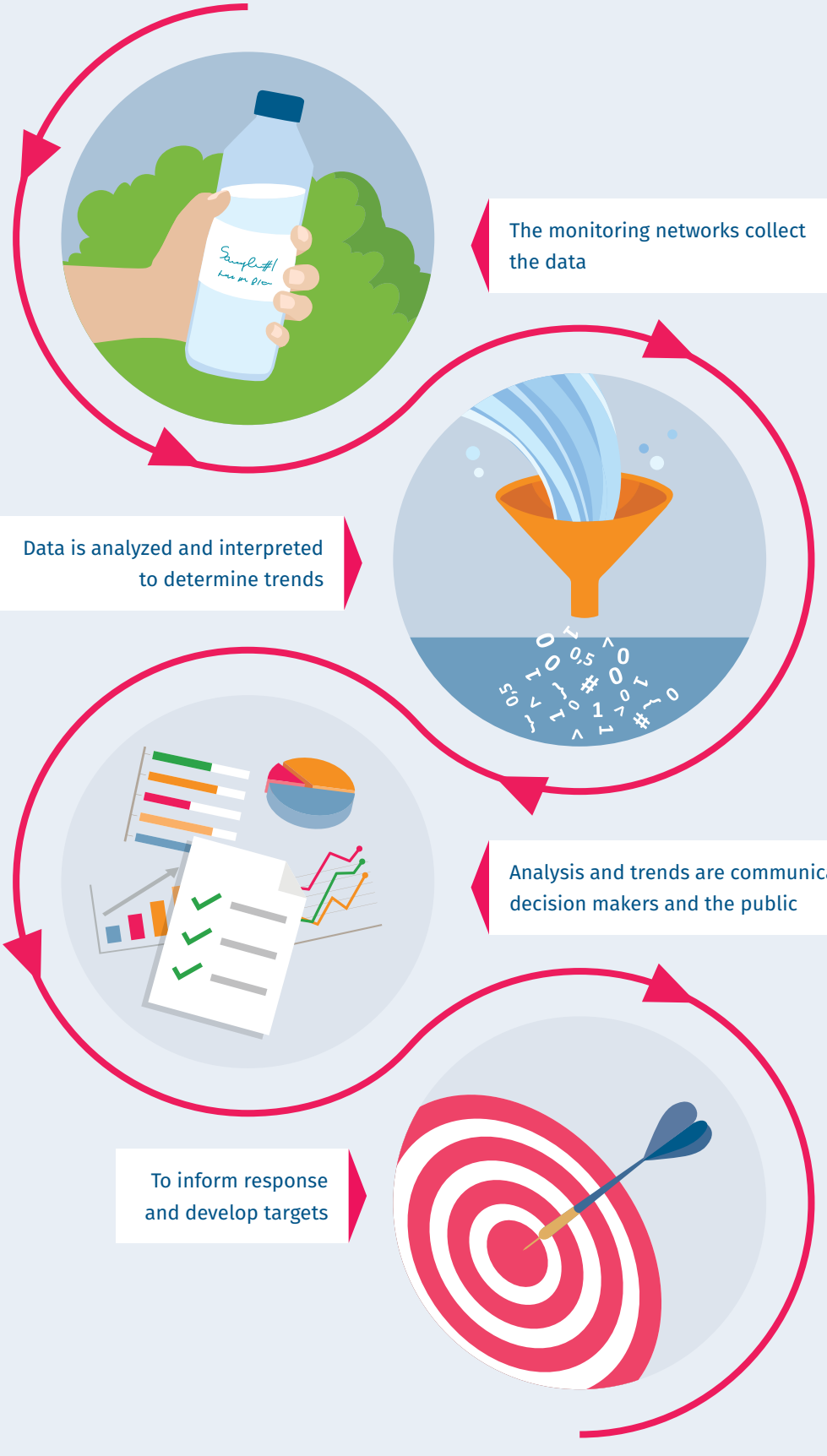
Water information and science are more important than ever given the extreme and rapid variation in precipitation, temperature and hydrological patterns driven by climate change. In the first ten years of DWWP, establishment of local monitoring networks significantly expanded the water data inventory in the region; some vulnerable water sources were prioritized for attention and management interventions; and current trends in conditions were analyzed and reported. The actions within this section build upon this successful foundation. The emphasis here is on high quality, sound science based on professional review and analysis.

This theme revolves around collecting data and information that will continue to:

- **fill gaps** in understanding of water resources and risks;
- **complement** existing Federal and Provincial monitoring networks with localized data gathering;
- **facilitate** analysis of the condition of regional water resources to support action.

Guiding principles under this theme include: using Provincial protocols to ensure a standardized and science-based monitoring approach; providing space for local and traditional knowledge; supporting community-based science initiatives; analyzing trends regularly; and sharing data openly. The four initiatives outlined in this section are inseparable and interrelated.

The Flow of Initiatives in Water Information and Science



The monitoring networks collect the data

Data is analyzed and interpreted to determine trends

Analysis and trends are communicated to decision makers and the public

To inform response and develop targets

5.2.1 Maintain Robust Regional Water Monitoring Networks

The RDN will continue to demonstrate leadership by maintaining and expanding long-term data collection programs that monitor our region's water resources and support informed decisions. This will address gaps in the Provincial monitoring networks which operate at a scale that overlooks many smaller creeks and streams, and often lacks sufficient spatial distribution of monitoring locations across complex aquifer systems to truly have "eyes on the resource" at the local level.

We will explore data collection partnerships with First Nations to support their varied needs and interests. Appropriate use of traditional knowledge could help further interpret and contextualize the other data that is collected through the networks.

Current monitoring efforts will continue, be further refined, or expand where needed. Monitoring will focus on priority and representative areas, to ensure most efficient use of resources. Additionally, monitoring of **groundwater use** was widely cited as an important missing dataset during engagement on updating this Plan. This may be addressed through a new incentive program (as in Section 5.1.2) for well owners who voluntarily install water meters on their wells that includes the option to share their groundwater use data with the RDN.

► Community Watershed Monitoring Network (Surface Water)

Since 2011, the RDN Community Watershed Monitoring Network has successfully collected baseline data across dozens of streams that were previously not monitored in a coordinated fashion or at all. The network consists of stewardship group volunteers, trained by Provincial and RDN staff to collect surface water quality data following provincial protocols. Equipment is provided by the RDN and RDN staff enter the data into the Province's Environmental Management System (EMS) database.

