



From Flood Risk to Resilience: a B.C. Flood Strategy to 2035

Executive Summary

Flooding is a recurring natural event in B.C. that will increase in frequency and intensity through the 21st century with climate change and associated risks, which may increase as our population grows, unless we learn to live with, and work alongside nature.

The B.C. Flood Strategy (the Strategy) has been founded on an understanding that flood resilience can best be achieved by working in collaboration with all orders of government, and that an *all of society* approach is required to be successful. Initiated in 2020, the Strategy was developed with First Nations, local governments, and stakeholders, including efforts towards sharing the pen with eight First Nations partners from B.C.'s major watersheds.

The Strategy is intended as a roadmap toward 2035, in recognition that a phased approach is required for implementing significant improvements to integrated flood hazard management over time. Following the UN Sendai Framework for Disaster Risk Reduction, the initial priority will be “understanding flood risk”, followed by “strengthening flood risk governance”. The Strategy offers clear direction on what needs to be done and how to begin translating principles into action through a Flood Resilience (Implementation) Plan.

Through engagement, we heard concerns regarding funding constraints for flood management efforts across the province, along with inter-jurisdictional and regulatory barriers, and insufficient communication when it came to flood risk. Additionally, we heard about challenges regarding coordination and relationship-building across jurisdictions to support better flood management, as well as the need for provincial guidance and support to facilitate the equitable distribution of flood planning and recovery resources.

While the Strategy offers a comprehensive approach to address a wide range of flood resilience challenges, it must act in accordance with a broad range of work taking place across government and with First Nations. This work includes the Watershed Security Strategy, Coastal Marine Strategy and the *Emergency and Disaster Management Act*, in addition to supporting work related to the co-benefits of biodiversity and addressing risks to salmon, drought, forest stewardship, food security, critical infrastructure, and mental health and well-being.

The Strategy articulates *why* a new direction for B.C. is necessary and *how* it can be achieved over time. During subsequent implementation planning, key questions such as *when* (phasing/timing of specific commitments), *who* (clarification of roles and responsibilities), *where* (locations for projects), and *how* much will be addressed. Moreover, implementation planning must establish *what* performance indicators, metrics, and targets will be monitored, measured, and tracked at the provincial scale to ensure accountability.

Responding To Feedback

First Nations were invited to contribute their knowledge, experience, and perspectives on flood resilience. Their contributions have shaped the Vision for the Strategy and informed the Actions moving forward.

The following examples illustrate how the Strategy seeks to respond to input by creating change:

| Feedback | Addressed through: |
|--|--|
| Holistic approach to understand risk around flooding and the monitoring of impacts | A province-wide climate and flood risk assessment |
| Need for more investments in flood projects that work with nature and prioritize natural resilience, fish friendly design, biodiversity, and consider climate adaptation | Policy actions and funding direction, specifically including <i>Action 4.7: Coordinate and enhance investments to support mutually beneficial floodplain management and community water, biodiversity, and ecological values</i> |
| Public education on flood risk and provincial funding support for community engagement and training | New flood wise programming and guidance on how local governments and First Nations can work together to develop integrated flood management plans (see <i>Actions 1.4 and 2.6</i>) |
| Place-based planning and building strong, functional relationships across watersheds, specifically involving local governments that must work with First Nations in integrated flood management planning | Exploring alternate governance approaches, more support for integrated flood management planning processes, and new local government guidance |
| Equitable and stable funding for all, with sufficient timelines (e.g., 3 years) to allow for project success | <i>Action 4.1: Develop and implement predictable ongoing funding programs that meet the needs of communities and address equity and accessibility considerations</i> |
| Food security and respecting First Nations' access and use of foods during and after flood events, as well as addressing flood impacts on agricultural lands and transportation corridors | Actions in <i>Pathway 3 – Enhancing Flood Preparedness, Response, and Recovery</i> , along with the implementation of new programs such as the Resilient Agricultural Landscapes Program and the Fraser Valley Farmers Flood Mitigation Fund |
| Mental health and community well-being planning needed before and after flood events | Policy actions linked to pre-disaster and post-disaster recovery plans, among other Actions that reflect the connection of health and well-being to biodiversity and nature |
| Challenge of recruiting and retaining qualified professionals and need for equal accreditation for First Nations' training programs | Increasing capacity and supporting applied research of qualified professionals, including identifying funding opportunities and additional eligibility accreditation options (See <i>Action 1.4</i>) |



A Message From Minister Nathan Cullen

Flooding continues to be one of the most significant environmental challenges in British Columbia. While the 2021 atmospheric river events were historic in their impact, every year our province faces flooding that carries a heavy cost to communities. The B.C. Flood Strategy represents an effort to strengthen our ability to respond to crises and prepare for flood-related climate impacts, while advancing our commitment to reconciliation with Indigenous peoples.

The development of the B.C. Flood Strategy involved engaging with First Nations, local governments, and numerous other partners to gather diverse perspectives on a holistic approach to flood management. On behalf of our team, I express gratitude for all who participated in the process and shared their insights to help shape the Strategy. I especially want to thank the First Nations collaborators on the sharing the pen team for their time and commitment to the co-development process.

The 2024 alignment of water mandates to the Ministry of Water, Land and Resource Stewardship (WLRS) provides opportunities to embed flood resilience and watershed security values in advancing government's goals of working in partnership with First Nations, responding to climate change, supporting sustainable economic development, and ensuring B.C. resources benefit local communities and people.

The B.C. Flood Strategy articulates a provincial vision, outcomes, and principles for flood management in the 21st century. Building a more flood-resilient province will require an all-of-society approach that brings communities together to prepare and respond to flooding.

While there is much to be done to accomplish this vision, the completion of the Strategy will build alignment and a shared path forward to ensure that people living in British Columbia are well equipped to face future flood events.

Sincerely,

Nathan Cullen
Minister of Water, Land and Resource Stewardship

Acknowledgments

The B.C. Flood Strategy team acknowledges the time and effort contributed by all those involved in the development of the B.C. Flood Strategy.

Special appreciation goes to our Sharing the Pen team for their dedicated collaboration. Notably, Stó:lō Tribal Chief Tyrone McNeil, a member of Seabird Island Band and chair of the Emergency Planning Secretariat, who enriched the Strategy with valuable wisdom and insights.

The Sharing the Pen team is a collective of First Nations participants representing B.C.'s distinct language families and major watersheds. Weekly meetings with the Sharing the Pen team during the spring of 2023 facilitated cross-dialogue and an iterative engagement process to draft the Strategy in a "good way". In other words, trying to move the Strategy forward to align with the *Declaration on the Rights of Indigenous Peoples Act* (the Declaration Act). This collaboration resulted in a more comprehensive Strategy, truly reflective of the knowledge and perspectives of **all peoples** living on these lands now known as British Columbia.

Special thanks are extended to the Alderhill Planning Inc. team for designing a collaborative environment that nurtured innovation, forged new connections, and established relationships, as well as Prism, for their creative and insightful work to communicate, collaborate, and lean-in to new ideas.

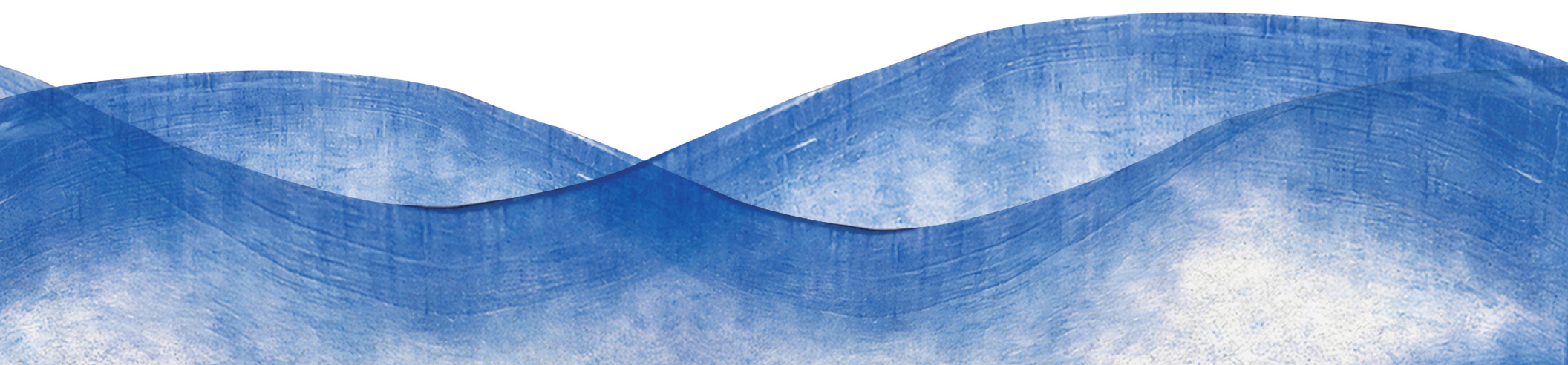




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Introduction

Flooding is the most common and costly disaster in Canada.¹ In British Columbia (B.C.), floods have been a recurring phenomenon along rivers, lakes, and coasts since time immemorial. Floods are prominent in many First Nations' creation stories and have influenced seasonal migrations and stewardship practices for generations. However, the risks of flooding to people living in British Columbia are substantial and continue to grow due to ongoing floodplain development and climate change.

The Strategy presents a roadmap including a Vision, Principles, and Actions to 2035 for flood resilience in B.C. Grounded in the principles of collective leadership and shared decision-making with Indigenous peoples, the Strategy emphasizes a commitment to collaboration in its development and implementation. Informed by the ["From Flood Risk to Resilience in B.C.: an Intentions Paper"](#) (October 2022), feedback on the Intentions Paper supports an innovative and holistic approach to flood risk management. Organized into four strategic 'pathways' aligned with the United Nations' Sendai Framework for Disaster Risk Reduction (the Sendai Framework); the Strategy integrates core themes from past engagements.

Futureproofing Our Ability to Respond to Crises:

Both Canada and B.C. have adopted the Sendai Framework, which consists of four priorities focused on knowledge, governance, funding, and disaster preparedness. The Sendai Framework advocates a comprehensive all-of-society approach to *"empower local authorities, through regulatory and financial means, to work and coordinate with civil society, communities and Indigenous peoples and migrants in disaster risk management at the local level."*

Flood Resilience

The ability of a system, community or society exposed to flood hazards to resist, absorb, accommodate, adapt to, transform, and recover from such events in a timely, efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.



Pathway 1: Understanding Flood Risk

- Action 1.1: Develop a provincially coordinated floodplain mapping program
- Action 1.2: Conduct a province-wide flood risk assessment
- Action 1.3: Raise awareness of flood risk with a human-centered approach
- Action 1.4: Build capacity and support for applied research and enhanced training

Pathway 2: Strengthening Flood Risk Governance

- Action 2.1: Set new direction for B.C.'s flood governance model
- Action 2.2: Establish a First Nations Flood Resilience Advisory Circle
- Action 2.3: Establish a Minister's Flood Resilience Advisory Circle
- Action 2.4: Promote integrated flood management planning
- Action 2.5: Build cross-jurisdictional and international collaboration for flood resilience
- Action 2.6: Update provincial legislation, regulations, and policies
- Action 2.7: Update provincial technical guidance
- Action 2.8: Strengthen dike regulatory programs
- Action 2.9: Develop a provincially coordinated approach to orphan dikes
- Action 2.10: Enhance forestry practices to mitigate flood risk

Pathway 3: Enhancing Flood Preparedness, Response, and Recovery

- Action 3.1: Enhance flood forecasting and early warning systems
- Action 3.2: Enhance flood preparedness through the Provincial Flood Emergency Response Plan
- Action 3.3: Enhance flood emergency response activities
- Action 3.4: Enhance pre- and post-disaster flood recovery planning

Pathway 4: Investing for Flood Resilience

- Action 4.1: Develop predictable funding programs
- Action 4.2: Enhance flood avoidance investments
- Action 4.3: Enhance flood accommodation investments
- Action 4.4: Enhance flood protection investments
- Action 4.5: Enhance community-led managed retreat investments
- Action 4.6: Address First Nations loss of land
- Action 4.7: Coordinate investments for floodplain management

Indigenous Peoples and Flooding

The Province acknowledges rights recognition, self-determination, and partnerships with Indigenous peoples; and is committed to alignment of laws with the *United Nations Declaration on the Rights of Indigenous Peoples Act* (the UN Declaration). This Strategy particularly emphasizes Articles 19 (free, prior, informed consent), 27 (fair, independent, impartial, and transparent processes), and 29 (conservation and protection of the environment).

