Canadian Water Resources Association

Association Canadienne des Ressources Hydriques

CWRA and Indigenous Water Issues

Dave Murray, Past National President

February 6, 2018

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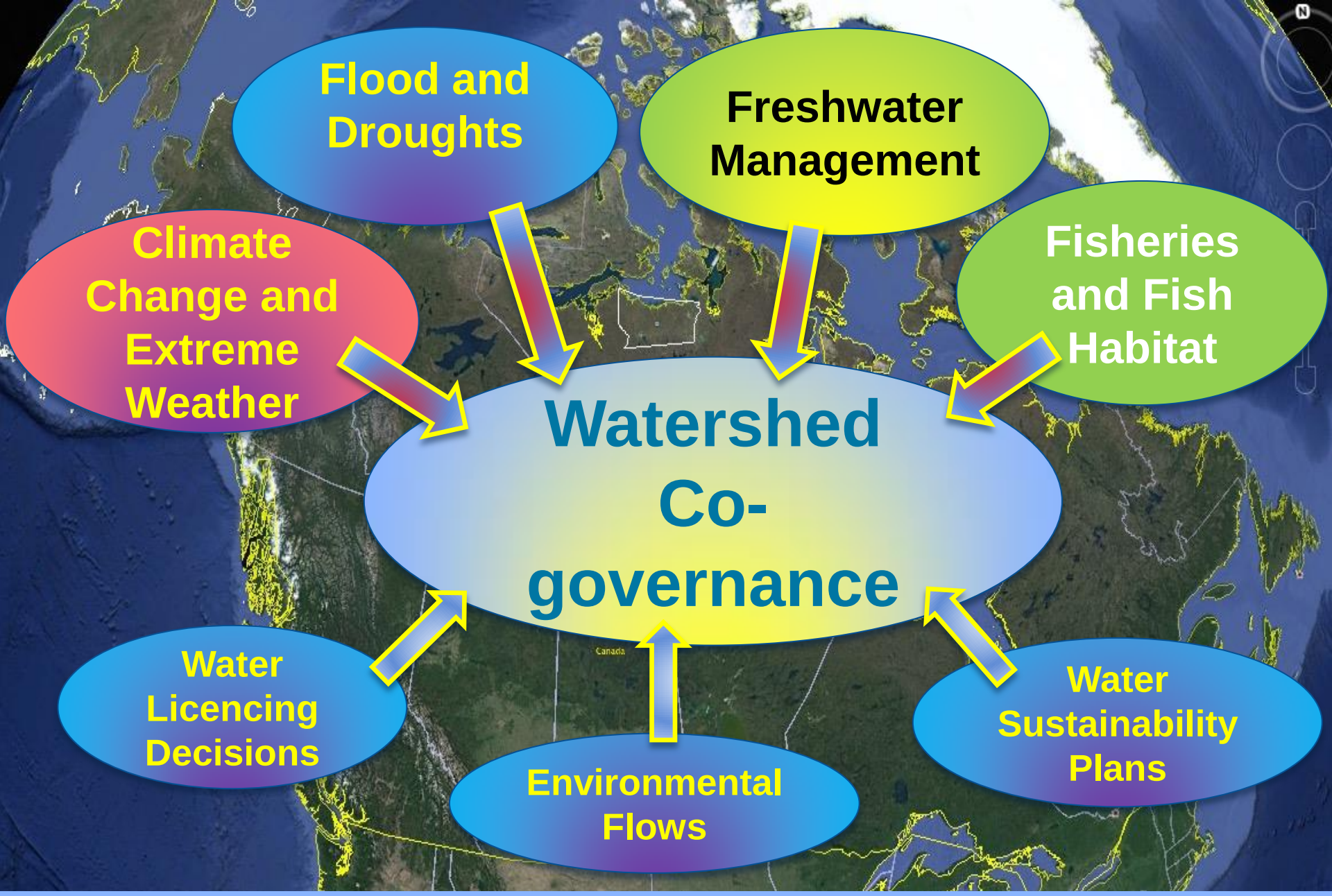
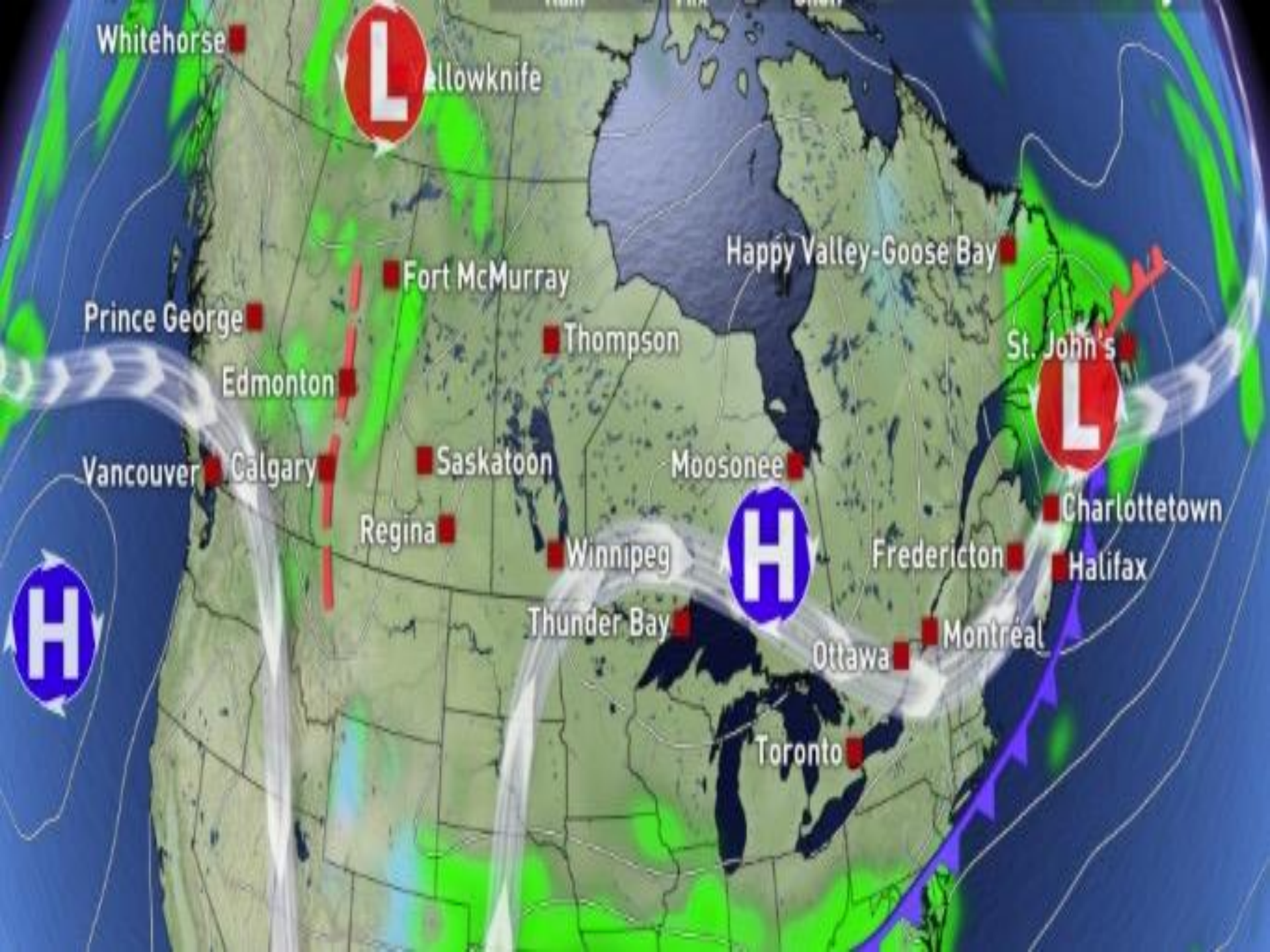
What can CWRA do for AFN

