

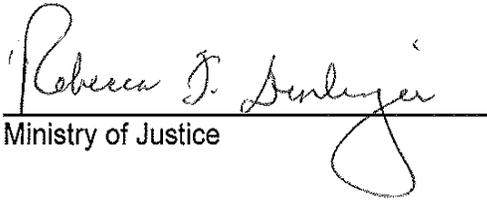


PROVINCE OF BRITISH COLUMBIA

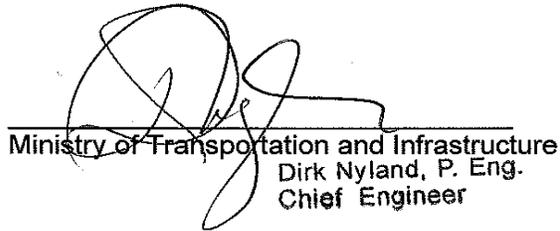
The British Columbia Flood Response Plan

2012

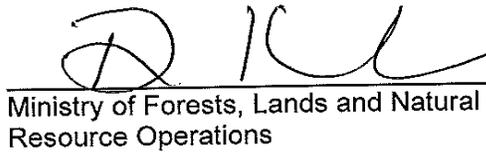
Emergency Management BC
4/18/2012


Ministry of Justice

May 1, 2012
Dated Signed


Ministry of Transportation and Infrastructure
Dirk Nyland, P. Eng.
Chief Engineer

20/09/12
Dated Signed


Ministry of Forests, Lands and Natural
Resource Operations

April 24/12
Dated Signed


Ministry of Community, Sport and Cultural
Development

May 1, 2012
Date Signed


Ministry of Environment

May 1, 2012
Date Signed

Amendments

The British Columbia Flood Response Plan 2012

Purpose

The British Columbia (BC) Flood Response Plan 2012 describes the methodology the provincial government will utilize for coordinating activities to manage a flood event including clarifying the roles and responsibilities of the ministries involved in flood management during an integrated provincial response event. It sets out a concept of operations that fosters collaboration among multiple organizations active in managing the consequences of a flood emergency.

Scope

The plan focuses on readiness and response activities of the provincial government at the regional and provincial level. Minor flood incidents that do not require multi-jurisdictional or multi-agency response are not discussed. Local authority flood response activities and financial issues including Disaster Financial Assistance (DFA) are also outside of scope for this document. The mitigation and recovery pillars of emergency management are not discussed in this plan.

Background

Communities in BC can experience flooding throughout the year. Within BC emergency flood response is managed primarily by local authorities. Please refer to Appendix 1 for a brief overview on local authority flood response activities. As required, the provincial emergency management system will activate to support local authorities.

Floods are caused by natural or human-made conditions and geography. Communities might experience flooding due to:

- Heavy rains or rain-on-snow events in fall/winter months;
- Spring freshet flooding from rapid snow melt;
- Intense precipitation at any time of the year;
- Ice jams;
- Reservoir releases;
- Failure of dams or flood protection works;
- Coastal flooding from high tides, storm surge and waves; and
- Debris flows on the fans of steep mountain stream channels.

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 normal stream channels become overwhelmed. The potential for freshet flooding can generally be forecasted using information related to snow packs, weather forecast 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. Physical failure of flood protection works or human-made dams have potential for flooding and are generally unpredictable.

Due to the unpredictable nature of floods, response activities generally require cross-government provincial coordination and collaboration. Enhanced readiness and response activities require the assistance of all stakeholders in the BC Flood Plan. This plan is a living document that represents an agreement between various ministries and agencies of the provincial government.

This document fits as a component of the provincial Comprehensive Emergency Management Plan and aligns with the BC Emergency Response Management System (BCERMS). Please refer to the Comprehensive Emergency Management Plan (CEMP) All-Hazard Plan for a detailed outline of the operational structure and responsibilities for a Provincial coordinated all-hazard response.

This plan replaces all previous versions, including the BC Flood Plan 2008 Edition.

Specific Risks and Considerations Associated with Flood Events

- Catastrophic or flash flooding can be extremely hazardous and pose a significant risk to infrastructure and potential loss of life;
- Flooding can cover a large geographic area, or occur in numerous locations concurrently, which can overwhelm local and provincial resources;
- Health risks can occur due to compromised sewage systems or contaminated drinking water supplies;
- Forecasting for freshet flooding can allow for advanced planning. Snow survey bulletin reports are released by the River Forecast Centre in January, February, March, April and May each year which can be used to identify areas with elevated risk;
- Dike authorities are required to actively monitor their flood protection works to ensure that such things as electrical connections are functional, that any gates or valves are operational and to assess dike integrity;
- Waterways must be monitored for hazardous material and debris that could cause further blockage of the normal water course;
- There may be a need to implement flood protection measures at site; and
- Overland flooding is an uninsurable event that might be eligible for coverage under DFA. If the flood event is identified as a DFA event by Emergency Management BC (EMBC), individuals, businesses and not-for-profits can then apply for financial assistance to cover eligible restoration and repair costs.

