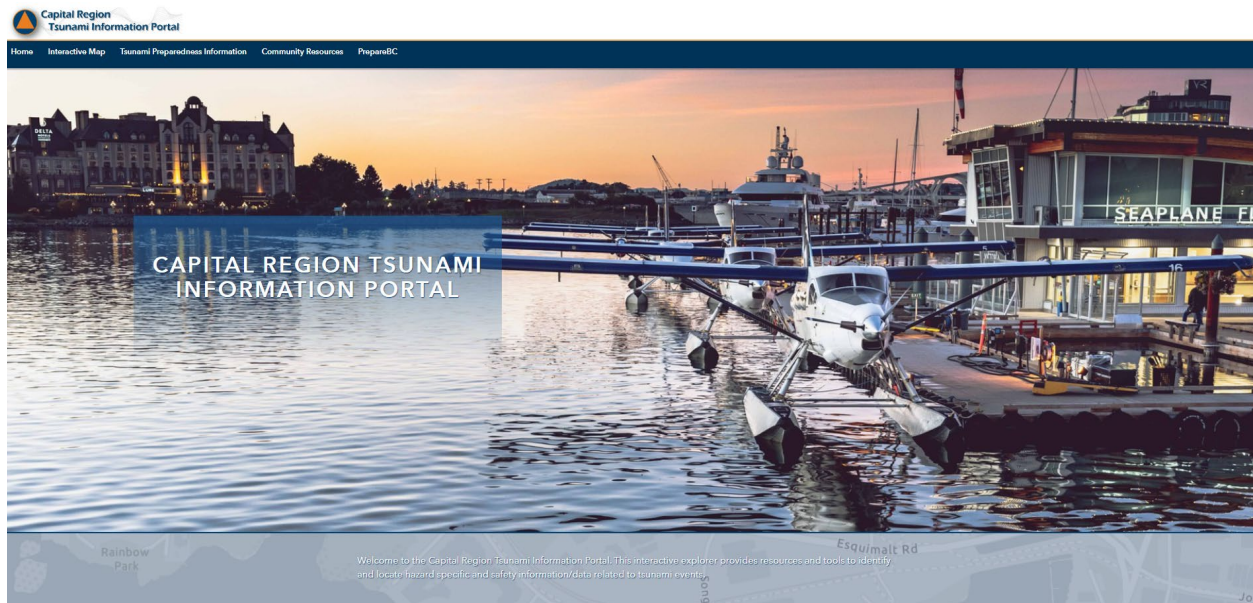




REMP

REGIONAL EMERGENCY
MANAGEMENT PARTNERSHIP
in the Capital Region

Capital Region Tsunami Information Portal



Demonstration Site Login Details

<https://capital-region-tsunami-information-portal-bcgov03.hub.arcgis.com/>

Username: PX.Tsunami

Password: BePrepared2022!



To: Decision-making representatives from each local authority and First Nation in the capital region

From: Alison Roberts, Senior Project Coordinator, REMP

Date: May 31, 2022 **Meeting Date:** Locally Determined

Subject: Approval for local emergency programs to appear on the Capital Region Tsunami Information Portal

RECOMMENDATIONS:

1. That {Name of Community} consents:
 - a. To be included on the Capital Region Tsunami Information Portal.
 - b. To use its official mark or logo on the Capital Region Tsunami Information Portal and elsewhere in communications regarding the portal.
-

PURPOSE:

The Regional Emergency Management Partnership (REMP) seeks written authorization from each local authority and First Nation in the capital region to appear on the Capital Region Tsunami Information Portal, which provides an overview of regional tsunami risk in support of emergency preparedness education. This portal will be hosted and managed by GeoBC on behalf of Emergency Management BC (EMBC).

CAPITAL REGION TSUNAMI INFORMATION PORTAL DISCUSSION

Benefits

Currently, tsunami risk communication is managed independently by each local authority across the capital region, contributing to fragmented and inconsistent risk communication. The end-user seeking tsunami-hazard-specific information may need to navigate more than a dozen websites, very few of which provide public access to Tsunami Mapping.

The Capital Region Tsunami Information Portal offers a collaborative region-wide solution that effectively utilizes limited regional resources, promotes regionally consistent messaging and takes into account the end-users and acknowledges how residents and guests move across jurisdictional boundaries to live, work and recreate.

This map is expected to help reduce public fear and anxiety regarding tsunami risk. The majority of the capital region's coastline is relatively elevated with a limited risk of tsunami, and a majority of the region is at minimal or no risk of a tele-tsunami (distant tsunami).