Many First Nations' worldviews center around water bodies in their land, and caring for that land, including all people, living things, and other resources in their traditional territories. First Nations peoples held well-structured governance systems before contact. Historical decisions related to flood management and land use have put many First Nation communities at a loss. To move forward with reconciliation, it is essential First Nations' needs, values and worldviews are incorporated in flood management and First Nations must be partners in decision-making going forward. As well, the respective and distinct laws, legal systems, and systems of governance of First Nations must be upheld.

Accordingly, early and ongoing engagement with Indigenous peoples has informed the Strategy, and First Nations' voices are respected and incorporated.

Types of Floods

Floods are broadly categorized into four main types: riverine, coastal, local stormwater, and groundwater.

Floods in British Columbia

In 2021, British Columbia experienced unprecedented flooding and landslides across the south-central and southern regions, triggered by atmospheric river events. Notable incidents included the Nooksack River overflow into the Sumas Prairie, causing extensive damage to critical infrastructure, such as transportation, agriculture, and ecological assets. The flooding had severe impacts on First Nation communities along Highway 8, as well as Merritt and Princeton, emphasizing the profound disruptions flooding poses to communities, economies, critical infrastructure, and the environment. The economic impact was estimated at \$5-7 billion, and it severely affected Canadian National (CN) Railway and Canadian Pacific (CP) Railway, cutting off main access routes to B.C. and Canada. The flooding in 2021 was also the most significant agricultural disaster in B.C.'s history, affecting over 1,100 farms, 15,000 hectares, and 2.5 million livestock.

The diverse geography of B.C., characterized by rainy coasts, mountain valleys, and rivers has historically been shaped by floods. Floodplains have attracted many communities, including thriving First Nations who have coexisted with floods and the environment to sustain their way of life. River valleys and floodplains have hosted human settlements since time immemorial, drawn by an abundance of food, fish, fertile soil, access to water and transportation routes, scenic views, and gentle slopes.

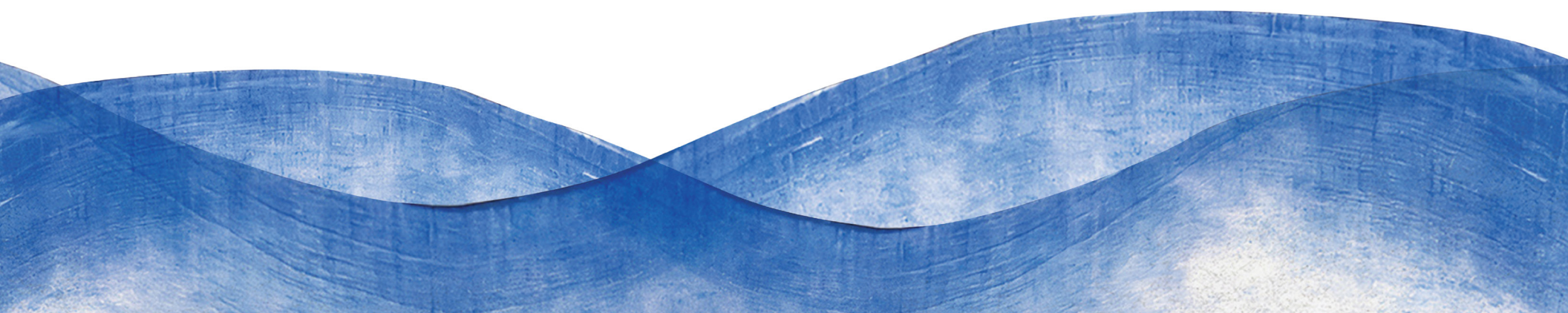
Today, over 500,000 people and numerous businesses are situated in flood-prone areas facing vulnerability to damaging flood events that threaten lives and the environment. Floodplains house critical infrastructure that supports a majority of British Columbia's population and many others across Canada. With climate change and urban expansion, the risk of damaging floods in B.C. continues to escalate.

The current mandates of the provincial government, highlighted by the development of B.C.'s *Emergency and Disaster Management Act*, emphasize the importance of preparing for climate change impacts, future-proofing our crisis response capabilities, and fostering meaningful reconciliation with Indigenous peoples. These focus areas are outlined below and frame the rationale for the B.C. Flood Strategy.

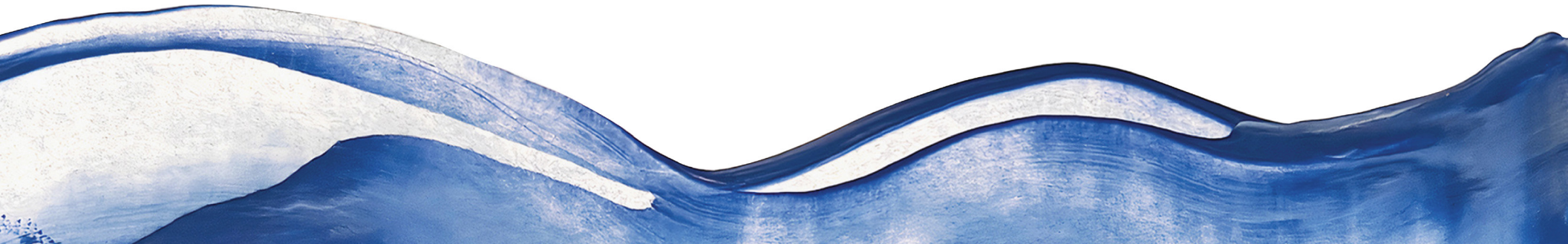
Preparing for Climate Change: Climate change amplifies flood risks from a warming atmosphere, which leads to heavier rainfall events, earlier and accelerated snowmelt, higher storm surges, and rising sea levels. Severe wildfires disrupt the natural landscape's ability to absorb water, leading to increased river and stream flows post-fires (see [Abbott-Chapman Report 2017](#)). Climate change is projected to increase river flooding frequency by at least 10-20% and increase local floods from heavy downpours by 40%. By the end of the century, sea levels may rise by as much as 0.44m, and potentially reach 1.4m under the most extreme emissions scenarios.² The B.C. Climate Preparedness and Adaptation Strategy highlights significant public concern about flooding, with over 80% of engaged people supporting increased Provincial action on flood management.

Meaningful Indigenous Reconciliation: First Nations communities in B.C., whose reserves are often located on floodplains, bear disproportionate flood impacts. First Nations have historically not received sufficient funding and resources to mitigate the consequences of flooding and are often excluded from decision-making processes and flood management planning. The Strategy aims to align with the Province's commitments under the *Declaration on the Rights of Indigenous Peoples Act* (the Declaration Act). Reconciliation requires building relationships on a nation-to-nation basis to achieve genuine collaboration. This means ensuring that First Nations' perspectives are reflected and respected throughout the Strategy. Implementation planning will demonstrate the Province's commitment to collaborating with Indigenous peoples to advance reconciliation.

Reconciling Our Relationship with Water, Land, and Flooding: To gain deeper insight into current policies, it is important to understand how past events have influenced them. Governments and communities have often responded to flood events with new policies, programs, and practices as reactive measures. It is crucial to shift toward a proactive approach that focuses on better preparedness for flooding. In this regard, it is essential to consider local history, recognizing that some First Nations communities were forcibly displaced to reserves situated in areas increasingly prone to flooding. By acknowledging this history, it is possible to foster better relationships and promote collaboration. In seeing water as a value that needs to be stewarded responsibly and cared for, we begin to understand that by taking care of it, it will in turn take care of us. Water quality is beyond the scope of the Strategy, however related implications and interactions are considered as part of integrated flood management decisions.



Vision & Principles



Vision

Together, we are leaders in innovative, holistic flood risk management, enhancing B.C.'s flood resilience for the 21st century.

Environmental Sustainability

B.C.'s flood resilient future will reflect natural floodplains, river corridors, lakes, watersheds, coastal ecosystems, and nature-based solutions, providing valuable ecosystem services and aiding recovery post-flood. Services include fish and wildlife habitat preservation, clean water, open spaces, recreational opportunities, contributing to health and well-being, as well as providing cultural and spiritual benefits. As we work towards a flood resilient future, we acknowledge the interconnectedness of nature-based solutions and human-engineered "grey" infrastructure.

Communities aspire to balance protecting people and infrastructure from flooding while preserving natural watersheds and floodplain ecosystems, safeguarding them from exploitation and engineered alterations of waterfront land. Nature-based solutions that consider salmon, species at risk, and aquatic habitat are integrated wherever possible in B.C.'s watersheds. The knowledge of Indigenous peoples and the jurisdiction of Rights and Title holders, who have long recognized the interconnectedness of environmental sustainability, economic stability, and public health are invaluable resources. This knowledge is integrated into decision-making processes, respecting the rights and traditions of Indigenous peoples as part of the path towards reconciliation

Enhanced Public Safety

Applying the Sendai Framework enhances public safety by reducing collective risks, considering the geographic locations of communities. This includes addressing disproportionate flood risks faced by Indigenous peoples residing on reserves or urban areas primarily located in floodplains. Tailored efforts are required to meet their specific needs while safeguarding their homes, infrastructure, and cultural sites from flooding. A Gender-Based Analysis+ (GBA+) lens is applied to consider equity-deserving groups, including Black, Indigenous, and People of Color (BIPOC), lesbian, gay, bisexual, transgender, queer, questioning and Two-Spirit (LGBTQIA2S+) people, individuals living with physical or mental disabilities, and women in all policy and actions. Special attention is given to the needs of vulnerable populations who require distinctive considerations during evacuation processes.

Economic Stability

Investing in flood resilient solutions is crucial for provincial and local economies to enhance their capacity to absorb and withstand water, minimizing economic disruption and property damage. Ongoing efforts focus on preventing major dam failures or mine tailings ponds through improved engineering practices, regulations, and compliance. Provincial and federal disaster mitigation actions, along with funding programs, promote nature-based solutions and infrastructure work for multiple benefits.

Principles

Principles for Strategic Flood Resilience

The following principles provide high-level guidance for flood resilience initiatives across multiple jurisdictions. They reflect the lived experiences of community members within the province and are informed by various references, including input from engagement, [the Sendai Framework](#), the B.C. Office of the Auditor General's [Public Sector Governance Guide to the Principles of Good Practice](#), the [B.C. Emergency Management System](#) (2016), the [Climate Preparedness and Adaptation Strategy](#), and the review paper *"Strategic Flood Management: 10 'Golden Rules' to Guide a Sound Approach."*⁴ These principles are foundational pillars for any flood resilience initiative or program in B.C., and include: Holistic, Proactive, Place-Based, Accountable, Collaborative, Transparent, Fair and Risk-Informed. These principles are widely recognized and serve as the basis for successful strategic flood resilience in the province.



Holistic: A holistic approach to flood management is interdisciplinary, balanced, Indigenous-centred, and is integrative across a network of relations within watersheds, ecosystems, land, and society.

Proactive: Provincial government, First Nations, local governments, organizations, and individuals must work together and take action to build greater flood resilience.