- Top First Nation Water Issues
- Who is CWRA and what do we do?
- Feedback from AFN and collaboration with CWRA?
- CWRA's National Conference May 28-June1 in Victoria

First Nations Water Issues



Sustainable Future


Whitehorse
L
llowknife
Happy Valley-Goose Bay
Fort McMurray
Prince George
Thompson
St. John's
L
Edmonton
Vancouver
Calgary
Saskatoon
Moosonee
Charlottetown
Regina
H
Winnipeg
Fredericton
Halifax
H
Thunder Bay
Montréal
Ottawa
Toronto


Flooding

Flooding

Human Impacts


Adaptation

Sediment Management in Floodplains

Lillooet River, Pemberton/Mount Currie

Cowichan River


Sea Level Rise


Adaptation

We like being near the water

We didn't know there was a hazard

Why are we here?
in the Floodplain that is?

We used to travel easier on the water

This is where we are from

REMEMBER THAILAND

Build Back Better - 2004 Tsunami

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Before

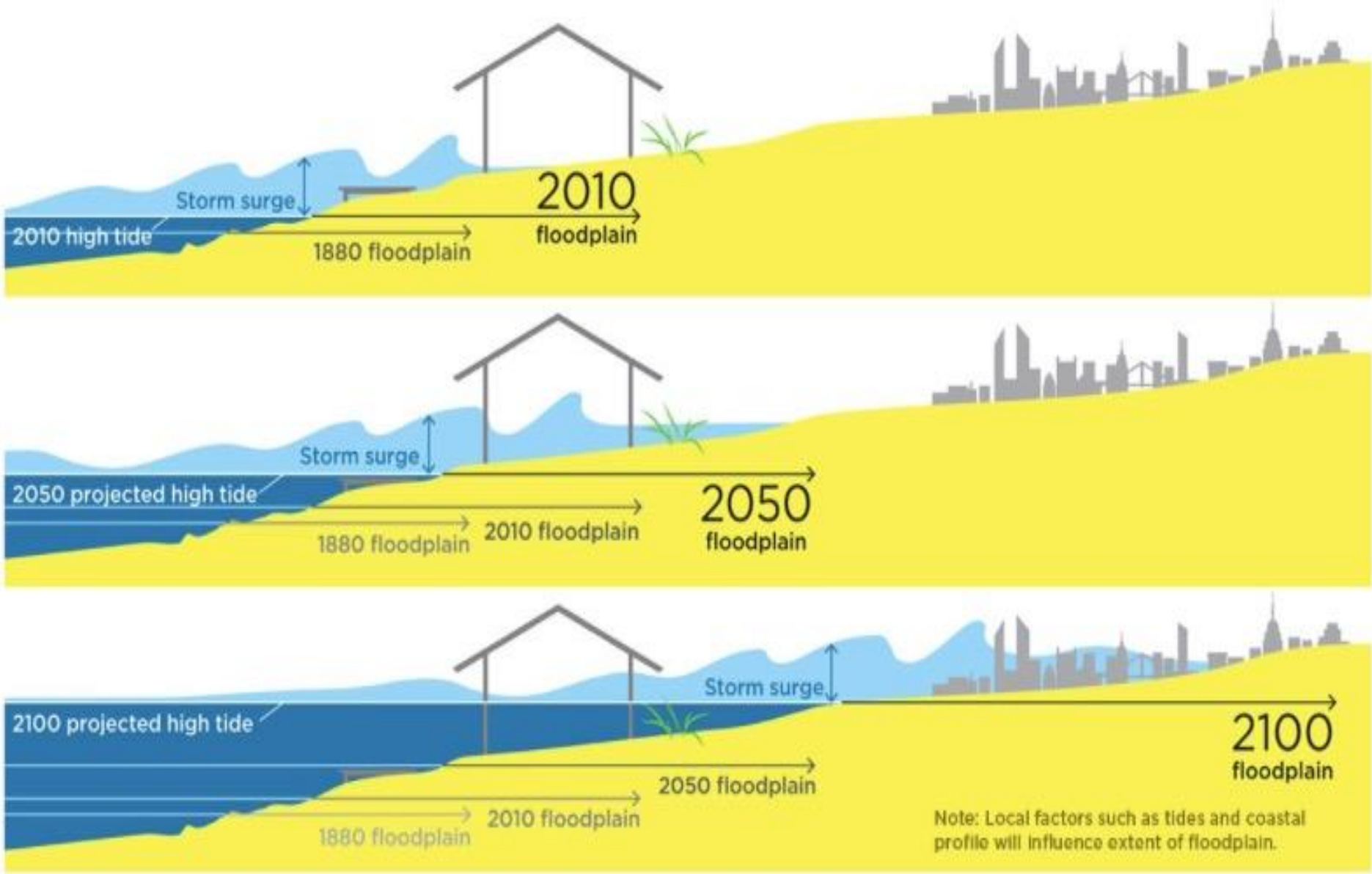
During


After

Awareness

New Aid Housing

Future Coastal Water Levels



Global warming is the primary cause of current sea level rise.

TEMPERATURES ARE RISING

global average temperatures by 1.4° F since the 1880s.

ICE IS MELTING

Shrinking glaciers and ice sheets are adding water to the world's oceans.

OCEANS ARE WARMING

Sea water expands as its temperature rises.

CONTRIBUTIONS TO GLOBAL SEA LEVEL RISE (1972-2008):