Key tasks under this initiative include:

- **Continue monitoring basic water chemistry parameters** at key representative and priority sites. Collecting field data aims to detect changes resulting from point or non-point sources of pollution, or from cumulative degradation of watershed health.
- **Continue and expand laboratory analysis for additional parameters** such as metals, bacteria or nutrients where necessary to support more advanced interpretation of the basic field parameters at locations with water quality concerns.
- **Continue to support physical stream assessments** at priority locations to characterize and monitor changes in the ecological function of watercourses and help interpret water quality data.
- **Explore options for ongoing wetland mapping and monitoring** in partnership with Vancouver Island University, community stewardship groups and provincial agencies.
- **Investigate the need to monitor biological water quality indicators** such as benthic invertebrates in selected watercourses to support more advanced interpretation of water chemistry data and gauge success of watercourse restoration activities.
- **Inform Provincial Water Quality Objectives** by providing local, stream-specific data and identifying areas of concern.

► Volunteer Observation Well Network (Groundwater)

In 2014, the RDN Volunteer Observation Well (VOW) Network was established to monitor groundwater levels and conductivity (in coastal wells) in order to fill gaps in the Provincial Groundwater Observation Well Network. The VOW Network was expanded significantly in 2017 to include more monitoring locations in priority aquifers as identified in the 2013 Water Budget Study. The regional network's purpose is to track water availability and saline intrusion in groundwater over time in a broad selection of wells, spatially distributed across the region's aquifers.. This initiative will continue to improve monitoring coverage in priority aquifers where additional data is required to support decision making. Operationally, review of monitoring technology as it evolves will seek to use the most suitable and reliable equipment.

► Support Hydrometric and Climate Stations through Partnerships

To understand the water balance within a watershed, hydrometric (streamflow, water level) and climate data are essential. The expansion of climate and hydrometric stations in the region has been a key success to-date. Streamflow is the master variable that determines the stream form, habitat diversity, and ecological and hydrological function. Streamflow is directly impacted by more intense droughts and rain events associated with climate change. Climate stations are currently positioned predominantly in the lower watersheds. Additional stations are necessary for data collection in the mid and upper watersheds to support both extreme weather event response and long-term water planning exercises. Senior governments are primarily responsible for hydrometric and climate monitoring networks, but the RDN will continue to support the addition of local stations that fill gaps in provincial or federal networks through identification of priority areas, coordinating site / land access, and occasional operational support

► Data Management Framework

Implementing improved data management is an area of continued attention as practices, monitoring needs and technology evolve. The DWWP Program includes three general elements of data management:

- **Contributing data to provincial databases** and portals (e.g. EMS and Aquarius), which provide a central and open location for storage of regional data for access by decision-makers, professionals and the public.

- **Internal data management** including use of specific software tools or purpose-built Excel databases and working closely with the RDN GIS department in mapping spatial datasets. Additionally, data acquired though planning applications and professional reports should be captured in a useable spatially referenced format where possible.

- **Facilitating the use of the BC Water Use Reporting Centre (WURC)**[2], a software application for storing water use data from regional water purveyors in one easy-to-access portal that automatically generates reports on actual water use. Use of WURC is contingent on support from the Province and other partners.

[2] In the first decade of the DWWP Program, the RDN partnered with the Okanagan Basin Water Board to develop the Water Use Reporting Centre software application as a pilot, with the vision that it would eventually be taken on by the Province as part of their measuring and reporting regulation that is still under development.

5.2.2 Analyze and Interpret Data to Generate Richer Understanding of the Region's Water

As the volume of data collected grows, the region's aquifers and watersheds become better characterized. Greater attention and resourcing devoted to data analysis will turn raw data into useful knowledge that can inform decision making. This requires engaging specialized skill sets through a combination of staffing, outsourcing to third-party professionals, and partnerships with the Province and academia.

► Water Budget and Rainwater Management Modelling

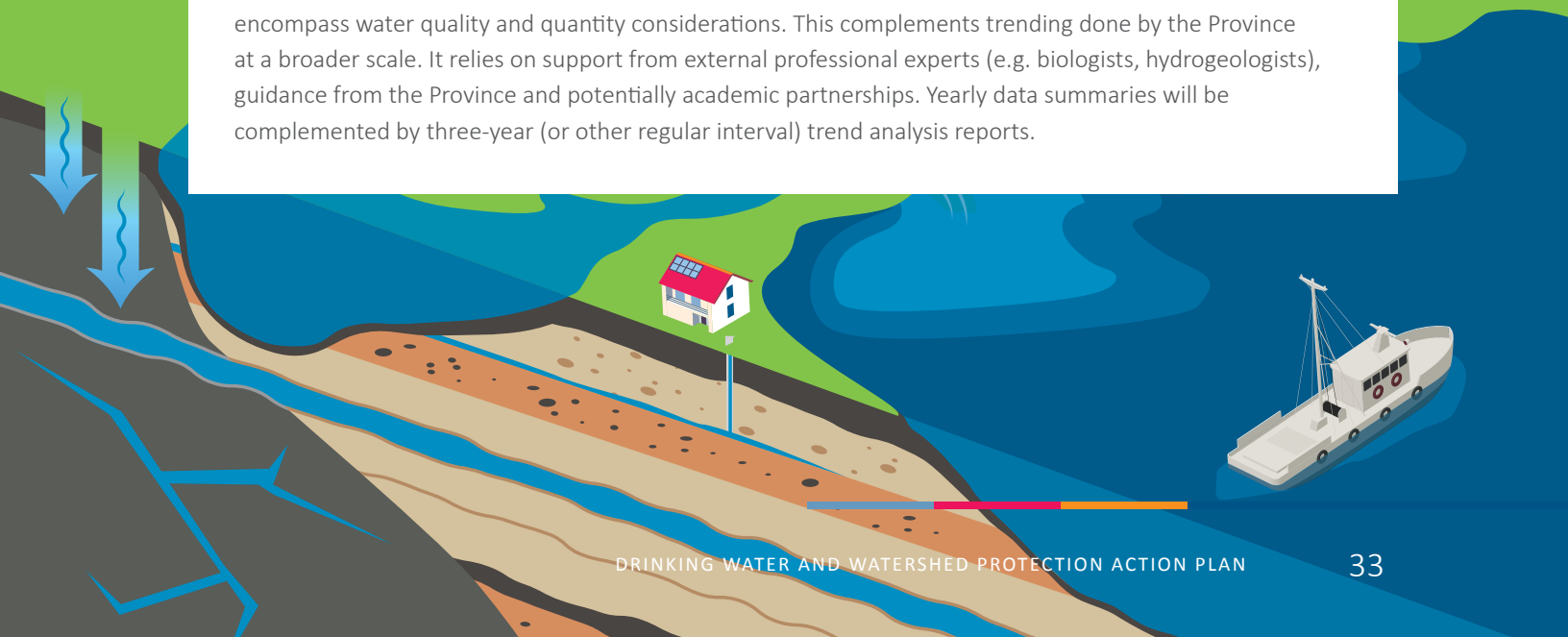
The RDN completed the Phase 1 Water Budget (developing a conceptual model) for the watersheds and aquifers within the region in 2013. Phase 2 involved expanding monitoring within areas identified as priorities. Phase 3, which began in 2019 and is ongoing, involves creating numerical models for those priority areas to run scenarios that analyze water supply and demand possibilities and anticipate how the system will respond to changes. This includes modelling climate aspects such as snowpack and snow water equivalent, precipitation, groundwater recharge, streamflow to understand 'supply' and includes modelling groundwater and surface water extraction, plus evapotranspiration to quantify 'demand'.