Place-based: Decisions to avoid and reduce flood risks need to use the best available data, and Indigenous knowledge and science considering watershed-based approaches, including understanding upstream and downstream connections. No single solution can address every flood risk, requiring the need for flexible and diverse solutions.

Accountable: Organizations and individuals must take responsibility for their decisions and actions to build greater flood resilience over time. Accountability in this context means inclusivity, equitable decision-making, and alignment with the UN Declaration, with a focus on a communal approach that goes beyond historical decision-making authorities.

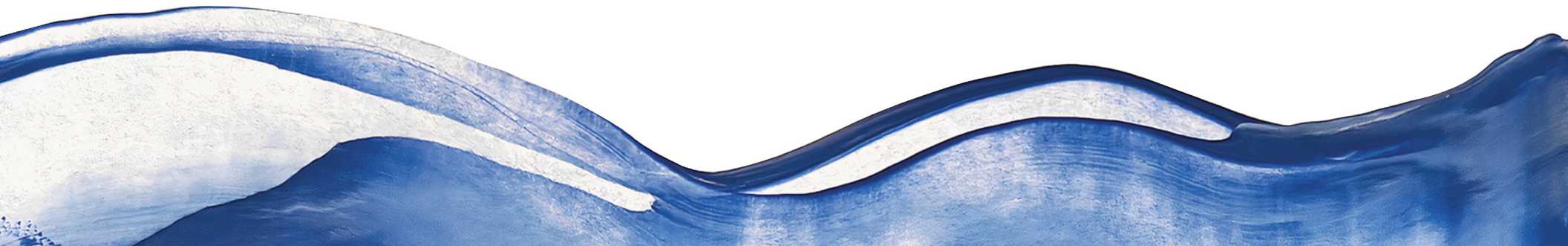
Collaborative: Effective collaboration among diverse stakeholders is required to reduce flood risks. This includes all levels of governments, First Nations, industries, businesses, communities, landowners, and the public.

Transparent: Flood resilience decisions and flood risk data must be open and accessible to all, enabling comprehensive, accurate, clear information on flood risks, including uncertainties.

Fair: To be effective, programs aimed at reducing flood risk must be equitable and accessible to all, with specific attention paid to the vulnerability of Indigenous peoples in B.C. A GBA+ lens must be applied to address factors such as race, culture, gender, sex, age, income, and ability, while upholding human rights.

Risk-informed: Flood resilience decisions and investments are informed by known levels of risk through community and provincial-level vulnerability and risk assessments that are based on climate change, equity, resilience, and cumulative effects.

Pathways & Action



The following introduces each of the four Pathways and 25 Actions that make up the comprehensive Strategy for shifting from flood risk to resilience between now and 2035.

While the Actions outline the broad scope of ways that the vision for flood resilience could be achieved over the next decade and beyond, further collaborative implementation planning is required to address priorities, phasing, magnitude and timing of specific commitments, roles and responsibilities. The Flood Resilience Plan (the Resilience Plan) will drive the Strategy's implementation in phases, encompassing risk assessments, legislative review, guidance, funding, and performance monitoring. Following the Sendai Framework, the initial priority will be "understanding flood risk", followed by "strengthening flood governance", the foundations of which can begin while the Resilience Plan is being developed.

Appendix A provides more detail on the types of activities, associated with the Actions, that will be built into implementation planning.



Pathway 1: Understanding Flood Risk



Increasing knowledge and understanding of flood risk in B.C. is critical for effectively building flood resilience over time. Traditionally, flood risk, as defined by Western science, engineering, and risk management disciplines is assessed by combining the likelihood and consequence of flooding in a specific location, considering the impacts of flooding on human health, well-being, buildings, infrastructure, ecosystems, and other valuable elements. This involves evaluating the exposure and vulnerability to flood damages. Wise practices include considering various flood risk scenarios with different magnitudes and resilience pathways.

There is an urgent need for respectful, reciprocal sharing of information and data to bridge Western science with Indigenous ways of knowing, respecting Indigenous data governance and the rights of First Nations. Acknowledging the complex and context-specific practices and values of First Nations alongside Western science, as well that some data is culturally sensitive and cannot be shared openly, is essential. First Nations have inherent rights to ownership, control, access, and possession of their data. Additionally, it is vital to consider past decisions that have influenced flood risk, including historical inequities, to address and rectify them.

Action 1.1: Develop a provincially coordinated floodplain mapping program

To enhance the understanding and communication of flood risk to governments, communities and individuals, the Province will explore how to establish and coordinate a multi-year floodplain mapping program. This program will provide provincial oversight and guidance for floodplain mapping projects prioritizing accessibility to all-of-society.

Action 1.2: Conduct a province-wide flood risk assessment

The Province will conduct a Provincial Flood Risk Assessment, guided by the Provincial Disaster and Climate Risk and Resilience Assessment (DCRRA), in accordance with the requirements under the *Emergency and Disaster Management Act*. The Provincial DCRRA will help establish a common understanding of key risks, including flood.

Action 1.3: Raise awareness of flood risk with a human-centered approach

To ensure people in the province have access to information about flood risk and preparedness, a human-centred program approach will be developed. It will be designed with input from First Nations, local governments, businesses, industry, agriculture, and academia, with a strong emphasis on public outreach and iterative learning.

Action 1.4: Build capacity and support for applied research and enhanced training

A gap analysis will be explored to identify the specific types and number of qualified professionals needed to meet B.C.'s growing demand for flood resilience expertise. This analysis could help to identify the education and accreditation programs required to support flood professionals. These efforts aim to address equity concerns of First Nations, rural, and remote communities, recognizing Indigenous and intergenerational knowledge in curriculum development.

Pathway 2: Strengthening Flood Risk Governance



To achieve flood resilient communities, it is crucial to recognize the interconnectedness within watersheds and among neighbouring communities. As B.C. works towards the vision of the Strategy, establishing a collaborative governance framework involving all stakeholders is essential. This framework will outline specific roles and responsibilities, emphasizing that local governments maintain authority over diking infrastructure, while receiving improved Provincial support through investments and guidance. It will also guide the development of Provincial funding programs and help the Province identify priorities.

Shared governance with First Nations and the incorporation of Indigenous ways of knowing are integral for the Province to lead as a regulator and a provincial knowledge hub. An updated flood governance approach will encourage pooling of resources to advance flood resilience within watersheds and facilitate the sharing of technical and administrative resources. New collaborative tools provided through updates to the *Emergency and Disaster Management Act* can assist in creating structures for collective risk assessment and planning.

Action 2.1: Set a new direction for B.C.'s flood governance model

The Province will collaborate with Advisory Circles (ACs) to establish a new flood governance model that aligns with the Sendai Framework and commitments to the UN Declaration. The new model will support the vision and principles of the Strategy and inform other aspects of the Resilience Plan.

Recommendations include:

- Establishing a central knowledge hub within the Provincial government to facilitate collaboration with local governments, First Nations, and federal partners.
 - The central knowledge hub will provide technical services in a coordinated and efficient manner and be accountable for developing guidelines and tools to enable consistent and best practice flood management approaches for local governments and First Nations. These groups would maintain accountability for collaborating and addressing their flood risk mitigation, preparedness, response, and recovery.
- Exploring the creation of regional watershed hubs for collaboration and sharing expertise, especially for underserved communities.
- Working towards reliable financing for locally driven flood investment activities that leverage local knowledge and processes.

Several related strategies, programs, and initiatives under development include:

- Climate Preparedness and Adaptation Strategy implementation, including provincial flood hazard mapping
- BC First Nations Climate Strategy and Action Plan
- BC First Nations Regional Action Plan for Disaster Risk Reduction
- B.C.'s *Emergency and Disaster Management Act* statute and regulations
- B.C. Watershed Security Strategy
- B.C. Coastal Marine Strategy
- B.C. Biodiversity and Ecosystem Health Framework
- Provincial & Regional Disaster and Climate Risk and Resilience Assessments & Disaster and Climate Risk Reduction Plan
- Canada's National Adaptation Strategy
- Canada's proposed national flood insurance program
- The newly created Canada Water Agency

B.C.'s new flood governance model will seek the following outcomes:

- **Alignment** – Align with the UN Declaration, in accordance with the Declaration Act and the Sendai Framework.
- **Relationships and Resilience** – Promote community-to-community watershed scale planning, bringing together First Nations, local governments, and stakeholders to foster information sharing, resource pooling, and collaborative decision-making.
- **Flexibility and Scalability** – Develop new tools that are responsive and support decision-making at the regional, watershed level for flood mitigation and adaptation actions, including sharing and accessibility of information and resources to address flood risk.
- **Clear Roles and Responsibilities** – Clarify provincial government, First Nations, and local governments roles and responsibilities for land use planning decisions, and integrated flood management planning.
- **Capacity** – Enhance capacity of the provincial government as a knowledge hub and regulator to support communities in implementing flood risk reduction actions, including the capacity of First Nations and local governments.
- **Maximize Co-benefits** – Design processes that support measures that include nature-based solutions and nature-based infrastructure, considering ecological diversity, social and economic co-benefits in flood mitigation, planning, response, and recovery.

Action 2.2: Establish a First Nations Flood Resilience Advisory Circle

The development of the Strategy has been founded on strong partnerships with First Nations that will be carried through to implementation planning. In consideration of other governance initiatives that align water objectives (e.g., Watershed Security Strategy) the Province may establish a B.C. First Nations Flood Resilience Advisory Circle (AC) consisting of First Nations delegates from across B.C.'s major watersheds. The AC's role may include advising the Province on strengthening flood governance while respecting First Nations' Rights and Title, as set out by the Constitution Act, 1982; the UN Declaration; the provincial Declaration Act; Modern Treaties; as well as the respective and distinct laws, legal systems, and systems of governance of First Nations. It will also support advising the Minister of Water, Land and Resource Stewardship (the Minister) on developing and implementing the B.C. Flood Resilience Plan for the Strategy.

Action 2.3: Establish a Minister's Flood Resilience Advisory Circle

In consideration of other governance initiatives that align water objectives (e.g., Watershed Security Strategy) the Province may convene a Minister's Flood Resilience Advisory Circle (AC), either as one or multiple committee(s) working in partnership with the First Nations' AC to address key interests of flood resilience. The Terms of Reference would involve various orders of government, including federal, provincial, Indigenous governing bodies, and local government agencies, with delegates from the major watersheds and key interest areas (e.g., diking authorities, agriculture, industry, academia, non-profit organizations, and conservation organizations). The ACs would provide advice and support to the Minister and facilitate communications on funding, governance, and policy updates and changes across different levels of government and sectors.

Action 2.4: Promote integrated flood management planning

The Province is committed to promoting and supporting integrated flood management planning approaches in communities across B.C. Integrated flood management planning, also referred to as integrated flood hazard management planning or integrated floodplain management planning, is a holistic systems-based approach. It responds to a community's flood hazard portfolio by employing a suite of tools, including both structural and non-structural, involving prevention, mitigation, and emergency response and recovery measures. This comprehensive approach aims to reduce the risk of flooding without incurring economic, societal, or environmental costs.

This process involves generating community support for multi-layered actions, fostering increased flood resilience transparently, and providing evidence for foundational investments. This community-scale effort can nest within a watershed scale or regional plan, contributing to a more cohesive and effective strategy.

Action: 2.5: Build cross-jurisdictional and international collaboration for flood resilience

This Strategy highlights the flexibility of integrated flood management planning, adaptable to various scales and objectives. An ideal planning approach adopts a watershed or catchment perspective, considering the dynamics of upstream–downstream and cross-river effects. The Province will utilize existing collaborative initiatives as potential models for developing wise practices and guidance for integrated flood management planning efforts at regional scales.

Existing forums recognize the importance of international and cross jurisdictional coordination to facilitate knowledge exchange, strategic planning, and joint implementation among regional and international partners. Achieving meaningful transboundary coordination for flood risk reduction initiatives, aligned with values such as community health, wellbeing, safety, ecosystem health, equity, reconciliation, and economic stability, will require the support of all orders of government.

