

Alberta's Flood Recovery An Overview

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Presentation Outline

Alberta's Largest Natural Disaster

- The Initial Response
- Alberta's Approach To Flood Recovery
- Improving Alberta's Flood Resiliency



Alberta's Flood Recovery

Alberta's Largest Natural Disaster







Calgary Downtown September 22, 2012





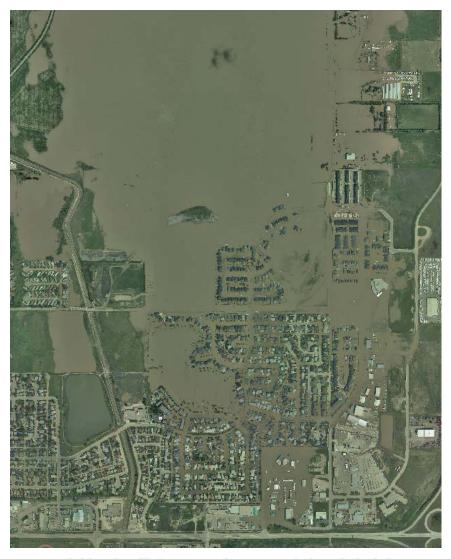
Calgary Downtown June 22, 2013



Government of Alberta



High River September 3, 2011



High River June 22, 2013



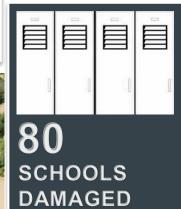


























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Alberta's Flood Recovery

The Initial Response



Organized Response

- Setup emergency operations centres in affected communities
- DRP registration centers at a pace unprecedented in Canada
- Pre-loaded debit cards: \$1,250 per adult and \$500 per child
- Support for relief centres, including food, clothes and supplies
- Resources to start repairing and rebuilding critical infrastructure



Laying The Foundation For Recovery

GoA mobilized a task force to lead recovery

 Ministries monitored and provided regular status reports on the conditions of roads, bridges, hospitals, schools, parks, etc.



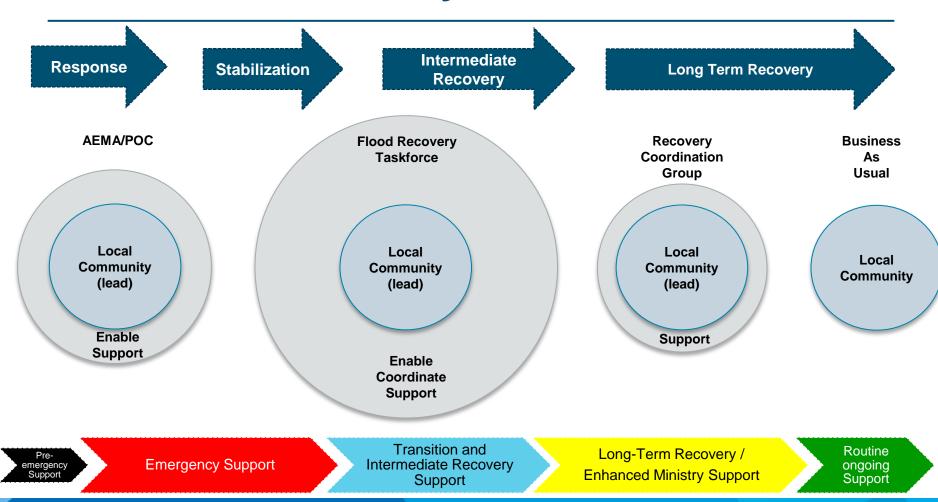


Alberta's Flood Recovery

Alberta's Approach To Flood Recovery



Provincial Recovery Framework





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Recovery Elements

ENVIRONMENT

- Biodiversity, ecosystems & natural resources
- Amenities
- Waste & pollution management
- Mitigation