This tool aligns the capital region with neighbouring jurisdictions, including Washington, Oregon, and California, all of whom identify a tsunami hazard zone, paired with action oriented personal safety information.

Portal Development and Technical Support

GeoBC creates and manages geospatial information and products. The REMP successfully partnered with GeoBC's Business Innovation and Emergency Response Unit to develop the tsunami portal. Tsunami data sets are considered static (until new modelling or data becomes available) and will be hosted by GeoBC on behalf of the region. REMP will continue to partner with GeoBC to support product lifecycle planning and site maintenance. The regional partners will have access to data analytics upon request.

Uses and Limitations

The Capital Region Tsunami Information Portal has been created to build public awareness of tsunami risk and empower residents and guests to make informed decisions about emergency preparedness. The interactive portal is a hybrid awareness/inundation map which illustrates the potential tsunami extent. Local authorities will be accountable for providing targeted public education.

Other types of mapping products should be utilized to inform policy and regulatory planning, specifically hazard and risk maps.

Local Liability

Tsunami risk exists with or without the release of this map. It is well understood that the Pacific Northwest region of BC is one of the most seismically active regions in Canada, and most people understand that a damaging earthquake could occur at any time, followed by a tsunami. Under the *BC Local Government Act* and the *Emergency Program Act*, local governments are responsible for understanding and managing flood risk through land use planning and regulations and through emergency planning and preparedness activities. In addition, Section 25(1) of the *BC Freedom of Information and Protection of Privacy Act* confirms that the local authority must warn where a natural hazard poses a significant risk.

The Capital Region Tsunami Portal supports each local authority in disclosing natural hazard information and promoting public education to reduce risk and improve public safety. Non-disclosure may be associated with medium- to long-term liability, including life safety and injury. Non-disclosure could also contribute to reputational risk by eroding public trust if tsunami hazard information is improperly disclosed or seen to be hidden.

Property Values/Risk Disclosure

Many factors influence property values, including construction materials, lot size, building composition, neighbourhood characteristics, and amenities. There is a perception that public release of flood information will have negative consequences, including impacts on real estate; international experience

shows that the actual effect of flooding reduces the value of the property substantially more than flood hazard disclosure – which could marginally affect property values (over the short-term) or not influence it at all (cited in Minano and Peddle, 2018).

Literature shows mixed results with respect to property values in a mapped flood hazard area. However, the greatest threat to decreased property value is an actual flood. Studies show that property values will decline immediately following a flood and tend to bounce back after rehabilitation efforts. Research suggests that perceptions of risk and price differentials tend to diminish over time in the absence of new information or recurring catastrophic events.

In 2016, researchers from Australia examined the effect of the release of flood risk map information on property values by comparing the impact with the effect of an actual flood. In 2009 Brisbane City Council in Queensland, Australia released flood risk maps. In 2011, they experienced a major flood event. Findings show that the release of flood risk information had a minimal impact on property values (1-4%), but the actual floods reduced property values by 18-19%. The findings following the 1998 California Natural Hazard Disclosure Law (AB 1195) show that the average floodplain home sold for 4.2% less than a comparable non-floodplain home (however, this varied by neighbourhood, and the negative capitalization was highest in Hispanic neighbourhoods).

Additional research in England found that houses within flood zones were worth 1.5% less (on average) than properties located elsewhere. This research also contrasted a period of downmarket with periods of hot housing market, finding flood risk has a lower impact on housing prices in hot markets when buyers are presumed to have less negotiating power. This research also noted that the flood risk discount is strengthened in the months following major flood events that caused significant damage and received national media attention.

Privacy

International experience shows that maps must be localized (to the property level where possible), simple to understand, clearly displayed, and paired with relevant information to raise risk awareness effectively. Research shows that most map users will likely have an extremely narrow focus, typically at the property level. Unless the information is provided and interpreted at this level of detail, most will lose interest and the effectiveness of the maps in driving behavioural change toward personal preparedness will be lost.

Insurance

The Insurance Bureau of Canada Fact Sheet attached describes the potential uses of flood maps. At this time home insurance policies do not cover tsunami and tidal waves. Tsunami insurance is challenging to administer due to mutuality. Mutuality refers to economic viability of insurance, only a small number of households are in the tsunami hazard zone, this small community of policyholders is not adequate to cover the loss, unless charged high premiums, reducing the likelihood individuals would opt to purchase insurance (Sandink et al., 2016).

