



Consequence Management Series  
**BC Flood Plan**

2007 Edition

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## Foreword

Effective consequence management involves planning for, responding to and controlling an event to minimize risk and reduce the negative effects from that event.

In BC, lives, homes, businesses, property and infrastructure may be threatened by floods. Whether flooding occurs from a sudden onset event due to unpredictable rains and storms or slowly developing situations due to run-off from melting snows, being prepared to respond is critical.


This British Columbia Flood Plan (BC Flood Plan), describes the concept of operations for responding to and managing a flood hazard event and its consequences whether the flood is a single event or in conjunction with another event such as an earthquake. This plan specifically relates to flood hazard management although some of the same responses and actions may be used for various other emergency events. (See the PEP Web site for other hazard-specific plans.)

Enhanced readiness and response activities require the assistance of all partners in the BC Flood Plan. This plan is a living document that represents an agreement between various ministries and agencies of the provincial government.

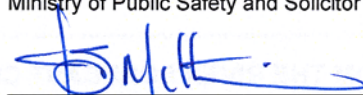
The plan, originally developed in 1992, is reviewed and revised by the Provincial Emergency Program to meet changing needs and new technologies.

This document fits as a component to the British Columbia Emergency Response Management System (BCERMS) which is a comprehensive all-hazards emergency response management structure. BCERMS provides a framework for a standardized process for organizing and managing a coordinated and integrated response to emergencies and disasters in BC.

This plan is approved for use by the four ministries responsible and replaces all previous versions, including the BC Flood Plan 2006 Edition.



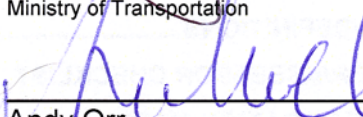
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## Preamble for Flood Hazard Consequence Management

The Province of British Columbia may experience flooding throughout the entire year, due to natural or human-made conditions and geography. Some communities are more susceptible to fall flooding due to heavy rains or rain-on-snow events, while other communities are susceptible to spring freshet flooding from rapid snow melt. The province, in general, remains susceptible to flooding by intense precipitation which may occur at any time of the year. Ice jams, reservoir releases and mechanical failure of flood protection works may also cause flooding anywhere in the province.

Freshet is the period of time in the spring, typically from April to July, where rivers swell from snowmelt. Freshet flooding may occur where atmospheric conditions lead to rapid melt and stream channels become overwhelmed. Freshet flooding can generally be forecast using information related to snow packs, predicted weather and knowledge of stream channel capacities. These forecasts generally create a foundation for an enhanced level of readiness.

Less predictable are localized weather conditions such as rain-on-snow or intense rain events. Each situation demands specialized attention and unfortunately, neither provides adequate advance warning, making response reactionary.

Localized or regional weather may cause ice jams anywhere on a stream including large rivers. Ice jams may form in intense cold where ice forms on the stream bottom becoming anchor for further ice development or reducing the ability for other floating ice to pass downstream. Where conditions persist, the ice continues to grow and will eventually dam the river. Alternatively, ice runs formed by the release of developed ice sheets flow downstream and accumulate in river sections eventually choking the river. Generally, the resulting flood occurs upstream of the ice dam until the reservoir formed behind the dam breaks through or finds an alternative path around it. River level changes may be rapid or gradual.

Mechanical failure of flood protection works or human-made dams have potential for flooding and are generally not predictable. Also difficult to predict are sudden releases by natural reservoirs formed by beavers or landslides.

The BC Flood Plan describes the methodology the British Columbia Provincial Government (the Province) will utilize for coordinating activities to manage a flood event. This includes laying the foundation for describing a flood event, the structure to be utilized, and the general expectations for roles and responsibilities of other levels of government, provincial ministries and agencies and other stakeholder groups.

Local Authorities, as described under 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.