Resource Requirements

Resource requirements for provincial agencies to assist with flood response are:

- Subject matter experts to forecast and analyze river behavior;
- Flood Assessors and Observers to assess field conditions, reporting directly to the activated Provincial Regional Emergency Operation Centre (PREOC) to help inform the provincial integrated response;
- Access to geographical information systems and flood mapping;
- Aviation resources for reconnaissance, surveying and advanced planning;
- Provincial trained staff for deployment to assist local authorities with proper sandbag placement, dike and dam assessment methodology, etc.;
- Riprap provided and managed by Ministry of Transportation and Infrastructure (MoTI);
- Gabion dikes for distribution to local authorities by the province;
- Sandbags for distribution to local authorities;
- Operational and available sandbag filling machines;
- Forestry crews to assist with sandbagging; and

In exceptional flood seasons special treasury board authorization for preparedness activities and additional staff may be required.

Authorities

Local Authorities, as defined in the *Emergency Program Act*, have a legislated duty to respond first to emergency situations within their jurisdictions and to have an emergency plan in place to keep citizens, infrastructure and the community as safe as possible.

Provincial legislation, as listed below, provides the legal authority for ministries to engage in flood management activities:

Emergency Program Act details roles and responsibilities of the Province, provides parameter for declaring local or provincial emergencies and the emergency powers a declaration provides.

Emergency Program Management Regulation details the responsibilities and authorities of provincial ministers, ministries, programs, and government corporations and agencies.

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

BC Dam Safety Regulation provides guidance on the application process as well as reporting and inspection guidelines specific to dams.

Please note that this is not an exhaustive list of the legislation that pertains to flood management activities.

Provincial Coordination Overview

The provincial flood response activities follow the BCERMS as outlined in the EMBC All-Hazard Plan. The following section outlines the operational centres and the relationship of flood response agencies.

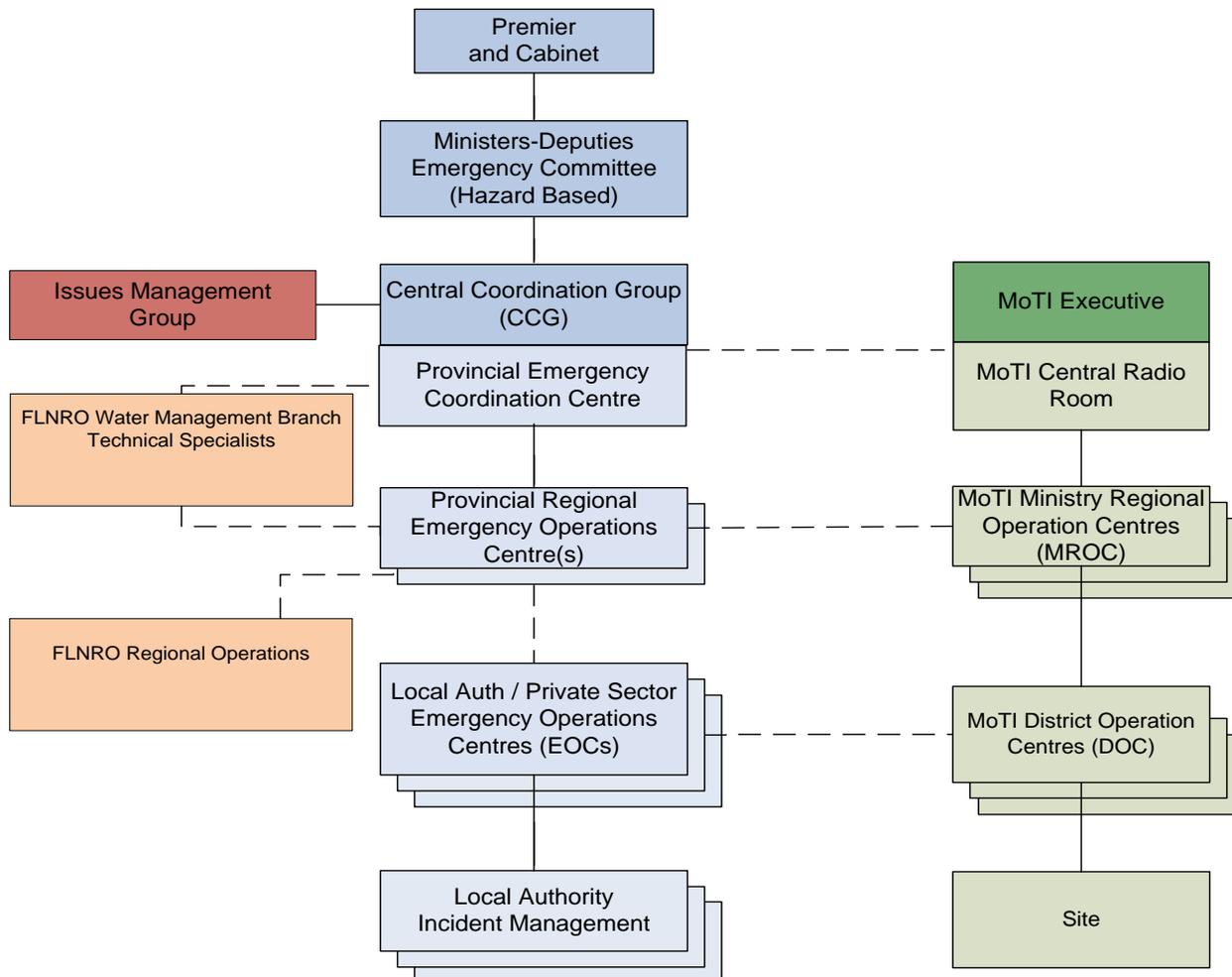


Figure 1. Illustration of Provincial Emergency Management System relationship with MoTI and, Forests, Lands and Natural Resource Operations (FLNRO) River Forecast and Flood Assessment Specialists during response to floods.