The Province commits to promoting alignment of goals, priorities, and coordination among internal and external regulators with parallel or overlapping jurisdictions.

Action 2.6: Update provincial legislation, regulations, and policies

To align with modern values, increasing risks, and liabilities, the Province will initiate a review and update of its provincial flood management legislation and regulations, consulting and cooperating with First Nations in alignment with the Declaration Act.

Action 2.7: Update provincial technical guidance

Guidelines and templates will be updated to improve the accessibility and utility of information. This includes partnering with First Nations and local authorities on integrated flood management planning, governance considerations, community planning processes, structural and non-structural approaches, and climate change. Risk-informed approaches, including nature-based solutions, will inform flood infrastructure planning, design, and construction practices. These approaches will be periodically reviewed and updated to reflect current and innovative design practices. Collaboration with First Nations, local governments, and professional associations will be integral to guidance development.

Action 2.8: Strengthen dike regulatory programs

A proposal will be developed for a comprehensive dike regulatory program in B.C., aimed to effectively reduce flood risk while considering ecological, economic, and community impacts. The program would apply a locally led integrated flood management approach and would enhance coordination among diking authorities and different levels of government. This action supports flood risk reduction at a community level and will not consider the Province taking over diking authorities' ownership, management, or maintenance of dikes.

Action 2.9: Develop a provincially coordinated approach to orphan dikes

To address the challenges related to orphan dikes, a new risk management approach is needed. This approach involves the participation of First Nations, local governments, regional stakeholders, and provincial partners to consider multiple perspectives, evaluate impacts, and maximize benefits in identifying, funding, and implementing actions to address orphan dikes.

Action 2.10: Enhance forestry practices to mitigate flood risk

The significant role of forestry in B.C.'s economy and its cumulative impact on the land needs to be recognized, particularly in light of climate change and the increased occurrence of drought, wildfires, and flooding over the past decade. The transition to Forest Landscape Planning replaces the current Forest Stewardship Plans, and sets clear objectives and outcomes for managing forest resource values over defined areas. As part of the changes to B.C.'s forest management regime, including the *Forest and Range Practices Act* (FRPA), these plans provide a methodology to address climate change, environmental impacts from timber harvesting, and cumulative effects in collaboration with First Nations, forest licensees, stakeholders, local communities, and the public. B.C.'s Chief Forester will establish Forest Landscape Plans in consultation and cooperation with First Nations.



Pathway 3: Enhancing Flood Preparedness, Response, and Recovery



Recognizing the variability of flood risk across B.C. locations and watersheds, regional and local perspectives are vital for crafting effective plans that prioritize flood resilience. The transition to a watershed scale promotes equal collaboration between First Nations and local authorities, significantly enhancing preparedness, response, and recovery capabilities.

Floods have a profound impact on food security, especially for vulnerable populations like those living in poverty and Indigenous communities. The disruption of infrastructure, such as community access roads, is a significant concern. For instance, First Nations have stressed the importance of considering their ability to access and utilize traditional foods post-flood when making infrastructure decisions. This is crucial for recovery, as singular road access may be cut off.

Flood preparedness is a collective effort involving individuals, businesses, and all levels of governments, including First Nations governments. While local governments have the primary responsibility for flood emergency planning and preparedness, effective collaboration and coordination across regional, provincial, and federal levels is essential. Being prepared ensures that residents and visitors receive timely flood warning and have comprehensive plans for more effective response and recovery from flood events.

Flood response involves coordinating activities across various agencies to provide support to those affected by the crisis. This may involve swiftly constructing flood mitigation structures and temporary measures, and implementing evacuation plans for people and animals. Clear communication from all parties before and during flood response is essential to support residents, visitors, and businesses in taking necessary measures to protect health, wellbeing, and property. Effective management of evacuations and the provision of emergency services are crucial and should include a focus on cultural safety with First Nations communities.

Flood recovery is defined as the phase of emergency management aimed at re-establishing social, cultural, physical, economic, personal and community wellbeing through inclusive measures. These measures reduce vulnerability to emergencies, enhance sustainability and resilience and involve taking steps to repair a community impacted by an emergency. This phase also includes supporting the conservation and restoration of fish and wildlife habitat, with a potential for improving resilience in individuals, families, organizations, and communities.

Action 3.1: Enhance flood forecasting and early warning systems

To continuously improve flood modelling and forecasting services in B.C., it is important to integrate the latest scientific knowledge into rapid operational river forecasts. This requires a well-equipped and knowledgeable team at the River Forecast Centre, ensuring staff resourcing and training are adequate and that collaboration is fostered across agencies.

Action 3.2: Enhance flood preparedness through the Provincial Flood Emergency Plan

The updated Provincial Flood Emergency Plan will define how the Provincial government, local governments, neighbouring jurisdictions, and First Nations will coordinate flood-related mitigation, preparedness, response, and recovery efforts. The plan will clarify the roles and responsibilities of each partner before, during, and after flood events, considering geographical differences in flood risks. The primary focus is on creating effective plans for flood preparedness, mitigation, response, and recovery, emphasizing flood resilience.

Action 3.3: Enhance flood emergency response

A well-coordinated, prompt response to flood events is vital for the health and safety of communities, protection of property and animals, safeguarding environmental values, and the well-being of residents and visitors in B.C. This involves effective coordination between First Nations, local governments, and provincial and federal response efforts, as well as providing cross-cultural competency training to facilitate collaboration among multiple agencies involved in flood response. The *Emergency and Disaster Management Act* requirements for consultation and cooperation with Indigenous governing bodies in land-based response and recovery actions, emphasizing the importance of engaging and respecting First Nations leaders in emergency response activities within their jurisdictions.

Action 3.4: Enhance pre- and post-disaster flood recovery planning

Under the *Emergency and Disaster Management Act*, the Province and regulated entities will prepare comprehensive plans, encompassing all four phases of emergency management, including recovery. These plans will be founded on available Indigenous knowledge and prioritize cultural safety.

To support and enhance post-emergency flood recovery planning, the Province will assist communities in rebuilding in a resilient, culturally safe, and appropriate manner post-disaster. This approach aims to facilitate recovery from economic, social, and cultural disruption, among additional efforts.

The Province also promotes collaborative, community-based, integrated flood management planning. Engaging in flood recovery blueprints before a flood disaster occurs allows for timely and effective adaptation decisions post-flood. Pre-disaster planning can support the consideration of environmental issues, respecting community values, facilitating a community-led retreat, and planning for future land use and zoning in risk prone areas.

Pathway 4: Investing for Flood Resilience



To enhance flood-resilience in B.C., additional investments are required from federal and provincial governments, but also landowners, individuals, and industry, including the agricultural sector. Funding programs should be designed with flexibility to cater to the unique needs of Indigenous, remote, rural, and urban communities. In addition to the grey infrastructure predominately relied upon historically, we must explore a broader range of solutions, including those that are nature-based. Funding programs must consider the interplay between hazards and communities' capacity to access, secure, and invest the necessary funding for a flood resilient future.

The Province recognizes that effective flood mitigation and adaptation funding should adopt a holistic approach, with community needs at the center. This involves considering flood avoidance, accommodation, retreat, and protection elements while maximizing co-benefits that result from the integration of nature-based infrastructure and mitigation using natural systems. The Province recognizes that natural floodplains and nature-based solutions offer a wide range of valuable ecosystem services, including flood regulation, fish and wildlife habitat, clean water, open space amenities, recreation opportunities, and spiritual benefits.

Many communities face barriers to access funding, whether due to capacity limitations or funding program design. To address this, communities should receive support in creating strong project proposals, ensuring funding is directed where it is needed most. Provincial and federal programs should be designed to collaborate effectively and center on community needs. The Province aims to increase its capacity to support communities, including First Nations, and remote and rural communities, in strengthening funding applications for evidence-based flood mitigations. The Province will collaborate with communities to match their flood resilience needs and projects with available federal and provincial funding opportunities.

Action 4.1: Develop predictable funding programs

The Province will develop and implement ongoing funding programs for hazard risk mitigation, including flood. These programs will be tailored to meet the needs of communities, focusing on addressing equity and accessibility. Collaboration with the federal government, cost-sharing across sectors and levels of government, and coordination with other agencies will be explored to support communities implementing flood resilience initiatives.

Action 4.2: Enhance flood avoidance investments

The Province will adopt a multi-generational approach to flood risk reduction. Decisions made today about development and land use in the floodplains will have long-term implications. The Province will work with partners to explore flood avoidance strategies that can minimize the risk and vulnerability of populations in flood-prone areas.

Action 4.3: Enhance flood accommodation investments

Flood accommodation involves allowing periodic flooding in developed or cultivated areas while taking measures to limit, mitigate, or reduce vulnerability. Benefits of this approach can include increased structural resilience, reduced disruption of socioeconomic activity during flood events, and a decrease in the cost and time required for rebuilding post-flood. The Province will explore expanding funding program coverage to support flood accommodation measures, particularly in communities where relocation is not an option.

Action 4.4: Enhance flood protection investments

The Province acknowledges the need for flood protection measures that reduce flood likelihood and damage. While historically focusing on traditional infrastructure, the Province recognizes the importance of nature-based solutions. Nature-based solutions will be promoted alongside grey infrastructure to provide protection against flooding while delivering multiple benefits, including improved biodiversity, conservation and restoration of fish habitat, carbon sequestration, social wellbeing, and tourism.

Action 4.5: Enhance community-led managed retreat investments

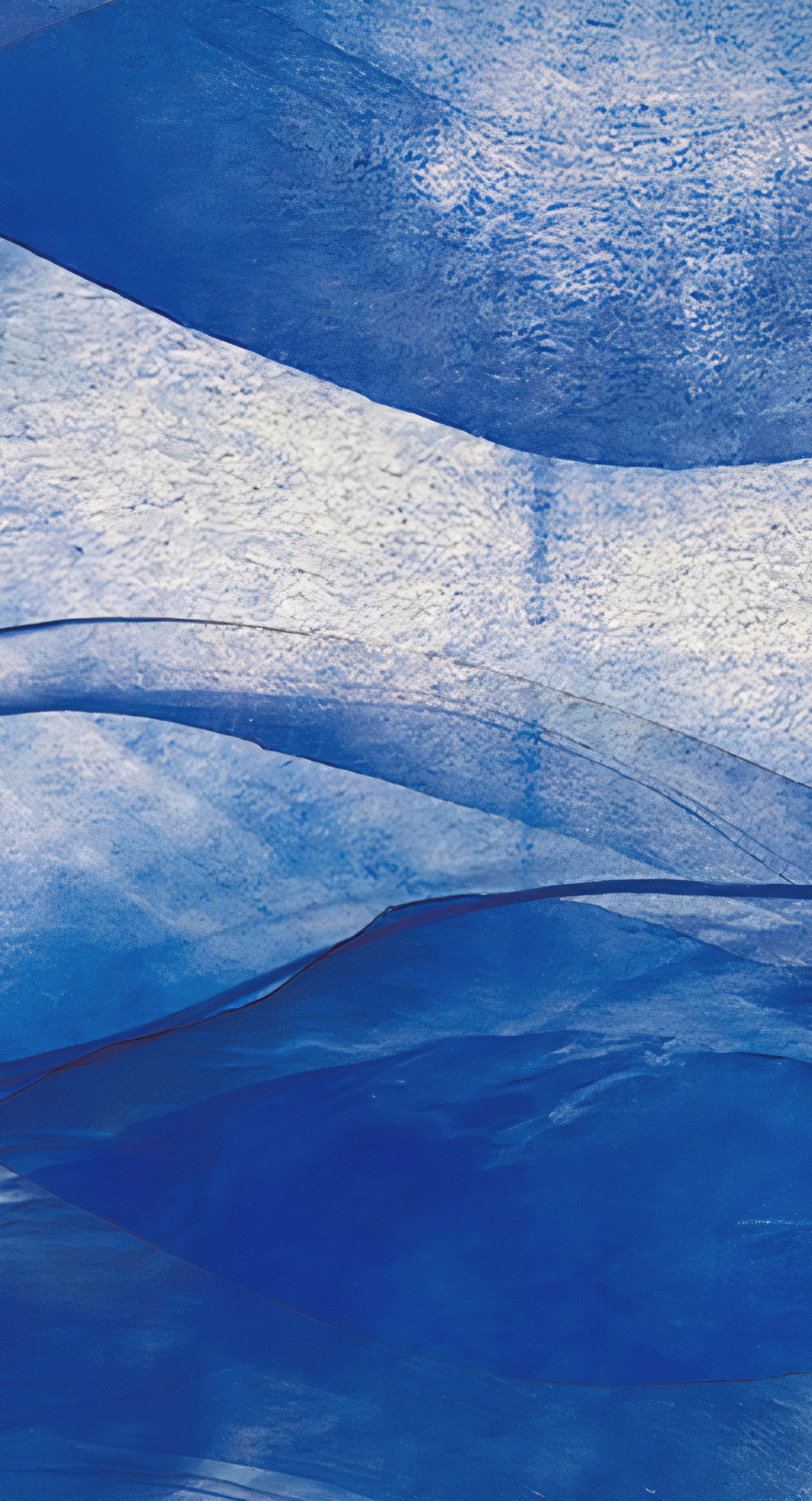
Community-led managed retreat involves moving people, buildings and infrastructure from hazard-prone areas to reduce future risks. The Province will update financial assistance regulations as part of modernizing B.C.'s emergency management legislation. Feedback received during a recent engagement on these regulations is being analyzed and will be considered as options are developed.