Regional sea level rise by the end of the 21st century

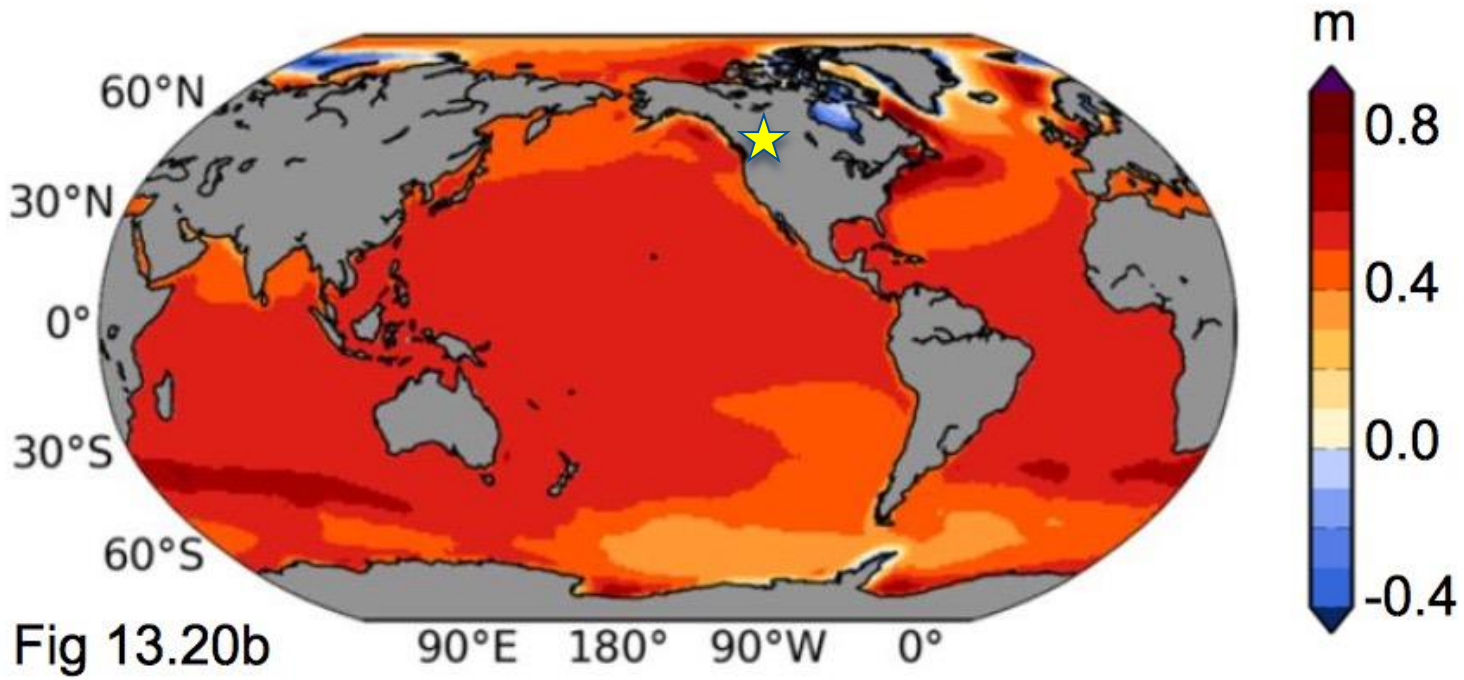


Fig 13.20b

IPCC 2013

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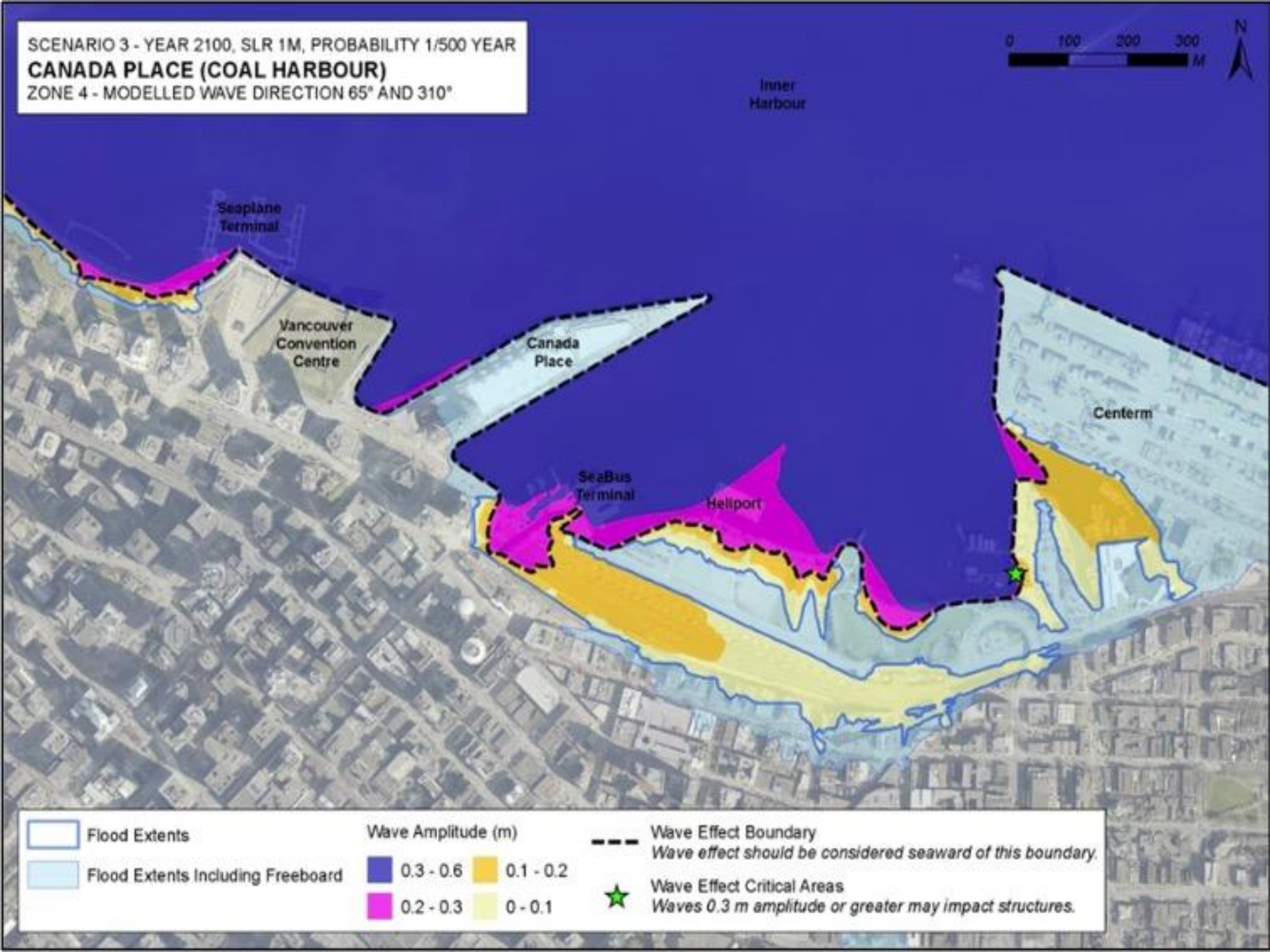
1mi
861 40.708 Degrees
Earthstar Geographics, CNES/Airbus DS
POWERED BY esri


SCENARIO 3 - YEAR 2100, SLR 1M, PROBABILITY 1/500 YEAR
CANADA PLACE (COAL HARBOUR)
ZONE 4 - MODELLED WAVE DIRECTION 65° AND 310°
0 100 200 300 M
N
Inner Harbour
Seaplane Terminal
Vancouver Convention Centre
Canada Place
Centerm
SeaBus Terminal
Heliport
Flood Extents
Flood Extents Including Freeboard
Wave Amplitude (m)
0.3 - 0.6
0.2 - 0.3
0.1 - 0.2
0 - 0.1
Wave Effect Boundary
Wave effect should be considered seaward of this boundary.
Wave Effect Critical Areas
Waves 0.3 m amplitude or greater may impact structures.