The legislation outlined below provides details on the roles, responsibilities and authority of local authorities and the Province and what they need to have in place to be prepared for emergencies. In addition to the legislation, there are a number of tools to help local authorities be disaster ready. These tools include evacuation guidelines, a community recovery guide, a hazard, risk and vulnerability analysis tool kit, a community emergency program review and the BCERMS site support level guidelines. (See the reference section of this document for Web site locations of these tools.)

## Legislation

**Emergency Program Act, 1996**, details roles and responsibilities of the Province, sets out local authority emergency organization, provides information declaring local or provincial emergencies and the extraordinary powers a declaration provides.

**Emergency Program Management Regulation, 1994**, details the responsibilities and authorities of provincial ministers, ministries, programs, and government corporations and agencies.

**Local Authority Emergency Management Regulation, 1995**, outlines what must be in a local emergency plan as well as the powers and responsibilities of a local authority.

**Compensation and Disaster Financial Assistance Regulation, 1995**, details eligibility requirements, payment limits, and payment processes for all DFA claims whether for an individual or a local authority.

**Dike Maintenance Act, 1995**, 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.

**British Columbia Dam Safety Regulation, 2000**, provides guidance on the application process as well as reporting and inspection guidelines specific to dams.

## Flood Management Phases

Flood management will be undertaken in four phases. These are:

1. Planning
2. Preparedness (Readiness)
3. Response
4. Recovery



### Phase 1 – Planning and Pre-Flood Preparation

Phase 1 may be described as the normal day-to-day operations for the province to monitor river levels, provide oversight to dam and dike owners, continue efforts in planning and exercises, and provide for mitigation. The province may, from time to time, provide strategic recommendations to local authorities and engage in flood response training or exercises. The River Forecast Centre of the Ministry of Environment (MoE) provides flood forecasts and bulletins [per [Schedule 2 EPM Reg](#)] as necessary through the spring and fall flood windows.

To maximize resources and to ensure coordinated approach to potential flood events, local authorities, the Provincial Emergency Program (PEP) regional manager and representatives of MoE and the Ministry of Transportation (MoT) 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 Provincial Emergency Coordination Centre may activate to help coordinate planning and preparations. The Provincial Regional Emergency Operations Centres may follow suit to coordinate and integrate regional activities. The Central Coordination Group may meet to establish priorities.

In this phase, a local authority may consider identifying a flood observer/assessor to identify and monitor any sites at risk.

### ***Phase 2 – Preparedness (Readiness)***

Phase 2 occurs when flooding potential is possible. Special resources may be pre-positioned, advisories are prepared, the Central Coordination Group (CCG) meets and active communication between local authorities and the Province occurs regarding the potential for flooding.

The local authority should ensure their Emergency Operations Centres (EOCs) are ready and staff are contacted; in addition, all related plans, including recovery plans are reviewed. Local authorities should provide public information about the risks of flooding and what individual, families and businesses can do to be prepared.

Diking Authorities should actively monitor their flood protection works to ensure that such things as electrical connections are functional, and any gates or valves are operational and clear.

The PEP regional manager will ensure that Temporary Emergency Assignment Management System (TEAMS) staff and other agency representatives that will be incorporated into the structure are prepared to staff Provincial Regional Emergency Operations Centres (PREOCs) on short notice to support local authorities. PEP headquarters will also prepare to activate the Provincial Emergency Coordination Centre (PECC) to support all flood response efforts throughout the province.

The province may hold regional information meetings with local authorities to provide flood event information as possible and to ensure technical experts are available to answer questions.

### ***Phase 3 – Response***

Phase 3 is described as when flooding is imminent to occurring or when an emergency response is initiated. Generally, this will occur when river stage (water height) is expected to reach or exceed stream channel capacity resulting in water threatening or impacting any people, property, or infrastructure.

EOCs, PREOCs and the PECC will be activated commensurate to the level of response required. The response phase is broken down into stages and will generally depict the activation level required. Events may dictate a non-linear or circular path through the response stages and may move up or down as the conditions improve or deteriorate further. The response stages are defined as:

1. Flood Alert
2. Flood Order
3. All Clear

















































