

Provincial Flood Emergency Plan

Updated
May 31, 2019



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

Signatories to the Provincial Flood Emergency Plan

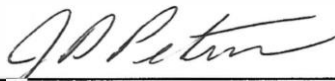
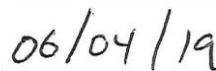
In accordance with Schedule 1 of the *Emergency Program Act*, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development is designated as the lead ministry for flooding and any corresponding emergency plans and procedures and their implementation. Emergency Management BC is responsible for coordinating provincial emergency management activities.

The Provincial Flood Emergency Plan replaces all previous versions, is a living document that represents an agreement between ministries and agencies of the Province, and will be reviewed and updated following major flooding events and associated lessons learned, or as required.

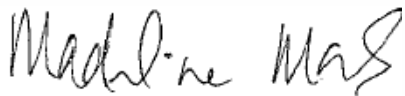
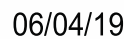
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1 Introduction

The province of British Columbia regularly experiences flooding events throughout the year; however, the spring of 2017 and 2018 witnessed an increase in frequency and intensity for freshet events and highlighted the growing impacts of climate change (Abbott-Chapman, 2018, p. ii). To address these impacts and anticipated future events, the provincial government (the Province) is placing a greater emphasis on increased collaboration between emergency management partners and strengthening flood management across all four pillars of emergency management: mitigation, preparedness, response, and recovery. The Provincial Flood Emergency Plan (the Plan) has been updated to reflect this.

The Province recognizes the need for inclusivity, reducing disaster risk, and incorporating climate adaptation practices into emergency management activities. As a result, the Plan has been updated to address the recommendations from the government-commissioned, independent Abbott-Chapman report on the 2017 wildfire and flood seasons. Furthermore, the Plan is supportive of and informed by the Draft Principles that Guide the Province of British Columbia's Relationship with Indigenous Peoples (Draft Principles), the United Nations Sendai Framework for Disaster Risk Reduction (Sendai Framework), and Gender-Based Analysis Plus (GBA+).

1.1 Purpose

The Plan describes the methodology the Province will utilize for coordinating flood-related activities managed by First Nations and local authorities. The Plan clarifies the roles and responsibilities of provincial ministries, First Nations, and local authorities involved in a flood emergency before, during, and after a flood event. It outlines a concept of operations that fosters collaboration between all levels of government and partners active in mitigating, preparing for, responding to, and recovering from flood events.

1.2 Scope

The Plan focuses on flood-related activities of the Province at the regional and provincial levels within the four pillars of emergency management: mitigation, preparedness, response, and recovery. Any flood event that exceeds the capacity of a First Nation or local authority and requires the activation of a Provincial Regional Emergency Operations Center (PREOC) is considered within scope. Minor flood incidents that do not require multi-jurisdictional or multi-agency response are out of scope. Although the primary focus of this document is on the role of the Province, activities of First Nations and local authorities are outlined.

This document is a hazard-specific annex of the provincial Comprehensive Emergency Management Plan (CEMP) and it aligns with the BC Emergency Management System (BCEMS). Please refer to the [BC All-Hazard Plan](#) (a component of the CEMP) for a detailed outline of the operational structure and responsibilities for a provincial all-hazard response.

1.3 Governance and Administration

In accordance with Schedule 1 of the *Emergency Program Act* (EPA), the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) is designated as the lead ministry for flooding and any corresponding emergency plans and procedures and their implementation. Emergency Management BC (EMBC) is responsible for coordinating provincial emergency management activities.

This Plan replaces all previous versions, is a living document that represents an agreement between ministries and agencies of the Province, and will be reviewed and updated by EMBC following major flooding events and associated lessons learned, or as required.

1.4 Plan Activation

The Plan will be activated by FLNRORD in consultation with the Assistant Deputy Ministers' Committee on Emergency Management (ADMCEM) in anticipation of or in response to a flood emergency. In alignment with the EPA, activation of the Plan will typically occur when "a present or imminent event or circumstance" that is flood specific and "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". Activation of the Plan will be communicated by FLNRORD and ADMCEM to provincial partners.

Mitigation and preparedness activities do not require the formal activation of the Plan; however the ADMCEM will be advised of provincial coordination of these activities.

1.5 Planning Assumptions

The Province is responsible for supporting the local level in their management of flood-related activities, with the expectation that First Nations and local authorities will manage activities to the best of their ability and will request assistance when appropriate. Local authorities have primary responsibility for managing emergency response and recovery activities within its jurisdiction. However, the Province recognizes not all communities in British Columbia operate under the same legislative requirements nor have access to the same resources. Therefore, the point at which communities need assistance and the level of assistance may vary based on capacity. Below highlights both assumptions and desired outcomes:

- Individuals and businesses will engage in flood prevention and mitigation works prior to flooding season to the best of their ability;
- Individuals are aware of flood risks to their properties;
- Individuals and businesses will make efforts to protect their property and possessions from flooding if time allows and if it is safe to do so. This may include removing hazardous materials, moving possessions out of lower levels of their homes/dwellings and placing sandbags provided by the First Nation community or local authority to protect their properties;
- First Nations and local authorities will initiate actions to meet the BCEMS goals in response to flooding;
- First Nations and local authorities will create, update, and activate emergency plans and directly control the resources within their jurisdiction for the purpose of emergency response and recovery from flooding;
- First Nations and local authorities will work in partnership with diking authorities to monitor risks to the community;
- Diking authorities have completed hazard risk assessments and appropriate emergency response plans are in place that can be implemented if required; and
- Dam owners will monitor dams to ensure they remain sound.

1.6 Considerations for Equitable Support

The Province recognizes and appreciates that flood emergencies affect all residents within the British Columbia region in unique ways. Below is a list of considerations to help guide flood management

activities to ensure safe, respectful, and appropriate measures are being taken and that traditionally underserved populations receive equitable treatment.

- Varying capacities and circumstances such as socio-cultural factors, population demographics, and budget for emergency management support can greatly alter the impacts and management of a flooding emergency event within a community;
- Indigenous Traditional Knowledge (ITK) provides a vital and unique contribution to flood management. The Province recognizes the importance of including ITK with local knowledge and as a result, ITK Holders may be a part of the SMEs referenced in this Plan;
- Demonstrated in both 2017 and 2018, First Nations are disproportionately impacted in emergencies and therefore an understanding of the inequitable circumstances that many communities face is imperative when working to support and collaborate;
- Systemic barriers remain for resource acquisition, thereby creating unequal access to flood management tools and services;
- Due to historical grievances and experiences, there may be a lack of trust in current institutions and practices. Awareness and understanding of historical and present relationships between communities and emergency management partners is vital to build and maintain trust;
- Dynamic approaches to routine emergency operations are encouraged to provide safe and equitable emergency management support, an example includes the use of culturally sensitive communications; and
- Consideration for the diversity and multiple intersecting identify factors of people, including culture, gender, education, disability and other factors should take place early and often during emergency operations to ensure an inclusive, intersectional, and integrated approach that acknowledges the social constructs of disasters.

2 Authorities & Agreements

2.1 Emergency Management Services Agreement

Within First Nation communities, Chief and Council have responsibility for the promotion of public safety by ensuring emergency management plans are in place and that all community members are aware of the response protocol during an emergency. Chief and Council have the authority to request assistance or to declare a Band Council Resolution (BCR) or equivalent to notify partnership agencies of the community's situation and needs. The *Emergency Management Services Agreement* between Indigenous Services Canada (ISC) and EMBC details how the Province delivers emergency management services to First Nation communities on-reserve.

In partnership with First Nation communities and the Province, ISC developed an Emergency Management Assistance Program (EMAP) to help communities on-reserve access emergency assistance services. EMAP provides funding to First Nations communities to support building resiliency, help prepare for natural or human-caused hazards, and respond to hazards using the four pillars of emergency management. EMAP aims to be flexible, culturally sensitive, responsive to the unique strengths and customs of First Nations, and adaptive to the evolving challenges resulting from emergency events. EMAP provides funding for mitigation and preparedness projects such as all hazard risk assessments and training opportunities. Furthermore, EMAP strives to help community response and recovery efforts through reimbursement for activities that support ongoing or imminent emergencies. For further information, refer to the Federal [Emergency Management Assistance Program](#) website.

2.2 Emergency Program Act

The *Emergency Program Act* (EPA) details provincial and local authority emergency management responsibilities. It also enables local and provincial states of emergency. As defined in the *Emergency Program Act*, local authorities include municipalities and regional districts. Local authorities have a legislated duty to respond to emergency situations within their jurisdictions and to have an emergency plan in place to keep individuals, infrastructure and communities as safe as possible. Local authorities must establish an emergency management organization to develop and implement emergency plans and other preparedness, response and recovery measures.

2.3 Emergency Program Management Regulation

The Emergency Program Management Regulation details the responsibilities and authorities of provincial ministers, ministries, programs, and government corporations and agencies for emergency management activities at the provincial level.

2.4 Water Sustainability Act

The *Water Sustainability Act* (WSA) provides the legislative framework that vests surface and groundwater in British Columbia. It includes how water can be diverted and used under legislation as well as how work can be conducted in a stream.

As it relates to flood emergencies, the WSA maintains the authority and sets out the process by which First Nations and local authorities can make application to construct works in and about a stream. In order to make changes in and about a stream you must hold a license, use approval, change approval or in case of most emergency works, give notification.

2.5 Water Sustainability Regulation

The Water Sustainability Regulation (WSR) is a regulation under the WSA and provides limited powers to local authorities to take action during a declared flood emergency under the *Emergency Program Act*.

Exemptions from Approvals or Notifications

When there is potential danger to life or property during an emergency, First Nations and local authorities do not need to submit notification or acquire approval to:

- Construct or place erosion protection works or flood protection works when an emergency is declared under the EPA, and/or
- Clear an obstruction from a bridge or culvert.

Emergency flood work must be carried out by the Province, municipalities, regional districts and their agents. First Nations and local authorities must report any emergency flood work to a habitat officer at FLNRORD before beginning work. However, the WSR allows 72 hours to report the change. The work must comply with the habitat officer's specifications.

Flood damage restoration work is not considered an emergency, and requires notification or approval.

2.6 Dam Safety Regulation

The Dam Safety Regulation (DSR) is a regulation under the WSA and outlines requirements for dam owners to inspect their dams, undertake proper maintenance, report incidents, take remedial action, and ensure their dam remains in compliance with the regulation to mitigate possible loss of life and damage to property and the environment from a dam failure.

2.7 Dike Maintenance Act

The *Dike Maintenance Act* (DMA) details the legislative basis for the operation and maintenance of public dikes in British Columbia. Other legislation relative to diking authorities in British Columbia includes the *Drainage, Ditch and Dike Act* and the *Local Government Act* which allows local authorities to undertake diking and drainage through local bylaws and Improvement Districts.

2.8 Environmental Management Act

The *Environmental Management Act* (EMA) guides provincial environmental protection activities including extraordinary measures to address imminent risks to the environment.

Please note that this is not an exhaustive list of the legislation that pertains to flood management activities. For further clarification please contact an EMBC or FLNRORD regional office.

3 Flood Hazard, Risk, and Resources

3.1 Flood Hazard

There are various common meanings of the word “flood.” For the purposes of the Plan, a flood will be considered to occur when the volume of water exceeds the bank’s full capacity of the stream channel or water body to accommodate the water, so that water flows outside the channel or overflows the water body. When water seeps into buildings through windows, doors, and other openings, it is considered overland flooding. When a flood becomes a source of potential harm it becomes a hazardous flood. Due to climate change, floods are expected to increase in frequency and intensity. Development pressures on the flood plain are resulting in an increase in the severity of flood damage. The effects of climate change are resulting in an increase in average temperatures, rising sea levels, and more extreme weather patterns. In a warmer future, extreme flows in mid-winter due to rain-on-snow events may become more common and may significantly affect larger drainage areas.

The most common causes of flooding and the causes often exclusively considered in water resource management are high runoff resulting from extreme precipitation and/or snowmelt. Physical failure of river bank erosion protection works, dikes, or dams can result in flooding and failure is generally unpredictable.

Freshet is the period of time when rivers swell from snowmelt, generally April to July. Freshet flooding occurs when atmospheric conditions lead to rapid snow melt and the bank’s full capacity of the stream channel or water body is exceeded. The potential for freshet flooding can generally be forecasted using information related to snow packs, weather forecasts and knowledge of stream channel capacities. While snowpack information can be used to begin planning in advance of a potential flood event, actual flood severity is dependent on short term weather conditions. Localized weather conditions, such as rain-on-snow, or intense rain events are even less predictable and do not provide significant advanced warning.

In BC, high water levels of creeks, rivers, streams, ponds, lakes, reservoirs, and the ocean can result from a number of different causes. Typical causes include:

- Rainfall;
- Snowmelt;
- Ice jams, ice runs, log jams, and beaver dams;
- Extreme ocean tides; and
- Storm surges.