Predicted SLR Scenario for BC

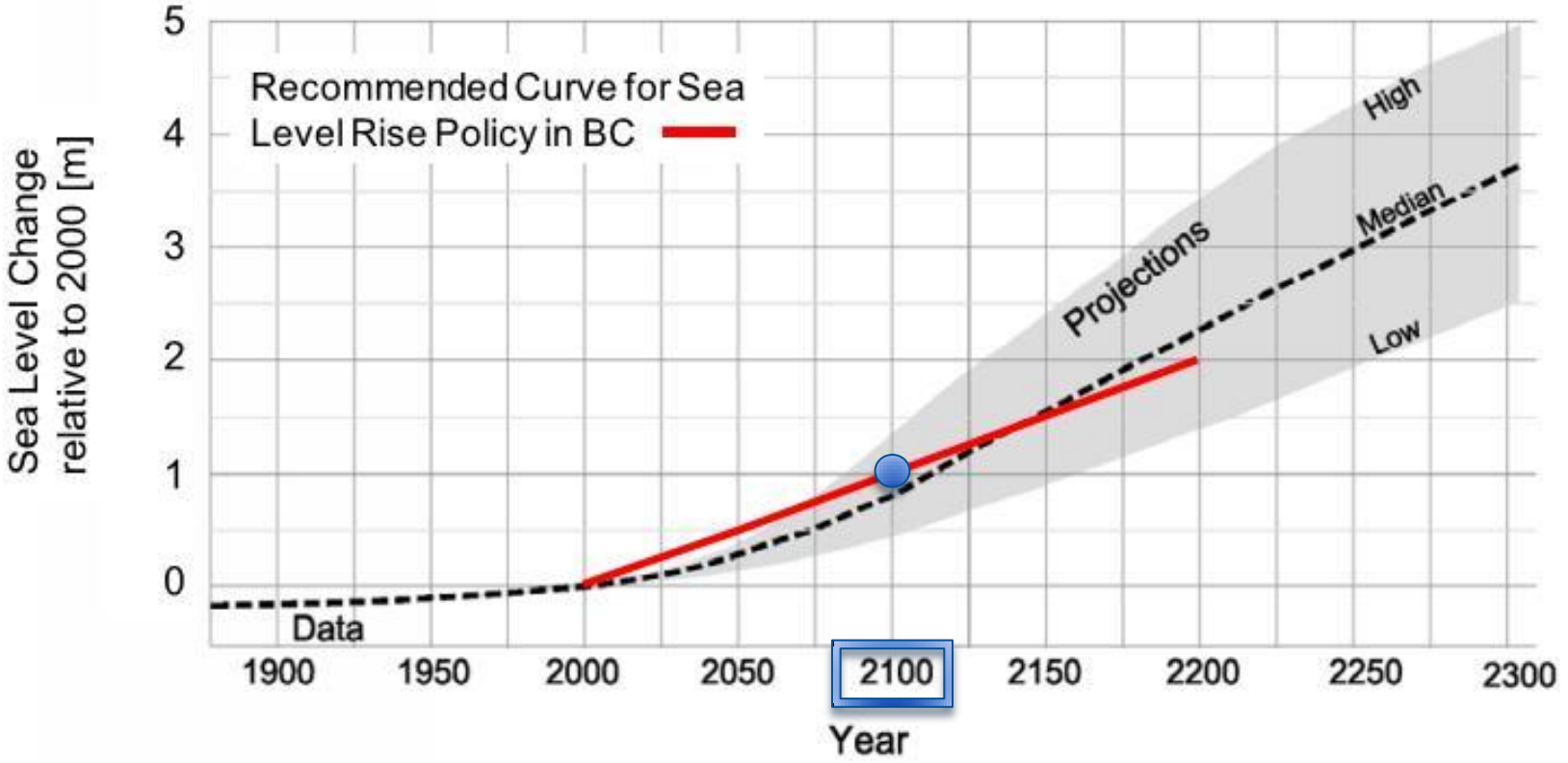


Figure 1: Recommended Global Sea Level Rise Curve for Planning and Design in BC

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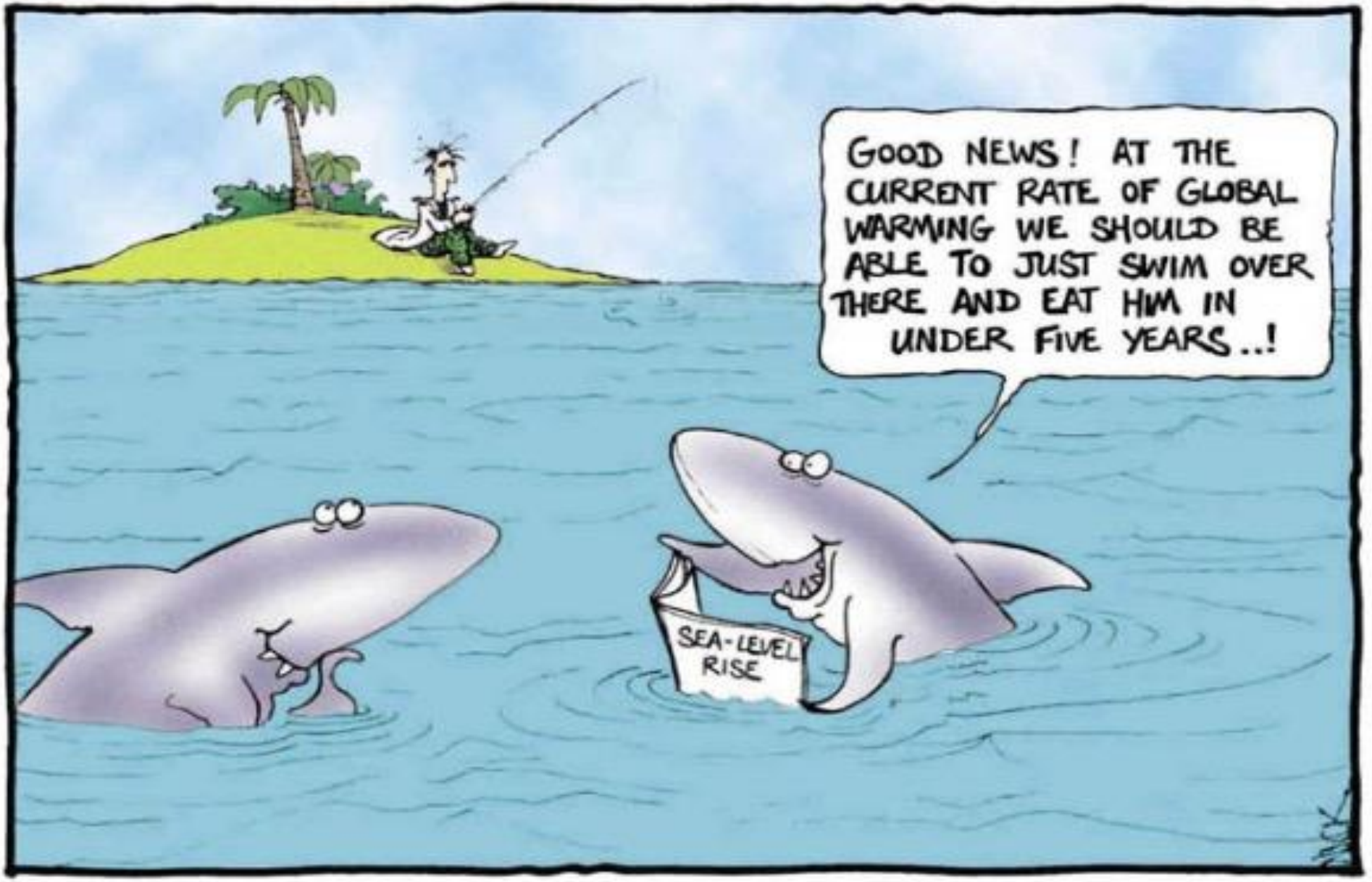
Sunny Summer Day- Esquimalt Lagoon

Stormy Winter Day

Photo: susansweetrun
via instagram



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Drought


Quality


Mitigation
Insurance
Flood Mapping
Forecasting
Land Use
Relocation
Disaster Assistance