First Nations Engagement

Pacheedaht, the four WSÁNEĆ communities, Songhees and Esquimalt Nations verbally consented to appearing within the portal. REMP will further build on this inter-active mapping project into 2023 to include First Nations perspectives. Future layers reflecting Indigenous place names, languages and oral histories are planned based on Indigenous-specific engagement.

ALTERNATIVES

- 1) That {Name of Community} consents to each of the following for the purposes of regional tsunami hazard education:
 - a. Inclusion on the Capital Region Tsunami Information Portal.
 - b. The use of its official mark or logo on the Capital Region Tsunami Information Portal, and elsewhere in communications regarding the portal.
- 2) That {Name of Community} voluntarily opts out of the following:
 - a. Inclusion on the Capital Region Tsunami Information Portal, in which case local tsunami layers will be effectively turned “off” for your jurisdictional boundaries. Refer to Figure 1 for an illustrative example of the contrast between mapped and unmapped regions.
 - b. Use of its official mark or logo on the Capital Region Tsunami Information Portal, and elsewhere in communications regarding the portal.

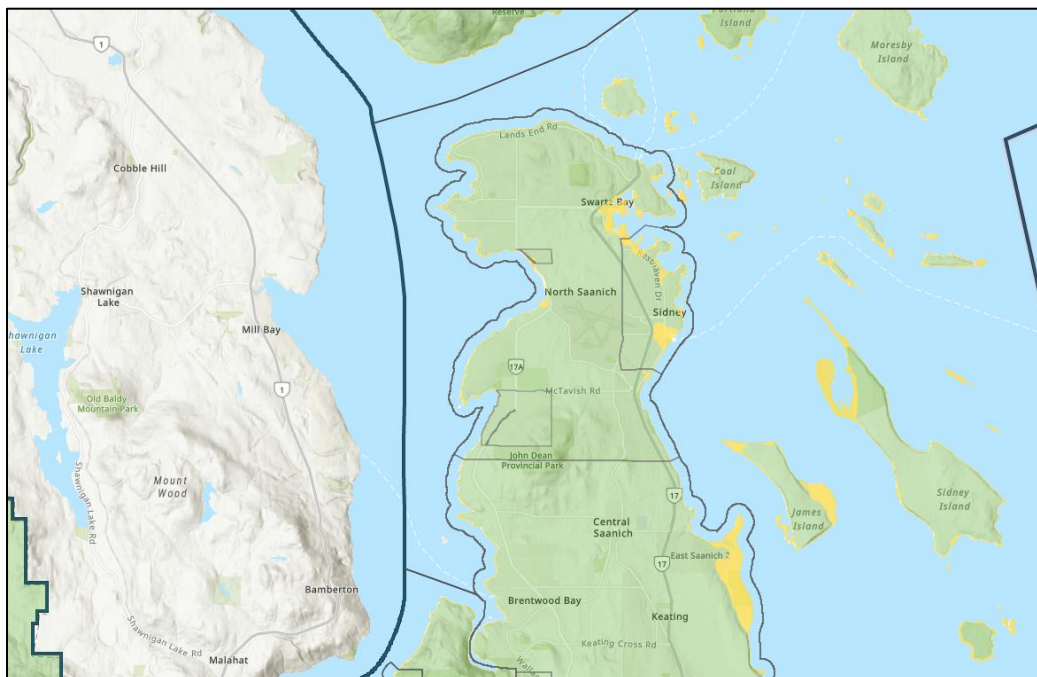


Figure 1. Illustrative example of the appearance of mapped and unmapped locations. Communities in the capital region voluntarily opting out will appear ‘White and unmapped’ at this time similar to the appearance of Mill Bay and Bamberton in this figure.

FINANCIAL IMPLICATIONS

- There are no financial costs associated with the development of the Capital Region Tsunami Information Portal for local, regional and First Nations governments.
- All project related costs for the Capital Region Tsunami Information Portal will be borne by the REMP, which is funded through a local requisition collected by the Capital Regional District.
- Costs associated with additional local, place-based communication methods will be borne by the local authority or First Nation partner.

NEXT STEPS

- Coordinate a public release of the Capital Region Tsunami Information Portal targeted for September 2022.