The DWWP Program will also model regional hydrology in relation to land development, from a rainwater management perspective. This focuses specifically on modelling the water balance aspects of run-off, interflow, and infiltration with changing land cover. The emphasis is on understanding the natural flow pathways that should be maintained or restored to minimize negative impacts of floods and droughts, in terms of both water quantity and quality.

In both cases, a key purpose is to reveal the impacts of modelled climate change on the region's hydrology, including streamflow timing and volumes, aquifer levels, snowpack accumulation, and changes in the viability of fish habitat, for example. This will enable the RDN to proactively respond to these water-related climate change impacts and risks through infrastructure, planning and policy.

► Trend Analysis

Analysis of trends is required to interpret the data collected, understand changes in water resources over time, and plan for the future (i.e. Is quality improving or degrading? Are levels declining or stable? What factors influence the observed trends?). The analysis, for both surface water and groundwater, will encompass water quality and quantity considerations. This complements trending done by the Province at a broader scale. It relies on support from external professional experts (e.g. biologists, hydrogeologists), guidance from the Province and potentially academic partnerships. Yearly data summaries will be complemented by three-year (or other regular interval) trend analysis reports.



► Watershed / Aquifer Prioritization

Watersheds and aquifers deemed the most stressed or at-risk will be continually prioritized based on analysis of data and engaging local and technical experts. This means directing extra attention for outreach, monitoring, policy and planning to these parts of the region when compared with stable / low stress areas. This could be at the water region scale (i.e. the French Creek water region including underlying aquifers), or at the sub-watershed (i.e. Morningstar Creekshed), or even the water feature scale (i.e. a particular wetland). Sharing information on prioritization with partners will facilitate proactive response to risk or concern. Parks departments, for example, may use this information to inform land acquisition priorities.

► Quantifying Natural Assets and Ecosystem Services

Watershed features are natural assets that provide ecosystem services to our community. These services include water storage, water filtration, flood buffers, aquatic habitat, aesthetic beauty and recreation opportunities. Quantifying natural assets (riparian corridors, wetlands, lakes, aquifers), analyzing their value and accounting for their worth in terms of community use can help inform decisions related to managing and maintaining natural assets, investing in engineered assets, climate change adaptation, and land acquisition. This could expand upon the wetland mapping and monitoring done in partnership with Vancouver Island University in the first decade of the DWWP Program. Quantifying ecosystem services within a pilot area or for a specific natural asset would test the approach before implementing natural asset valuation at a wider scale. Recent guidance at the provincial and federal level on developing the Ecological Accounting Process (EAP) and Municipal Natural Assets Initiative (MNAI) could provide support for the RDN to achieve this action.

5.2.3 Communicate Water Information to Decision-Makers and the Public

The RDN will develop and implement tools to ensure that water science and information is mapped, visualized, and published for ease of access. Review of the DWWP Program's website will identify opportunities to improve communications through use of new technology and best practices (e.g. dynamic graphs, infographics, etc.). Messaging will also shift to include more about what the science tells us, why it is important, and how it informs watershed protection in a format that effectively communicates to the public and to decision-makers at all levels. The goal is to select the best communication format for the audience and purpose.

The tools to support this action include:

- ► **Publications**
- ► **Data visualization** through dynamic graphs
- ► **GIS Water Map**
- ► **Established process** to inform updates to Province's mapping & characterization of water attributes

These tools relate to those discussed above in section 5.1.1 (*Community-Based Team WaterSmart Outreach*) and section 5.3.1 (*Facilitate Integration of Water Information into Planning Processes*) which follows.

5.2.4 Develop Targets to Maintain Watershed Function

A high-functioning watershed can support and maintain the full range of ecological processes and functions essential to sustaining biodiversity, and watershed resources, and services provided to society. Residents are concerned with the cumulative impacts of land development on watershed health.

Developing science-based watershed performance targets and standards to maintain watershed function will help guide development in a way that preserves ecological processes and sustainable water resource access. The DWWP Program will play a leading role in exploring how water balance targets can be developed using existing tools, science, and best practices to maintain or restore hydrologic function and protect water quality in the region's watersheds. We will review targets as conditions change and new information becomes available. Watershed targets could potentially relate to:

- **infiltration** (pervious surfaces);
- **soil depth / retention**;
- **riparian vegetation corridor** width and continuity;
- **water quality** (supporting Province in developing water quality objectives as mentioned in Section 5.2.1);
- **instream flow needs**;
- **tree cover**; and,
- **water extraction**.