In addition to the conventional floods listed above, there are several other flood-related hazards in BC including:

- Debris flows and debris floods/hyper concentrated flows;
- Channel avulsions;
- Landslide dams;
- Breaching of landslide dams, and moraine dams and glacial lake outburst floods; and
- Breaching of anthropogenic (human made) dikes, dams, and tailings impoundments.

3.2 Flood Risks and Considerations

- Floods can be extremely hazardous and pose a significant risk to lives and infrastructure.

- Floods can cover a large geographic area, or occur in numerous locations concurrently, which can overwhelm local and provincial resources.
- Floods can be both “notice” (for example, predictable events based on snow pillow analysis and extended weather forecasting) and “no-notice” events (for example, flash floods due to failure and sudden release of debris dams). Climate change may increase the number of “no-notice” and “notice” events.
- Forecasts for “notice” events such as freshet flooding allows time for advanced planning activities. Snow survey bulletin reports are released by the River Forecast Centre (RFC) typically in January, February, March, April, May and June of each year. These are used to identify areas with elevated risk.
- For “notice events” deploying temporary water barriers such as sandbags, gabion mesh basket dikes, rubber dams, and temporary berms as early as possible can mitigate against forecast flood damage.
- The RFC relies on gauge (snow and river) data on watersheds to provide forecasts and does not monitor ungauged watersheds and associated streams and tributaries.
- Diking authorities and dam owners are required to actively monitor the condition of their infrastructure to ensure: infrastructure integrity; critical items are operational (i.e. electrical connections, gates, valves, etc.); spillways and culverts are clear; and infrastructure access routes are clear and safe to use and alternate access routes are identified and planned for use. Poor maintenance increases the risk of a failure and consequent flooding.
- Health risks can occur due to compromised sewage systems or contaminated drinking water supplies.
- Hazardous waste and/or debris could cause further blockage of waterways.

3.3 Resource Requirements

Potential resource requirements for provincial ministries to support flood advanced planning and response include:

- Access to SMEs to enhance understanding of water body behavior and flood forecasting;
- Access to geographical information systems (GIS) staff, emergency mapping products and tools, flood maps, and the BC Emergency Management Common Operating Picture (BC EM COP);
- Use of aviation resources (fixed wing, rotary wing, satellite information, drones, etc.) for reconnaissance, surveying, and advance planning;
- Deployment of temporary water barriers (sandbags, gabion mesh baskets, rubber dams and temporary berms) for distribution to First Nations and local authorities;
- Field observation by provincial flood staff (Flood Assessors, Flood Observers and technical specialists) to assess field conditions and recommend use and placement of temporary water barriers. Flood staff report directly to the Flood Assessment Unit (FAU) in an activated PREOC to inform the provincial integrated response;
- Deployment of available sandbag filling machines;
- Access to a list of skilled heavy equipment operators and specialized heavy equipment;
- Access to staff to provide training and support at the First Nation community or local authority Emergency Operations Centers (EOC); and
- Access to field crews to assist with sandbagging when First Nations, local authorities, and their residents are overwhelmed.

4 The Pillars of Emergency Management

The BC Emergency Management System views emergency management as a continuous process consisting of four interconnected phases: mitigation, preparedness, response, and recovery. These may occur sequentially or, in some cases, concurrently, but they are not independent of each other. The below provides definitions of each and general actions that occur during these phases for flood emergency management. Detailed actions by ministries for these phases are described in Section 6 and Appendix A.

4.1 Mitigation

Mitigation is defined as the steps and effort taken pre-event to reduce or prevent any potential impacts. Mitigation covers structural measures (such as construction of floodways and dikes) and non-structural measures (such as building codes and land use planning).

Mitigation works are considered either as permanent or temporary. Permanent works are owned, operated and maintained by First Nations and local authorities. Temporary works such as temporary water barriers (sandbags, gabion mesh baskets, rubber dams and temporary berms) are for distribution to First Nations and local authorities during emergency response. These works are to be removed after the flood event. Temporary emergency works may be constructed for imminent flood protection. However, the Plan refers to these activities as response procedures. For information on imminent flood threat works (the construction of temporary berms and dikes) when sandbags and gabion baskets are not viable, please see [Policy 5.12](#).

Additional information on flood mitigation programs, approved projects, as well as guidelines on how to complete adequate flood mitigation projects are found on the [Flood Mitigation Funding Programs](#) website. For more information on land use management, see the [Flood Hazard Land Use Management](#) website.

Climate projection information is available through the [Pacific Climate Impacts Consortium's Plan2Adapt](#) website. Please contact ClimateRisk@gov.bc.ca for further information on preparing for, and adapting to, climate change.

4.2 Preparedness

Preparedness is defined as the actions taken to ensure that individuals, businesses, and jurisdictions/organizations are ready to undertake emergency response and recovery. This may be through the development of plans, training of staff, exercises, or mobilization of resources. Actions such as regional integrated planning, seasonal preparedness workshops, as well as GIS information sharing and updates should all be part of the preparedness pillar.

Each year, preparedness activities are carried out in advance of flooding, although certain procedures are initiated based on the degree of forecasted flood threat. In this Plan, procedures that are specifically initiated in anticipation of an imminent flooding event are referred to as “readiness” activities or functions.

The Province may provide strategic guidance recommendations based on best practices to First Nations and local authorities to enhance flood readiness activities. Readiness activities may include the mobilization of resources, pre-deployment to regions, or training of new staff. Advance planning activities, such as standing up the Provincial Flood Readiness Group, may also commence during the

readiness stage and can reduce the severity of a major emergency event and/or increase the resiliency of the Province through the coordination of response agencies and SMEs.

4.3 Response

Response is defined as the actions taken in an imminent or occurring emergency in order to manage its consequences. Response actions should first be carried out at the local level by First Nations and local authorities. If a First Nation community or a local authority reaches capacity and request support, regional and provincial staff will initiate response activities. Local level response actions may include protecting infrastructure by sandbagging, initiating evacuations, and informing community members of flood threats.

Flood response activities that require cross-government provincial coordination and collaboration are often widespread and require a variety of skill-sets and knowledge to address the number of direct and indirect consequences from flooding. These activities may include activating a PREOC or the Provincial Emergency Coordination Centre (PECC), coordinating the deployment of temporary water barriers, or facilitating coordination calls for information sharing purposes between First Nations, local authorities, regional staff, critical infrastructure partners, and SMEs.

4.4 Recovery

Recovery refers to activities and programs designed to support communities to rebuild post-disaster in a resilient, culturally safe and appropriate way. The Province recognizes the importance of the Build Back Better (BBB) approach to post-disaster recovery. This approach focuses on reducing risk within communities during the recovery phase to prevent or mitigate future disasters and thereby reduce or eliminate response efforts.

Recovery operations should commence during response activities and may involve public and private sector coordination of recovery efforts. Recovery consists of several stages: short-term (days-weeks), medium-term (weeks-months) and/or long-term (months-years). This may include short-term activities, such as setting up a community resilience center to long-term, such as dike construction or modifying land use and zoning. The timing of the transition between recovery stages will vary depending on the scope and scale of impacts.

5 Provincial Coordination

The Province has developed and adopted the BC Emergency Management System that helps ensure a coordinated and organized approach to emergencies and provides standardization, guiding principles and processes, and emphasizes integration and partnerships at all levels. When a flood emergency occurs that requires coordination of provincial emergency management activities and/or has created a request for assistance from a First Nations community, local authority, or another ministry, the provincial emergency management structure is activated.

5.1 Deputy Ministers' Committee on Emergency Management/Ministers'–Deputies' Emergency Council (DMCEM/M-DEC)

The Deputy Ministers' Committee on Emergency Management (DMCEM) leads executive-level prioritization and alignment of provincial emergency management policy, legislation, and strategy outside of activation. The DMCEM will activate and transition to the Ministers'-Deputies' Emergency Council (M-DEC) in response to a significant flooding event, inclusive of both response and recovery. M-DEC comprises a provincial cross-section of the key provincial Ministers and Deputy Ministers who provide whole-of-government, integrated and strategic direction to ADMCEM. The Ministry representation on the M-DEC generally mirrors the ADMCEM.

5.2 Assistant Deputy Ministers' Committee on Emergency Management (ADMCEM)

The ADMCEM supports the DMCEM and M-DEC in leading cross-government integration, coordination, and prioritization of emergency management work related to mitigation, preparedness, response, and recovery.

Where potential 'notice' events such as freshet flooding based on snow-pillow and weather reports is anticipated, the ADMCEM may meet prior to the actual flood event to initiate advance planning activities, including the activation of the Provincial Flood Readiness Group (PFRG). During a significant flooding event, ADMCEM will provide whole-of-government strategic direction, coordination and oversight of provincial integrated emergency response and recovery activities to the PECC. Should the flooding emergency result in a significant recovery component, the ADMCEM will provide leadership to overall provincial recovery activities and direction.

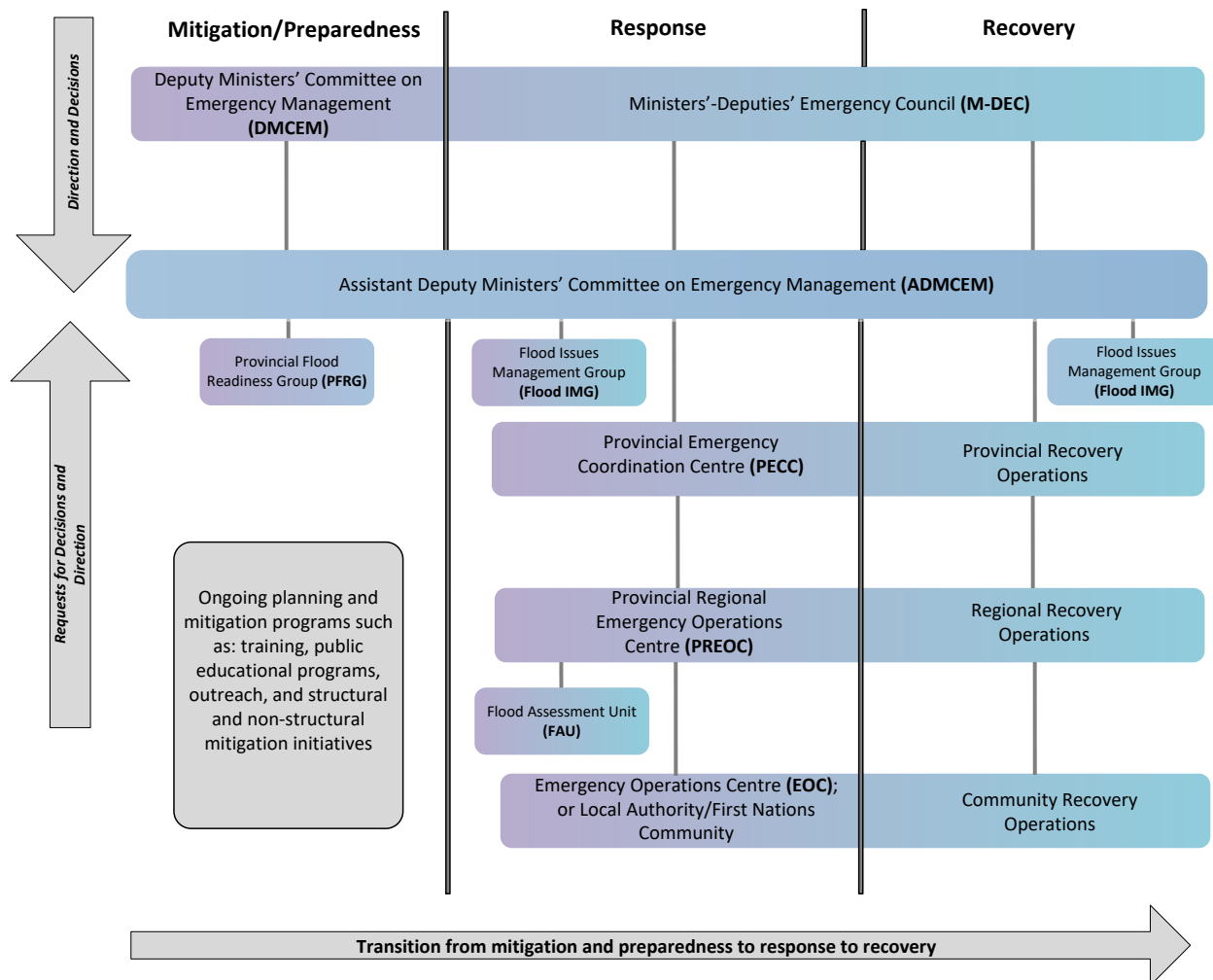


Figure 1: Illustration of the Provincial Emergency Management System as it transitions through the phases of emergency management

5.3 Provincial Flood Readiness Group (PFRG)

Prior to the freshet season or in anticipation of a flood event the PFRG may be stood up by leadership from either EMBC or FLNRORD, or ADMCEM to convene in advance to assist the Province with specific or potential issues relating to cross-ministry response. Reporting to ADMCEM, the PFRG will be co-chaired by EMBC and FLNRORD and will work with relevant ministries and organizations to identify areas at greatest risk of flooding, the possible threats to public safety and critical infrastructure, urgent mitigation measures to be considered, and criteria for future planning during activations/responses.