ATTACHMENTS

1. Appendix I – Background Information
2. Memorandum of Understanding for Interactive Tsunami Map of the Capital Region
3. Insurance Bureau of Canada Fact Sheet

APPENDIX 1 – BACKGROUND INFORMATION

Associated Engineering Tsunami Modelling and Mapping:

Tsunami hazard maps for this region were last updated following the release of the AECOM (2013) Modelling of Potential Tsunami Inundation Limits and Run-Up for the Capital Regional District. In July 2020, the [Capital Region Coastal Flood Inundation Mapping Project](#) was completed for the region, inclusive of First Nations communities, with approximately \$705,000 in funding support through the National Disaster Mitigation Program (NDMP). This project included the Tsunami Modelling and Mapping Report, which modelled 11 tsunami sources (a combination of far-field and local crustal events of varying magnitudes). This report shows that the risk of tsunami is not equal across the region and depends on the scenario and the geographic location. This is the most detailed tsunami modelling within the region to date, providing high resolution data. This report serves as the ‘foundation stone’ from which the Capital Region Tsunami Information Portal was developed.

Emergency Preparedness Education Initiative: Regional Tsunami Map

Local emergency management practitioners of the Local Government Emergency Program Commission (LGEPAC) unanimously supported translating the 2020 Associated Engineering Tsunami Modelling and Mapping report into a regional public education tool, agreeing on a two-zone approach that delineates the tsunami hazard zone and outside the tsunami hazard zone.

Associated Engineering completed additional GIS processing and mapping under the Development of Public Education Safety Zones Project in 2021 to communicate ‘high-ground safe zones’ to stakeholders and the public. The methodology combined the inundation extent from all 11 modelled tsunami scenarios to create a single, worst-case inundation extent. The ‘safe zone’ areas represent all land area in the Capital Regional District boundaries that is not within the inundation extents. Edges of the ‘safe zones’ were smoothed to provide a more clear boundary. Each emergency program in the 13 municipalities and three electoral areas financially contributed to the \$10,934.70 cost for additional GIS processing.

REGIONAL EMERGENCY MANAGEMENT PARTNERSHIP

The REMP in the capital region is an inter-governmental partnership between the BC Government and the Capital Regional District (on behalf of its member municipalities and electoral areas) to enhance agreed upon priorities for regional emergency management mitigation, preparedness, response and recovery. A Steering Committee equally comprised of provincial and local authority representatives sets the direction for REMP’s work. REMP’s planning initiatives are supported by integrated working groups consisting of all levels of government, First Nations and stakeholder agencies and are reliant on collaboration and relationships to achieve success.

On July 5, 2021, the REMP Steering Committee approved the REMP 2022 Business Plan, which designated staff to provide project management support to conclude a regional public education tsunami mapping project for felt earthquake events. A Steering Committee project champion, Norm McInnis, Chief

Administrative Officer District of Sooke, was assigned and has since provided regular updates to the Local Area Administrators (LAAs).

REMP Tsunami Engagement

In May 2021, REMP hosted a Regional Tsunami Forum, which convened relevant stakeholders and subject matter experts with roles in tsunami policy, practice and research. Over 50 attendees representing 28 organizations identified the most urgent/important places to make improvements which were: (1) increase public education and communication, (2) provide consistent data, modelling and mapping, and (3) improve and clarify cross-organizational communication. Actions identified to increase and improve public education and communication included: developing a coordinated approach to messaging across the capital region; developing public education and communication materials for use by partners and stakeholders; resources, and developing a coordinated public education effort for the region as a whole; and investigate and develop a multi-pronged approach to information seeking from the public.

The Capital Region Tsunami Portal was developed based on feedback collected through seven engagement sessions from over 80 participants from approximately 30 organizations, including:

- BC Emergency Health Services
- BC Earthquake Alliance
- BC Hydro
- BC SPCA
- Canadian Red Cross
- Capital Regional District
- City of Colwood
- City of Langford
- City of Port Alberni
- City of Victoria
- District of Oak Bay
- District of Saanich
- District of Sooke
- District of Ucluelet
- EMBC
- GeoBC
- Greater Victoria Public Library
- Juan de Fuca Electoral Area (EA)
- North Salt Spring Waterworks
- Natural Resources Canada (NRCan)
- Pacheedaht Nation
- Salt Spring Island EA
- Southern Gulf Islands EA
- T'Sou-ke Nation
- Town of Sidney
- Town of View Royal
- Township of Esquimalt
- Uchucklesaht Nation
- University of British Columbia
- Washington State: Emergency Management Division
- Washington State: Department of Natural Resources

REMP Regional Interactive Tsunami Mapping Initiative: local cross department engagement results (February 24, 2022) Report is available upon request.