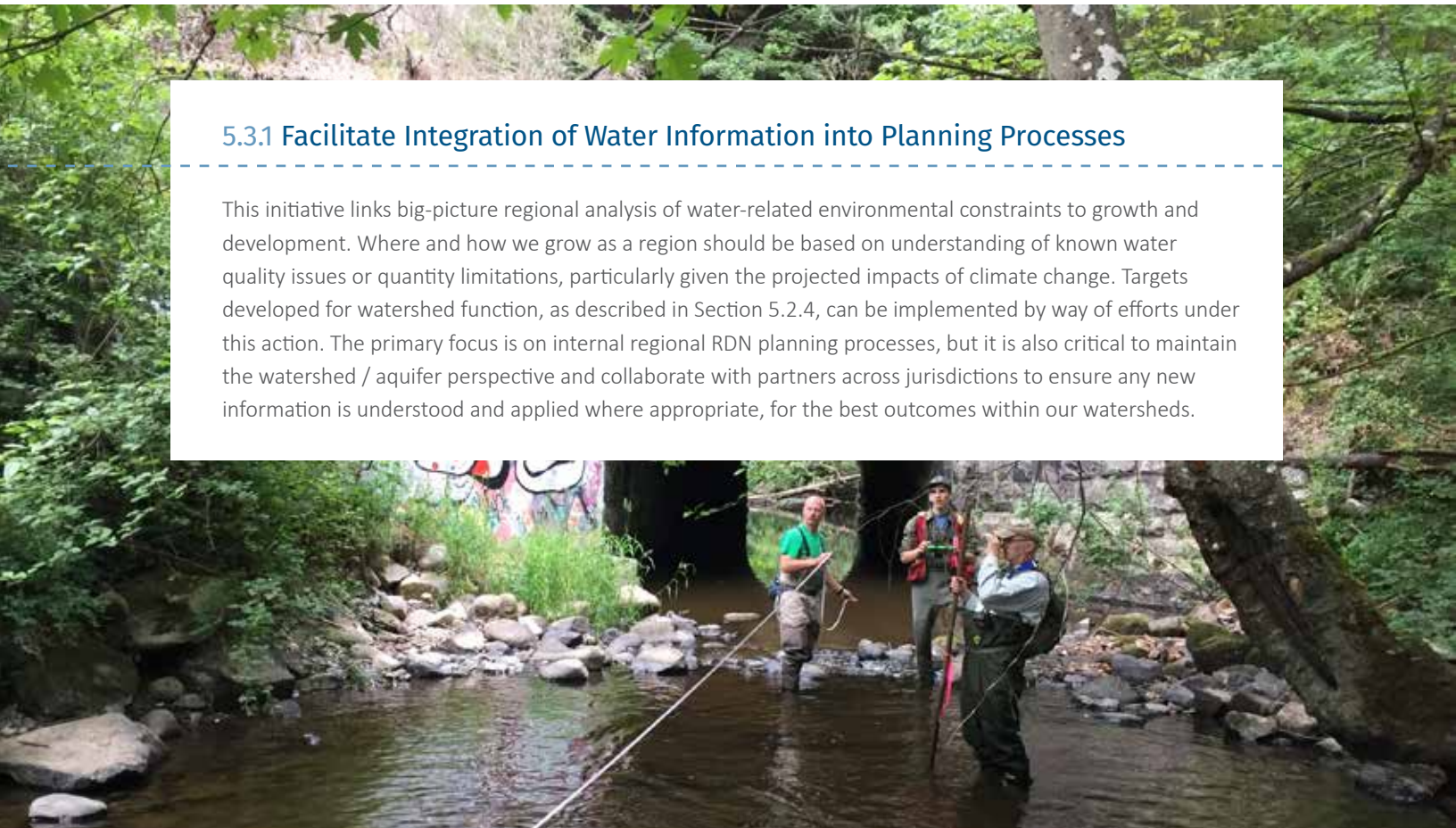
While it is desirable to set targets on a watershed and aquifer scale, RDN jurisdiction does not extend to all the land uses in a watershed or over an aquifer. This initiative will focus on how the RDN will develop watershed performance targets for implementation within its sphere of authority. However, in order to reap the benefits of a watershed approach, the RDN will collaborate with partners, within their own areas of authority, to understand the potential for broader use of targets and identify areas where alignment will be beneficial for watershed-scale outcomes. This is discussed more in Section 5.3.2 under *Strategic External Advocacy*.

5.3 Water-Centric Planning and Policy Support

For the first decade of the DWWP Program, the RDN's focus was on establishing systems to collect data and generate information in support of sustainable land-use planning. There is an opportunity over the next decade of the Program to further operationalize that data to directly inform planning processes and policy.

Recognizing that water is fundamental to life yet finite in supply, our plans and policies should make freshwater protection a central goal. This is linked to an ethic grounded in the understanding that communities and ecosystems are connected through water. In terms of this Action Plan, water-centric planning and policy support includes both internal (RDN departments) and external partners (municipalities, provincial ministries and others). The RDN's role through the DWWP Program is that of an information broker, a convener, and an advocate. The DWWP program will support planning departments, policy makers, and decision makers by providing regional water-related information that can inform processes like long-term planning, current development application reviews, provincial license / permit referrals, strategic advocacy with outside agencies, and innovative policy research. This section discusses planning processes (high level sequence of steps to develop or execute a plan) and policies (rules, regulations, guidelines that help achieve plan objectives).

Potential support to First Nations in watershed planning will be explored through further dialogue, guided by the principles of openness to working with neighbouring communities, and respect for Indigenous rights and title.



5.3.1 Facilitate Integration of Water Information into Planning Processes

This initiative links big-picture regional analysis of water-related environmental constraints to growth and development. Where and how we grow as a region should be based on understanding of known water quality issues or quantity limitations, particularly given the projected impacts of climate change. Targets developed for watershed function, as described in Section 5.2.4, can be implemented by way of efforts under this action. The primary focus is on internal regional RDN planning processes, but it is also critical to maintain the watershed / aquifer perspective and collaborate with partners across jurisdictions to ensure any new information is understood and applied where appropriate, for the best outcomes within our watersheds.

► Informing long term plans

Long-term plans set a vision for the community (including related services) over an extended time horizon. Integrating water information into these processes and plans will involve the analysis performed under Section 5.2.2 and the communication tools developed under Section 5.2.3. Whenever long-term plans are designated for renewal or updating within the RDN, the DWWP Program will facilitate inclusion of current and pertinent content on water availability, water quality, water risk, water sustainability best practices, etc. This valuable input will influence local planning into the future, which will directly impact the status of water resources. These long-term plans include, but are not limited to:

- Regional Growth Strategy;
- Official Community Plans;
- Neighbourhood Plans;
- Parks and Trails Strategic Plans;
- Liquid Waste Management Plan;
- Asset Management Plans.