The role of the PFRG is to:

- Predict areas of the Province with the highest risk of flooding;
- Identify any information gaps in the modelling or forecasting and make recommendations;
- Increase available information and decrease uncertainty;
- Identify any issues requiring the guidance and/or decision of ADMCEM;
- Identify and propose solutions to rectify resource and policy gaps;
- In consultation with First Nations and local authorities, identify any urgent mitigation measures that could be implemented;

- Ensure that communities are supported with access to technical advice and flood protection measures;
- Provide mapping support to provincial ministries, First Nations, and local authorities; and
- Develop communications strategies for providing information to the public.

Once the “notice” event becomes a response event the PFRG will dissolve and flood response activities will commence.

5.4 Flood Issues Management Group (Flood IMG)

When required, the ADMCEM will activate a Flood Issues Management Group (Flood IMG) to analyze specific flood-related response and/or recovery issues and to provide decision-making support and recommendations for ADMCEM or PECC resolutions. Chaired by FLNRORD, the Flood IMG consists of SMEs who provide research and analysis on areas of specialization such as legislation, risk management, ITK, policy and technical knowledge. SMEs will be engaged on a case-by-case basis, depending on the circumstances of the specific issue. These SMEs may also provide knowledge to support cross-ministry coordination and resolution of complex issues. This can also include members of the PFRG, as appropriate.

As a result of a significant flooding event, there may be issues that extend beyond normal emergency management activities and that require extraordinary measures to resolve. While the ADMCEM has decision support systems in place to deal with normal and above normal flood seasons there may be complex situations where engaging additional provincial-level decision making support and expertise from key ministries and agencies is required. The Flood IMG will address specific, complex flood response and/or recovery issues including those that have a precedent setting effect on future flood related provincial decisions and activities that may have a direct influence on provincial policy.

The Flood IMG may assist the ADMCEM with:

- Providing options for the resolution of complex emergency management issues;
- Obtaining legal opinions pertaining to complex emergency management issues;
- Maintaining a corporate library of case studies;
- Coordinating and collaborating with any required SMEs;
- Ensuring that each ministry involved is adequately represented;
- Determining other issue-specific participation in the group; and
- Reporting out to appropriate ministry executive, ADMCEM and the Inter-Agency Emergency Preparedness Council (IEPC).

If a complex issue impacting multiple provincial agencies arises at the regional level, it will be communicated to the PECC and to the ADMCEM, as required. If the ADMCEM determines that the issue requires further examination and analysis they will task the Flood IMG to properly analyze decision options and give recommendations.

5.5 Provincial Emergency Coordination Centre (PECC)

During a significant flood event the PECC will implement ADMCEM priorities and support active PREOCs. The PECC will be activated to:

- Implement the Province’s overall priorities and objectives in a significant flooding event;
- Manage the Province’s response and recovery activities and provide direction for emergency flood operations;

- Provide coordination and support to activated PREOCs;
- Provide cross-government support to provincial ministries, First Nations, local authorities, and emergency management partners;
- Ensure adequate province-wide mobilization and allocation of critical assets;
- Coordinate government's business continuity requirements to support mission critical functions;
- Provide continuity support to provincial senior officials as requested; and
- Facilitate, as required, the acquisition of provincial, territorial, state, and national assistance.

The RFC, Ministry of Environment and Climate Change Strategy (ENV), and Environment and Climate Change Canada (ECCC) provide high-level briefings in support of provincial response efforts. Provincial technical specialists from FLNRORD (including RFC, Dam Safety Section and the Flood Safety Section) work in collaboration with the Planning and Operations sections in the PECC. Technical experts provide high-level expertise to the PECC including forecasting and situational awareness regarding flood locations and associated flow magnitudes, water levels and duration of events, and associated hazards on dam and dike infrastructure. RFC typically provide their expertise remotely.

The PECC also liaises directly with FLNRORD's Wildfire Management Branch to obtain access to field crews and equipment to support field response during flood events, i.e. sandbag placement, evacuation support, pumping, etc.

If required Ministry of Transportation and Infrastructure (MoTI) senior staff may be deployed to the PECC where staff is typically located within the operations section. MoTI staff have extensive knowledge of highway systems in the province, are available to provide and gain situational awareness, and communicate regularly with their counterparts in PREOCs and MoTI MROCs. They also keep their ministry senior officials informed of any major developments regarding ministry engagement in provincial response activities.

During response, when the need for provincial recovery coordination is identified, a recovery unit/branch will be established within the PECC to coordinate short-term recovery actions. Should the emergency escalate, requiring significant recovery support, coordination, and direction, EMBC would signal that recovery scope and scale has exceeded the provincial emergency management system's capability and a recommendation would be made to formally initiate recovery through the ADMCEM to DMCEM/M-DEC.

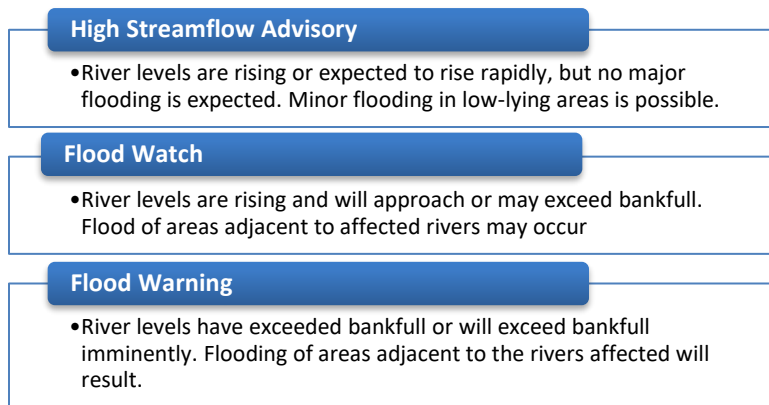
5.6 River Forecast Centre (RFC)

The RFC analyses snow pack, assesses seasonal water supply and flood risk, and predicts flows in British Columbia's rivers, streams and water bodies. It produces a range of bulletins, maps and warnings to inform emergency managers and the public about current and upcoming streamflow conditions. During periods of high flood risk, the RFC provides information on current and forecast streamflow conditions, including modeled forecast data, and flood advisories and warnings.

The level of provincial response is generally linked to flood levels as described by the RFC and the potential or real severity of impacts to First Nations and local authorities.

Advisories from the RFC

The RFC uses three levels of advisories. They are as follows:



In general, during a flood event the advisories sequence through all three levels, beginning with a High Streamflow Advisory. However, in certain circumstances the first notification for an event may be a Flood Watch. The timing of the advisories before a flood event can vary from a few hours to approximately 72 hours. The RFC distributes these advisories to key emergency management partners by email and posts the information on its website. In situations where there is some advanced warning (>72 hours) of the potential for flood-producing weather systems, the RFC may alert EMBC of these conditions prior to releasing a Flood High Streamflow Advisory, Watch or Warning.

The RFC is a technical unit that uses scientific analysis to forecast river levels along certain streams and thus the advisories are only one element of the multi-faceted decision making process that determines if response agencies will activate their operation centres. Depending on local geography and historical knowledge, emergency management activities may escalate according to the RFC notifications if the degree of risk to people and infrastructure warrants action. However, First Nations and local authorities may initiate response at any time. In locations where a significant threat to person and property exists, the announcement of a High Streamflow Advisory can mark the transition from the readiness to the response phase.

The RFC advisory levels are based on streamflow statistics and past events, and therefore may not be capable of capturing all vulnerable areas. These advisories should be viewed as general guidelines as they are not perfectly calibrated to local conditions. First Nations and local authorities should continue to make their own assessments to highlight potential areas of concern.

For additional information on advisory levels, see Appendix C.

Response to “No-Notice” Events

“No-notice” flood events are unpredictable and offer no time for pre-planning, pre-positioning of resources or the completion of mitigation activities. Examples include flash flooding due to intense rain events and the physical failure of flood protection works or natural or human-made dams. “No-notice” events may be indicated by weather warnings but the severity of flooding cannot be predicted. In “no-notice” flood events it is not guaranteed that there is sufficient time for the RFC to issue advisories or for emergency response agencies to complete the necessary preparedness activities.

In severe “no-notice” flooding events, provincial coordination and response will begin during the flooding event and the activation of a First Nation community or local authority EOC.

5.7 Ministry of Transportation and Infrastructure District Operation Centres and Ministry Regional Operation Centres (DOCs and MROCs)

In major flood emergency events MoTI may activate a combination of District Operation Centres (DOC, site-support level) and Ministry Regional Operation Centres (MROCs, regional coordination level) to manage the response to flooding on provincial highways and to provide support for PREOC activities. Operations are coordinated through MoTI Operations Centres with support for provincial MoTI and public communications.

5.8 Provincial Regional Emergency Operation Centre (PREOC)

The PREOC is the primary point of contact between the Province, First Nations and local authorities. As per the BC All-Hazard Plan, a PREOC provides support to EOCs that are activated during an emergency flooding event. Thus, provincial resources that are deployed in support of First Nations and local authority response are primarily coordinated through the PREOC.

At the PREOC level different types of services and subject matter expertise are provided by ministries supporting both provincial and regional response activities. The RFC and ECCC provide high-level briefings and technical expertise on a regular basis to inform response activities and regional staff.

If required MoTI senior staff may be deployed to any of the PREOCs where staff are typically located within the operations section. MoTI staff have extensive knowledge of ministry capabilities and of the highway systems in the region. They are available to provide and gain situational awareness regarding roadways, and can communicate forecasted or urgent resource and assistance needs of First Nations, local authorities, and PREOCs to MoTI MROCs. MoTI support to First Nations and local authority sites is prioritized by the PREOC and coordinated by the PREOC and MoTI representative in the PREOC.

During response operations, when the need for regional recovery coordination is identified, a recovery branch/unit will be established to support First Nations and local authorities. As response operations de-escalate and recovery operations escalate, EMBC Regional Managers will ensure agencies involved in the response phase and additional agencies needed to support recovery are integrated as required.

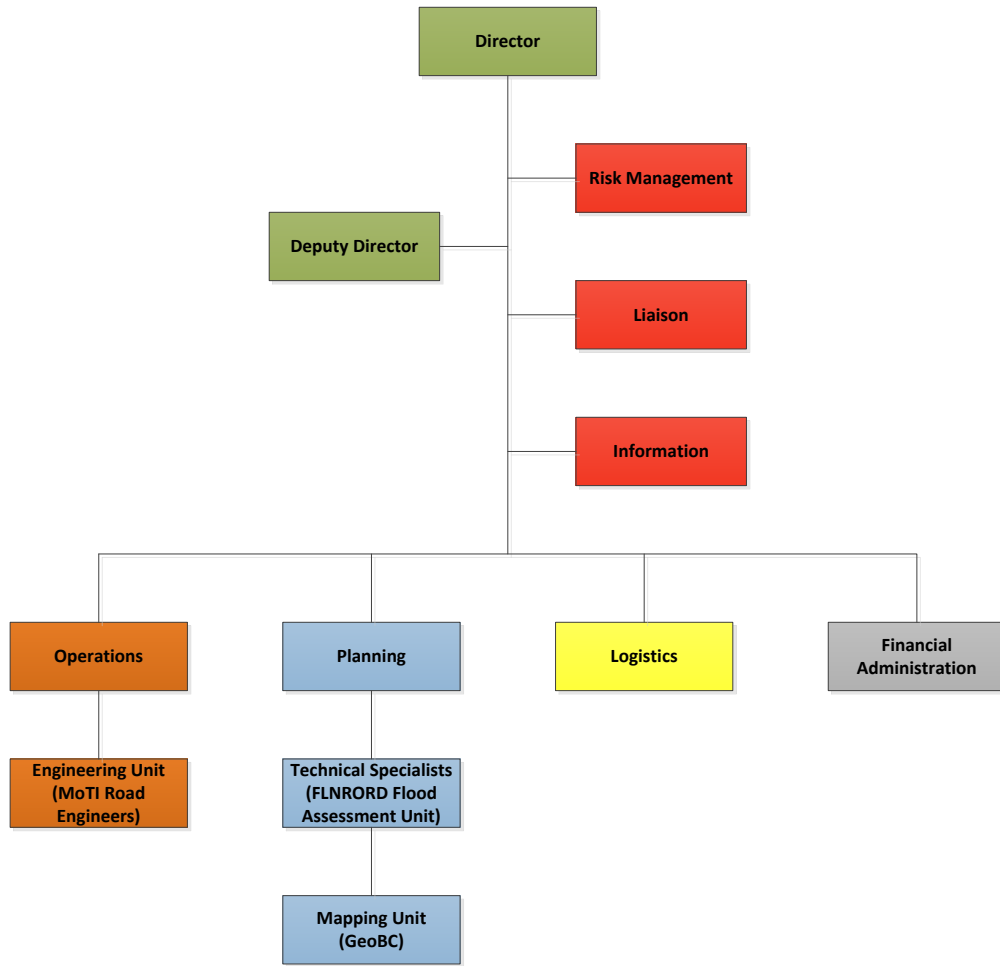


Figure 3: Illustration of the PREOC and the relationship with MoTI and FLNRORD during response to floods.