Action 4.6: Address First Nations loss of land

The Province will engage the federal government on how to better collaborate to implement measures addressing loss of lands due to flooding, based on the needs identified by First Nations.

Action 4.7: Coordinate investments for floodplain management

To promote floodplain management and water conservation objectives, the Province will leverage provincial funding to align with federal funding and capacity-building programs. These efforts will be in line with provincial initiatives like the Watershed Security Strategy and Fund, B.C.'s Salmon Restoration and Innovation Fund, and funding associated with Canada's National Adaptation Strategy.



Conclusion

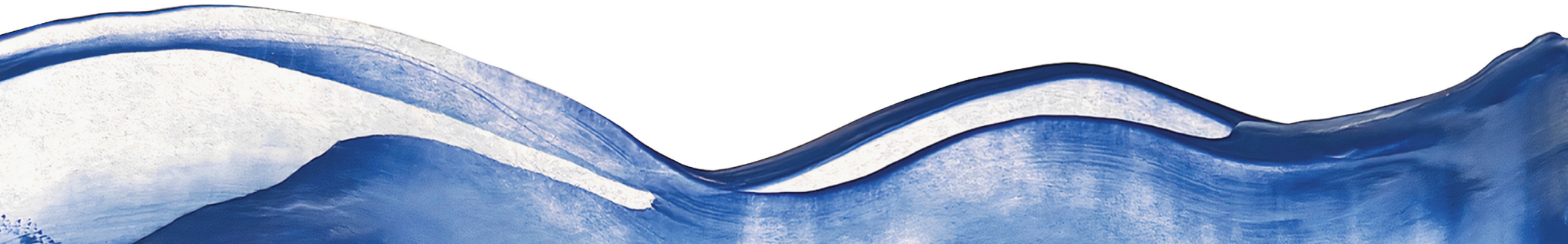
All levels of government have critical and distinct roles to play in strengthening B.C.'s flood resilience. The Province's responsibilities include setting clear, high-level strategy and policy direction, fostering collaboration at a watershed-based scale, establishing technical standards and guidelines, offering funding programs, supporting community access to funding for improved flood resilience, and maintaining and updating relevant legislation and regulations.

To ensure transparency and keep stakeholders and the public well-informed about the B.C. Flood Strategy and Resilience Plan, the Province will regularly provide updates and information through online materials. These resources will include 'What We Heard' reports and the Intentions Paper. A dedicated website will serve as a central location for information, acting as a platform to share progress on the Strategy's implementation and valuable input from First Nation partners, local governments, and the public, gathered during the Strategy's development.

The Strategy aims to achieve several goals, including reducing the impact of flooding on communities, promoting sustainable growth and prosperity, safeguarding cultural assets, and enhancing our environment for the collective benefit of all. The Strategy aligns with the B.C. government's mandate to help communities prepare for the effects of climate change. Through the phased implementation of this Strategy, we aim to future-proof our province-wide ability to respond to flood emergencies, ensure the resilience of critical infrastructure, protect our land and water for future generations, prioritize co-benefits and ecosystem services, and enhance public safety.

Appendix A: Resilience Activities Under the Pathways

Appendix A outlines the activities that have been identified by the Province and its partners through extensive engagement. These activities are crucial in supporting the achievement of each Pathway and Action identified in the Strategy. While some of these activities will be further evaluated and incorporated into implementation planning, others will serve as immediate, foundational actions.



Pathway 1: Understanding Flood Risk

Action 1.1: Develop a provincially coordinated floodplain mapping program

The program will provide provincial oversight and guidance for floodplain mapping projects, as well as:

- Promote collaboration and facilitate connections between the Province, First Nations, and local governments on floodplain mapping projects, thereby establishing a foundation for integrated flood management planning.
- Develop modernized, provincial floodplain mapping guidance for local governments, First Nations, and qualified professionals on the use of floodplain maps to support flood preparedness, mitigation, and adaptation efforts.
- Coordinate floodplain mapping projects led by multiple partners, prioritizing high-risk areas, and producing maps that are founded on local, Indigenous, and intergenerational knowledge systems, equity, and climate change impacts in a consistent format.
- Improve technical expertise and capacity at regional, provincial, and First Nation community levels to support communities with limited capacity to lead floodplain mapping and planning activities independently.
- Provide a consistent flood hazard dataset to support flood risk assessment work at the provincial, regional, and community scales.
- Ensure free and equitable access to flood risk data for everyone in B.C., to enable risk-informed decision-making in the face of climate change and flooding. This involves providing public access to existing and new floodplain maps and related datasets, while expanding provincial investments in B.C.'s LiDAR program.
- Investigate a long-term, stable approach to annually update a subset of floodplain maps with a 10-year interval target, prioritizing areas experiencing rapidly shifting flood hazards.
- Promote cross-ministry coordination of floodplain mapping information, the use of floodplain mapping products in infrastructure planning, and decision-making by provincial ministries and critical infrastructure providers.

Action 1.2: Conduct a province-wide flood risk assessment

The flood risk assessment is intended to:

- Develop a consistent provincial understanding of flood risk by co-developing the assessment in partnership with First Nations and incorporating local, Indigenous, and intergenerational knowledge systems, as well as considerations for climate change and equity-denied populations.
- Establish partnerships with subject matter experts, such as technical and academic professionals, service providers, practitioners, and advocates. These partnerships will ensure that the assessment integrates multiple knowledge systems, such as scientific and Indigenous, lived experience, and multiple disciplines including engineering, planning, emergency management, forestry, aquatic ecosystems, soil sciences, and public health and community wellbeing.
- Explore relevant risk management guidelines for integration with the provincial climate risk assessment. Consider hazard, risk, and vulnerability guidelines to enhance the overall assessment.

- Consider a multi-criteria analysis involving economic, social, cultural, environmental and health values and trade-offs. This analysis will incorporate Indigenous knowledge, while considering projected future climate conditions, such as those forecasted for 2050 and 2100.
- Address biases and apply a GBA+ and equity, diversity, and inclusion lens to identify disproportionate impacts to populations affected by flooding, including the short-and long-term impacts to mental health and well-being.
- Explore the assessment of flood-related fluvial geohazard risks in regional flood risk assessments, including the need for flood protection infrastructure, considering the likelihood of failure, the linkage of flood risks with landslides, as well as potential threats of storm surge flooding due to the increased frequency and intensity of storm surges combined with sea level rise.
- Assess the impacts of flooding on health and community water infrastructure, such as drinking water, wastewater, and hydro systems, in regional flood risk assessments.

Action 1.3: Raise awareness of flood risk with a human-centred approach

Programming to build flood awareness will:

- Produce content to educate the public about flood risk.
- Share innovative strategies to mitigate flood risk (e.g., Floodplains by Design).
- Promote flood outreach tools, including the federal Flood Ready website, the provincial ClimateReadyBC website, the Flood Preparedness Guide, and Storm Ready social media package, and other academic and public information sites, such as the Fraser Basin Council's FloodWise website, the University of Waterloo's Intact Center on Climate Adaptation, and Partners for Action's Flood Smart Canada website.

Action 1.4: Build capacity and support for applied research and enhanced training

Recognizing the high demand for qualified professionals, particularly post-disaster, and the need for local or regional support, engagement participants initiated exploratory conversations to:

- Enhance collaboration among organizations involved in a technical capacity, such as Engineers and Geoscientists BC, BC Water and Waste Association, Justice Institute of British Columbia, First Nations' Emergency Services Society of British Columbia, Indigenous Services Canada, Union of BC Municipalities, academia, and youth groups.
- Explore creating a working group to advise on an action plan that focuses on recruitment, retention, and equitable accreditation across disciplines and institutions. The action plan could identify additional eligibility accreditation options, including First Nations qualifications, such as incorporating professional work experience, mentorship programs, and train the trainer initiatives, as well as identify available financial supports.

Pathway 2: Strengthening Flood Risk Governance

Action 2.1: Set new direction for B.C.'s flood governance model

In strengthening flood governance in alignment with the Sendai Framework, the Province will:

- Consider transitioning B.C.'s flood governance from a decentralized model to a hybrid “flood hubs” model (subject to Provincial government direction).
- Ask Flood Resilience Advisory Circles to provide recommendations on the proposed flood governance model, considering planning, regulating, guidance, funding, and implementation and monitoring implications.
- Promote an Integrated Flood Management approach that supports communities to adopt a combination of structural and non-structural approaches, climate change considerations, and community land use planning processes.

Action 2.2: Establish a First Nations Flood Resilience Advisory Circle

The First Nations Flood Resilience Advisory Circle will be invited to:

- Prioritize assessing options to strengthen B.C. flood governance through a hybrid “flood hubs” model.
- Advise the Minister on strengthening B.C. flood governance in recognition of First Nations’ inherent and legal Rights and Title, the UN Declaration, as well as the provincial Declaration Act.
- Advise the Minister on setting new provincial direction for flood risk reduction, optimizing resource allocation, addressing fairness in risk reduction efforts, clarifying roles and responsibilities, and supporting planning at a community scale.
- Collaborate with the Province to develop a framework for the Flood Resilience Plan, including scoping of potential programs, policies, roles, and responsibilities, timelines, and cost apportionment.
- Promote the coordination and building of relationships across watersheds in alignment with the vision and principles of the Strategy (e.g., through a federal, provincial, and First Nations’ Memorandum of Understanding).
- Support future reviews and potential updating and strengthening of existing and new provincial legislation, regulations, and policies that support an all of society approach to flood resilience.
- Support and participate in the Minister’s Flood Resilience Advisory Circle.

Action 2.3: Establish a Minister’s Flood Resilience Advisory Circle

The Minister’s Flood Resilience Advisory Circle will be invited to:

- Collaborate with the First Nations’ Flood Resilience Advisory Circle, assess and prioritize options to strengthen B.C.’s flood governance through a hybrid “flood hubs” model.