Extreme Weather Events
Cost of Damage
Decay of Infrastructure
Consequences
• Flood and erosion
• Sea Level Rise
• Fires
• Sewer back-up

What the future holds

- Rivers: **By 2100** floodplain depth and the lateral flood area projected to increase by about **40%**
- Coastal: By **2100**, coastal flood hazard areas may increase up to **50%**
- Population by **2100** within riverine and coastal flood hazard areas is expected to increase by **130 to 150%**

Reference: Natural Resources Canada 2016

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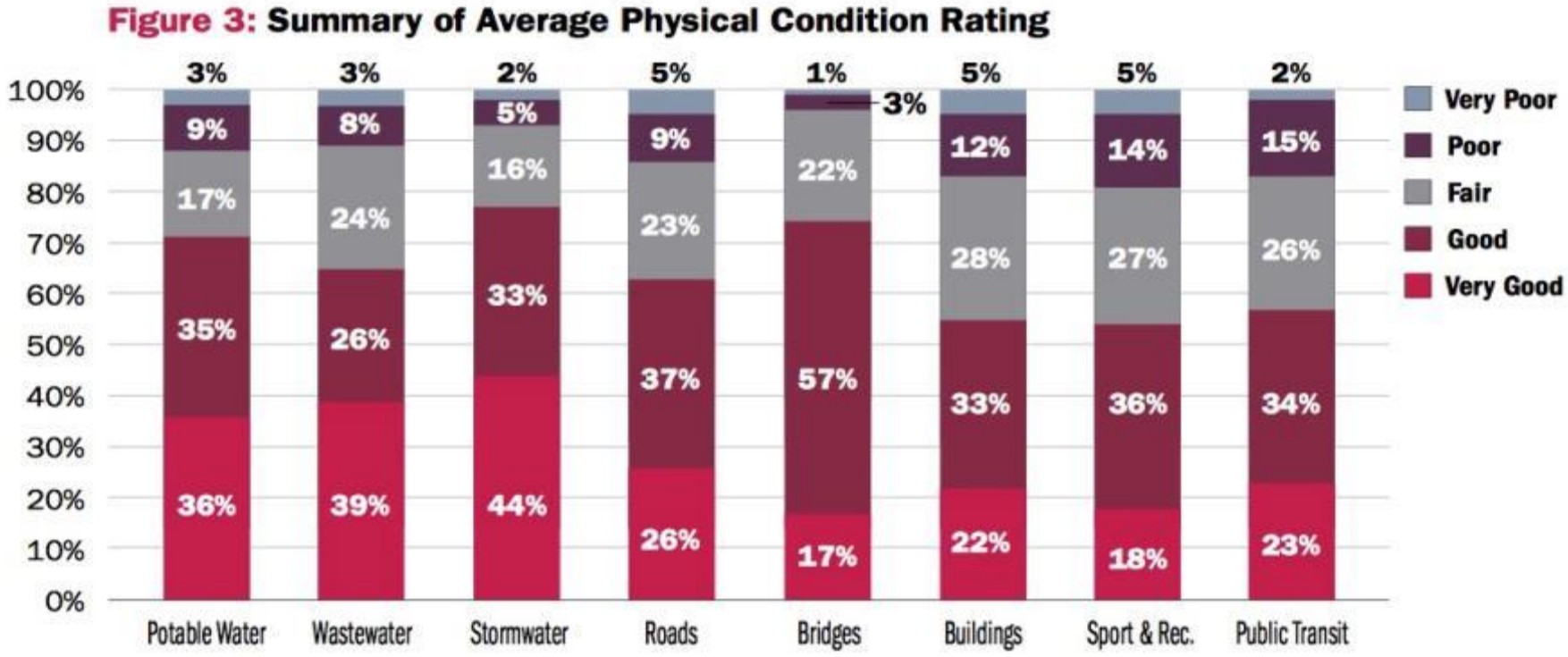

1/3 of our infrastructure is in fair, poor or very poor condition

Source: Canadian Infrastructure Report Card 2016

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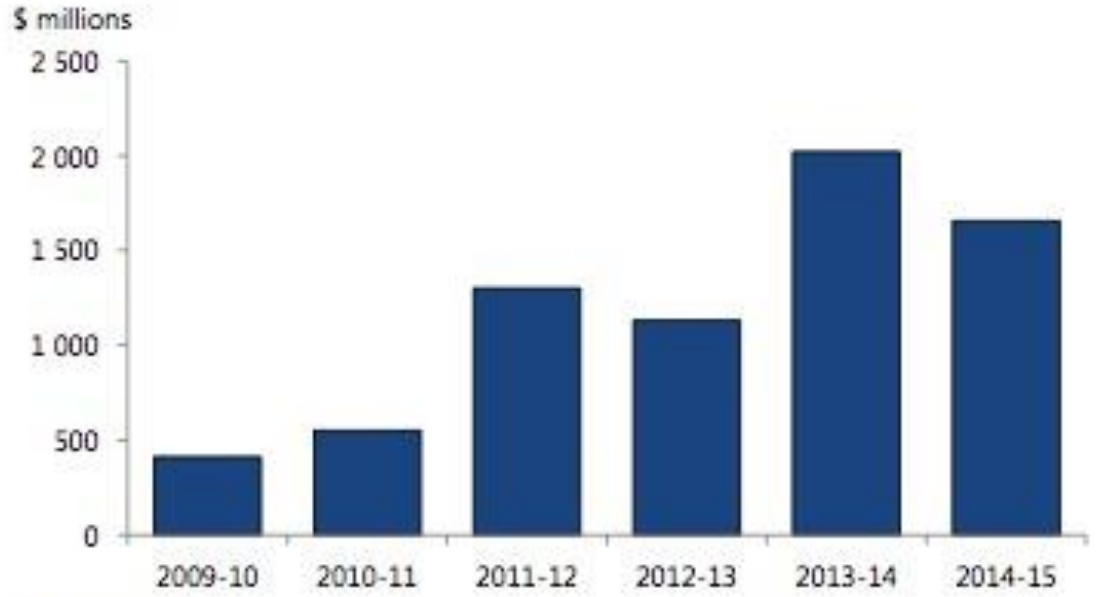
Disaster Financial Assistance

Summary Figure 1 DFAA liabilities



Source: Public Safety.