5.9 Flood Assessment Unit (FAU)

During a significant flood event, when technical support and SMEs for advance planning and response is needed, an FAU may be created within the PREOC’s Planning section. Reporting to the Planning Chief, this scalable unit may be populated by flood hazard management staff (i.e., hydro technical, hydrological, geotechnical and/or engineering) from FLNRORD Regional Operations. In addition to Flood Assessors and Flood Observers, the FAU typically has a Unit Lead who advises and guides staff members, and will liaise with FLNRORD Regional Operations as required. The FAU Lead collects information from Flood Assessors, Flood Observers, and the Operations section.

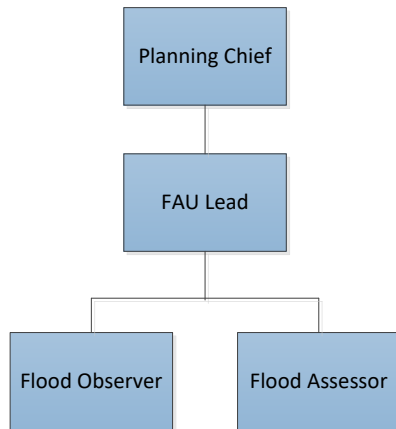


Figure 4: A Typical Reporting Structure of the FAU within the PREOC

Within the PREOC the FAU, through its FAU Lead, work primarily with the Operations Chief to maintain situational awareness, liaise with EOCs, and to provide Operations and/or the PREOC Director with timely recommendations to guide response activities and

Expenditure Authorization Forms (EAF) received in the PREOC, based on site assessment information gathered by Flood Assessors and Flood Observers deployed in the field. In addition, the FAU Lead may work with Operations to identify consultants and contract expertise when requested to augment in-house resources.

Any assessments, analysis results, conditions or recommendations that impact a First Nation community or local authority's response efforts will be communicated to the First Nation community or local authority through PREOC Operations. First Nations and local authorities are at all times responsible for the direction and control of their emergency response.

5.10 Site Level

First Nations and local authorities are decision-makers of flood management activities within their jurisdiction and are responsible for site level management of response and recovery activities, with the exception of provincial highway infrastructure. During a significant flooding event and if requested by the First Nation community or local authority, provincial staff may be deployed to an EOC to provide the PREOC with situational awareness necessary for PREOC integrated flood response coordination. While on site, provincial staff will report directly to PREOC Operations. Through communication and integration with PREOCs, local EOCs will request resources and capabilities, conduct planning, and share information to assist with response and recovery activities and contribute to the BC EM COP.

6 Roles & Responsibilities Overview

6.1 First Nations and Local Authorities

Mitigation

First Nations and local authorities are responsible for the maintenance of their flood protection infrastructure, dikes, and dams within their geographical boundaries, and are responsible for any flood mitigation projects. Home and landowners are decision-makers of their property and therefore are responsible for its protection. First Nations and local authorities are encouraged to apply for funding programs to support their mitigation strategy.

First Nations and local authorities are also encouraged to conduct a Hazard, Risk and Vulnerability Analysis (HRVA). The Local Authority Emergency Management Regulation mandates local authorities to conduct an HRVA. First Nations on-reserve communities have diverse governance structures and are not bound to the same legislation though they may choose to voluntarily follow EPA standards and may benefit from understanding the context for neighbouring local authorities. An HRVA is an assessment of the sources of potential harm, their likelihood of occurring, the severity of their possible impacts, and who or what is particularly exposed or vulnerable to these impacts. Conducting an HRVA is the first step in developing an emergency plan.

Preparedness

Emergency preparedness involves as much pre-planning as possible and the designation of a variety of emergency facilities can enhance response logistics when an emergency occurs. An EOC is a central location where First Nation members or local authority personnel can coordinate and make decisions in support of the emergency management activities on-site. The EOC integrates personnel, procedures, communications and equipment into a common system with responsibility for coordinating support to an emergency event. In larger flood events, neighboring First Nations and local authorities may choose to coordinate the emergency response through a joint EOC.

Under the EPA, local authority elected officials are responsible for supporting, funding, and approving the local emergency plan. The local emergency plan is maintained and updated by an appointed coordinator (often called the Emergency Program Coordinator) and should be reviewed annually.

Being that First Nations are decision-makers for their communities, Chief and Council hold authority and decision over their planning processes. For fiscal support, EMAP has a funding program that can be used to develop an emergency management plan.

Below are some considerations when developing an emergency plan:

The emergency plan can:

- ✓ Provide the overview of the community's response organization and policies;
- ✓ Establish the overall authority for conducting emergency operations during response and recovery;
- ✓ Describe the hazards that the plan intends to address; and
- ✓ Assign responsibility for emergency planning and operations.

If you are a crop or livestock producer, you are encouraged to develop an additional emergency plan for your farm with supplementary information such as:

- ✓ A map of the farm site that indicates buildings, access routes, barriers, livestock locations, waste storage, water supply, drainage ditches, electrical panels and locations of hazardous substances;
- ✓ List of updates to farm inventory including livestock;
- ✓ Pre-determined access and egress routes for livestock; and
- ✓ Livestock identification records.

For additional resources on creating or updating an emergency management plan, please see [Emergency Management Planning Toolkit for Local Authorities and First Nations](#).

First Nations and local authorities can significantly alter the course of events during response by engaging in prevention methods prior to a flooding emergency, such as conducting flood risk assessments of their jurisdiction or repositioning sandbags. Communication with the Province and awareness of any potential concerns or emerging problems may deescalate the size or need for response support. For information on imminent flood threat works (the construction of temporary berms and dikes) when sandbags and gabion baskets are not viable, please see [Policy 5.12](#). Where applicable, it is encouraged to consider ITK, local knowledge, climate change considerations, and respect for culturally important spaces in the planning process.

Response

The range of local response can vary significantly depending on the severity of a flood emergency event and the capacity of the First Nation community or local authority. First Nations and local authorities hold primary responsibility for flood response and the protection of properties within their jurisdiction. To assist in validating and maximizing financial assistance claim submissions, it is recommended that at the onset of a flood emergency event a detailed record of the damages, with photographs, is initiated by impacted First Nations or local authorities. If there is a need for critical assets, review Policy 4.02 on the [EMBC Policies](#) webpage before submitting a resource request or purchasing materials and contact an EMBC Regional Manager at your local EMBC regional office.

If the local authority requires access to the emergency powers in the EPA, including the ability to order an evacuation of its citizens, a state of local emergency must be declared. The process by which a state of local emergency (SOLE) is declared and used is outlined in the publication, [Declaring a State of Local Emergency in BC](#) which is available on the EMBC website.

Within First Nation communities, a BCR or a verbal equivalent from Chief and Council may be issued to signify a state of emergency. An evacuation order or a verbal equivalent from Chief and Council may be issued to implement an evacuation of community members.

Recovery

First Nations and local authorities are responsible for managing recovery efforts. Local EOCs conduct post-disaster needs assessments and through communication and integration with EMBC regional operations will request resources and capabilities, conduct planning, and share information to assist with recovery operations. A post-disaster needs assessment is conducted by the community to gather situational understanding and determine what resources and support a community requires to advance recovery. Local authorities are responsible for establishing an individual or organization to develop and

implement community recovery plans; the province will assist local authorities in accessing funding for recovery activities as appropriate.

Through ISC, via EMBC, First Nations are expected to manage the risks associated with damage or destruction of infrastructure, including housing. First Nations are encouraged to hire an individual or organization to support ongoing capacity building and recovery efforts. Depending on the scope and scale of the event, the position should be supported by a recovery team, but this will depend on community capacity and what works best at the community level.

Following a flood, EMBC may declare the event eligible for Disaster Financial Assistance (DFA). Once declared, the DFA program may compensate individuals for essential uninsurable losses and/or reimburse local governments for damaged infrastructure. The *Compensation and Disaster Financial Assistance Regulation* sets out the costs that are eligible for reimbursement from the province. First Nations and local authorities are encouraged to work with EMBC Recovery and Funding Unit to assess eligible costs and the appropriate procedures for submitting a claim.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.2 Ministry of Public Safety and Solicitor General, Emergency Management British Columbia (EMBC)

Mitigation

EMBC's Disaster Mitigation Unit leads and coordinates the management of funding programs to support First Nations' and local authorities' mitigation projects.

Preparedness

The Public Education branch of EMBC focuses on preparedness resources for families and individuals to better prepare for a flooding emergency. EMBC also engages in regional planning and advance planning activities with multiple levels of government, First Nations, critical infrastructure partners, and SMEs. EMBC also provides internal training and exercises to prepare for activations.

Response

EMBC has the primary responsibility for coordinating the Province's emergency management structure. EMBC will activate PREOCs and the PECC to coordinate and implement the Province's integrated response and to provide support to First Nations and local authorities response efforts. EMBC may request additional resources required to conduct flood hazard risk assessments, including SMEs from FLNRORD, EOCs, and/or external support.

Recovery

During activation, EMBC coordinates provincial recovery operations. A recovery function will be established within the Planning section (often in the Advance Planning Unit) and may transition to a standalone recovery unit as the response phase shifts into recovery. When the focus shifts to medium or long-term recovery, leadership will transition from the PECC Director to the Executive Director of Recovery (ED of Recovery) and/or EMBC ADM. Depending on the scope and scale of recovery, the PREOCs may continue activation to support recovery coordination or the role could be performed by EMBC Regional Managers.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.3 Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD)

Mitigation

FLNRORD is responsible for regulatory oversight to First Nations, local authorities, dam owners, and diking authorities under the following Acts:

- *Dike Maintenance Act* (DMA) authorizations for the construction of new dikes, or upgrading/repairing of existing regulated dikes (the majority of dikes on First Nations land are not regulated);
- *Water Sustainability Act* authorizations for new dams and approvals for structural mitigation works;
- *Dam Safety Regulation* authorizations upgrading/repairing of existing dams and associated infrastructure;

Additionally, FLNRORD may:

- Refer First Nations and local authorities to Flood Hazard Area Land Use Management Guidelines;
- Participate in mitigation initiatives pre-event; and
- Participate in First Nations and local authority led technical advisory committees, including but not limited to: sediment removal programs, vegetation management strategies, bank armoring works and regional flood reduction strategies, etc.

FLNRORD remains responsible for the safety and maintenance of FLNRORD owned infrastructure including the forest service road (FSR) network, FLNRORD owned dams (e.g. Okanagan Lake Regulation System), and provincial flood control structures. The responsibility for safety and maintenance of all other ministry-owned dams lies with the specific ministry that holds the water license for those dams. The Dam Safety Program is the provincial dam safety regulator and cannot take on the responsibility of a dam owner. The Dam Safety Program is responsible for ensuring dam owners, including all ministries that own a dam, comply with the DSR.

GeoBC (part of FLNRORD) coordinates acquisition of imagery and LiDAR data under the National Disaster Mitigation Program (NDMP) and makes it available to First Nations and local authorities to undertake Flood Modelling and Mapping projects within their communities.

Preparedness

Prior to freshet and fall/winter flooding Provincial and Regional Operations work together to provide Flood Assessor and Flood Observer training. This training includes: Provincial Flood Emergency Plan, legislation, flood vulnerable areas, GIS mapping and tools, and the BC EM COP and mobile apps. Provincial Operations prepares the Fraser River Hydraulic Model for freshet to provide peak water level forecasts from Hope to the Ocean and coordinates staff, and other partners to provide water level readings from water level gauges along the Fraser River. Working in collaboration with RFC, Regional Operations may provide local forecasting as needed. Provincial Operations provides dike inspection training to diking authorities. These reports may be used to inform discussions related to works prior to freshet.

GeoBC and Regional Geospatial Services provide GIS products and services to support preparedness.

This includes:

- Engaging with emergency management partners and developing GIS strategies, governance framework and implementation plans to support all phases of natural hazard and emergency management;
- Participating and liaising with various committees to facilitate integration of emergency management and hazard information;
- Developing and integrating data, tools, methods and processes based on a multi-hazard approach to improve situational awareness and the BC EM COP to support all phases of natural resource hazard and emergency management;
- Developing and implementing governance framework for data and tools for emergency management; and
- Deploying and coordinating of acquisition and staging of remote sensing products provided by GeoBC before/during/after responses (e.g. satellite imagery, LiDAR, imagery, etc.).

A GIS-based BC EM COP Portal was developed to provide situational awareness within the PECC, PREOCs, and EOCs. The Portal is used to support planning, evacuation, logistics, and response activities. The BC EM COP has integrated information from several mobile solutions/apps that support flood and dike assessment work as well as rapid damage assessment.