- Provide advice and support to the Minister, and facilitate communications on funding, governance, policy updates and changes across different levels of government and sectors.
- Identify opportunities to leverage existing planning processes to promote flood risk reduction actions and support for watershed-based flood planning.
- Promote informal coordination and build relationships across watersheds in alignment with the vision and principles of the Strategy.
- Liaise with the First Nations Flood Resilience Advisory Circle.

Action 2.4: Promote integrated flood management planning

To strengthen support and guidance for responsible authorities on the integrated flood management planning process, the Province will:

- Draw on subject matter experts, First Nations and local governments with experience to share best practices or examples regarding objective setting, approaches, scope, and outcomes of Integrated Flood Management Plans (IFMPs).
- Develop guidance on the process and modelling content for IFMPs.
- Explore promoting the development of IFMPs through provincial funding programs for flood planning and exploring specific initiatives to support its adoption.

Action: 2.5: Build cross-jurisdictional and international collaboration for flood resilience

The Province will participate in collaborative initiatives, including:

- The Nooksack Transboundary Flood Initiative,
- The Sumas River Watershed Flood Mitigation Planning, and
- A working group with First Nations, local, provincial and federal governments, to translate the Lower Mainland Flood Management Strategy “Pathways to Action Report” recommendations into a proposal, including establishing a leadership table to guide the approach.

Action 2.6: Update provincial legislation, regulations, and policies

To strengthen flood management and preparedness in B.C., the Province will:

- Modernize emergency management legislation, including regulations co-developed with First Nations. Input received through the B.C. Flood Strategy engagement, such as interest in supporting equitable and inclusive recovery efforts, will inform this work.
- Launch a review of provincial flood management legislation and regulations in collaboration with First Nations in alignment with the Declaration Act.
- Complete a new compensation and financial assistance regulation under the *Emergency and Disaster Mitigation Act* to better support equitable and inclusive recovery efforts.

- Collaborate with the British Columbia Real Estate Association (BCREA) and the Land Title and Survey Authority of British Columbia (LTSA) to explore strategies for incorporating the disclosure of flood hazard risks (and other hazards, if feasible) during property sales or during annual property assessments in the province. This will ensure that reliable information is disclosed and presented in a manner that is easily understood by the public.
- Work towards repealing the *Drainage, Ditch, and Dike Act*.
- Collaborate with local governments and other partners to explore opportunities to improve building and technical guidelines and policy tools that support flood resilience and address climate risks associated with riverine, coastal, local stormwater, and groundwater flooding.
- Modernize the *Dike Maintenance Act* and/or develop regulations under the Act to ensure resilient flood protection infrastructure through effective regulatory processes, including compliance and enforcement.
- Provide guidance on incorporating regulations for activities, such as timber management approaches within the *Agricultural Land Commission Act*, to reduce the vulnerability of surrounding areas to flood impacts or risks.
- Review and revise the B.C. Dam Emergency Response Plan, as necessary.
- Streamline approvals under the *Water Sustainability Act* and other Acts for projects in and around streams, that mitigate flood risk, particularly those involving nature-based solutions.

Action 2.7: Update provincial technical guidance

Several professional practice technical guidelines identified for renewal include:

- **Flood Infrastructure Guidelines:** These guidelines will be updated to cover the design, construction, and management of flood infrastructure including, dikes, erosion protection works, nature-based solutions, nature-based infrastructure, and other flood mitigation measures. These updates will incorporate current scientific knowledge, engineering wise practices, and considerations related to climate change.
- **Nature-Based Flood Infrastructure Guidelines:** These new guidelines will complement the flood infrastructure guidelines and inform decision-making on nature-based solutions and nature-based infrastructure. They will be based on the 'PARA' framework, which stands for protect, avoid, retreat, and adapt. The guidelines will also include decision support tools for assessing site level vulnerabilities and risks related to climate change, including various types of flooding, sea level rise, and storm surges.
- **Flood Hazard Area Land Use Management Guidelines:** The existing guidance will be updated to provide improved information for land use managers and approving officers. These updated guidelines will provide clear direction on developing and implementing land-use management plans and making subdivision approval decisions for flood hazard areas.
- **Local Flood Risk Assessment Guidelines:** New guidelines will be developed to establish standardized professional practices and techniques for conducting flood risk assessments at the local level.
- **Hydrologic Assessments and Climate Change Guidance:** Develop guidance on hydrologic assessments and climate change, including

consistent definitions and base assumptions for analysis. This will be done in collaboration with professional associations to ensure consistent outcomes across flood mapping and flood risk assessments.

- **Structures Threatened by Watercourses Provincial Support Guidelines:** Update guidelines to reflect the implementation of the *Emergency and Disaster Management Act*. The guidelines will provide clarity on the process for structures threatened by watercourses, distinguishing responsibilities between small- and large-scale events.
- **Integrated Flood Management Planning Guidelines:** These guidelines will provide a framework for identifying community values and priorities in integrated flood management planning. They will include guidance on meeting the minimum expectations for flood risk management, incorporating both structural and non-structural approaches, climate change considerations, and integrating community land use planning processes.
- **Local Authority Guidance and Wise Practices:** Improve guidance, policies, and support to explicitly address flood risk and effectively implement mitigation, adaptation, and accommodation measures at various stages of development and planning. This includes local governments updating Official Community Plans and approving new developments in flood risk areas. Strengthening guidance for local governments will ensure proper consultation and collaboration with neighboring jurisdictions, specifically First Nations. This also includes the need to provide notification regarding potential downstream impacts of new flood risk reduction investments or integrated flood management planning strategies.
- **Stormwater Guideline Adoption:** The Province will explore the formal adoption of nationally recognized standards and design guidelines for addressing urban flooding, stormwater infrastructure and development.⁵
- **Comprehensive Guidance on Flood Accommodation:** Develop comprehensive guidance on flood accommodation measures, including consideration of co-benefits that reduce flood related risks, such as drought and tsunamis. This guidance will focus on community land use planning and consider various types of flooding including, riverine, coastal, local stormwater, and groundwater flooding.
- **Steep-Creek/Debris Flow Guidance/Guidelines:** Develop standards and guidelines for the design and maintenance of debris flow barriers and other flood protection against the steep-creek hazard.

Action 2.8: Strengthen dike regulatory programs

A comprehensive dike regulatory program in B.C. will:

- Implement an integrated flood management approach to enhance coordination among diking authorities and different levels of government.
- Collaborate with professional associations to update guidelines for professional practice related to flood risk reduction.
- Improve communication and education regarding the roles and responsibilities of diking authorities. This includes dike inspection and maintenance, submission of dike inspection reports, and *Dike Maintenance Act* approval applications.
- Implement a publicly accessible, centralized repository of dike information that is updated with data collected from diking authorities.

- Support diking authorities through streamlined regulatory approvals, dike safety audits, and improved information for local governments and other authorities responsible for land use.

Action 2.9: Develop a provincially coordinated approach to orphan dikes

This coordinated provincial effort will involve the following actions:

- Identify high-risk orphan dikes across the province.
- Collaborate with local governments and other partners to gain a shared understanding of orphan dike details, regulatory considerations, and tailor an approach for each orphan dike based on its level of risk.
- Identify and implement site-specific actions, which may involve dike upgrades in conjunction with assigning a diking authority, building alternative flood infrastructure, removing unsafe dikes, implementing flood accommodation measures, or supporting community-led managed retreat, and identify potential funding. These actions will generally be guided by an integrated flood management plan.
- Maximize co-benefits, such as creating fish friendly habitat, enhancing ecological diversity, promoting economic opportunities, and preserving or restoring Indigenous places of cultural value or food systems.
- Collaborate with partners, such as the First Nations' Emergency Services Society (FNESS) and the Union of BC Municipalities (UBCM) to co-develop equitable approaches to support smaller communities with limited financial and technical capacity in shared planning and implementation of actions related to orphan dikes.
- Prevent the creation of new orphan dikes through clarifying and communicating policies, roles and responsibilities for temporary emergency works constructed during flood response.

Action 2.10: Enhance forestry practices to mitigate flood risk

This initiative will encompass the following components:

- Completion of Forest Landscape Plans in partnership with First Nations, in collaboration with forest licensees, and with input from stakeholders, local communities, and the public.
- Develop guidance on objectives and practices aimed at reducing the impacts of upstream forestry operations and resulting peak flows, including erosion under the *Forest and Range Practices Act* Improvement Initiative. These objectives will be applied through forest landscape level planning. Additionally, existing partnerships, and collaborative approaches, such as Forest Landscape Plans and the Collaborative Indigenous Stewardship Framework, can be leveraged for objective setting and implementation.

Pathway 3: Enhancing Flood Preparedness, Response and Recovery

Action 3.1: Enhance flood forecasting and early warning systems

To continuously improve flood modelling and forecasting services in B.C., it is important to integrate the latest scientific knowledge into rapid operational river forecasts. This involves maintaining a well-equipped and knowledgeable team at the River Forecast Centre that is adequately staffed and trained, making appropriate technologies available for ongoing success, and fostering collaboration across agencies including:

- Collaborating with partner agencies, such as the B.C. Ministry of Environment and Climate Change Strategy and the Water Survey of Canada, on recommended enhancements to hydrometric and climate monitoring networks across all major watersheds in the province.
- Developing and investing in a robust data management system and computing resources, which includes site-specific data management in First Nation communities.
- Acquiring and integrating various numeric weather model outputs to improve forecasting.
- Continuously improving river, lake, and coastal flood forecast models and analysis tools.
- Providing support for on-the-ground monitoring and field programs, such as Indigenous Guardians initiatives.
- Integrating local-scale flood risk and Indigenous knowledge systems into early warning systems.
- Collaborating with other key agencies involved in collection, production, and communication of hydrometric and climate monitoring data to inform flood risk and other related monitoring programs (e.g., cumulative effects and watershed health).
- Coordinating cross-border flood hazard communication and alerts regarding potential Nooksack River overflow (an action emerging from the Transboundary Flood Initiative).

Action 3.2: Enhance flood preparedness through the Provincial Flood Emergency Response Plan

- Satisfy the requirements of the *Emergency and Disaster Management Act* concerning an emergency management plan, as they become available.
- Integrate cultural safety into recovery planning to prevent traumatization of Indigenous people during displacement or flood event impacts. The Provincial Flood Emergency Plan will include the integration of local, intergenerational knowledge, and Indigenous Knowledge wherever possible.

Action 3.3: Enhance flood emergency response

- Continue to collaborate with partners to ensure the safety of communities, the protection of property, pets, and livestock, and to meet the needs of both residents and visitors in B.C. This includes addressing and meeting the needs of B.C. residents and visitors through B.C.'s Tourism Emergency Management Framework.

- Introduce requirements for consultation and cooperation with Indigenous governing bodies when implementing land-based response and recovery actions as part of modernized emergency management legislation.
- Communicate with flood related authorities on the importance of engaging and respecting First Nations as leaders in emergency response activities within their jurisdictions. Provide cross-cultural competency training to facilitate collaboration among multiple agencies involved in flood response, with consideration of access to traditional food sources.
- Explore ways to assist communities in better coordinating and planning for the transportation and protection of livestock in disaster events.

Action 3.4: Enhance pre- and post-disaster flood recovery planning

- Ensure emergency management plans prepared under the *Emergency and Disaster Management Act* by the Province and regulated entities (lead government ministers, local governments, critical infrastructure owners, public sector agencies) include all four phases of emergency management. These requirements will be phased in over time.
- Explore the incorporation of climate informed design into flood mitigation policies and funding mechanisms. This work has begun with the Community Emergency Preparedness Fund (CEPF), which requires applicants to demonstrate use of future climate scenarios in their projects.
- Investigate ways to minimize future losses by incorporating climate change considerations into codes and standards, facilitating the reconstruction of more resilient infrastructure capable of withstanding the effects of a changing climate.
- Maximize co-benefits by providing support for enhanced stream conservation and restoration efforts that benefit salmon, aquatic habitat, improve flood resilience, and increase property and infrastructure protection.
- Based on lessons learned from flood debris management after the 2021 atmospheric river events, ensure that information and guidance continue to be made available to the public on how hazardous materials that can endanger human health and safety (e.g., hydraulic constrictions, potential remobilization/impacts on infrastructure, pollution) are being addressed, and how those actions could be built into recovery planning for future events.
- Considerations for the Province and regulated entities that were brought forward during engagement to support holistic post-disaster emergency response plans included:
 - Incorporating the expertise of First Nations knowledge experts in incident response as well as post-disaster recovery planning.
 - Including individual and community mental health and well-being support requirements following the guidelines outlined in the Mental Health and Wellness Recovery Toolkit developed by the B.C. Provincial Health Services Authority (PHSA).