Canadian Average $900 M per year

Reference: Public Safety Canada 2017

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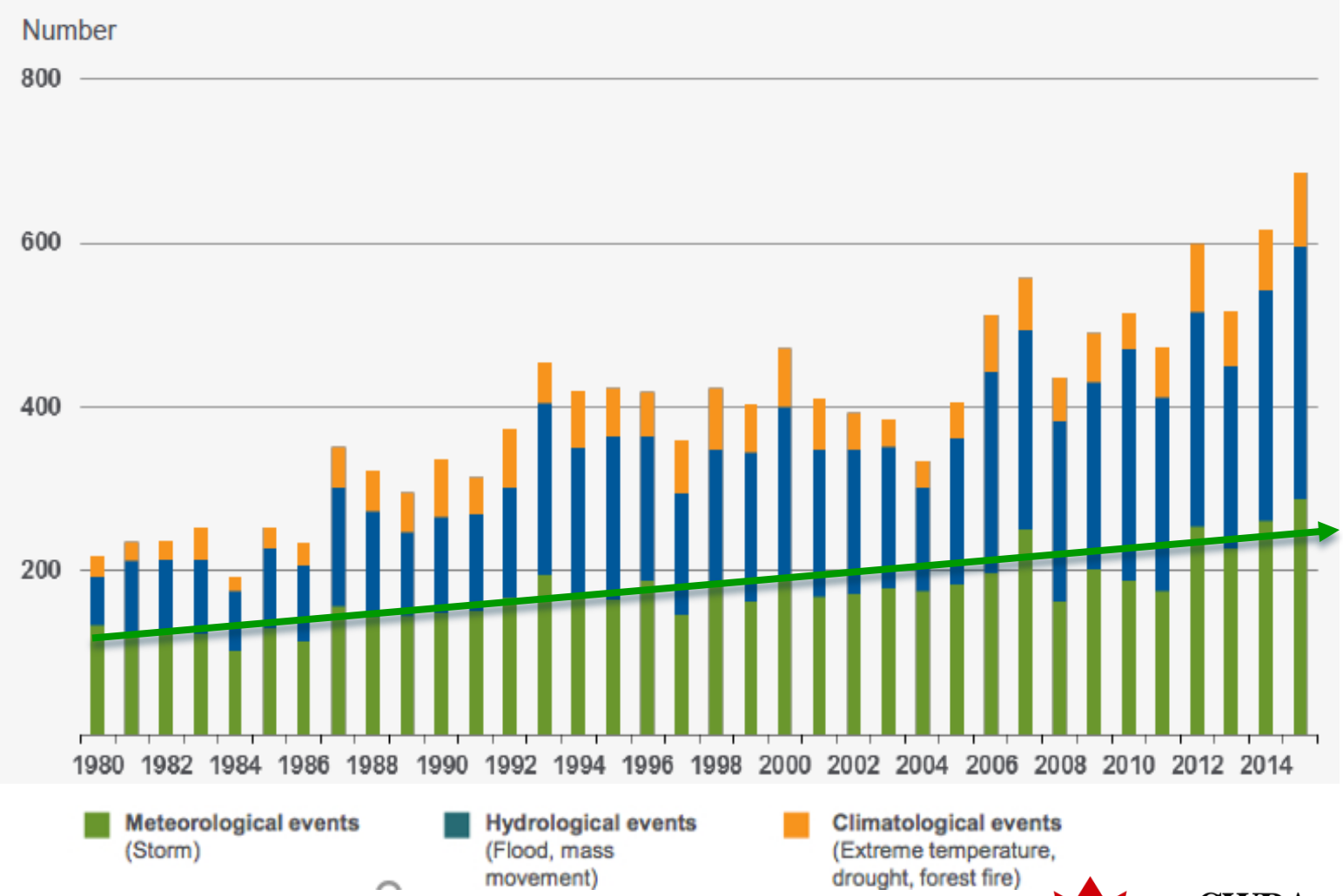
Weather-Related Loss Events



Courtesy of John van der Eerden, Associated Engineering

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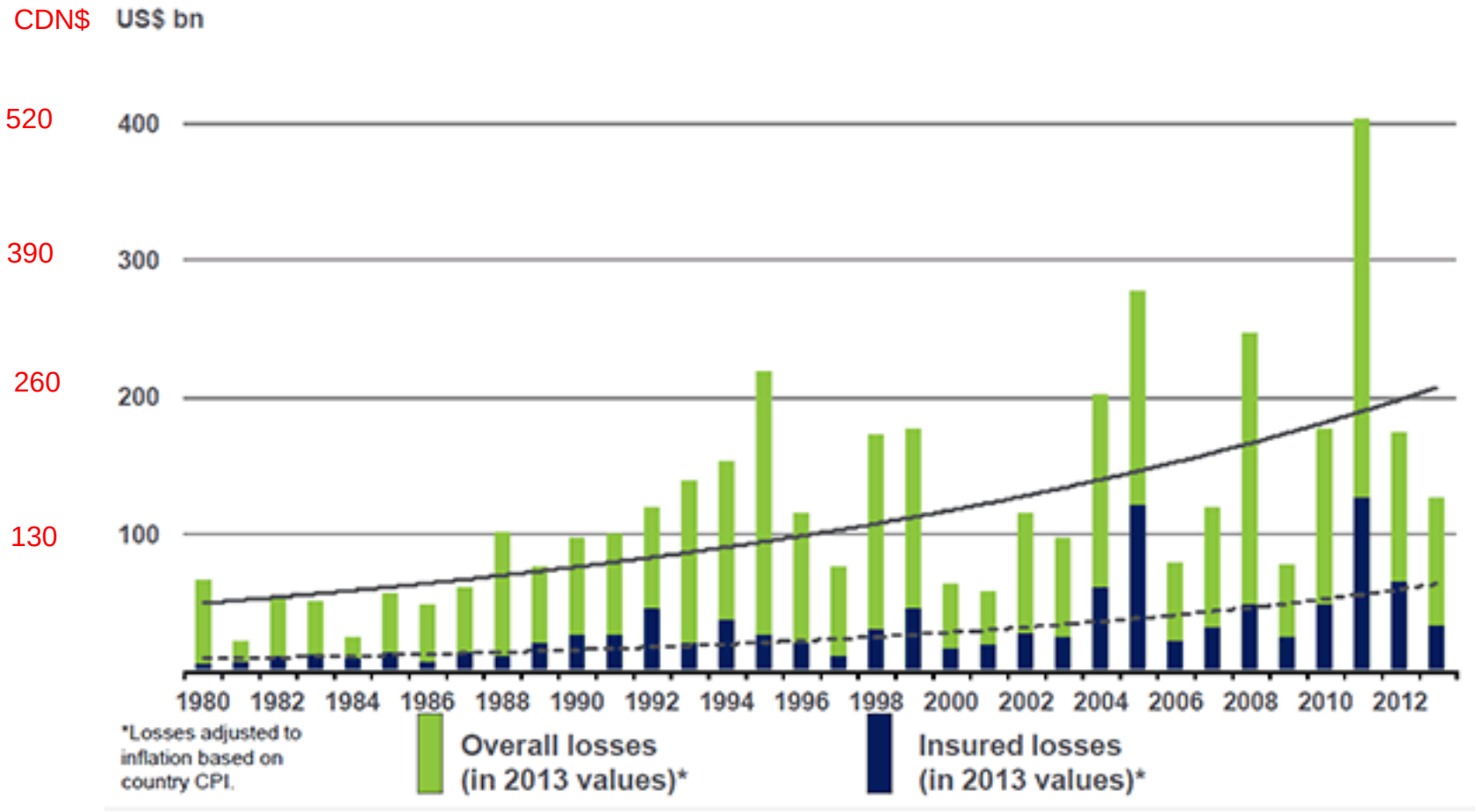
Cost of Damage Worldwide