Response

During a flooding event, both Provincial and Regional Operations work to support flood management activities of First Nations and local authorities through deployments to both the PECC and PREOC. FLNRORD brings subject matter expertise and support to activations through the Advance Planning Unit, the Flood IMG, the FAU, or through coordination calls hosted by RFC.

Where deemed a provincial priority, Regional Operations may work with First Nations and local authorities during flooding emergencies, particularly within remote areas. This may include:

- Assessing public safety risks;
- Addressing washouts and emergency repairs in order to restore access to communities and resource roads; and
- Supplying information for resources such as local contractors, equipment and assets.

Recovery

FLNRORD may undertake recovery activities related to flood-damaged FLNRORD owned infrastructure. The Flood Safety Section, Dam Safety Section, and Regional Operations will provide technical advice to EMBC on recovery operations as required.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.4 Ministry of Health (MoH)

Preparedness

During the preparedness phase, the Ministry of Health (MoH), health authorities, including the First Nations Health Authority (FNHA), and health partners participate in seasonal readiness calls to maintain situational awareness and inform preparedness activities for the annual flood season.

Response

During the provincial response to floods, the role of the MoH is to support the health authorities to maintain the delivery of health services. The MoH is responsible for supporting the regional health authorities and First Nations Health Authority and provides leadership and direction on environmental health and public health issues related to flooding. If required, the MoH Health Emergency Coordination Centre (HECC) may be activated to provide a coordinated response across all health system stakeholders.

Recovery

During the recovery phase, the MoH will continue to provide environmental health and public health information as required. The MoH is responsible for supporting regional health authorities, the First Nations Health Authority, and other government agencies on activation of a mental health and wellness framework to plan and coordinate mental health supports.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.5 Ministry of Transportation and Infrastructure (MoTI)

Response

MoTI is primarily responsible for the safety and protection of provincial public highway, road and bridge infrastructure. The first priority of the ministry is to ensure that provincially-owned infrastructure is intact which includes maintaining command at the site level of events impacting provincially managed infrastructure. Ministry representatives may deploy staff to the PREOC and the PECC. In addition, at the request of the PREOC, MoTI will provide expertise and resources as required. This may include attending to First Nations and local authority sites off of provincial highways, as resources allow.

During flood response MoTI responds to floods impacting provincial highway infrastructure as well as supports the response activities of the province.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.6 Ministry of Environment and Climate Change Strategy (ENV)

Response

During the provincial response to floods the main supporting role of ENV is to respond to hazardous material and other threats to the environment. Environmental Emergency Response Officers (EEROs) can provide on-site observations and advice related to spills or imminent spills and risks associated with hazardous materials. The ministry liaises with ECCC and other federal agencies, as required, and provides direction and leadership regarding general and contaminated wastes, and flood debris

management issues. Ministry representatives may staff the PECC and ENV will participate as a member of the ADMCEM, as required.

ENV is responsible for coordinating the operation and maintenance of the provincial hydrometric network (water and snow gauges) and data quality provided by these gauges. These gauges are used by the RFC in FLNRORD to provide seasonal forecasts and bulletins as well as flood advisories.

Recovery

During the recovery phase, ENV will provide technical expertise for the management of hazardous materials, and direction and leadership regarding general and contaminated wastes and flood debris.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.7 Ministry of Finance and Open Government, Government Communications and Public Engagement (GCPE)

Mitigation

During the mitigation phase, Government Communications and Public Engagement (GCPE) may provide support for messaging on mitigation projects and programs.

Preparedness

During the preparedness phase, GCPE provides training to GCPE Public Information Officers and maintain key public safety messaging and evacuation procedures to inform the public.

Response

GCPE has the primary responsibility to implement the BC Crisis Communications Strategy for Major Provincial Emergencies once the provincial emergency management structure is activated. GCPE provides Public Information Officers to the PREOCs, the PECC and to local EOCs as needed to provide expertise in media relations and public information activities. GCPE will participate as a member of the ADMCEM.

Recovery

GCPE works with spokespeople and media sources to provide updates on recovery activities. GCPE will continue to brief senior government officials on any communications concerns and provide Elected Officials with briefing materials for press conferences.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.8 Ministry of Agriculture (AGRI)

Preparedness

Ministry of Agriculture (AGRI) has a variety of funding programs available to assist and support farm businesses with preparing for flooding events.

AGRI encourages farm businesses to develop an emergency preparedness plan for their farms. To review a comprehensive list of Emergency Preparedness Tips for crop and livestock producers, please see [Emergency Preparedness Tips](#).

Response

During the provincial response to floods, the main role of AGRI is to support EMBC; this support may include the facilitation of the relocation of commercial livestock, providing support to farmers, aquaculturalists and fishers on the protection of crops, livestock and provincially managed fish and marine plant stocks and advanced planning which may include mass livestock carcass disposal planning.

Ministry Regional Coordinators are on call during work hours and pre-identified AGRI excluded managers are available as contacts outside of work hours; these individuals are responsible for the pre-planning and coordination of AGRI Emergency Responder support to an EOC or PREOC. Ministry responders will be activated when a Ministry Regional Coordinator/Manager receives a direct request for assistance from an EMBC Regional Manager or activated PREOC. There are three AGRI Regional Coordinators: one in the North West/North East EMBC Region, one in the Central/ South East regions, and one in the South West/ Vancouver Island region.

Where multi-jurisdictional or complex action is required, e.g. major flooding of wide-area agricultural properties, AGRI activities may include advanced planning, coordination of information, resources, and decision-making on a regional or provincial basis. This would include the activation of a Ministry Emergency Operation Centre (MEOC) which would be supported by the PECC and provide coordination on agriculture issues for agriculture industries, First Nations, and local authorities. AGRI staff will also maintain operational linkages with the required PREOC(s).

If there is a threat of flooding in a large area such as the lower Fraser Valley, AGRI will focus on high risk zones, i.e. farm areas that are not protected by standard dikes. Areas behind standard dikes are presumed to be protected and generally would not necessitate livestock relocation. In the event of a dike breach, human safety would be the priority for evacuation; a breach situation could result in livestock mass carcass disposal requirements.

Where hazard forecasts do permit an orderly relocation, the Ministry of Agriculture and EMBC have developed an agri-business livestock evacuation protocol during evacuation alert and/or evacuation order stages set by the First Nation community or local authority (“Provincial Support for Livestock Relocation During an Emergency” policy and procedures). This procedure will only be considered when the listed conditions are met and a request is made by the farm business for support:

- An EMBC task number has been issued for the emergency broad geographic assessment of risk has occurred and the First Nation community or local authority, AGRI and any other applicable provincial agencies agree that there is significant risk to livestock and relocation during the evacuation alert phase is supported.
- The First Nation has issued a BCR or a Local Authority has issued an evacuation alert or evacuation order. The farm business operator has requested assistance through the EOC.

For further information regarding the bulletin, farm businesses should contact their EMBC regional office.

Recovery

AGRI offers a variety of funding programs to impacted communities, particularly for those impacted by the 2017 freshet and flooding events.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

6.9 Ministry of Municipal Affairs and Housing (MAH)**Mitigation**

The Ministry of Municipal Affairs and Housing (MAH) in partnership with other ministries administer program intakes at discrete intervals that support applications for disaster mitigation.

Response

MAH provides programs and services related to authorities, including the legislative, policy, governance and planning framework for local authorities. The Ministry provides funding, advice, and other guidance to foster effective local authority services, infrastructure, and governance structures.

For a full list of roles and responsibilities during the phases of mitigation, preparedness, response and recovery, please see Appendix A.

7 Key External Agencies

7.1 Diking Authorities

Over a hundred communities, diking districts, crown corporations, senior government agencies and other entities own and operate public diking systems in British Columbia. Under common law and in accordance with pertinent legislation, these organizations are responsible for dike operation and maintenance, including:

- Periodic inspection;
- Performance monitoring;
- Repairs and replacement;
- Contingency emergency planning;
- Dike flood patrol; and
- Emergency measures.

If a new dike is proposed to be constructed or the upgrade of an orphan dike to provincial standards, the construction will only be approved if the local authority agrees to become the diking authority, and become responsible for ownership, operation and maintenance of the dike.

7.2 Dam Owners

More than 1,800 active dams in B.C. are regulated under the WSA. Regulated dams require a water license issued under the Act and must meet the requirements specified in the DSR.

Dam owners must be certain that their dams are designed, operated and maintained in a safe manner as outlined in the Canadian Dam Association's Dam Safety Guidelines. Dam owners are required to:

- Annually determine the dam failure consequence classification;
- Perform regular inspections and maintenance;
- Prepare operation, maintenance and surveillance manuals;
- Prepare dam emergency plans;
- Report any incidents;
- Take immediate action to resolve hazardous conditions and potential dam safety hazards; and
- Review the regulation.

Please see www.gov.bc.ca/damsafety for additional information.

7.3 Federal Government

When an emergency requires an integrated Government of Canada response, Public Safety Canada (PS) coordinates the response on behalf of federal government institutions and ensures adequate response to a provincial request for federal assistance in BC. Known as the "single window" concept, it is intended to facilitate interdepartmental and intergovernmental coordination, without unduly restricting operations. This concept does not exclude or discourage interactions between supporting federal departments or agencies and supported provincial ministries. That said, in a situation to save life, some federal departments/agencies have legislative authority to commit resources without requiring a request for assistance to be coordinated through the PECC.

7.3.1 Public Safety Canada (PS)

During an emergency PS is the primary point of contact for EMBC and is responsible for the coordination of provincial requests for federal assistance. PS links into the provincial emergency management structure through the PECC to facilitate situational awareness, conduct advance planning and coordinate requests for assistance and liaison. During flooding events, PS may deploy a representative(s) to the PECC.

7.3.2 Indigenous Services Canada (ISC)

ISC holds responsibility for emergency management on First Nations on reserve. Through an Emergency Management Services Agreement with ISC, EMBC provides emergency Mitigation, Preparedness, Response, Recovery supports and services to First Nation communities on reserve. EMBC communicates response activities undertaken by PREOCs to ISC. EMBC will also collaborate with ISC to support the coordination of response activities and EMAP requests for First Nations on reserve.

7.3.3 Agriculture and Agri-Food Canada (AAFC)

Under the Agri-Food Emergency Support Function of the Federal Emergency Response Plan, Agriculture and Agri-Food Canada (AAFC) would assist BC in securing safe food and water, spare parts and fuel for agricultural producers and key ingredients for processors. AAFC would work in coordination with Public Safety Canada to seek alternate means of transport if the province requests assistance for the emergency movement of livestock out of a flood zone.

7.3.4 Canadian Food Inspection Agency (CFIA)

The Canadian Food Inspection Agency (CFIA) enforces the Health of Animals Regulations, which governs the humane transportation of all animals in Canada. CFIA staff engagement during livestock relocation can reduce concerns around humane livestock transport. CFIA authorizes the movement of Specified Risk Material under transport permit to a permitted livestock carcass disposal site.

7.3.5 Department of Fisheries and Oceans Canada (DFO)

Fisheries Oceans Canada (DFO), through coordination with Public Safety Canada, can assist the province by providing rapid water rescue, aerial reconnaissance with photo and video capability, law enforcement support to the RCMP and additional resources, such as transport, pumps and boats.

7.3.6 Department of National Defense (DND)

The Canadian Joint Operations Command (CJOC), represented in BC by Joint Task Force Pacific (JTFP), will coordinate with Public Safety Canada and EMBC in preparing for a potential response to support the Province, First Nations, and local authorities during flooding. When requested and depending on the availability of military resources at the time, the Canadian Armed Forces may support civilian functions including operational planning, communications, flood area surveillance, evacuation and mobility support and workforce reinforcement. As the Canadian Armed Forces is responsible for Air Search and Rescue, this function may also be enhanced depending on the situation.

7.3.7 Environment Canada Meteorological Service (MSC)

The Meteorological Service of Canada (MSC) provides vital weather and environmental information and warnings 24 hours a day, seven days a week. The Warning Preparedness Meteorologist liaises with Emergency Measures Organizations, ensuring that important weather information regarding the safety and security of people, property and critical infrastructure is received and understood by individuals and key decision-makers in a timely and efficient manner. These meteorologists provide key information to the PECC and PREOCs, ensuring planners have critical forecasts for risk analysis and advanced planning.

7.3.8 Environment Canada Water Survey (WSC)

The Water Survey of Canada (WSC) provides public access to real-time hydrometric (water level and stream flow) data collected at approximately 450 stations in BC. This work is done in cooperation with the Province of BC. WSC works closely with the BC RFC, responding to their priorities and requests. It monitors the hydrometric stations and maintains the stations to ensure operational effectiveness in the worst of conditions. WSC also works closely with MSC to provide data for forecasting.

7.3.9 Royal Canadian Mounted Police (RCMP)

During flood response the Royal Canadian Mounted Police (RCMP) performs all policing duties associated with regular general duty policing (e.g., traffic control, evacuation coordination, scene containment and area security) as well as operational support requirements, which may include coordination of response and communications interoperability between the federal, provincial and local levels. The RCMP may provide a representative to the PREOC when there are evacuations.