In particular, the DWWP Program will take the lead on developing a Regional Rainwater Management Strategy in partnership with Wastewater Services, a commitment in the LWMP. This includes collaborating across departments, between municipalities, and with Ministry of Transportation and Infrastructure to share rainwater management strategies and recommend best practices that can be supported across the region. This planning process will consider subdivision development standards for onsite rainwater management linked to the watershed performance targets referenced in Section 5.2.4.

In unique circumstances that warrant it, Water Sustainability Plans (WSPs) (as defined in the BC *Water Sustainability Act*) may be utilized as a tool to manage water and land-use in priority watersheds based on analysis as described in Section 5.2.2. The RDN DWWP Program could participate in development of a Water Sustainability Plan (WSP), in collaboration with the Province, First Nations and key stakeholders.

► Informing current operations

Integration of regional water information, generated and compiled by the DWWP program, benefits the current operations and processes of many RDN departments and provincial agencies, including:

- RDN Current Planning: by ensuring that current available water-related information (i.e. recharge areas, vulnerable aquifers, sensitive streams) is considered in a manner that influences how development can proceed while protecting the resource from cumulative impacts over time. This may include contracting external professionals to assist in complex application reviews and hold technical reports supporting development applications to a rigorous standard of scrutiny.
- RDN Emergency Operations: by informing short-term responses to emergency events, through data compilation, tracking and communication including – precipitation, winds, and river levels – to understand the situational context and plan for response.
- Provincial Resource Referrals: by informing referrals to the RDN so that the most current local water information is considered by the Province when adjudicating relevant applications. Referrals include, for example, license applications for use of groundwater or surface water and permits for activities near streams.

5.3.2 Advance Innovative Policies and Practices to Improve Water Sustainability

► Review and Advise on Internal Policy

Subject-matter expertise on water sustainability, provided by the internal DWWP Program staff and external expert support, will assist with the review and strengthening of RDN policy and regulatory requirements that affect water protection in RDN's electoral areas. For example, assisting with creation and implementation of model bylaws or policies regarding provision of drinking water supplies for new development or maintaining on-site hydrology for preservation of ecological and hydrological function. Relevant policy topics, consistent with direction from the LWMP, include:

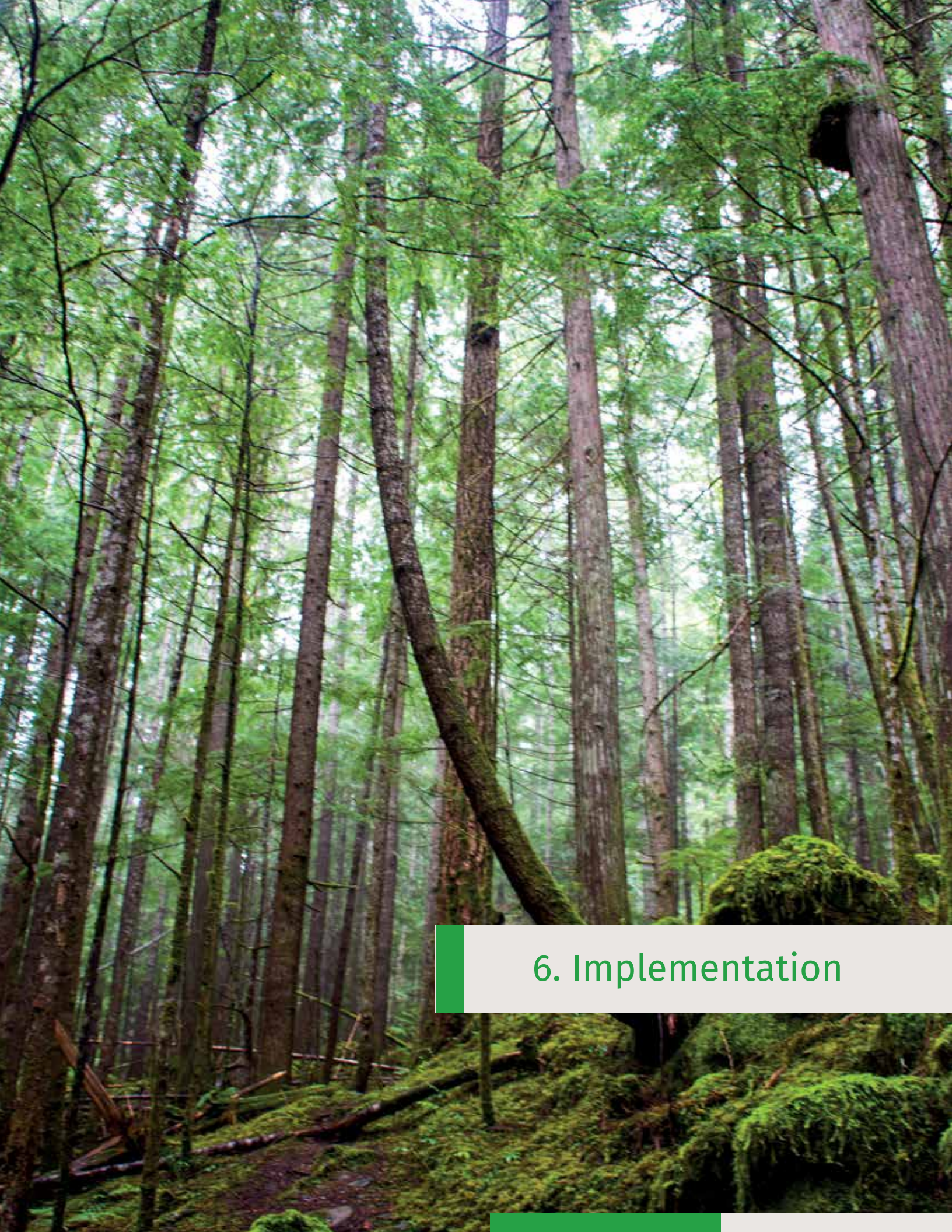
- supporting alternate water sources (i.e. rainwater, greywater);
- additional water conservation requirements where water supplies are stressed or at risk;
- erosion and sediment control standards; and,
- green infrastructure requirements for rainwater management

This involves research to identify water protection policies and best practices in other North American jurisdictions. Innovative approaches include incentive-based policies, low-impact development standards, and ecosystem services valuation considerations. The DWWP Program could also coordinate with member municipalities for review and advice on consistent policies within the watershed context, where appropriate.