LOCAL COMMUNITY and STAKEHOLDERS

PEOPLE

- Safety
- Health
- Social well-being
- Mitigation

RECONSTRUCTION

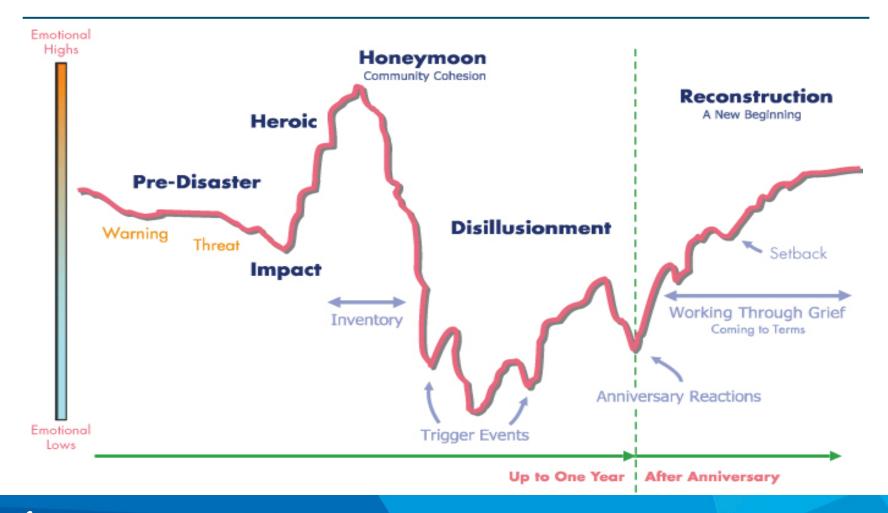
- Residential & commercial buildings
- Utilities
- Infrastructure, communications & transport planning
- Mitigation

ECONOMY

- Individual
- Small Enterprise
- Medium Enterprise
- Large Enterprise
- Tourism
- Mitigation



Phases of Disaster Mental Health





Flood Recovery: Communities and Individuals

- Regional Recovery Coordination
 - Direct engagement with communities
 - Enable/support community led-recovery
 - Integrating function-Example: NGO's
- Community Flood Mitigation Planning
 - Flood mitigation framework
 - Cross ministry team
 - Mitigation Symposium held October 4, 2013



Flood Recovery Plan

GoA Flood Recovery Plan:

- Shared understanding of core vision, principles and outcomes
- How recovery outcomes are achieved
- Recovery for this year and beyond
- Links recovery achievements to Albertans' priorities
- Defines accountability for recovery projects



Alberta's Flood Recovery

Improving Alberta's Flood Resiliency



Flood Mitigation Framework: Purpose and Principles

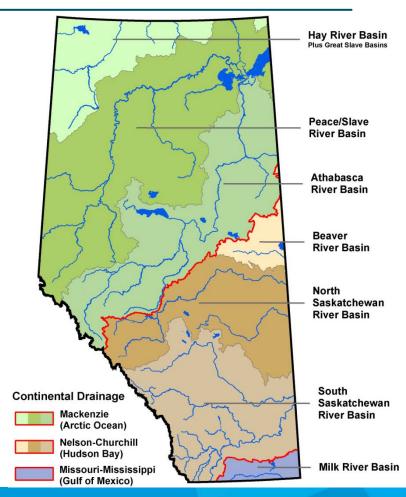
- Preparedness, protection and resilience
 - Reduce risk
 - Define the "1:100" standard as a 1% chance in any given year
- Assess, select, coordinate and implement mitigation measures and policies. Evaluate based on:
 - Understanding of causes and analysis of risks
 - Scientific and engineering assessment of impact and efficacy
 - Social, environmental and economic cost/benefit
- Flooding cannot be prevented, but we can be better prepared



Watershed Management

"System of Systems" Approach

- River basins where flooding and drought risks are highest
- Each river basin as a system
- Implement best combination of upstream, local, individual and policy-based mitigation measures to protect against 1:100 flooding events
- Enhance the ability to protect against water shortages as well





The Seven Key Elements of Mitigation

- 1)Overall Watershed Management System-wide view.
- 2)Flood Modelling, Prediction, and Warning Systems Tools to prepare Albertans for future floods.
- 3)Flood Risk Management Policies
 Rules that will reduce the risk to people, infrastructure, the environment and economy.
- 4) Water Management and Mitigation Infrastructure Layers of flood protection at the regional level.



The Seven Key Elements of Mitigation

5) Erosion Control Resiliency of our river systems to handle high water flows.

6)Local Mitigation Initiatives – by municipality Layers of flood protection at the local level.

7)Individual Mitigation Measures for Homes Flood protection for homes most at-risk.