Ministers–Deputies Emergency Committee

The Ministers–Deputies Emergency Committee (M-DEC) is composed of the key ministers and deputies who provide direction, policy and strategic guidance to the CCG Central Coordination Group (CCG) for flood emergency events. The Ministry representation on the M-DEC generally mirrors the participant list in the CCG.

Central Coordination Group

During major or complex flood events the core CCG will be activated. The CCG is co-chaired by EMBC and the MoTI. Where potential freshet flooding based on snow-pillow and weather reports is forecasted, the CCG will meet in prior to freshet to initiate advanced planning.

The CCG will provide policy and direction regarding the integrated provincial emergency flood management activities in support of provincial agencies and local authorities.

The CCG role is to:

- Evaluate the situation and assess the provincial government involvement;
- Provide strategic and policy direction to the Provincial Emergency Coordination Centre (PECC);
- Determine the need to activate the M-DEC;
- Oversee the implementation of cross ministry communications; and
- Brief senior government officials on the flood threat, flood preparation, response and recovery activities on a regular basis.

In addition, when required the CCG will make situation specific decisions based on recommendations and options provided by the Issues Management Group (IMG) who activate to assist in more complex emergencies and disasters.

The CCG is generally activated by the onset of flooding or by one of the co-chairs based on flood potential, or flood forecasts.

The suggested makeup of the CCG for flood events is as follows:

- Ministry of Justice, EMBC (co-chair);
- Ministry of Transportation and Infrastructure, (co-chair);
- Ministry of Forests, Lands Natural Resource Operations;
- Ministry of Health;
- Government Communications and Public Engagement;
- Ministry of Agriculture; and
- Ministry of Environment.

During the course of flood response other federal agencies, such as Public Safety Canada (PS) and Aboriginal Affairs and Northern Development Canada (AANDC) may be represented. Depending on response requirements, additional organizations or provincial agencies may be invited to participate in the CCG.

Each Ministry will designate a senior representative (Executive Director/ Assistant Deputy Minister (ADM) level) and one alternate to represent them on the CCG. Each representative will report to the CCG on the response and readiness activities of the respective ministry. This would include reporting out on major incidents impact response capability as well status of readiness preparation.

Issues Management Group

During any significant event, there may be situations that require extraordinary measures to resolve issues that extend beyond normal emergency management activities. While the CCG has decision support systems in place to deal with normal and above normal flood seasons there are complex situations where engaging additional provincial-level decision making support and expertise from key

government ministries and agencies is required. The IMG will address specific complex flood management issues as they may arise.

The IMG will provide decision making support to government, through the CCG when active, on complex incidents involving cross government coordination. The IMG will assist the CCG 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 subject matter experts;
- Ensuring that each ministry is adequately represented;
- Determining other issue-specific participation in the group; and
- Reporting out to appropriate ministry executive, CCG (when appropriate) and Interagency Emergency Preparedness Council (IEPC).

Ministry of Transportation and Infrastructure MROCs and DOCs

In major events the 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 provide support for PREOC activities. Operations are coordinated through the MoTI radio system utilizing a central radio room (PHCC). If required MoTI subject matter experts may be deployed to any of the EMBC operation centres and with staff typically located in the operations section.

Provincial Emergency Coordination Centre

As per the All-Hazard Plan, the PECC located in Victoria, will implement CCG priorities and support active PREOCs. Provincial technical specialists from the River Forecast Centre and Dam Safety Branch of the Ministry of FLNRO work in collaboration with the planning and operations sections in the PECC.