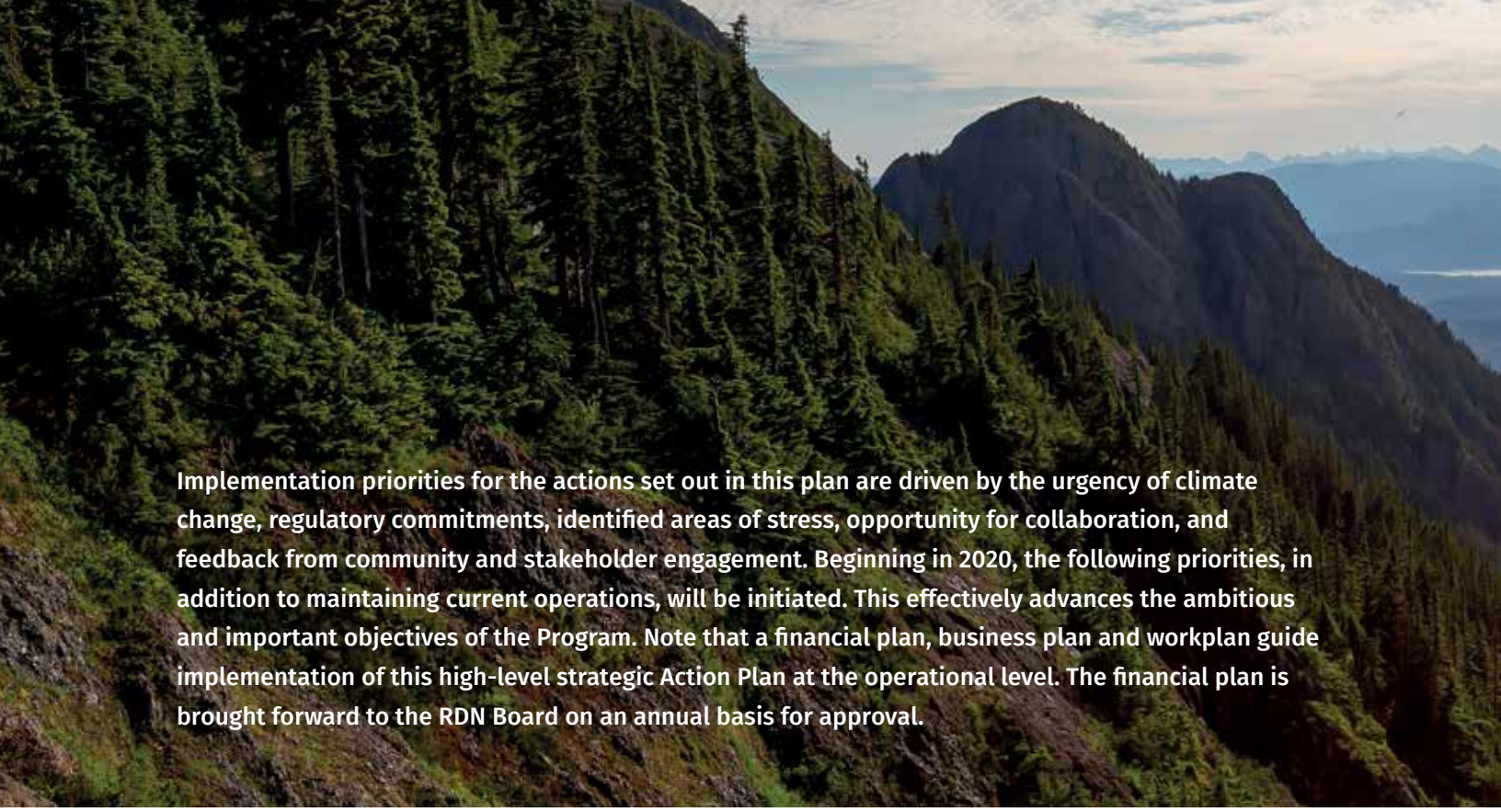
► Strategic External Advocacy

The DWWP Program will champion a positive advocacy role to inform external policies and regulations that affect the region's water resources yet are outside RDN authority. This includes providing formal comment by way of the DWWP Technical Advisory Committee to senior levels of government concerning their regulations or policies (subject to Board endorsement), formalizing collaborative working relationships with external agencies through MOUs where appropriate, and generally advancing regional sustainability goals through open lines of communication with other government agencies and First Nations. Within the RDN water protection sphere of interest, anticipated topics and associated external partners include:

- Provincial water policy – *Ministry of Environment and Climate Change; Ministry of Forests Lands Natural Resource Operations and Rural Development*
- Private managed forest land – *Ministry of Forests Lands Natural Resource Operations and Rural Development; Managed Forest Council and Mosaic Forest Management*
- Road drainage & rainwater management – *Ministry of Transportation and Infrastructure (Rural) and Municipalities*
- Drinking water guidance, standards and data management – *Ministry of Health / Island Health*