8 Authoritative Sources of Information

The following sources of information are valid for use in the development of situation reports and gaining situational awareness.

- Drive BC: www.drivebc.ca
- Emergency Info BC: <http://www.emergencyinfobc.gov.bc.ca/>
- River Forecast Centre: <http://bcrfc.env.gov.bc.ca/>
- Environment Canada: http://www.weatheroffice.gc.ca/canada_e.html
- DFA: <https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/emergency-response-and-recovery/disaster-financial-assistance>
- Water quality advisories are posted on Health Authority websites. For advisory definitions and current advisories visit <http://www.health.gov.bc.ca/protect/dwadvisories.html>

Appendix A: Roles & Responsibilities Tables

This section breaks down the roles and responsibilities of First Nations, local authorities, and provincial ministries within each of the four pillars.

MITIGATION

<p>First Nations and Local Authorities</p>	<ul style="list-style-type: none"> • Complete an HRVA; • Assess the likelihood of flooding at a local level; • Assess the consequences of flooding on traditionally underserved populations; • Assess the consequences of flooding on both infrastructure and services; • Assess and troubleshoot any potential concerns with dikes and dams; • Apply for funding programs for current and future projects; • Work with Regional Emergency Managers from various ministries, neighbouring communities and partners to identify risk reduction opportunities; • Coordinate and collaborate with the Regional Inspector of Dikes Office in FLNRORD and Senior Regional Managers in EMBC on required mitigation works as early as possible to allow for timely regulatory approvals (WSA, DMA, etc.), prior to flood emergencies; • Identity actions that build community resilience; and • Where resources allow, ensure floodplain mapping is updated and includes climate-related risks.
<p>EMBC</p>	<p>Provincial/Regional</p> <ul style="list-style-type: none"> • Provide an HRVA tool and guidance materials; and • Provide technical review of proposals for funding programs for example: Union of BC Municipalities (UBCM), Community Emergency Preparedness Fund NDMP funding programs.
<p>FLNRORD</p>	<p>Provincial</p> <ul style="list-style-type: none"> • Adjudicate and be Statutory Decision Maker (under the WSA) for mitigation projects requested by First Nations and local authorities. <p>Regional</p> <ul style="list-style-type: none"> • Provide approvals for diking authorities and dam owners on their mitigation projects; and • Provide technical sounding board for mitigation proposals with First Nations and local authorities. <p>GeoBC and Regional Geospatial Service</p> <ul style="list-style-type: none"> • Assist in development of emergency mapping and advance planning tools through the provision of geospatial information.
<p>GCPE</p>	<p>Provincial</p> <ul style="list-style-type: none"> • Provide messaging for funding programs, such as NDMP and CEPF; • If requested by the First Nation community or local authority, provide support to communities on messaging for project rollouts; • Brief senior government officials on project updates; • Facilitate events and announcements throughout the year on emergency preparedness programs; and • Highlight emergency preparedness weeks and campaigns.
<p>MAH</p>	<p>Provincial</p> <ul style="list-style-type: none"> • In partnership with other ministries, administer program intakes at discrete intervals

that support applications for disaster mitigation.

PREPAREDNESS

<p>First Nations and Local Authorities</p>	<ul style="list-style-type: none"> • Create an emergency plan for flooding; • Designate a facility to be used as an EOC; • Communicate with the regional Inspector of Dikes Office at FLNRORD and Senior Regional Managers at EMBC on required urgent mitigation works as early as possible to allow for timely regulatory approvals (WSA, DMA, etc.), prior to flood emergencies; • Communicate with Senior Regional Managers in EMBC on potential temporary mitigation works as early as possible prior to flood emergencies; • If appropriate: <ul style="list-style-type: none"> • Participate in seasonal readiness calls for weather forecasts; • Work with EMBC regional offices to preposition sandbags in community; • Participate in opportunities for training courses through EMBC regional offices; and • Crop and livestock producers should additionally: <ul style="list-style-type: none"> o Ensure their farm business insurance is up to date; o Secure copies of insurance policies and other essential farm documents; o Store hazardous materials in secured areas and away from flood levels to avoid chemical spills; o Ensure there are adequate supplies for livestock for an extended period of time; and o Register for livestock for the British Columbia Premises ID program to allow for rapid notification.
<p>EMBC</p>	<p>Provincial/Regional</p> <ul style="list-style-type: none"> • Co-Chair the Provincial Flood Readiness Group as required; • Coordinate cross-ministry advance planning activities as required; • Confirm status and prepare provincial stockpiles of temporary water barriers such as sandbags, gabion mesh basket dikes, rubber dams, and temporary berms for deployment; • Maintain a series of public education materials related to personal preparedness and emergencies (See Appendix B for PreparedBC materials); • Maintain an education-based twitter feed (@EmergencyPrepBC) to engage with members of the public on personal emergency preparedness activities, including preparedness tips and recovery information; • In collaboration with other ministries and emergency management partners, ensure the flood resource contact list is updated; • Update the Temporary Emergency Assignment Management System (TEAMS) roster; • Touch base with First Nations and local authorities to offer pre-event assistance, just-in-time training, and access to SMEs; • Establish seasonal flood readiness sessions for critical infrastructure owners/operators, provincial ministries and agencies and for First Nations and local authorities emergency personnel; and • Develop a communications strategy tied to seasonal readiness.

FLNRORD	Provincial
	<ul style="list-style-type: none"> • Co-Chair the Provincial Flood Readiness Group as required; • Operate the Fraser River Hydraulic Model for 10-day freshet forecasts and provides updates to the PECC and PREOC; • Through RFC, liaise with ECCC regarding weather forecasts and monitor hydrometric information; • Through RFC, produce provincial snow bulletins and other analyses to describe potential flood risks; and • Through RFC, produce flood forecasting and flood advisories.
	Regional
	<ul style="list-style-type: none"> • May produce regional-specific flood forecasting and flood advisories; and • May operate hydraulic models on specific major systems for freshet forecasts and provides updates to the EMBC Regional Duty Manager.
MoH	GeoBC and Regional Geospatial Service
	<ul style="list-style-type: none"> • Establish and maintain a provincial roster of GIS Specialists to deploy during Freshet; • Manage and maintain Emergency Management Data Atlas and its use as a single authoritative source to create mapping products; • Engage with emergency management partners to develop GIS strategies, governance frameworks and implementations plans; • Coordinate with First Nations, local authorities, utility companies and other levels of governments to negotiate data agreements for the acquisition of GIS data required for response activities; • Develop mobile solutions to support collection of data during an event (e.g. Flood App for Flood Assessors and Flood Observers); • Develop and maintain the BC EM COP to support situational awareness; • Provide training and orientation on Web Mapping Portal and other products and services to EMBC and staff; and • Communicate with IT partners (CSNR and DataBC) to ensure the IT infrastructure (GIS Terminal Server and the BC Geographic Warehouse) is available during an event to support creation, access and distribution of mapping products and services.
GCPE	Provincial/Regional
	<ul style="list-style-type: none"> • Participate in seasonal readiness calls with health authorities to maintain situational awareness and inform preparedness activities.
AGRI	Provincial
	<ul style="list-style-type: none"> • Prepare to implement the BC Crisis Communications Strategy for Major Provincial Emergencies and ensure the readiness of TEAMS information officers; • Provide training of GCPE Public Information Officers; • Maintain relationships with other public information staff within government and with other agencies; and • Maintain key messages regarding basic public safety and evacuation procedures for use in an event or area at risk to inform public.
	Provincial/Regional
	<ul style="list-style-type: none"> • Provide funding programs to assist and support farm businesses with preparing for flood events.

RESPONSE

First Nations and Local Authorities	<ul style="list-style-type: none"> • Identify and monitor any sites at risk; • Provide the public with flood safety information and pre-determined local response information; • Identify and contract qualified contractors to provide assessment services as required; • Implement flood protection measures; • Assist impacted residents through the provision of Emergency Support Services possibly through partnership with community volunteers, community-based organizations and non-government organizations. • Activate their local emergency plans; • Activate their EOC; • Advise the PREOC of local flood emergency response activities; • Submit financial reports to the PREOC; • Submit EAFs and resource requests to the PREOC as required; and • Issue evacuation notices and coordinate evacuations as necessary; and • Establish local call centres for public inquiries as necessary; • When appropriate, advise the PREOC of local flood emergency response activities; and • When appropriate, prepare a situation report and distribute to the PREOC and other appropriate agencies or EOCs on a regular basis.
EMBC	Provincial
	<ul style="list-style-type: none"> • Participate in the Flood IMG as required; • Activate PECC as required; • Distribute RFC advisories and updates from ECCC to appropriate staff and emergency management partners; • Provide public safety flood information and distribute to media; • Deploy water barriers from the provincial stockpile to First Nations and local authorities as requested and appropriate; • Coordinate the preparation of provincial flood response directives; • Activate TEAMS roster based on operational needs; • Coordinate with ISC to support and work alongside First Nation communities; and • Liaise with Wildfire Management Branch to obtain services of field crews for sandbagging.
	Regional
	<ul style="list-style-type: none"> • Activate PREOC as required; • Host briefings and coordination calls with key emergency management partners as required; • Access provincial volunteer resources (Search and Rescue, Emergency Support Services Mobile Support Team, Provincial Emergency Radio Communications Service) as required; • Notify First Nations and local authorities of potential impacts, based on RFC and ECCC forecasts; • Activate TEAMS roster based on operational needs; • Create an FAU within the PREOC Planning section, as required; • Liaise with First Nations, local authorities and ministry representatives about

	<p>potential consequences related to flooding;</p> <ul style="list-style-type: none"> • Manage and deploy sandbag filling machines; • Review and approve EAFs and resource requests from First Nations and local authorities as required; • Communicate to PECC and seek resolution on complex issues impacting multiple provincial agencies; • Attend town hall meetings; and • Provide support to First Nations and local authorities in the transition to recovery.
FLNRORD	<p>Provincial Operations</p>
	<ul style="list-style-type: none"> • Chair the Flood IMG as required; • Provide technical advice and specialist expertise, support services and staff to PECC (and PREOC) as required; • Operate Fraser River Hydraulic Model and provide daily 10-day peak water level forecasts to RFC for posting on RFC website; • Coordinate or provide a contact list for cross-regional deployment of staff to PECC and PREOCs; • Compile and distribute flood resource contact list; • Provide guidance on the DMA, WSA, and DSR as required; • Through RFC, produce provincial snow bulletins and other analyses to describe potential flood risks; • Through RFC, liaise with ECCC regarding weather forecasts and monitor hydrometric information; • Through RFC, issues advisories and provide forecast updates to First Nations and local authorities via PREOC, and to PECC, ADMCEM, etc.; and • Liaise with dam owners (major dams i.e. generally dams more than 9 meters in height) and request dam owners conduct assessments as required.
	<p>BC Wildfire Service</p>
	<ul style="list-style-type: none"> • As requested by PECC and/or PREOCs: <ul style="list-style-type: none"> o Supply fire crews for sandbagging when available for deployment; and o Provide resource, communications and logistical support, including: <ul style="list-style-type: none"> ▪ Air support; ▪ Water pumps, hoses and hand tools; ▪ Warehousing services; ▪ Transportation of materials and sandbag machines; ▪ Portable camps; ▪ Communication services; and ▪ Personnel for sandbagging.
	<p>Engineering Branch (Coast, Southern, Northern Engineering Groups)</p>
<ul style="list-style-type: none"> • As requested by PECC and/or PREOCs: <ul style="list-style-type: none"> o Supply professional engineering and technical services support, including: <ul style="list-style-type: none"> ▪ District engineering staff; ▪ Geotechnical or hydrological site hazard assessments; and ▪ Structural site hazard assessments during provincial response to floods. 	
<p>Regional Operations</p>	

	<ul style="list-style-type: none"> • Where resources are available and upon request, provide support to PREOCs, including: <ul style="list-style-type: none"> ○ Populating the FAU with requisite flood expertise from within or out of region; ○ Identifying consultants and contractors to augment FAU expertise as required; ○ Providing trained Flood Assessors and Flood Observers; ○ Supplying professional geotechnical or hydrological site hazard assessments ○ Making flood assessment and response recommendations on EAFs and resource requests, including potentially assessing the suitability of temporary water barrier deployments; ○ Providing advice and recommend strategies regarding flood response in cooperation with the FAU lead; ○ Communicating with First Nations, local authorities, and diking authorities on flood mitigation works; ○ Communicating with dam owners and requesting that dam owners conduct dam assessments; ○ Monitoring available hydrometric information, issuing advisories and providing forecast updates to First Nations and local authorities; • May operate hydraulic models on specific major systems for freshet forecasts and provides updates; and • Provide guidance on the DMA, WSA, and DSR as required;
	<p>GeoBC and Regional Geospatial Service</p> <ul style="list-style-type: none"> • Coordinate acquisition of imagery (air photos, satellite imagery, Light Detection and Ranging Imagery etc.) as required; • Coordinate deployment of GIS staff; • Support FAU in collection of flood assessment data using mobile technology (e.g. Flood App for Flood Assessors and Flood Observers); • As requested by PREOC and PECC Planning and/or Operations, develop standard and custom mapping products and reports as required to support response efforts; • Support PREOC and PECC Operations with requested with updates to the BC EM COP to increase situational awareness; and • Test, strengthen and increase access to IT infrastructure (GIS Terminal Server and the BC Geographic Warehouse) during an event to support creation, access and distribution of mapping products and services.
MoH	<p>Provincial</p>
	<ul style="list-style-type: none"> • Provide a representative to the Operations section of the PECC; • Activate the Health Emergency Management Structure as needed; • Provide leadership and direction on environmental health and public health issues related to flooding; and • Through Health Emergency Management BC coordinate Provincial Disaster Psychosocial support as needed.
	<p>Regional – Health Authorities and other Health Agencies</p>
	<ul style="list-style-type: none"> • Through health authorities and other health agencies, provide a representative/liaison to the PREOC(s);