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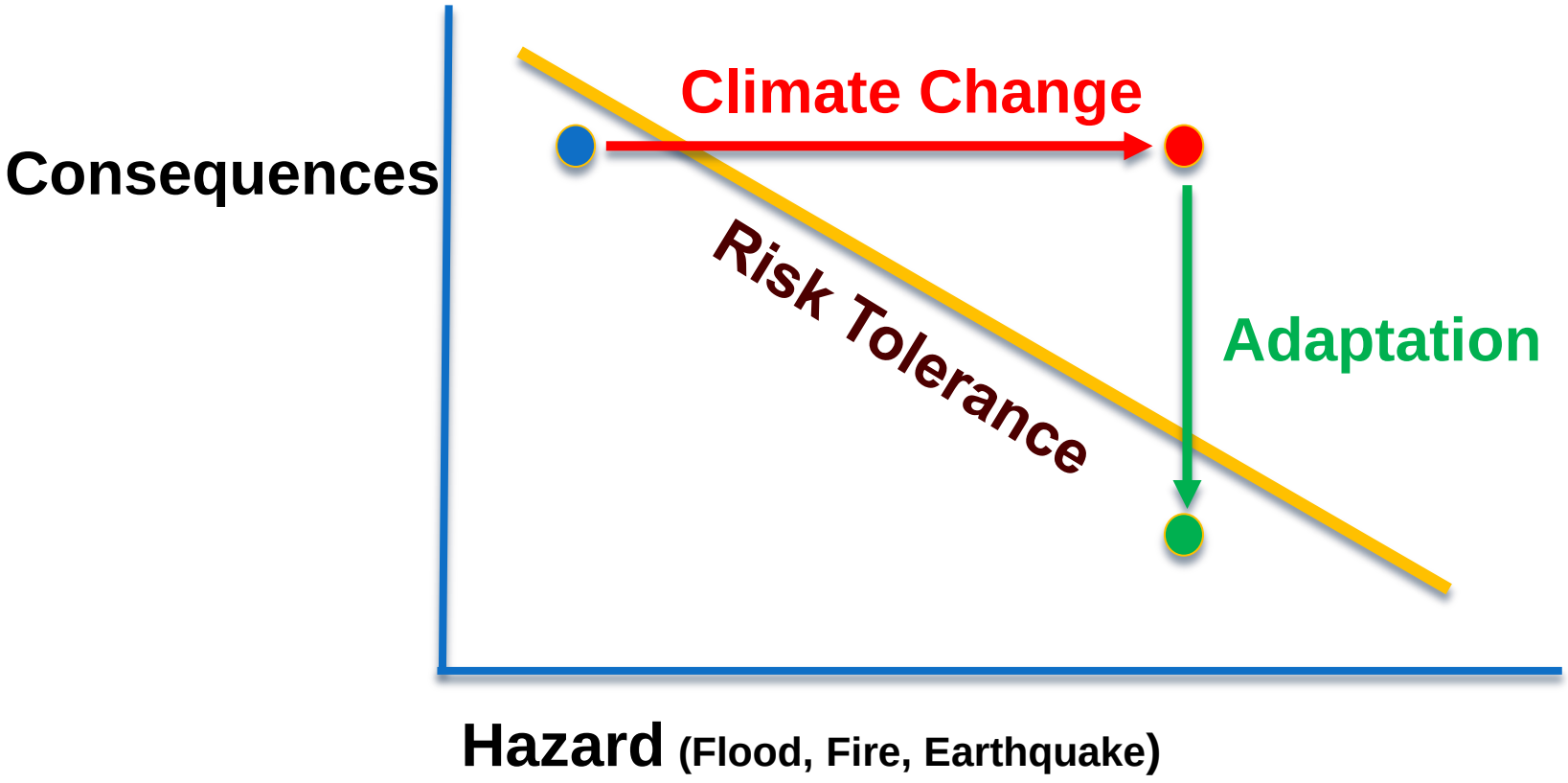
Acceptable Risk



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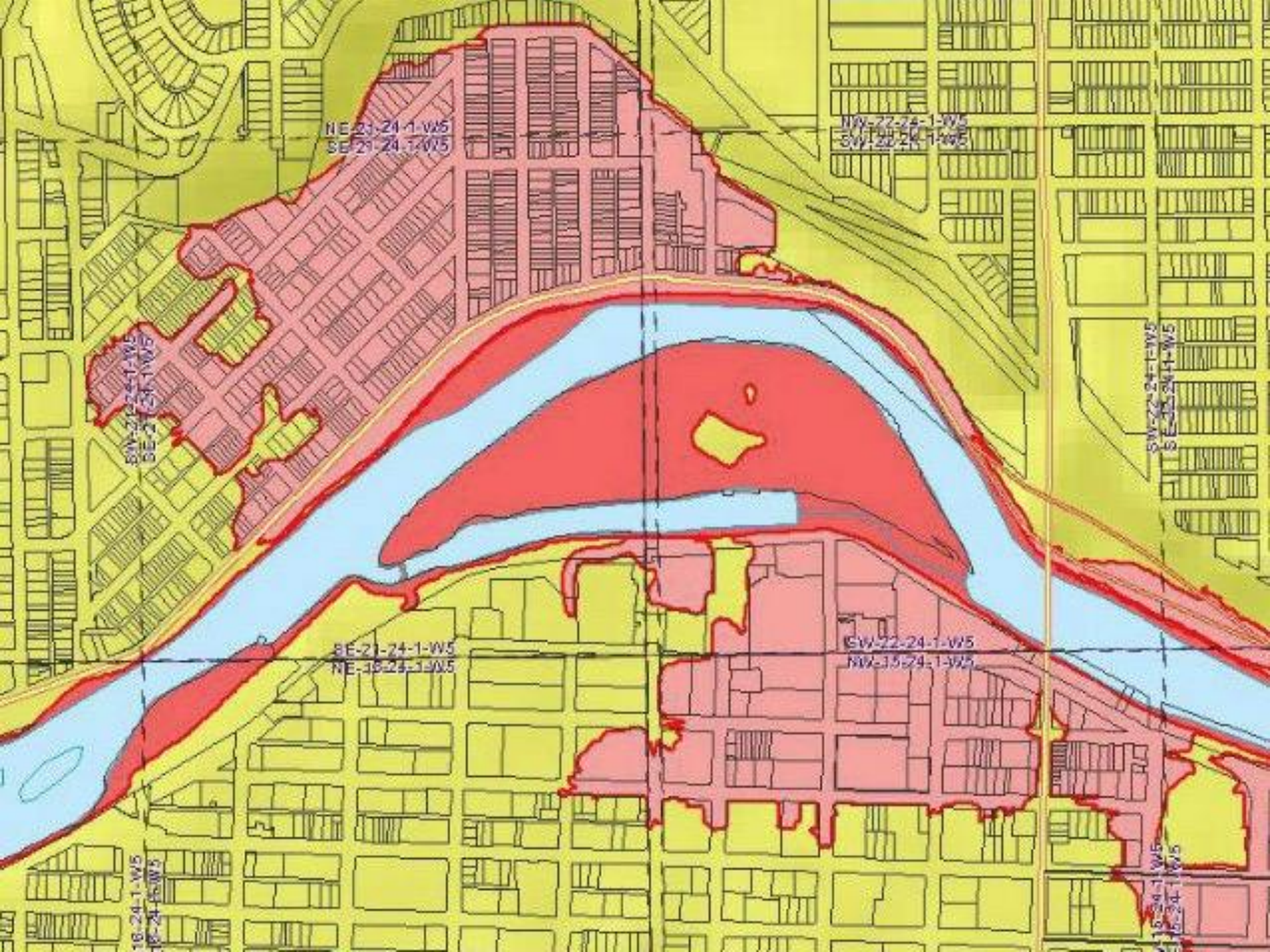
NE-21-24-1-W5
SE-21-24-1-W5
NW-22-24-1-W5
SW-22-24-1-W5
SE-21-24-1-W5
NE-15-24-1-W5
SW-22-24-1-W5
NW-15-24-1-W5

There is hope!