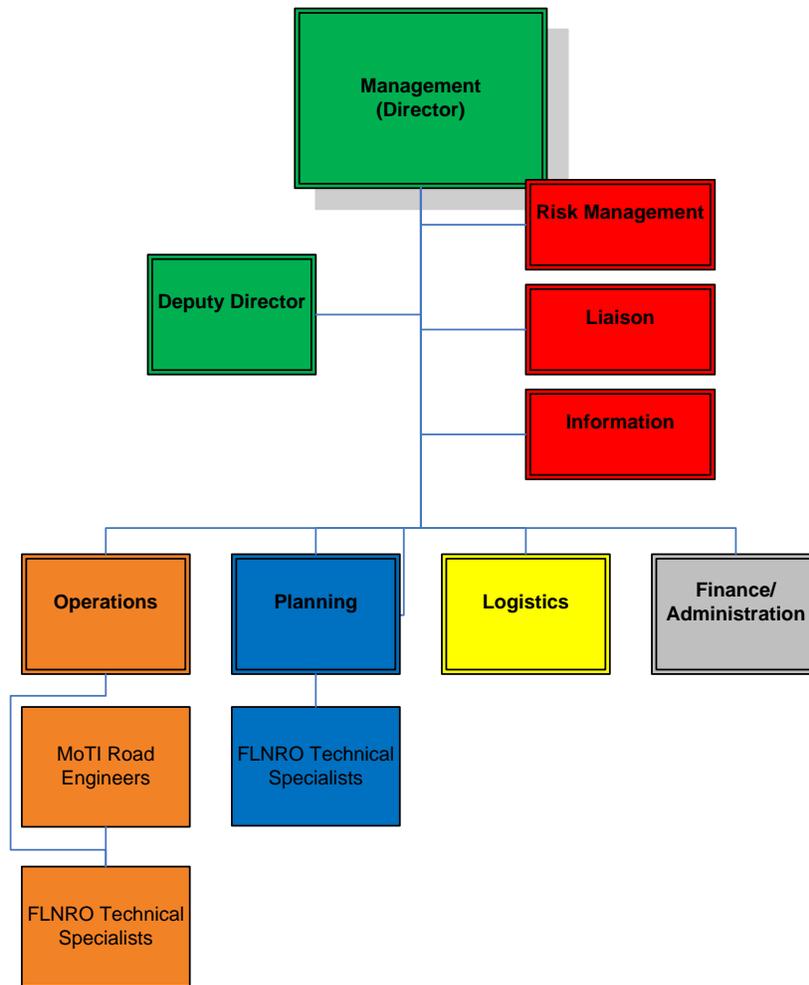


Figure 2. Illustration of the potential placement of the MoTI and FLNRO representatives within the EMBC operational organization structure.

Provincial Regional Emergency Operation Centre (PREOC)

As per BCERMS, a PREOC provides support to affected local authorities. Technical expertise from the River Forecast Centre, Water Stewardship Branch, FLNRO Regional Operations and Environment Canada, are the most commonly placed into the planning section of 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.

Site Level

Provincial technical specialists may be deployed to the site to assist local authorities with technical services including dike assessments and hazard mitigation. Provincial staff may also provide situational awareness. The deployment of provincial staff is dependent on the prevalent situation.

Flood Emergency Management Overview

Readiness

The Province, through FLNRO, monitors river levels, provides flood forecasts and bulletins (River Forecast Centre) as necessary through the spring-summer and fall-winter flood windows and provides oversight to dam and dike owners. During the snow accumulation season (January to May), the River Forecast Centre issues monthly snow survey and water supply bulletins which assess seasonal flood risk and identify areas of the province that may be subject to increased risk due to heavy snow pack. Typically the April 1st snow bulletin provides the best outlook for seasonal flood risk for freshet, but in years with very high snow pack, earlier snow surveys (February 1st or March 1st) may be used to identify increased risk. While snow pack is an important element of seasonal flood risk, flooding can occur during years with or without high snow packs. During readiness for a predicted forecast extreme flood threat, the province provides strategic recommendations to local authorities and engages in flood preparedness activities. The level of flooding risk influences the type and amount of preparedness activities carried out by the Province.

The CCG may meet to establish priorities on readiness activities. The IMG may meet to assist the CCG with specific complex flood issues. EMBC Advanced Planning will begin planning to support all provincial flood response efforts.

Where there is a possibility of an extreme flood event, the level of readiness will dictate the need to establish cross-government working groups such as agricultural, transportation including mass evacuation, government services continuity, community recovery, health, critical infrastructure, and mapping. EMBC will also explore the possibility of establishing a provincial call centre if required.

During the readiness stage local authorities, the EMBC regional manager and representatives of FLNRO and the MoTI may begin work on an integrated Regional Flood Response Plan that details what jurisdictional activities are or will be undertaken for preparedness, response and recovery within the region by all agencies. The Regional Flood Response Plan will be developed well in advance of any potential flooding activities to maximize resources and to ensure coordinated approach to potential flood events.

EMBC regional managers will reach out to the local governments and offer assistance with flood readiness or activities. Seasonal preparedness workshops may be delivered to assist local governments with preparing for flood activities.

Advisories from the River Forecast Centre

The River Forecast Centre uses three levels of advisories. They are as follows:

1. **High Streamflow Advisory** means that river levels are rising or expected to rise rapidly, but that no major flooding is expected. Minor flooding in low-lying areas is possible.
2. **Flood Watch** means that river levels are rising and will approach or may exceed bankfull. Flooding of areas adjacent to affected rivers may occur.
3. **Flood Warning** means that river levels have exceeded bankfull or will exceed bankfull imminently, and that flooding of areas adjacent to the rivers affected will result.

In general, during a flood event the advisories sequence through all three levels, beginning with a High Streamflow Advisory, but in certain circumstances the first notification for an event may be a Flood Watch. The timing of the warnings before a flood event can vary from a few hours to about 72 hours. The River Forecast Centre distributes these warnings to key stakeholders. In situations where there is some advance warning (>72 hours) of the potential for flood-producing weather systems, the River

Forecast Centre may alert EMBC (stakeholders) of these conditions prior to releasing an advisory or warning.