	<ul style="list-style-type: none"> • Activate Local and Regional Health Emergency Management Structures as needed; • Provide leadership and direction on environmental health and public health issues related to flooding; • Manage and coordinate the evacuation of health facilities, and ensure service continuity for those receiving health care in the community; and • Through BC Emergency Health Services, ensure continuity of response for pre-hospital care and inter-facility transfers of the sick and injured.
MoTI	Provincial
	<ul style="list-style-type: none"> • Provide technical advice and specialist expertise, support services and staff as required; • Provide representatives to the PECC, PREOC and site as required; • Clear drainage infrastructure associated with the highway system to ensure appropriate runoff during flood season; • Deploy provincial crews/field services staff to assist with site mitigation works and site response if required and available; • Increase inspection patrols and maintenance along the highway system as required; • Forward additional equipment and resource requirement requests to the PECC or PREOC (non-highway work and highway work); and • Issue regional priorities for flood response tasks based upon directives issued by the ADMCEM.
	Regional
	<ul style="list-style-type: none"> • Participate in integrated regional planning, a process led by First Nations and local authority emergency coordinators; • Identify and supply equipment and other resources such as riprap within the region(s) to support the repair and/or protection of provincial highway infrastructure; • When requested by a PREOC, supply heavy equipment, construction materials and/or contract equipment and operators; and • Complete emergency highway and bridge infrastructure work.
ENV	Districts
	<ul style="list-style-type: none"> • Coordinate maintenance contractor site response to flooding on provincial highways; • Report flooding, response activities and changes in status to Regional Operation Centres; • Install road subject to flooding signs; • Complete emergency highway and bridge infrastructure work; • Set priorities for sites along provincial roadways or related to provincially owned infrastructure; • Ensure that the provincial highway infrastructure is reliable; and • Establish alternate routes as required and if available.
	Provincial
	<ul style="list-style-type: none"> • Provide technical advice and specialist expertise, support services and staff as required; • Provide representatives to the PECC and site, as required; • Provide technical services regarding environmental risks;

	<ul style="list-style-type: none"> • Co-ordinate the provincial snow survey program, capture and maintain snow survey data and maintain automated snow pillow sites; and • Coordinate the Federal Provincial Hydrometric Network (water level gauges and snow gauges).
	<p>Regional</p> <ul style="list-style-type: none"> • Participate in regional planning, as required; • Respond to spills and potential spills resulting from flooding; • Provide expertise on general and contaminated waste management and disaster debris issues; • Provide information on spill prevention for floods; • Provide technical assessment and direction on imminent spill risks; • Determine any imminent risk of pollution and require the associated actions to be undertaken if appropriate; • Provide advice on the potential contamination of water bodies (lakes) due to for example septic field leakage; and • Provide policy recommendations on safe disposal of contaminated soils, such as fill from sandbags and gabion mesh basket dikes.
<p>GCPE</p>	<p>Provincial</p> <ul style="list-style-type: none"> • Verify that the public receive complete, accurate, and consistent information about life safety procedures, public health advisories, relief and assistance programs and other vital information by working with the media and government's online assets; • Provide support and assistance to EOCs as requested. Connect with and provide support to local information officers as needed, and maintain close contact with PECC Information Officers. Interact and liaise with Information Officers in area EOCs, MROCs, DOCs and emergency response agencies. Obtain information relative to public information operations; • Coordinate news releases, events, press conferences, media requests and activities such as tours and town hall meetings; • Brief senior government officials on communications issues; • Assign TEAMS Information Officers to the PECC and each regional PREOC, as requested by the PECC, and where necessary, to EOCs; • Fulfill the Information Officer role in the PECC and PREOC; Work closely with the PECC Information Section to develop overall provincial public information strategies and develop an event-specific PREOC public information plan; • Coordinate cross-agency media briefings and liaise between the various Information Offices established: PECC, other PREOCs, DOCs, MROCs, EOCs and other agencies as appropriate; • Implement the BC Crisis Communications Strategy for Major Provincial Emergencies and the CEMP Public Information Annex; • Collate info enabling government and partners to develop a broad understanding of the event from a local, regional and provincial perspective; • Provide media relations by coordinating all information to the media, responding to all media calls, developing the format for press conferences and briefings, maintaining a positive relationship with media representatives, and monitoring all broadcasts and written articles for accuracy; • Provide explicit information for evacuees in terms of procedures, etc.; and

	<ul style="list-style-type: none"> • Exchange x-ministry intel/info means collating activities that are currently underway and sharing it up and out to internal government stakeholders.
AGRI	Provincial
	<ul style="list-style-type: none"> • Activate a MEOC as required and to support livestock relocation activities; • Provide coordination of the evacuation of livestock, including emergency feeding; • Provide advice on the protection and health of livestock; • Provide advice regarding the coordination for disposal of livestock carcasses; and • Engage with partnering agencies as required in the inspection/regulation of food quality/safety and identify food and potable water supplies.
	Regional
	<ul style="list-style-type: none"> • Provide a representative to the appropriate PREOC as required; • Provide agriculture related information to EOCs as required; • Provide coordination of the evacuation of livestock and their care, including emergency feeding; • Provide advice on the protection of livestock; • Provide advice regarding the disposal of livestock carcasses; • Communicate to farmers through agriculture industry associations; and • Participate in the regional planning as required.
MAH	Provincial
	<ul style="list-style-type: none"> • In support of local authority recovery, provide guidance and assistance to local authorities regarding infrastructure; and • After situation assessment, may approve special operating authority/funds for local authorities (in an emergency event). Specifically, the Minister may “ratify” a borrowing by-law under the <i>Emergency Program Act</i> (13(6)) provided a local state of emergency is declared.

RECOVERY

First Nations and Local Authorities	<ul style="list-style-type: none"> • Ensure safe community re-entry for residents; • Set up a community resilience center; • Conduct rapid damage assessments; • Clean up infrastructure sites; • Develop and maintain an organization/individual to lead and coordinate recovery efforts; • If applicable, determine what proportion of individual or community losses are insured or insurable; • If applicable and the event is declared eligible, complete and submit a DFA application; • Establish a donations management system; • Develop a debris removal plan; • Remove and dispose of sandbags; • Coordinate with EMBC for removal of gabions, tiger dams, temporary berms; and • Coordinate with EMBC/ISC post-disaster for information sharing, planning purposes, as well as requests for resources and/or support.
EMBC	Provincial

	<ul style="list-style-type: none"> • Within the PECC, establish a recovery function within Planning, and if/when the scope and scale of the event requires, expand this to be a standalone Recovery Branch that will report to the ED of Recovery; • Maintain partner engagement and situational awareness of recovery needs and activities; • Establish a cross-ministry project team and working groups as required; • Coordinate cross-ministry recovery activities as required; • Provide regular updates to the ADMCEM and seek advice or direction as required; • Inform and pursue recovery funding decisions with executive and ADMCEM support; • If applicable, authorize DFA event and administer the DFA Program for private sector and/or public sector applications • In a DFA event, deploy program staff to local communities to participate in public information sessions, town hall meetings and a resilience centre. • Develop recovery tools and resources to support community-led recovery; • Liaise with other organizations/agencies involved in recovery; and • Support regional offices with recovery activities.
	<p>Regional</p> <ul style="list-style-type: none"> • Within the PREOC, establish a recovery function within Planning, and if/when the scope and scale of the event requires, continue to support First Nations and local authorities through Regional Managers; • Coordinate with regional partners, ministries, NGOs, First Nations and local authorities to facilitate planning for recovery operations; • Collaborate with communities to best utilize local expertise and ITK; • Gather situational awareness for recommendation for DFA; • Provide public information materials to First Nations and local authorities about health issues, cleanup, DFA (if approved) and other resources available to help those who have been impacted and need additional assistance; • Identify key policy issues and forward to PECC if applicable; • Respond to requests for resources or services from First Nations and local authorities; and • Assist provincial recovery projects.
<p>FLNRORD</p>	<p>Provincial</p> <ul style="list-style-type: none"> • Chair the Flood IMG as required; • Depending on the scope and scale of the event and when resources are available, FLNRORD may: <ul style="list-style-type: none"> ○ Assist with cross-ministry coordination of recovery activities; and ○ Review recovery project proposals if requested from EMBC.
	<p>Regional</p> <ul style="list-style-type: none"> • Depending on the scope and scale of the event and when resources are available, FLNRORD may: <ul style="list-style-type: none"> ○ Refer First Nations and local authorities to policies and procedures to assist in recovery activities; and ○ Assist local recovery initiatives when and where applicable.
<p>MoH</p>	<p>Provincial</p> <ul style="list-style-type: none"> • Provide environmental health and public health information as required; and

	<ul style="list-style-type: none"> • Support regional health authorities and other government agencies on activation of a mental health and wellness framework to plan and coordinate mental health supports.
ENV	Provincial/Regional
	<ul style="list-style-type: none"> • Provide policy recommendations on safe disposal of contaminated soils, such as fill from sandbags and gabion mesh basket dikes; and • Provide expertise on general and contaminated waste management and disaster debris issues resulting from flooding.
GCPE	Provincial
	<ul style="list-style-type: none"> • Organize and coordinate, in consultation with communities and recovery managers, VIP and media tours of impacted areas; • Brief senior government officials on communications issues; • Prepare all materials for briefings and press conferences, including briefing material for Elected Officials. Provide other assistance as necessary to facilitate their participation in media briefings and press conferences; • Coordinate cross-agency media briefings; • Work with spokespeople and media on updates on status of recovery; and • Monitor all media sources and identify issues, using information to develop follow-up news releases, deal with emerging issues, and correct inaccuracies.
AGRI	Provincial/Regional
	<ul style="list-style-type: none"> • Provide funding programs to impacted communities.

Appendix B: Acronyms

AAFC	Agriculture and Agri-Food Canada
ADM	Assistant Deputy Minister
ADMCEM	Assistant Deputy Ministers' Council on Emergency Management
AGRI	Ministry of Agriculture
BC EM COP	BC Emergency Management Common Operating Picture
BCEMS	British Columbia Emergency Management System
BCR	Band Council Resolution
CEMP	Comprehensive Emergency Management Plan
CEPF	Community Emergency Preparedness Fund
CFIA	Canadian Food Inspection Agency
CJOC	Canadian Joint Operation Centre
DFA	Disaster Financial Assistance
DMA	Dike Maintenance Act
DMCEM	Deputy Ministers' Committee on Emergency Management
DFO	Department of Fisheries and Oceans
DND	Department of National Defense
DOC	Department Operation Centre
DSR	Dam Safety Regulation
EAF	Expenditure Authorization Forms
ECCC	Environment and Climate Change Canada
EERO	Environment Emergency Response Officer
EMA	Environment Management Act
EMAP	Emergency Management Assistance Program
EMBC	Emergency Management BC
ENV	Environment and Climate Change Strategy
EOC	Emergency Operation Centre
EPA	Emergency Program Act
FAU	Flood Assessment Unit
FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
FSR	Forest Service Roads
GIS	Geographic Information Systems
GCPE	Government Communications and Public Engagement
HECC	Health Emergency Coordination Centre
HRVA	Hazard, Risk and Vulnerability Analysis
IEPC	Inter-Agency Emergency Preparedness Committee
IMG	Issues Management Group
ISC	Indigenous Services Canada
ITK	Indigenous Traditional Knowledge
JTFP	Joint Task Force Pacific
M-DEC	Ministers-Deputies Emergency Committee
MAH	Ministry of Municipal Affairs and Housing
MEOC	Ministry Emergency Operation Centre
MoH	Ministry of Health

MoTI	Ministry of Transportation and Infrastructure
MROC	Ministry Regional Operation Centre
MSC	Meteorological Service of Canada
NDMP	National Disaster Mitigation Program
PECC	Provincial Emergency Coordination Centre
PFRG	Provincial Flood Readiness Group
PHCC	Provincial Highway Condition Centre
PREOC	Provincial Regional Emergency Operation Centre
PS	Public Safety Canada
PSSG	Public Safety and Solicitor General
RCMP	Royal Canadian Mounted Police
RFC	River Forecast Centre
SME	Subject Matter Expert
SOLE	State of Local Emergency
TEAMS	Temporary Emergency Assignment Management System
UBCM	Union of BC Municipalities
WSA	Water Sustainability Act
WSC	Water Survey of Canada
WSR	Water Sustainability Regulation

Appendix C: RFC Advisories

High Streamflow Advisory Response

In cases when a High Streamflow Advisory is announced and response actions are warranted, the PREOC may activate to help coordinate regional planning and preparations. In addition, the PECC may activate to coordinate and integrate provincial activities. This may include pre-positioning resources such as sandbag filling machines and preparing public information for distribution.