VISION
Vision- where are we going?

VALUES
What matters most to us?

STRATEGIES
High-level approach

PROCESSES
Apply, communicate and implement

PLAN
How do we pull it all together?

Background on CWRA

- Origins in 1948; CWRA formally established in 1968
- Approx. 800 members – individuals & organizations – nationwide
- Full spectrum of water resource professionals (engineers to biologists)
- Branches in 9 provinces
- 4 Affiliates (CANCID, CSHS, SYP, Project WET)
- National Executive Director, National Office

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Who We Are

- Canada's broadest-based not-for-profit water organization
- Water resource professionals from the public, private, and academic sectors
- A volunteer organization dedicated to EFFECTIVE WATER MANAGEMENT (Mission)

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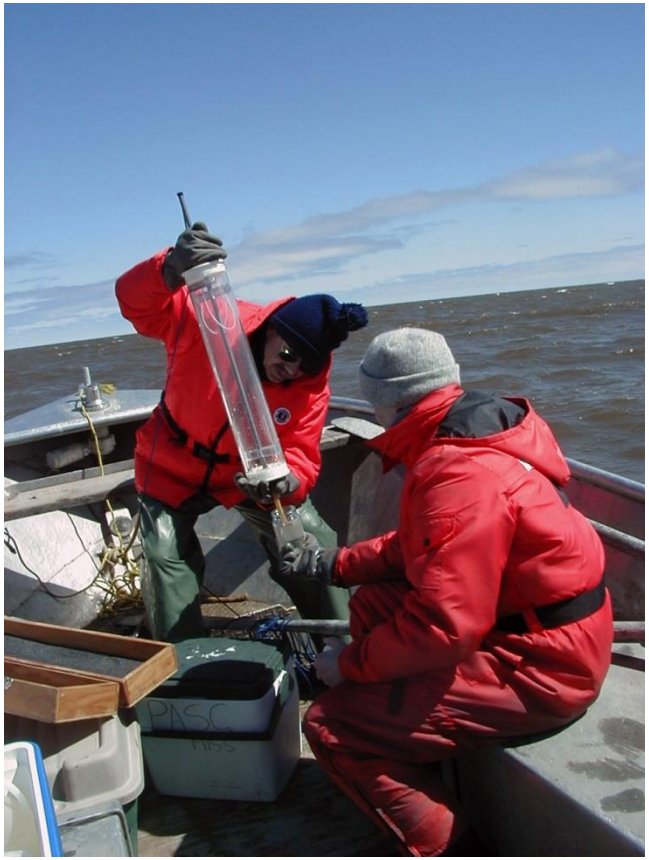
What We Aren't

- A lobby organization
- A business



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Our Objectives

- To stimulate public awareness and understanding of Canada's water resources
- To encourage public recognition of the high priority of water
- To provide a forum for the exchange of information and opinion relating to the management of water
- To participate with appropriate agencies in international water management activities

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What We Do

- Major Conferences, Workshops, Webinars & other seminars
- Project WET (Water Education for Teachers)
- *Canadian Water Resources Journal*
- *WaterNews*
- Website: www.cwra.org
- Special Projects – publications, consultations, policy support
- Scholarships

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What We Offer

- Access to specialist technical expertise
- National exposure
- Unfettered, unbiased, credible professional expertise; “honest broker”
- Opportunities for education and outreach
- Effective working partnerships and collaborative approach
- A sincere commitment to effective water management

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First Nations Water Issues

- Coastal Flooding and Adaptation to Climate Change
- Protection of communities from floods and droughts
- Water Governance, Law, Water Economics
- Technical capacity building of water expertise
- Fisheries programs, challenges and projects
- Watershed & water supply protection
- Water monitoring and networks
- Water quality and source water protection

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CWRA's Strengths

- Ability to provide balanced viewpoints
- Sound science and technical knowledge
- Multidisciplinary perspective
- Strong network of water resources professionals across Canada
- Able to lead on issues of national significance
- Able to address regional or local issues/priorities through Branches and Affiliates

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How do we Build First Nations Capacity in Water Management?

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Monitoring Program

Training for Fort Nelson and Fort Liard First Nations

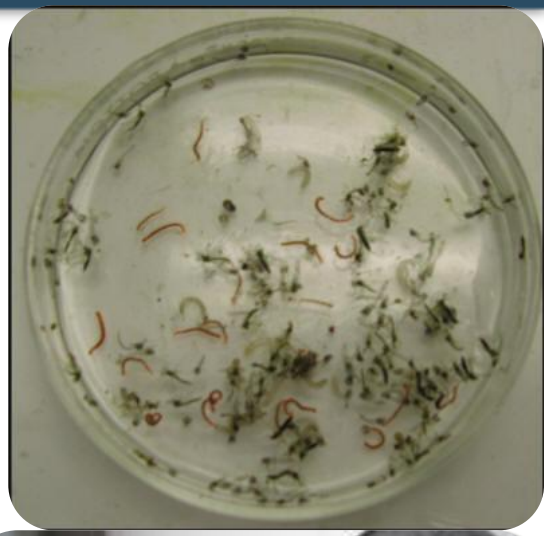
- Project Coordination
- First Nations Engagement
- Hydrometric and Climate Monitoring
- Water Quality and Biological Sampling
- Data Management and Reporting

First Nations Skill Capacity

- Project Management
  - Project management skills
  - Mentoring and experience
- Environmental Planning
  - Monitoring station design and location
  - Traditional use – final site selection
- Field Monitoring
  - Classroom training
  - Field crew experience

First Nations Training

Biological Monitoring Program



Photos: Cathy Mackay EDI

Lower Fraser Flood Strategy

From Hope to Richmond and Squamish to Whiterock

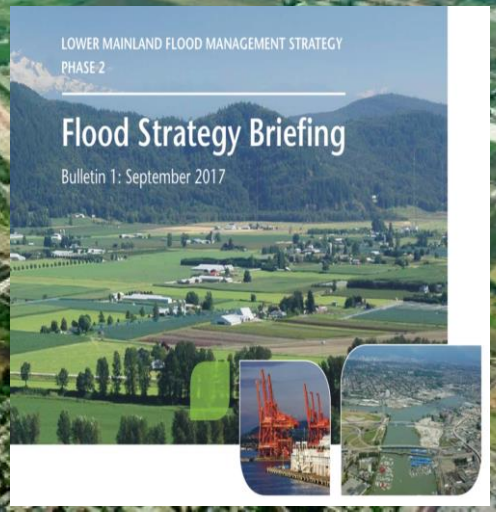
Phase 1 Flood Hazards, Vulnerabilities, Infrastructure

Phase 2 Regional Action Plan

Phase 3 Implementation Plan

Criteria → Process → Consensus → Financing

Fraser Basin Council



Leadership Committee

- Two provincial government senior officials
- Two federal government senior officials
- Four elected local government leaders (Metro Vancouver and the Fraser Valley regions)
- Four elected First Nations government leaders(Fraser Valley and BC South Coast)
- One infrastructure / private sector representative

How do we Build First Nations Capacity in Water Management?

- Training programs?
- Mentoring programs?
- Co-managed project experience?
- Project WET (water Education for Teachers)

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Photo Courtesy: Bob Anderson

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71st CWRA NATIONAL CONFERENCE

May 28- June 1, 2018, Victoria, BC

Our Common Water Future:
Building Resilience through Innovation

conference.cwra.org