Response

River Forecast Centre

Emergency response activities will escalate depending on the River Forecast Centre notifications.

High Streamflow Advisory Response

Special resources may be pre-positioned and public media bulletins prepared in advance. The PREOC may activate to help coordinate regional planning and preparations. The PECC may follow suit to coordinate and integrate provincial activities.

During a High Streamflow Advisory a local authority may consider assigning a flood observer/assessor to identify and monitor any sites at risk. Diking authorities should actively monitor their flood protection works to ensure that all connections are functional and any gates or valves are operational and clear.

Public information on flood-proofing homes, businesses and threatened infrastructure as well as public safety advisories will be issued by the local authority EOCs, PREOCs or PECC. Local authority EOCs should create opportunities such as public meetings, local bulletin board postings or local newsprint articles to provide flood safety awareness to citizens and explain flood response plans.

Evacuation plans should be updated by the local authority, as necessary, for potentially affected areas.

Flood Watch Response

Local authorities and diking authorities should proactively patrol river banks on a priority basis and as conditions dictate. This should include all dikes or other flood protection works and 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. FLNRO staff may assist local authorities with river assessments. MoTI will provide the primary monitoring where any highway infrastructure may be at risk.

Flood Warning Response

Flood Warnings indicate there is a high probability of damage due to flooding. The range of provincial response can vary dramatically depending on the severity of the event. Full flood response or control programs are implemented due to the potential severity of flooding.

Mandatory evacuation is contemplated or ordered. Provincial resources will continue to monitor and assess flooding events.

When the river stage (water height) is expected to reach or exceed stream channel capacity or when flooding is actively occurring emergency response activities are initiated. EOCs, PREOCs and the PECC will be activated with staffing levels and operational hours that reflect the level of response required.

Response Involving First Nations

AANDC holds legislated responsibility for emergency management on federally designated First Nations reserves. Through a Letter of Understanding with AANDC, EMBC has agreed to support the provision of emergency response and recovery services to First Nations communities when requested by either AANDC or the local Band Council.

EMBC is specifically named as the provincial agency to be involved with any requirement to respond to flood conditions on (or involving) reserve lands. As a result, the PECC must be informed as soon as reasonably possible. A separate task number will be issued for the incident to facilitate cost recovery from the federal government.

EMBC will support, assist or arrange for such required emergency measures as seen under existing protocol arrangements with AANDC. This may include coordinating volunteer, municipal, provincial, federal and other agency support.

Recovery

Recovery refers to activities and programs designed to return a situation to an acceptable pre-emergency condition. Recovery activities can be carried out at the local, regional or provincial level as is required by the complexity of the flood event.

When the threat of continued flooding has passed, evacuees may return to the area once the evacuation order has been lifted. Outstanding issues such as denying building occupancy, due to electrical problems or drinking water contamination may persist; however, people may proceed with cleanup activities.

This stage may also be characterized by the implementation of demobilization plans and recovery activities. EOCs, PREOCs and the PECC may reduce their activation levels to support recovery activities.

Overland flooding is not insurable in BC for homeowners. If an event is determined eligible for DFA, EMBC supports recovery efforts through the administration of the DFA program. Incremental costs for a local authority’s Recovery Centre under Community Disaster Recovery are administered under DFA program. Refer to the EMBC website for further details on the DFA program.

Lead Provincial Agency Roles and Responsibilities

Flood management requires an integrated provincial response. All provincial ministries must collaboratively work with all emergency management stakeholders to assist local authorities with effectively managing flood events. Provincial ministries must ensure internal communication within each ministry is unified and that all staff involved in flood management activities receives appropriate training/orientation for the activity that they are involved in. This section highlights the primary ministries responsible for flood management. There are five primary ministries involved in the support of flood response. These are:

Ministry of Justice, Emergency Management British Columbia (EMBC)

EMBC has the primary responsibility for coordinating the provincial emergency management structure. EMBC will activate PREOCs and the PECC to coordinate and implement the provincial response and provide support to local government response efforts. EMBC will also support recovery efforts through the administration of the DFA program. When required, EMBC will activate the CCG and serve as co-chair.

In the readiness phase, EMBC will:

Provincial
<ul style="list-style-type: none"> • Ensure flood resource contact list is updated;
<ul style="list-style-type: none"> • Ensure ready status of provincial stockpiles of sandbags and gabion systems;
<ul style="list-style-type: none"> • Review central sandbag inventory and alignment to local authority needs;
<ul style="list-style-type: none"> • Update Temporary Emergency Assignment Management System (TEAMS) roster based on flood needs;
<ul style="list-style-type: none"> • Update public education and awareness information material if required in collaboration with

GCPE;
<ul style="list-style-type: none"> • Establish seasonal flood readiness sessions;
<ul style="list-style-type: none"> • Develop a communications strategy and tie it to seasonal readiness; and
<ul style="list-style-type: none"> • Review and amend the current BC Flood Response Plan 2012.