During a High Streamflow Advisory, an impacted First Nation community or local authority should consider assigning their own Flood Assessor or Flood Observer to identify and monitor any sites at risk. Diking authorities should actively monitor their flood protection works to ensure that accesses to dikes for flood fighting equipment are unobstructed, flood level monitoring gauges are functional, and stockpiled riprap and other materials are available.

Public information on flood-proofing homes, businesses and threatened infrastructure as well as public safety advisories will be issued by the First Nation community or local authority EOCs, PREOCs or PECC. Creating opportunities such as public meetings, local bulletin board postings, local radio or local newspaper articles to provide flood safety awareness to citizens and explain flood response plans is recommended. Evacuation plans should be updated by the First Nation community or local authority, as necessary, for potentially affected areas.

Flood Watch Response

In cases when a Flood Watch is announced and response actions are warranted First Nations, local authorities, and diking authorities should proactively patrol river banks on a priority basis and as conditions dictate. Patrols should include all dikes or other flood protection works and First Nations, local authorities, and diking authorities should specifically observe for the appearance of instability or deficiencies. Dam owners should increase the monitoring of their structures and ensure that spillways are clear and the structure(s) are in working order. If appropriate, FLNRORD staff may increase river surveillance to improve situational awareness for the province and its stakeholders. MoTI will provide the primary monitoring along provincial highways where any highway infrastructure may be at risk.

Flood Warning Response

Flood Warnings are issued when the river stage (water height) is expected to reach or exceed stream channel capacity or when flooding is actively occurring along a waterway. The range of provincial response can vary dramatically depending on the magnitude and potential consequences due to flooding. If response actions are warranted, EOCs, PREOCs and the PECC will be activated with staffing levels and operational hours that reflect the level of response required. Flood Warnings along populated waterways indicate there is a high probability of damage or risk to public safety due to flooding.

Appendix D: Personal Flood Preparedness and Prevention Materials

EMBC maintains a series of public education materials related to personal preparedness and emergencies. Through the PreparedBC website, resources are available on personal flood preparedness, prevention and recovery. These online resources include the following, with many of them available in English, Punjabi, Cantonese and Mandarin:

- Guide to Protecting Your Family and Home;
- Flooding: Am I in a Risk Area?;
- Sandbagging;
- Stages of Evacuation; and
- Flood Recovery and Financial Assistance.

Other sites with related information:

Ministry of Transportation: Disaster Response Transportation

The Ministry of Transportation and Infrastructure have defined a set of integrated, cross-jurisdictional and multi-modal strategies and methods for safe and coordinated movement of emergency personnel, resources and impacted persons following a disaster. MoTI continues to work with different governments, agencies and stakeholders to align disaster preparedness transportation plans and activities to develop and ensure coordinated and effective response in a disaster.

Ministry of Forests, Lands, Natural Resource Operations and Rural Development: Integrated Flood Hazard Management Home Page

The following links provide information on flood forecasting, flood safety and dam safety, including legislation and policy.

River Forecast Centre <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre?keyword=river&keyword=forecast>

Flood Safety <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/integrated-flood-hazard-management>

Dam Safety <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/dam-safety>

Ministry of Health: Flooding and Your Health

Detailed health information on how to protect yourself and your family from illness in flood situations.

Ministry of Health: Environmental Health, Drinking Water Protection

General information on how drinking water is managed in B.C. — the surveillance and monitoring of drinking water systems; the enforcement of the Drinking Water Protection Act, the Drinking Water Protection Regulation and the Health Act; and interventions that minimize health and safety hazards.

Ministry of Health: Boil Water Advisories

Listen for news reports to learn whether the water supply is safe to drink. Your local Health Authority will release Boil Water Advisories as necessary. Find your local Health Authority at

www.healthservices.gov.bc.ca/socsec/index.html You may want to read “How to Disinfect Drinking Water” found in the B.C. Health Guide, posted at: www.bchealthguide.org/healthfiles/hfile49b.stm.
<http://www.health.gov.bc.ca/protect/dwadvories.html>

Agriculture Sector: Flood Precautions and Personal Preparedness

The information provides general tips for consideration to help B.C.'s agriculture sector prepare for and deal with the perils of a flood.

Public Safety Canada: Is Your Family Prepared?

For a major emergency – like a blackout or severe storm – you need to be prepared. Ready for at least 72 hours while emergency workers help those in urgent need. For a major emergency – like a flood – you need to be prepared. Are you Ready for at least 72 hours while emergency workers help those in urgent need?

Public Safety Canada: Floods

A heavy rainfall can result in flooding, particularly when the ground is still frozen or already saturated from previous storms. Floods may also result if heavy rain coincides with the spring thaw. This information will help you prepare for flooding in risk areas.

Public Safety Canada: Storm Surges

A storm surge, or abnormal rise in water level, often accompanies a very intense winter storm or high winds. This information will help you prepare for storm surges and coastal flooding.

FortisBC

Protect your household equipment from a flood: tips for those who live in areas subject to flooding.

BC Hydro

Information for homeowners regarding your personal safety, and your home's electrical safety when you experience a flood.

B.C. Safety Authority

Home safety in flood situations: Protect your gas and electrical appliances and systems.

Appendix E: Glossary

The following terms are used throughout the Provincial Flood Emergency Plan:

Activation: The act of initiating the emergency plan and different levels of support.

British Columbia Emergency Management System (BCEMS): An emergency management system founded on the principles of the Incident Command System. BCEMS is required to be used by all ministries and Crown Corporations and cross-jurisdictionally in BC.

Business Continuity: An ongoing process supported by senior management and funded to ensure that the necessary steps are taken to determine the impact of potential losses and maintain viable recovery strategies, recovery plans, and continuity of services.

Climate change: A long-term shift in weather conditions identified by changes in temperature, precipitation, winds, and other indicators. Climate change can involve both changes in average conditions and changes in variability, including, for example, extreme events.

BC Emergency Management Common Operating Picture (BC EM COP): A single understanding of the relevant information about the emergency situation shared by more than one operational element.

Community Resilience Centre: A model that may be used to assist individuals through the recovery process. The community resilience centre provides the space for and coordination of the various agencies and groups offering guidance, advice, and assistance to those affected by an emergency/disaster.

Critical Infrastructure: Assets that are essential for the functioning of government and society, namely, water, food, transportation, health, energy and utilities, safety, telecommunications and information technology, government, finance, and manufacturing.

Debris Dams: A natural damming of a river by some kind of mass wasting: landslide, debris flow, rock avalanche or volcano.

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." [*Emergency Program Act*]

Disaster Risk Reduction: Measures taken to decrease the potential for future losses arising from emergencies/disasters.

Emergency: A present or imminent event that requires prompt co-ordination of action or special regulation of persons or property to protect the safety, health or welfare of people or to limit damage to property.

Emergency management: An ongoing process to prevent, mitigate, prepare for, respond to and recover from an emergency or disaster that threatens life, property, operations or the environment.

Emergency Operations Centre: The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a

temporary facility or may be located in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction.

Emergency plan: A document developed to ensure quick access to the information necessary for effectively responding to an emergency.

Emergency Program Coordinator: The person responsible for the day-to-day management of an organization's emergency management program. May also be referred to as planner, manager, or director.

Emergency Support Services: Short-term assistance to British Columbians who are forced to leave their homes because of fire, floods, earthquakes or other emergencies. This assistance includes food, lodging, clothing, emotional support and family reunification. In British Columbia, local authorities are responsible for planning and operating emergency responses within their jurisdictional areas, including Emergency Social Services (ESS).

First Nations: On-reserve communities that are supported by Emergency Management BC through a 10-year bilateral agreement signed in 2017 with the Federal Government. While the Federal Government, through the Department of Indigenous Services Canada (ISC), holds the legislated responsibility for emergency management activities on First Nations Reserve Lands, the Agreement enables EMBC to provide First Nations with the full range of emergency management services that Local Authorities receive.

Flood: The overflow of natural drainage channels, natural shorelines and/or human-made facsimiles leading to partial or complete inundation from the overflow of inland or tidal waters, and/or the accumulation or runoff of surface waters from any source

Flood Observer: An individual who has completed the Flood Observer training and is deployed to observe, record and report on field conditions, issues and threats that could adversely affect public safety. Observers work under the direction of an assessor and report to an assigned assessor and/or PREOC.

Flood Assessor: An individual who typically has advanced technical knowledge, water resource experience, and who has completed the Flood Assessor training. They are deployed to review, verify and prioritize information collected by observers, and to define options for corrective actions/resources needed and report the finding to the PREOC Water/Flood Expert. If direction by the FAU lead, assessors will be responsible for ensuring that observers are adequately equipped, trained and prepared to go to site and may be deployed alongside them in the field.

Freshet: The substantial rise in water level of a stream or river caused by melting snow in the spring.

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.

Hazard, Risk, and Vulnerability Analysis (HRVA): An assessment of:

- **Hazards:** These are sources of potential harm, or situations 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.
- **Risk:** This refers to the likelihood that a hazard will occur, as well as the severity of possible impact to health, property, the environment, or other things of value.
- **Vulnerability:** This refers to the people, property, infrastructure, industry, resources, or environments that are particularly exposed to adverse impact from a hazardous event.

Impact: The physical/environmental, social, economic, and political consequences or adverse effects that may occur as the result of a hazardous event.

Indigenous Traditional Knowledge: A holistic system of knowledge that belongs to First Nations, embedded in culture and tradition, built through generations of living in close relationship with the land, and which can carry spiritual significance.

Indigenous Traditional Knowledge Holders: A member from the community, or designate, who holds Indigenous Traditional Knowledge.

Incident Command System (ICS): Originally developed as a fire response management system by various jurisdictions in the United States, this incident management system has been widely adopted by first responders and emergency management programs throughout North America.

Local Authority: Municipalities, regional districts, and Treaty First Nations who have specific legislated emergency management requirements set out in the Emergency Program Act (EPA).

Mitigation: Activities which reduce or eliminate the impacts of an emergency or anticipated emergencies, before, during or after the emergency event.

Preparedness: Activities undertaken prior to an emergency to ensure an effective response to and recovery from the consequences of an emergency event.

Provincial Emergency Coordination Centre: The central emergency operations centre activated to provide overall coordination of the integrated provincial response to an emergency or disaster. The Provincial Emergency Coordination Centre manages the overall provincial government response, which includes the provision of support for the regional levels. This may include consultation with senior elected officials, management of emergency information for the public, resource coordination and policy guidance. Communications and collaboration with external agencies such as crown corporations, federal emergency response agencies, non-governmental organizations and other provinces are managed at the Provincial Central Coordination level.

Provincial Regional Emergency Operations Centre: The Provincial Regional centre responsible for coordinating regional response activities, supporting local EOCs assigning regional (provincial and federally assigned) critical resources, providing regional messaging, and providing situational understanding to the PECC.

Recovery: Activities and programs designed to support communities to rebuild post-disaster in a resilient, culturally safe and appropriate way.

Resources: Equipment, supplies, personnel, volunteers, and facilities available for assignment or staging in support of emergency management activities.

Resilience: 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.

Resource management: A process for identifying and managing available resources to enable timely and unimpeded access to the resources needed to prevent, mitigate, prepare for, respond to or recover from an incident.

Response: The phase of emergency management during which actions are taken in direct response to an imminent or occurring emergency/disaster in order to manage its consequences.

Risk: A concept that takes into consideration the likelihood that a hazard will occur, as well as the severity of possible impact to health, property, the environment, or other things of value.

Site level: Governed by the Incident Command System (ICS). One or more Incident Commanders or Incident Management Teams oversee site operations from an Incident Command Post (ICP). In some circumstances, site level response is managed by more than one responsible agency under unified command.

Situational Awareness: Knowing what is going on and what has happened with respect to the current incident, what could go on in terms of future impact or outcomes, and what options exist in terms of response actions.

Snow Pillow: A large rubber/neoprene bladder containing anti-freeze laid on the ground prior to snowfall. The pressure of the fluid in the bladder is measured and this enables the determination of the snow water equivalent at that location.

Snow Survey: A manual measurement of the snow depth and snow water equivalent at a site. Samples are taken at several pre-determined points at a snow course or snow pillow site. The data are most frequently used to compare the current readings with other readings taken at the same site at other times.

Subject Matter Expert: Provincial, regional or local experts with knowledge on a specific area of expertise, such as hazard(s) likelihood, consequences, environmental and economic impacts.