6. Implementation



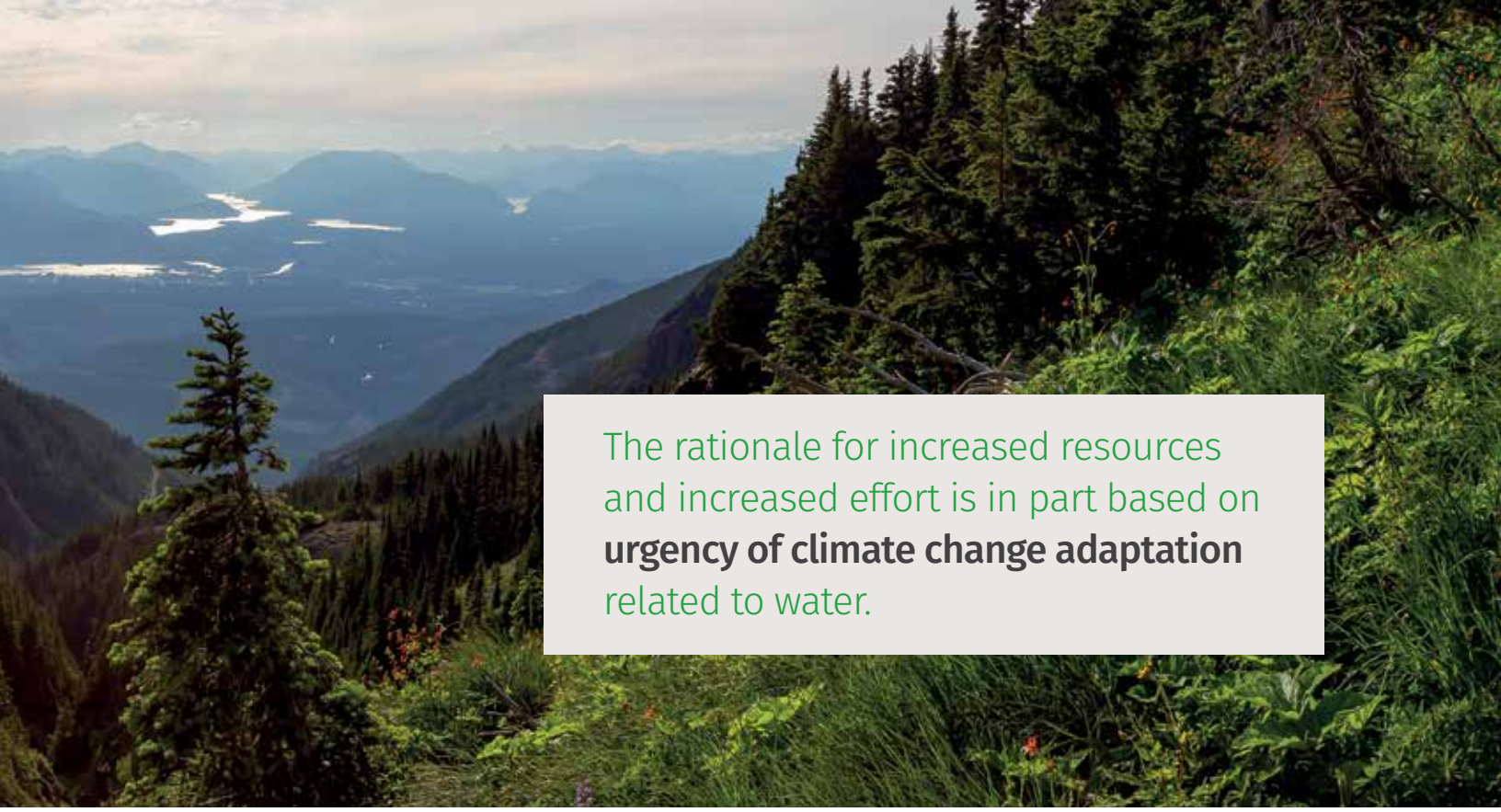
Implementation priorities for the actions set out in this plan are driven by the urgency of climate change, regulatory commitments, identified areas of stress, opportunity for collaboration, and feedback from community and stakeholder engagement. Beginning in 2020, the following priorities, in addition to maintaining current operations, will be initiated. This effectively advances the ambitious and important objectives of the Program. Note that a financial plan, business plan and workplan guide implementation of this high-level strategic Action Plan at the operational level. The financial plan is brought forward to the RDN Board on an annual basis for approval.

6.1 Priorities for 2020–2025

While all the actions outlined in this Plan are important parts of a comprehensive whole, some actions have emerged from the engagement process as most critical to advance soonest, starting in 2020:

- integrating water information into key plans that come up for review (i.e. RGS, OCPs, etc.);
- making progress towards LWMP commitments for rainwater management;
- exploring the valuation and ecosystem accounting of watershed natural assets;
- modelling water availability in a changing climate;
- priority long term data collection necessary for trend analysis;
- identify outreach program redesign opportunities for best use of resources using community-based social marketing;
- increase rebate funding and stewardship project support;
- survey to statistically quantify public reception to the program and guide implementation; and,
- multimedia outreach to communicate stewardship and science to the public.

Overall, implementation should be guided by additional considerations such as balanced delivery of core program actions across the Electoral Areas and the municipalities, recognizing water is a shared resource. To complement the equitable delivery of core actions, high risk or high stress areas will receive extra attention and effort. Implementation priorities will also be guided by partnership opportunities that can be seized for quick wins. Of course, the ultimate guide to prioritizing actions under the Plan is the Board strategic priorities and direction, as this evolves over the next decade.



The rationale for increased resources and increased effort is in part based on **urgency of climate change adaptation** related to water.

6.2 Resourcing the Plan

The engagement and feedback process for this Plan indicated strong support

to continue the activities that were most effective from the first 10-years and provided clear direction to take on additional initiatives, which will allow for a greater degree of stewardship, analysis and integration of information. This is in line with important organizational obligations and consistent with water-related objectives across various RDN plans and departments, including LWMP regulatory requirements and Board strategic priorities.

Currently, the DWWP Program is funded through a regional parcel tax. In order to evolve the DWWP program to this next phase of capacity to serve the region, sufficient funding is required. This includes an expanded budget needed to obtain the consulting and staffing support necessary to meet the objectives, maintain key relationships, and address the additional priorities identified in this updated Plan.

The items identified as new priorities in the section above amount to an increase in effort of approximately 50%, and a corresponding increase in resources. To act on these priorities starting in 2020 would require an increase in the parcel tax to deliver the desired service level.

The degree to which this Plan is resourced is decided by the RDN Board through the annual Financial Plan approval process.

7. Monitoring and Updating the Plan

How will we know we are on track to meet our ambitious goals and objectives? Under the overall theme of collaboration, success is gauged by the ongoing dialogue, cooperation, and participation of TAC members, between departments, with the public and other partners. Bringing together a diversity of perspectives is critical to ensuring a resilient process for water collaboration. Another high-level indication of progress is generally: do our questions about drinking water and watershed protection evolve over time? If we ask the same questions in the same way 10 years from now that will indicate stagnancy not progress.

7.1 Progress Indicators

For more tangible evaluation purposes, a suite of progress indicators has been selected to gauge success over time in each of the Program's thematic categories.