EMBC supports and publishes public information response pamphlets regarding flood-proofing your home and clean up measures on its website.

Response

In addition to the activities listed in the All-Hazard Plan, activities of the PECC specific to flood events include:

Provincial
<ul style="list-style-type: none"> • Distribute River Forecast Centre advisories to appropriate staff and stakeholders;
<ul style="list-style-type: none"> • Provide public flood safety information and distribute to media;
<ul style="list-style-type: none"> • Deploy sandbags, gabion baskets and regional resources from the provincial stockpile to local governments as requested;
<ul style="list-style-type: none"> • Coordinate the preparation of provincial flood response directives;
<ul style="list-style-type: none"> • Activate TEAMS roster based on flood needs;
<ul style="list-style-type: none"> • Coordinate with AANDC regarding First Nations communities;
<ul style="list-style-type: none"> • Approve event eligibility for DFA and administer the DFA Program for individuals, local authorities and businesses; and
<ul style="list-style-type: none"> • In a DFA event, deploy program staff to local communities to participate in information sessions and community meetings.

In addition to the activities listed in the All-Hazard Plan, the PREOC activities specific to flood events include:

Regional
<ul style="list-style-type: none"> • Host briefings with key stakeholders as required;
<ul style="list-style-type: none"> • Notify local authorities that are potentially affected according to RFC forecasts;
<ul style="list-style-type: none"> • Activate TEAMS roster based on flood needs;
<ul style="list-style-type: none"> • Liaise with local authorities, First Nations communities and ministry representatives about potential consequences related to flooding;
<ul style="list-style-type: none"> • Manage and deploy sandbag filling machines;
<ul style="list-style-type: none"> • Ensure proper safety measures are in place for technical specialists deployed to assist local authorities at the site;
<ul style="list-style-type: none"> • Attend town hall meetings;
<ul style="list-style-type: none"> • Assess requirement for DFA; and
<ul style="list-style-type: none"> • Provide public information materials to local authorities about health issues, cleanup, DFA and other resources available to help those who have been impacted and need additional assistance.

Ministry of Transportation and Infrastructure (MoTI)

MoTI will provide expertise and resources, as required. MoTI will also remain responsible for the safety and protection of provincial public highway road and bridge infrastructure. Ministry representatives may deploy staff to the PREOC, PECC or local EOC(s) and co-chair the CCG.

During flood response MoTI responds to floods impacting provincial highway infrastructure. Associated activities include:

Provincial
<ul style="list-style-type: none">• Provide technical advice and specialist expertise, support services and staff as required;
<ul style="list-style-type: none">• Provide representatives to the PECC, PREOC and site as required;
<ul style="list-style-type: none">• Assign a senior representative to the CCG;
<ul style="list-style-type: none">• Clear culverts to ensure appropriate runoff during flood season;
<ul style="list-style-type: none">• Increase inspection patrols and maintenance as required;
<ul style="list-style-type: none">• Forward additional equipment and resource requirement requests to the PECC or PREOC; and
<ul style="list-style-type: none">• Issue regional priorities for flood response tasks based upon directives issued by the CCG.
Regional
<ul style="list-style-type: none">• Participate in the development of the Regional Flood Response Plan, a process led by local government emergency coordinators;
<ul style="list-style-type: none">• Identifying and supply equipment and other resources such as riprap within the region(s);
<ul style="list-style-type: none">• When requested by PREOC supply heavy equipment, construction materials and/or contract equipment and operators; and
<ul style="list-style-type: none">• Complete emergency highway and bridge infrastructure work.

Ministry of Forests, Lands and Natural Resource Operations (FLNRO)

FLNRO will provide expertise and resources at the readiness, response and recovery phases, as required. This may be in the form of flood forecasting, professional or technical services and assessments, planning, logistics support (e.g., air support, water pumps, hoses), and supply of field personnel. FLNRO will also remain responsible for the safety and maintenance of forest service roads (FSR) network. In addition, the Ministry may deploy staff to the PREOC, PECC or local EOC(s).

Provincial operations include Water Management, Water Stewardship, Engineering, and Wildfire Management Branches. Regional Operations includes field operations at the regional and district levels. Water Management Branch includes the Flood Safety, River Forecast Centre (RFC), Dam Safety Sections; and Water Stewardship Branch provides liaison and oversight with regional operations.

Water Management Branch
Provincial
<ul style="list-style-type: none">• Provide technical advice and specialist expertise, support services and staff as required;
<ul style="list-style-type: none">• Provide representatives to the PECC, PREOC and site as required;
<ul style="list-style-type: none">• Assign a senior representative to the CCG;
<ul style="list-style-type: none">• Monitor river levels;
<ul style="list-style-type: none">• Conduct regular snow surveys through the River Forecast Centre;
<ul style="list-style-type: none">• Provide flood forecasts and bulletins;
<ul style="list-style-type: none">• Provide regular updates of snow conditions;
<ul style="list-style-type: none">• Liaise with Environment Canada regarding weather forecasts;