The Alberta Flood Mitigation Strategic Plan

System of Systems

- Hydrology basins, watersheds, streams
- Water management and planning agencies
- 3. Land management and planning agencies

7 Elements of Mitigation

- 1. Overall Watershed Management
- 2. Modeling, Prediction, and Warning
- 3. Policies
- 4. Water Management Infrastructure
- 5. Erosion Control
- 6. Local Authorities
- 7. Individual Homes

Stakeholders

Albertans

First Nations

Local Authorities

WPACs

Non-Governmental Organizations

TransAlta

Industry

Irrigation Districts

Deliverables:

IMMEDIATE (Now-Spring 14)

- 1. Erosion Control Program implemented
- 2. Investigate Bow River operations
- 3. Municipal Implementation of Recovery Plans starts
- 4. Confirm long term feasibility and constructability of engineering projects
- 5. Expedite Engineering Review of Pilot EQ1
- 6. Funds for impact and efficacy evaluations of nonengineering projects are made available.

SHORT (Spring 14-Spring 15)

- 1. Initiate Highwood Diversion
- 2. Complete list of projects submitted by July 14
- 3. Review and gap analysis of existing infrastructure completed
- 4. Complete modeling, prediction based on the existing infrastructure and proposed projects.
- Detailed design and development plan developed (December 2014)

MEDIUM (Spring 15-Fall 16)

- 1. Construction of water management infrastructure begins
- 2. Full slopes to plains system identified
- Complete waterway infrastructure requirements as identified
- 4. Natural watershed solutions and implementation plans developed
- 5. Legislative and policy solutions fully developed and implemented
- 6. Water and waste-water solutions implemented
- 7. Robust emergency management plans in place across Alberta municipalities
- 8. Area strategies complete and ready for final stage development

LONG (Fall 16-Spring 20)

- 1. Long-term engineering solutions begin to come on-line
- 2. Water management governance structure fully realized and in place
- 3. Land Use Framework and Mitigation and Resilience Framework are fully integrated
- 4. Final development of municipal mitigation and resilience plans completed.

As required: Environmental Impact Assessments and Regulatory Review

On-going: Regular Stakeholder Engagement throughout; Other priority capital and policy projects in Alberta continue

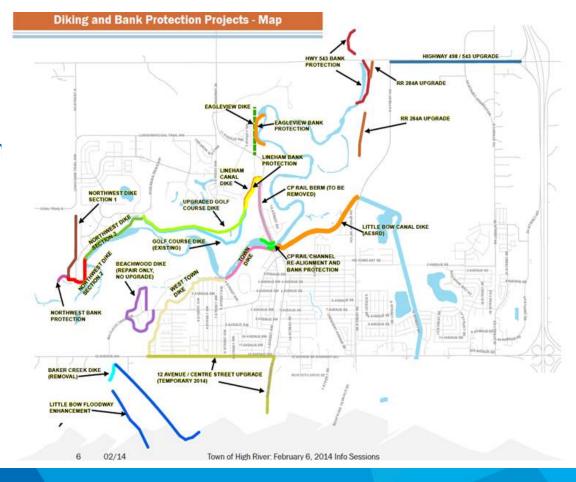
Mitigation Focus

- Project proposals which increase flood and drought resilience and reduce vulnerability
 - Water detention/retention/storage
 - Water diversion
 - Aquifer recharging
- Proposals to reduce risk
 - Relocation
 - "Hardening" of infrastructure



Mitigation project examples

- High River \$83M
 - Removal of CP Rail bridge
 - Wallaceville relocation
 - Berms





Received proposals – detention/storage



- Several sites examined.
- Conceptual design on dry dams is under development.
- Also looking at off-stream storage options.