References:

- Belanger, P., & Bourdeau-Brien, M. (2017). The impact of food risk on the price of residential properties: the case of England. *Journal of Housing Studies*, 33(6), 876-901
- Bin, O., & Landry, C. E. (2013). Changes in implicit flood risk premiums: empirical evidence from the housing market. *Journal of Environmental Economics and Management*, 65 (3), 361-376.
- Minano, A., & Peddle, S. (2018). Using Flood Maps for Community Flood Risk Communication. Report Prepared for Natural Resources Canada (NRCan-30006050733). Waterloo, Ontario: Partners for Action.
- Rajapaksa et al. (2016). Flood Risk Information, Actual Floods and Property Values: a quasi-experimental analysis. *Journal of Economic Record* (92), 52-67.
- Sandink et al. (2016). Public relief and insurance for residential flood losses in Canada: Current status and commentary, *Canadian Water Resources Journal / Revue canadienne des ressources hydriques*, 41:1-2, 220-237, DOI: [10.1080/07011784.2015.1040458](https://doi.org/10.1080/07011784.2015.1040458)
- Troy, A., & Romm, J. (2004). Assessing the price effects of flood hazard disclosure under the California natural hazards disclosure law (AB 1195). *Journal of Environmental Planning and Management*, 47(1). 137-162.



IBC
Insurance Bureau
of Canada



Why better flood maps and modelling matter

With climate change, Canadians are seeing more frequent extreme weather, which can impact the level and extent of flood risk.¹ Making high-quality flood maps available to homeowners, insurers, and governments raises public awareness of flood risk, which can be used to inform mitigation strategies and improve community level decision-making well into the future.

Open access to government flood hazard maps can help inform insurers' maps and models, as well as educate residents about their flood risk. Having access to this important information could motivate British Columbians and their communities to mitigate their risk of flooding. Unfortunately, the tools currently being used to assess flood impacts do not provide a complete picture.

How insurers use flood maps

Flood map data is one of many factors that insurers may consider when building a consumer's complete risk profile. In addition to flood map data, an insurer may look at location, replacement costs, claims history, plumbing, and the structural materials of the home.

Different insurers use different flood maps and models to assess hazard and risk for all types of flooding. These tools allow them to better understand flood risk and to develop and accurately price new insurance products.

Adding new government flood mapping to existing models will allow insurers to reassess and price risk more accurately. Better flood mapping can potentially impact the consumer's risk profile, making them more or less eligible for specific coverage. In addition, it could result in higher premiums for some consumers and lower premiums for others.

¹ Investing in Canada's Future: The Cost of Climate Adaptation at the Local Level (2020), available at <http://assets.ibc.ca/Documents/Disaster/The-Cost-of-Climate-Adaptation-Report-EN.pdf>





Evaluating risk: Tsunamis

Tsunamis are most often produced by huge undersea earthquakes that displace a massive volume of water and trigger a series of large waves. In BC, earthquakes along the Cascadia Subduction Zone pose the biggest threat of a destructive tsunami.²

Basic home insurance policies have coverage for loss or damage caused by lightning, hail, wind, and forest fire. Tsunamis and tidal waves are typically not covered.

Here is what insurers need to consider when evaluating tsunamis and specialized risks:

- ▶ **Risk modelling:** Risk models help insurers understand the probability of a catastrophic event and how many properties are likely to be exposed to it. With risk modelling for tsunamis still in its infancy, and a lack of experience with tsunami-related losses, insurers are unable to accurately price this product for consumers.
- ▶ **Eligibility and demand:** Tsunami risk is concentrated to some of Canada's coastal communities. When the risk is not widespread, there is less of a demand for coverage.
- ▶ **Affordability:** Since tsunamis are not common across Canada, fewer policyholders contribute to the insurance pool. When the insurance pool is small, insurers must raise premiums to ensure that funds are available to pay claims in the event of a catastrophe.

To address the issue of affordability, insurers may offer higher deductibles or limit how much coverage is available to consumers.

¹ Earthquake and Tsunami Guide, available at https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/preparedbc/preparedbc-guides/earthquake_and_tsunami_guide.pdf

Know your coverage

For details on what is and isn't covered, ask your insurance agent or broker, or review your policy. IBC has a Consumer Information Centre to help you address your specific insurance questions.

IBC Consumer Information Centre

1-844-227-5422

AskIBCWest@ibc.ca

About Us

Established in 1964, Insurance Bureau of Canada (IBC) is the national trade association representing Canada's private home, auto and business insurers. Its member companies represent the vast majority of the Canadian property and casualty insurance market. IBC works on a number of fronts to increase public understanding of home, auto and business insurance.

For more information

Greg Moy

Manager, Government Relations, Pacific

gmoy@ibc.ca