<ul style="list-style-type: none"> • Provide oversight to dam and dike owners;
<ul style="list-style-type: none"> • Undertake modeling to support flood level forecasts;
<ul style="list-style-type: none"> • Contribute to provincial planning efforts;
<ul style="list-style-type: none"> • Provide provincial coordination of ministry resources; and
<ul style="list-style-type: none"> • Provide training of ministry and other staff.
Wildfire Management Branch
<ul style="list-style-type: none"> • Supply fire crews for sandbagging when available for deployment; and
<ul style="list-style-type: none"> • 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 ○ Portable camps ○ Communication services ○ Response personnel.
Engineering Branch (Coast, Southern, Northern Engineering Groups),
<ul style="list-style-type: none"> • Supply professional engineering and technical services support, including: <ul style="list-style-type: none"> ○ Geotechnical or hydrological site hazard assessments ○ Structural site hazard assessments during provincial response to floods.
Regional Operations
<ul style="list-style-type: none"> • Provide technical services and recommend strategies to PREOC on flood assessment and response, including drinking water source identification and protection;
<ul style="list-style-type: none"> • Identify and deploy field level flood assessment and observation providers for the PREOC;
<ul style="list-style-type: none"> • Liaise with dam owners and dike authorities;
<ul style="list-style-type: none"> • Conduct dam assessments;
<ul style="list-style-type: none"> • Provide technical support services and staff on a 24-hour basis to PREOC, as requested;
<ul style="list-style-type: none"> • Provide local stream forecasts and information;
<ul style="list-style-type: none"> • Provide advice and recommend strategies to site, EOC, PREOC, PECC regarding orphan dikes; and
<ul style="list-style-type: none"> • Provide recovery plans for protection works, as required.

Ministry of Environment (MoE)

During provincial response to floods the main supporting role of the MoE is to address hazardous material and other threats to the environment. MoE liaises with Environment Canada and other federal agencies as required and provides direction and leadership regarding waste and flood debris management issues that arise. In addition, ministry representatives may staff the PREOC, PECC or local EOC(s). The MoE will participate as a member of the CCG as required. Associated activities include:

Provincial
<ul style="list-style-type: none"> • Provide technical advice and specialist expertise, support services and staff as required;
<ul style="list-style-type: none"> • Provide representatives to the PECC, PREOC and site as required;
<ul style="list-style-type: none"> • Assign a senior representative to the CCG;
<ul style="list-style-type: none"> • Provide technical services regarding environmental risks; and
<ul style="list-style-type: none"> • Co-ordinate the provincial snow survey program.

Regional
<ul style="list-style-type: none"> • Participate in the development of all Regional Flood Response Plans, a process led by local government emergency coordinators;
<ul style="list-style-type: none"> • Respond to spills and potential spills resulting from flooding;
<ul style="list-style-type: none"> • Provide expertise on waste management and disaster debris issues resulting from flooding;
<ul style="list-style-type: none"> • Provide information on spill prevention for floods;
<ul style="list-style-type: none"> • Provide technical assessment and direction on imminent spill risks; and
<ul style="list-style-type: none"> • Provide trained flood observers to assist in the establishment and monitoring of flood gauges.

Government Communications and Public Engagement (GCPE)

GCPE has the primary responsibility to implement the provincial communications strategy once the provincial emergency management structure is activated. GCPE provides information officers to the PREOCs, the PECC and to local EOCs as needed to provide expertise in media relations and public information activities. The GCPE will participate as a member of the CCG. Associated activities include:

Provincial
<ul style="list-style-type: none"> • Prepare to implement the province’s Crisis Communications Strategy for Major Provincial Emergencies and ensure readiness of TEAMS information officers;
<ul style="list-style-type: none"> • Brief senior government officials on communications issues;
<ul style="list-style-type: none"> • Assign a senior representative to the core CCG;
<ul style="list-style-type: none"> • Assign TEAMS Information Officers to the PECC and each regional PREOC, as requested by the PECC, and where necessary, to local authorities EOCs; and
<ul style="list-style-type: none"> • Implement the BC Crisis Communications Strategy for Major Provincial Emergencies.

Supporting Provincial Agencies Roles and Responsibilities

Ministry of Health

During provincial response to floods the main supporting role of the Ministry of Health is to support regional health authorities to ensure the continuity of health services and monitoring and managing Public Health impacts. If the situation becomes severe, the ministry may activate its Health Emergency Coordination Centre (HECC) in Victoria, in support and coordination of the health sector response.

Provincial
<ul style="list-style-type: none"> • Assign a senior representative to the CCG;
<ul style="list-style-type: none"> • Provide a representative to the PECC;
<ul style="list-style-type: none"> • Activate the Health Emergency Management structure as needed;
<ul style="list-style-type: none"> • Provide leadership and direction on Public Health issues related to flooding; and
<ul style="list-style-type: none"> • Provide Provincial Disaster Psychosocial support as needed.
Regional
<ul style="list-style-type: none"> • Through health authorities and other health agencies, provide a representative to the PREOC(s);
<ul style="list-style-type: none"> • Activate Local and Regional Health Emergency Management Structures as needed;
<ul style="list-style-type: none"> • Provide sewage disposal expertise;
<ul style="list-style-type: none"> • Provide drinking water quality expertise; and
<ul style="list-style-type: none"> • Manage and coordinate the evacuation of health facilities as required.