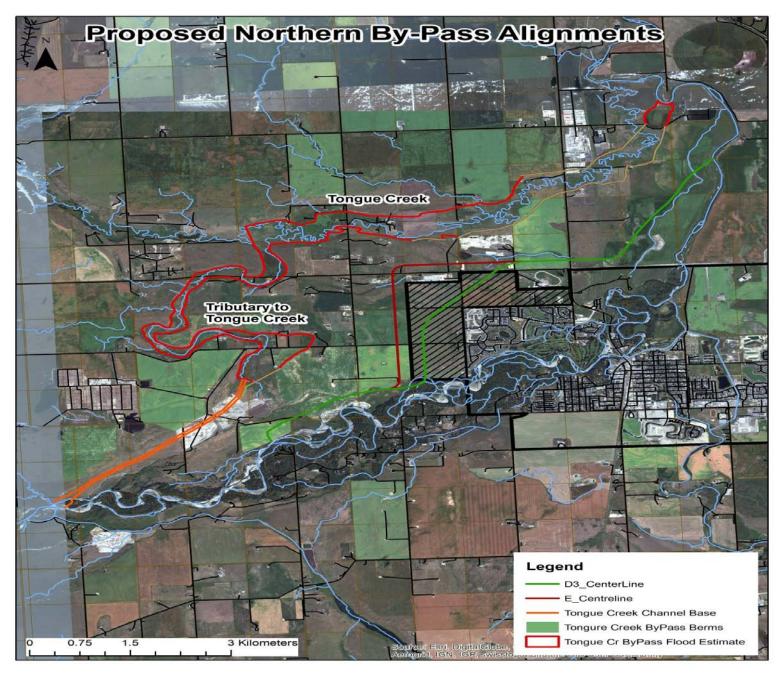


Highwood Diversion

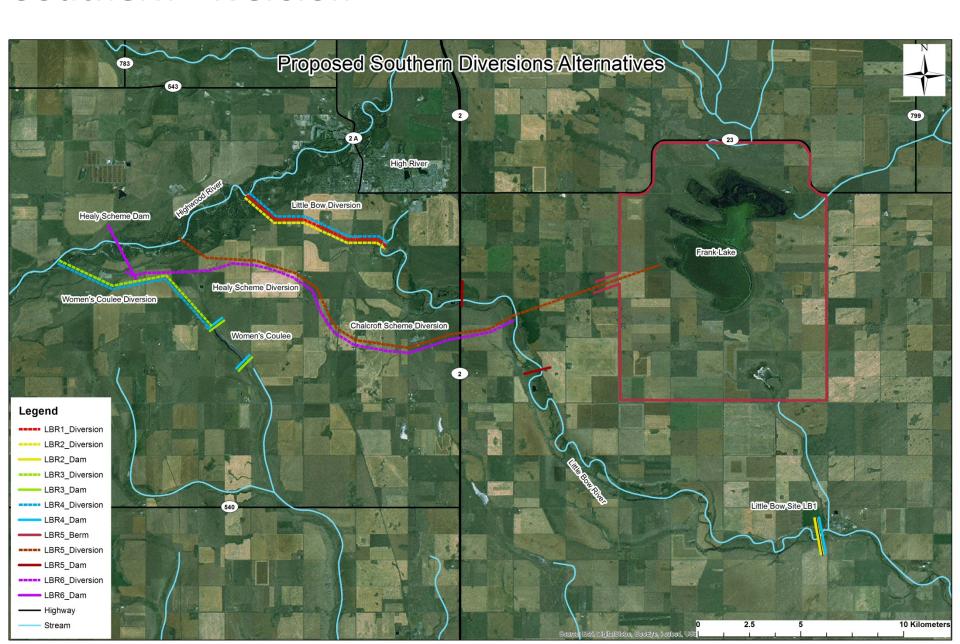
- 15 routes were reviewed.
- North and south alignments are being considered.



Northern **Diversion**



Southern Diversion



Current activity

- AMEC & AECOM: South Saskatchewan river basins.
- Golder/IBI & Stantec: Athabasca and Red Deer River basins.
- Stakeholder consultation and engagement on-going
- Non-structural mitigation options also being considered.
- Symposium April 29th
- Spring readiness sessions
- Flood mitigation website: http://www.gov.ab.ca/Flood-mitigation.cfm

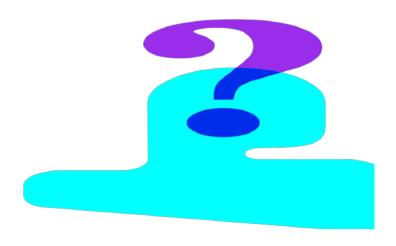


Available information

- Respecting Our Rivers 7 principles of mitigation <u>https://pabappsuat.alberta.ca/albertacode/images/Key-Elements-of-Mitigation1.pdf</u>
- Resilience & Mitigation Framework philosophy behind approach http://alberta.ca/AlbertaCode/images/Mitigation- Framework.pdf



Questions?



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