Pathway 4: Investing for Flood Resilience

Action 4.1: Develop predictable funding programs

Expand provincial capacity to better support communities in matching disaster mitigation needs with available funding and develop strong funding applications. To achieve this, the Province will look to:

- Adjust provincial funding program requirements and processes to improve access and predictability, especially for First Nations and smaller, remote, and rural communities.
- Seek collaboration with the federal government to secure additional funding, establish new provincial programs, and explore opportunities for cost-sharing across sectors and levels of government. Efforts will be made to streamline and coordinate funding with the federal government and other agencies to provide support for communities implementing flood resilient initiatives.
- Work with the Union of BC Municipalities (UBCM), local governments and First Nations to explore financing mechanisms to address new and ongoing emergency management costs related to floods.
- Support agriculture-related flood preparedness work in communities, aligning with provincial investments in food security emergency planning and preparedness, and work to develop an Emergency Preparedness Strategy on Food Security. This includes setting clear eligibility streams, providing more sustainable funding, particularly for First Nations, and respecting Indigenous Knowledge, and the authorities of Rights and Title holders in program design.

Action 4.2: Enhance flood avoidance investments

The Province will explore supports for flood avoidance strategies. Flood avoidance allows natural expansion and contraction of water and facilitates natural water storage in undeveloped floodplains and wetlands. To achieve this, the following tools will be utilized:

- Explore and develop options to facilitate updates to bylaws and land use policies.
- Develop guidance and provide resources to assist decision-makers in considering flood hazards when determining the location of community facilities and critical infrastructure.
- Explore designing programs that support flood avoidance concepts, pilots, and innovative approaches to avoid new flood exposure.

Action 4.3: Enhance flood accommodation investments

To better reflect the principles of the Strategy and modernize flood accommodation investment, the Province will look to:

- Expand the eligible activities covered by community funding programs to support flood accommodation measures where appropriate, particularly in communities where relocation is not an option. Funding could also be explored for a flood retrofit funding program in collaboration with First Nations and local governments to support individuals and small businesses with property-level flood audits and cost incentives for retrofits such as sump pumps, electrical system modifications, and backflow valves to reduce flood damage.
- Align wise practices and guidance on flood accommodation, including measures specific to tsunamis.

- Explore incentivizing homeowners, farmers, and businesses in high-risk areas to floodproof their buildings through cost-sharing programs and funding initiatives like the Fraser Valley Farmers Flood Mitigation Fund.
- Engage with the federal government to ensure that B.C.'s interests are effectively represented in the national flood insurance program.

Action 4.4: Enhance flood protection investments

Moving forward, the Province will invest in funding programs that support both grey and nature-based infrastructure solutions that:

- Seek co-benefits for flood protection investments with fish habitat restoration, agricultural land protection, reconciliation with Indigenous peoples, health and wellbeing, and rural economic development.
- Support diking authorities in upgrading dikes to meet provincial standards, particularly in areas where high-value land uses and settlements are vulnerable to flood risks.
- Develop provincial funding programs that enable communities to adopt holistic approaches to risk mitigation, including incorporating nature-based solutions.
- Conduct more post-flood infrastructure and riverbank inspections to identify and address deficiencies, while leveraging local and intergenerational knowledge and scientific expertise.
- Collaborate with First Nations to protect archaeological resources and sites of Indigenous cultural significance early in the planning and design process, for any flood protection infrastructure.

Action 4.5: Enhance community-led managed retreat investments

The Province will:

- Update the financial assistance regulations as part of the *Emergency and Disaster Management Act*.
- Engage in discussions on how managed retreat could be used to address flood risk.

Action 4.6: Address First Nations loss of land

In response to the identified need by First Nations, the provincial government will proactively collaborate with the federal government and implement measures to address loss of lands due to flooding. This will include exploring how the Province can:

- Engage with the federal government, including Indigenous Services Canada (ISC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to propose improvements to the federal Additions to Reserve (ATR) process in relation to securing replacement lands for territories lost because of natural disasters.
- Increase communication regarding the Province's investments in over \$38 million in a new program to collect light detection and ranging (LiDAR) data, enabling effective and informed decision-making on the planning and management of wildfires, landslides, floods, and other natural events.

- Support First Nations' led exploration of options related to flooded land restoration, prevention, and response measures, including potential designations that reflect First Nations' interests.

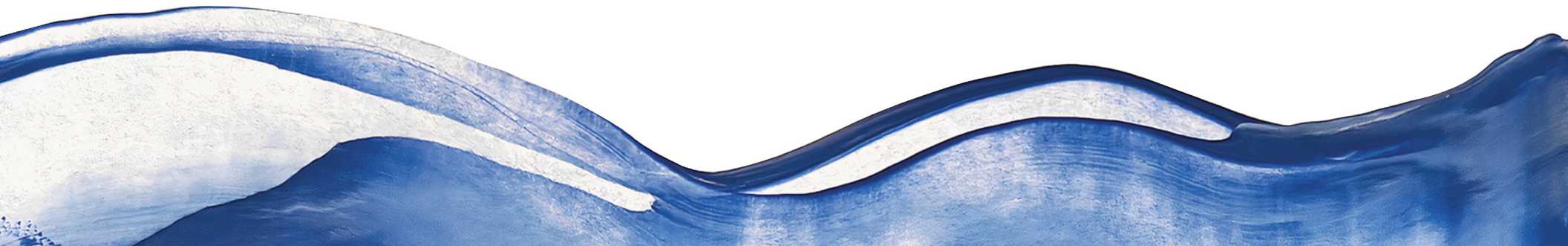
Action 4.7: Coordinate investments for floodplain management

To support these values, the Province will explore opportunities to:

- Collaborate among local governments and First Nations to achieve co-benefits in association with flood resilience. This collaboration should align with related initiatives such as the Watershed Security Strategy and Fund, Coastal Marine Strategy, salmon actions and related biodiversity framework programs.
- Promote flood accommodation design, such as adaptable crops, fish friendly habitats, and community recreation uses.
- Collaborate with First Nations to explore nature-based solutions and nature-based infrastructure projects. This includes initiatives that address wildlife impacts, focusing on floodplain restoration and connectivity, habitat improvement for fish and wildlife, especially wild salmon, migratory birds, and species at risk.
- Further fund flood planning, preparedness, response, and recovery measures that incorporate salmon values. This includes flood control infrastructure projects aligned with federal and provincial salmon and aquatic habitat restoration initiatives (e.g., Healthy Watersheds Initiative, British Columbia Salmon Restoration and Innovation Fund, Habitat Conservation Trust Foundation, etc.).
- Include biodiversity and species at risk recovery in flood mitigation programs, including wetland restoration, creation and enhancement that align with First Nations, federal and provincial initiatives (e.g., Nature Agreement, Together for Wildlife, Biodiversity and Ecosystem Health Framework, North American Wetland Management Plan and Migratory Bird Joint Ventures).

Appendix B:

Glossary



| Term | Definition |
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| Adaptation | Adaptation refers to modifying ecological, social, or economic systems in response to current or anticipated climatic stimuli and their effects. It refers to changes in processes, practices, and structures to minimize potential damages or take advantage of opportunities arising from climate change. |
| Adaptive Management | A systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. |
| Climate Adaptation | Proactively understanding and preparing for the changing climate and reducing climate-related risks. |
| Climate Change | Shifts in temperature and weather patterns over an extended period. These shifts may be natural, or human caused. |
| Coastal Flood | Seawater inundation of lands in coastal zones, due to storm surge, wind and wave action, tsunamis, high tides, or sea level rise. |
| Community | Everyone who is or could be affected by an emergency/disaster. This includes all levels of government, agencies, not-for-profit organizations, businesses, and individuals. |
| Critical Infrastructure | The systems, facilities, networks, or assets essential to the health, safety, security or economic well-being of people and the effective functioning of government. |
| Cumulative Effects | Changes to environmental, social, and economic values caused by the combined effect of past, present, and potential future human activities and natural processes. |
| Dike | An embankment, wall, fill, piling, pump, gate, floodbox, pipe, sluice, culvert, canal, ditch, drain, or any other thing that is constructed, assembled, or installed to prevent the flooding of land. |
| Diking Authority | a) the commissioners of a district to which Part 2 of the B.C. <i>Drainage, Ditch and Dike Act</i> applies, (b) a person owning or controlling a dike other than a private dike, (b.1) if the final agreement of a Treaty First Nation so provides, the treaty first nation in relation to dikes on its treaty lands, (c) a public authority designated by the minister as having any responsibility for maintenance of a dike other than a private dike, or (d) a regional district, a municipality or an improvement district. |
| Disaster | A calamity that (a) is caused by accident, fire, explosion, or technical failure or by the forces of nature, and (b) has resulted in serious harm to the health, safety, or welfare of people, or in widespread damage to property. |

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| Disaster Risk Reduction (DRR) | Systematic efforts to analyze and reduce the causal factors of disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are examples of DRR. |
| Groundwater | Water naturally occurring below the surface of the ground. |
| Ecosystem Services | The benefits people obtain from nature. These include provisioning services (i.e., clean water supplies), regulating services related to disturbances (floods, droughts, pest outbreaks), supporting services (i.e., soil formation, nutrient cycling), and cultural services (i.e., recreational, spiritual, religious, etc.). |
| Emergency | A present or imminent event or circumstance that (a) is caused by accident, fire, explosion, technical failure, or the forces of nature, and (b) requires prompt coordination of action or special regulation of persons or property to protect the health, safety, or welfare of a person or to limit damage to property. |
| Engagement | The act of involving someone in discussion, the act of establishing a meaningful contact of connection. (Oxford dictionary). Generally, refers to activity that happens early in an involvement process, as part of the continuing and ongoing process of developing relationships and partnerships. |
| Erosion | The natural breakdown and movement of soil and rock by water, wind, or ice. The process may be accelerated by human activity. |
| Exposure | The presence of people, infrastructure, housing, or other assets-at-risk (or parts thereof) in places that could be adversely affected by hazards. |
| First Nation | A term that came into common usage in Canada during the 1970s to replace the word “Indian”, but still does not have a legal definition. The term “First Nations peoples” typically refers to the Indian peoples of Canada (status and non-status). Some <i>Indian Act</i> bands have also adopted the term “First Nation” to replace the word “band” in the name of their community. |
| Flood | A condition in which a watercourse or body of water overtops its natural or artificial confines and covers land not normally under water. |
| Floodplain | An area of low-lying ground subject to flooding adjacent to a watercourse or lake. |
| Floodproofing | In reference to development, actions taken at the site or property level that reduces the vulnerability of buildings and their contents to flood damage, such as elevating all habitable living spaces above defined flood construction levels. |