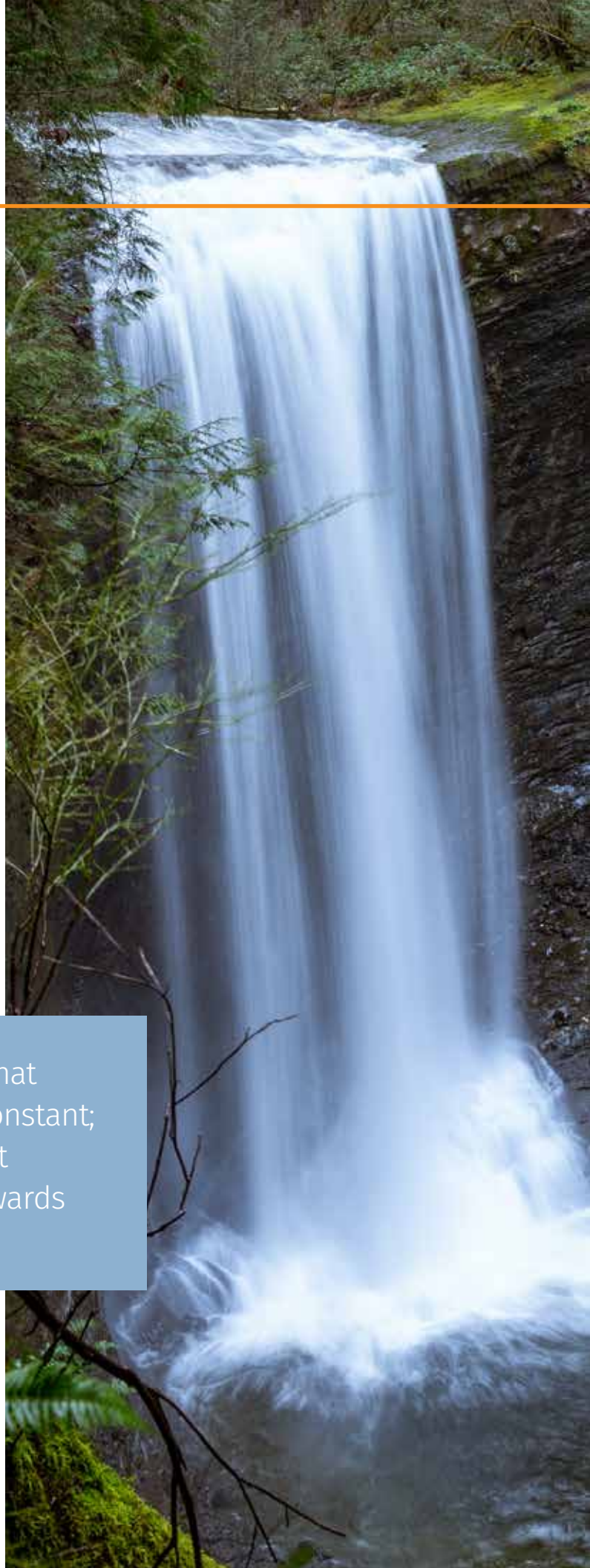
Theme	Progress Indicator 1	Progress Indicator 2	Progress Indicator 3	Progress Indicator 4
Water Awareness and Stewardship	Reduction of metered water use over time	Number of restoration projects completed	Market research survey response indicating improved awareness	Improving trends in groundwater level and surface water quality
Water Information and Science	Number of sites with long-term (>3 years) datasets hosted on open Provincial platforms	Completion of numerical water budget models for priority watersheds and aquifers	Continued participation of community volunteers in citizen science efforts	Number of publications communicating water science
Water-centric Planning and Policy Support	Number of planning documents and processes linked to water information	Planning-related referrals supported by DWWP information or staff	Implementation of innovative rainwater management policies and practices	Successful advocacy with outside agencies

7.2 Reporting Structure

Experts and stakeholders that represent the key water interests in the region will continue to guide Program implementation through **the DWWP Technical Advisory Committee (TAC)**. Progress against the DWWP Action Plan will be reported to the Board by way of the Technical Advisory Committee meeting minutes, the DWWP Business Plan and Operational Plan, and occasional reports to the Board as needed for more detailed advice or strategic updates. **The terms of reference for the TAC will be updated as needed to ensure active ongoing engagement of essential expertise to guide the implementation of the priority actions.** Residents can readily access details about projects made available on the public website.

7.3 Adaptive Management

Adaptive management means learning from implementation and responding as needed to fine-tune delivery of the program in response to feedback and outcomes. By using tools such as website analytics and surveys, and by responding to the results of water data analysis, information can readily be utilized to gauge how and where adaptation is required for continuing progress towards the vision and mission of the Program. The formal update interval for this Plan is every ten years. This provides long enough duration to roll out the outlined initiatives while still providing an opportunity to refresh the Plan before it becomes stale or out-of-step with local realities and priorities. Still, this Plan is designed to stand up beyond the decadal horizon based on the long-term nature of the actions and the acknowledgement of the time it takes to make meaningful change and produce tangible outcomes. However, periodic reflection on what is working and what is not, is essential. One guiding principle that applies here is the paradox that "action is reflection and reflection is action".



An **adaptive approach** recognizes that uncertainties exist and change is constant; it provides the mechanism to adjust direction as needed to progress towards the vision.

For the love of our water

8. Closing Remarks

This document outlines the basis by which the Regional District of Nanaimo plans to implement, facilitate and support regional initiatives that safeguard, restore, and optimize the region's drinking water sources, ecosystems, and infrastructure. The region-wide nature of the Program reflects the importance of collaboration and partnerships in understanding, stewarding and planning for our shared water resources. Clean, available water is closely linked to prosperity – this has long been a focus of the RDN Board and will continue and expand within the next decade through continued direct action. This Plan is about relationships, centred around water. Together, we can lead the way to a sustainable future.

8.1 Acknowledgements

The update of this Plan would not have been possible without the following contributors:

- The DWWP Technical Advisory Committee

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Appendices

APPENDIX A - RDN DWWP 10 Year Action Plan Implementation Review (2018)

APPENDIX B - Summary Report – Planning Advisory Group Structured Decision Making Workshops Updating the RDN DWWP Action Plan (2019)

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