Ministry of Agriculture

During provincial response to floods the main supporting role of the Ministry of Agriculture is to facilitate the relocation of livestock and provide support to the agricultural industry. If the situation becomes severe, the ministry may activate its ministry operation centre (MOC) in Abbotsford. If there is a threat of flooding in the lower Fraser Valley, due to heavily concentrated dairy farm industry in high risk areas, it is likely that Ministry of Agriculture will perform significant advanced planning and readiness activities. During provincial response to floods the Ministry of Agriculture will:

Provincial
Provide coordination of the evacuation of livestock and their care, including emergency feeding; and
Provide advice on the protection of livestock and the coordination for disposal of livestock carcasses.

Ministry of Community, Sport and Cultural Development (CSCD)

The Ministry of CSCD provides programs and services related to local governments, including the legislative, policy and governance framework for local governments. The Ministry provides funding, advice, and other supports to foster effective local government services, infrastructure, and governance structures. During provincial response to floods the Ministry of Community, Sport and Cultural Development will:

Provincial
<ul style="list-style-type: none">• Provide guidance and assistance to local governments regarding infrastructure; and
<ul style="list-style-type: none">• After situation assessment, may approve special operating authority/funds for local governments (in an emergency event).

Response Roles of Key External Agencies

Dike Authorities and Dam Owners

Dike Authorities should proactively patrol dike banks on a priority basis and as conditions dictate. This should include all dikes or other flood protection works and should specifically include observations for the appearance of instability or deficiencies. Dam owners should increase the monitoring of their structures and ensure that spillways are clear and all support structure(s) are in working order.

Fisheries and Oceans Canada

During flooding events Fisheries Oceans Canada, through coordination with Public Safety Canada, would assist the province by providing additional resources, such as pumps and boats.

Agriculture and Agri-Food Canada (AAFC)

Under the National Disaster Assistance Framework, AAFC would assist BC in securing safe food and water, spare parts and fuel for 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 during flood events.

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
- For information on DFA: http://www.pep.bc.ca/dfa_claims/dfa.html
- Water quality advisories are posted on Health Authority websites.

Appendix A

Local Authority Flood Response Activities

Local authorities include municipalities and regional districts. Local authorities hold primary responsibility for emergency management within their jurisdiction. According to the *Emergency Program Act* (EPA) local authorities must establish an emergency management organization to develop and implement emergency plans and other preparedness, response and recovery measures.

Elected officials are responsible for supporting, funding, and approving the local emergency plan. The local emergency plan is maintained and updated by a coordinator (often called the Emergency Program Coordinator) and should be reviewed annually. This emergency plan:

- Provides the overview of the community's response organization and policies;
- Establishes the overall authority for conducting emergency operations;
- Describes the hazards that the plan intends to address; and
- Assigns responsibility for emergency planning and operations.

A current and detailed local emergency plan ensures that the community is prepared to take immediate action in the event of an emergency.

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 Emergency Operation Center (EOC) is a central location where response personnel can coordinate and make decisions in support of activities required at the site of an emergency. The EOC integrates personnel, procedures, communications and equipment into a common system with responsibility for coordinating an emergency event. In larger flood events, neighbouring local authorities may choose to run a joint emergency operation centre.

The range of local authority response can vary dramatically depending on the severity of a flooding event and the resources available within the local authority. During flooding events, the local authority, in accordance with its emergency plan(s) may, in varying order:

- Identify and monitor any sites at risk;
- Make any preparations necessary, including completing outstanding mitigation work;
- Provide the public with flood safety information and pre-determined local response information; and
- Implement flood protection measures.

At the onset of flooding, a detailed log of damages, with photographs, should be initiated. This will help validate and maximize any financial assistance claim submissions. As well the local authority should:

- Activate emergency plans;
- Activate their EOC;
- Notify the PREOC of local emergency response activities;

- Prepare a situation report and distribute to the PREOC and other appropriate agencies or EOCs on a regular basis;
- Issue evacuation notices and, coordinate evacuations as necessary;
- Establish local call centres for public inquiries as necessary; and
- Provide post-flood information about health issues, cleanup, etc.

If the local authority requires access to the emergency powers in the *EPA*, including the ability to evacuate its citizens, a state of local emergency should be declared. The process by which a state of local emergency is declared and used is outlined in the publication, Declaring a State of Local Emergency in BC which is available on the EMBC website.

The *Compensation and Disaster Financial Assistance Regulation* of the *EPA* sets out the local authority emergency response costs that are eligible for reimbursement from the province. Local authorities are encouraged to work with EMBC to assess what costs are eligible and the appropriate procedures for submitting a claim.¹

For any provincial assistance with emergency management activities, local authorities should contact their EMBC regional office.

¹ Eligible costs include but not limited to emergency social services for people displaced from their homes, emergency operations centre costs, and even site security for evacuated homes. EMBC will provide local government 100% support for costs in relation to response to an emergency, and up to 80% for recovery activities from an event if DFA is approved.