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| Floodway | The channel of the watercourse and those portions of the floodplains that are reasonably required to discharge the flood flow of a Designated Flood. A minimum required floodway shall be equal to the width of the channel within the natural boundary plus a minimum setback of thirty metres from the natural boundary on each side of the channel or channels unless otherwise approved. |
| Frequency | The number of occurrences of an event in a defined period. |
| Flood Accommodation | Allows flooding to occur periodically in developed or agricultural areas, with measures taken to limit, mitigate, or reduce vulnerability to flood damage. |
| Flood Avoidance | Approaches that prevent new building in flood hazard areas. |
| Flood Construction Level (FCL) | The minimum height required for a development to protect habitable living space from flood damage. In new construction, the underside of a wooden floor system or the top of a concrete slab must be no lower than the FCL. |
| Flood Fringe | The Flood Fringe is always the outer portion of the two-zone flood risk area where the flows are slower, shallower, and less damaging. |
| Flood Hazard Maps | Maps that go beyond flood inundation maps by providing information on the hazards associated with defined flood events, such as water depth, velocity, and duration of flooding. |
| Flood Inundation Maps | Topographic maps showing the extent of floodwater in plan view, under defined flood events. |
| Floodplain Mapping | See “Flood Hazard Maps”. |
| Flood Mitigation | Steps to reduce flood damage by structural measures (such as dikes), non-structural measures (such as keeping populations and assets away from flood-prone areas or requiring floodproofing), or a combination of these measures. |
| Flood Protection | Involves building and upgrading structural works designed to reduce the likelihood of flooding, prevent erosion, or reduce flood damage. |

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| Flood Risk Maps | Maps that reflect the potential damages that could occur because of a range of flood probabilities, by identifying populations, buildings, infrastructure, residences, and environmental, cultural, and other assets that could be damaged or destroyed. |
| Flood Resilience | The ability of a system, community or society exposed to flood hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a flood hazard in a timely, efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. |
| Floodplain Management | Includes policies and regulations intended to reduce flood risk associated with land use and development in floodplains and areas subject to flood hazards. |
| Gender Based Analysis Plus (GBA+) | An analytical process used to assess how diverse groups of women, men, and people of all genders may experience policies, programs, and initiatives. |
| Green Infrastructure | See “Nature-Based Solutions and Nature-Based Infrastructure”. |
| Hazard | A source of potential harm, or a situation with a potential for causing harm, in terms of human injury; damage to health, property, the environment, and other things of value; or some combination of these, as defined by the Canadian Standards Association. |
| Indigenous Knowledge Systems | The understandings, skills and worldviews developed by Indigenous Nations with long histories of interaction with their natural surroundings. This local land-based knowledge informs decision-making about fundamental aspects of day-to-day life. This knowledge is integral to a cultural complex that also encompasses language, systems of classification, resource use practices, social interactions, and cultural traditions. These perspectives are inherently valuable as they provide local land-based knowledge that transcends thousands of years, providing a lens for local sustainable development. |
| Indigenous Governing Body | An entity that is authorized to act on behalf of Indigenous peoples that hold rights recognized and affirmed by section 35 of the <i>Constitution Act</i> , 1982. |
| Indigenous People | Has the same meaning as Aboriginal Peoples in section 35 of the <i>Constitution Act</i> , 1982 (note that this term includes First Nations, Inuit, and Métis peoples). |
| Integrated Floodplain Management Plans | Plans that outline the preferred combination of measures for managing flood risk, including structural and non-structural approaches. |

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| Land Use Planning | The process by which lands are assessed so that informed decisions can be made regarding their use and development. |
| Local Governments | Municipalities and regional districts provide people living in British Columbia with essential local and regional services such as clean water, sewer systems, parks and recreation, and fire protection. These local governments plan and shape their communities and exercise the vision through the adoption of bylaws. |
| Métis | Recognized in the Canadian Constitution as one of the three Aboriginal peoples. Used broadly to describe people with mixed First Nations and European ancestry who identify themselves as Métis. |
| Mitigation | The phase of emergency management in which proactive steps are taken to prevent a hazardous event from occurring by eliminating the hazard, or to reduce the severity or potential impact of such an event before it occurs. Mitigation protects lives, property, cultural sites, and the environment, and reduces vulnerabilities to emergencies and economic and social disruption. |
| Nature-Based Solutions and Nature-Based Infrastructure | Nature-Based Solutions or Nature-Based Infrastructure is an approach that uses natural systems to provide critical services, such as wetlands for flood mitigation, or mangroves to reduce the impact of waves, storm surge, and coastal erosion. These solutions can also synergize with grey infrastructure, forming so-called "hybrid" solutions. |
| Multiple Accounts Analysis | A decision-making process involving the evaluation of several alternative options or scenarios for achieving a specific goal or objective. The purpose of this analysis is to compare the potential benefits, costs, and risks of each option to determine the most appropriate course of action. |
| Orphan Dike | "Orphan Dike" mean a "dike," as defined in the <i>Dike Maintenance Act</i> (the "Act"), that: a) has no identified "diking authority", and b) is not a "private dike", as those terms are defined in the Act. |
| Outcome | A desired future condition guiding the development and implementation of an organization's related programs. |
| Peak Flow | The maximum rate of water discharge during a flood at a given location on a river or other watercourse. |
| Preparedness | The phase of emergency management during which action is taken to ensure readiness to undertake emergency response and recovery. It includes, but it not limited to, hazard, risk, and vulnerability assessment, planning, resource planning, volunteer management, training, exercises, public/stakeholder education, and continuous improvement. |

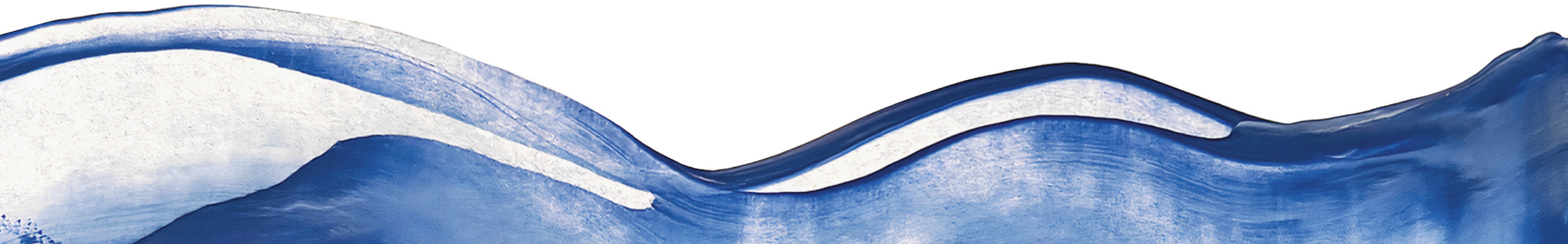
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| Remote Communities | A community not currently connected to the North American electrical grid or the piped natural gas network and is a permanent or long-term (5 years or more) settlement with at least 10 dwellings. |
| Probability | A measure of the chance of an event or an incident taking place. |
| Recovery | The phase of emergency management during which action is taken to re-establish social, cultural, physical, economic, personal and community well-being through inclusive measures that reduce vulnerability to emergencies, while enhancing sustainability and resilience. It includes taking steps to repair a community impacted by an emergency and restore conditions to a level that could withstand a potential future event or, when feasible, improve them to increase resilience in individuals, families, organisations, and communities. |
| Response | The phase of emergency management during which actions are taken in direct response to an imminent or occurring emergency to prevent, limit and manage impacts. Response includes the initiation of plans and actions to support recovery and may include deployment of registered volunteer resources. |
| Rights and Title Holders | Has the same meaning as Aboriginal Peoples in section 35 of the <i>Constitution Act</i> , 1982 (note that this term includes the 204+ First Nations of British Columbia). |
| Risk | A concept that takes into consideration the likelihood that a hazard will occur, as well as the severity of possible consequence to health, property, the environment, or other things of value. |
| Risk Assessment | A method to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed buildings, infrastructure, people, property, services, livelihoods, and the environment on which they depend. Can be qualitative or quantitative. |
| Risk Management | The systematic approach and practice of managing uncertainty to minimize potential harm and loss. |
| Riverine Flooding | Occurs when water levels in a river or stream overflow beyond its banks. |

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| Resilience | <ul style="list-style-type: none"> i. The capacity to lead a continued existence in response to rapid and gradual change. ii. The capacity of a system to deal with change while continuing to develop. iii. The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. iv. The ability of a system to plan and prepare for a stressor, absorb the perturbations induced by the stressor, recover from damage created by the stressor, and adapt to prevent future severe effects from the same stressor. |
| Rural Communities | Rural community is defined as a community with a population of less than 5,000 people and a population density of less than 400 peoples per square kilometre and not connected to the North American piped natural gas network. |
| Safe Flooding | See “Flood Accommodation”. |
| Sector | Includes not only water users but other groups that benefit from healthy water (e.g., tourism, fisheries). |
| Stormwater | Rainwater, snowmelt, and water from other sources that runs off impervious surfaces such as pavement and rooftops. Stormwater has implications for urban and rural planning, as it cannot infiltrate the ground and is typically channeled into storm sewers and watercourses. |
| Tsunami | A series of waves caused by a rapid, large-scale disturbance of water. Tsunamis can be triggered by earthquakes, landslides, volcanic eruptions, meteor impacts, human activities (e.g., explosions), and meteorological/atmospheric phenomena. |
| Vision | An aspirational description of what an organisation would like to achieve in the mid- to long-term future. |
| Vulnerability | <ul style="list-style-type: none"> i. The characteristics of a person or group and their situation that influences their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. ii. The conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards. |

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| Watershed | <p>Watersheds are areas of land where rain, snow and glacier runoff flow into common rivers, lakes, streams, or aquifers. They are homes to species, like wild salmon, give water for drinking and growing our food, support jobs and work for people, and have significant cultural and spiritual value for local communities.</p> <p>With respect to floods, B.C. has nine major watershed basins and they are the Mackenzie, the Fraser, the Columbia, the Pacific Ocean Seaboard (sometimes divided into the North Coast and South Coast), the Nass, the Skeena, the Stikine, Taku and the Yukon. Each major watershed includes many sub watershed drainage basins.</p> |
| Water Basin | See “Watershed”. |
| Water Conservation | Preservation of water supplies by employing methods, policies and technologies that reduce water consumption. |
| Wetland | A swamp, marsh, bog, fen, or other similar area that supports natural vegetation that is distinct from adjacent upland areas or enclosed uplands. |

Appendix C:

Acronyms



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| ALRs | Agricultural Land Reserves, preserved under the <i>B.C. Agricultural Land Commission Act</i> |
| B.C. | Province of British Columbia, Canada |
| CEPF | Community Emergency Preparedness Fund |
| DCRRA | Disaster and Climate Risk and Resilience Assessment |
| EMCR | B.C. Ministry of Emergency Management and Climate Readiness |
| ESS | Emergency Support Services |
| FNAC | First Nations Advisory Circle |
| FRAC | Flood Resilience Advisory Circle |
| GBA+ | Gender Based Analysis Plus |
| GDP | Gross Domestic Product |
| IFMP | Integrated Flood Management Plan |
| NGO | Non-governmental Organization |
| PHSA | Provincial Health Services Authority |
| UBCM | The Union of BC Municipalities |
| UN | The United Nations |

End Notes

¹ Insurance Bureau of Canada. 2019. *Combatting Canada's Rising Flood Costs: Natural infrastructure is an underutilized option.*

² Natural Resources Canada (2021). *Relative sea-level projections for Canada based on the IPCC Fifth Assessment Report and the NAD83v70VG national crustal velocity model.* James, T. S., Robin, C., Henton, J. A., and Craymer, M. Geological Survey of Canada Open File 8764.

⁴ Sayers et al. (2014). *Strategic flood management: ten 'golden rules' to guide a sound approach.* International Journal of River Basin Management. 13(2): 137-151.

⁵ Examples include Canadian Standards Association (CSA) W204 (Flood resilient design of new residential communities), CSA W210 (Prioritizing flood resilience work in existing residential communities), CSA W211 (Management Standard for Stormwater Systems), and CSA Z800 (Guideline on basement flood protection and risk reduction).

