

## 2021 Flood Mitigation and Resilience Annual Update

### RECOMMENDATION:

That the Community Development Committee recommend that Council:

1. Request that the Mayor, on behalf of Council and their focus on climate resilience, communicate to the Government of Alberta the significance of updated Flood Hazard Area maps and a new reservoir on the Bow River for Calgary.

### RECOMMENDATION OF THE COMMUNITY DEVELOPMENT COMMITTEE, 2022 APRIL 27:

That Council request that the Mayor, on behalf of Council and their focus on climate resilience, communicate to the Government of Alberta the significance of updated Flood Hazard Area maps and a new reservoir on the Bow River for Calgary.

## HIGHLIGHTS

- The City of Calgary's (The City) Flood Resilience Program guides efforts to fulfill Council's strategic direction of a climate resilient Calgary that can manage the impacts of severe weather events, with a goal of 1:200 level of flood mitigation throughout Calgary.
- What does this mean to Calgarians? Calgary's Flood Resilience Program uses a multi-layered approach, with a range of stakeholders, combining upstream-, community-, and property-level measures to ensure Calgary is resilient, now and in the future.
- Why does this matter? The Government of Alberta's work on upstream reservoirs and updated Flood Hazard Area maps remain critical components to Calgary's Flood Resilience Program, vital to understanding and managing flood risk in Calgary.
- Significant milestones in 2021 include the regulatory approval of the Government of Alberta's Springbank Offstream Reservoir, construction on the Downtown Flood Barrier, and over \$21 million in stormwater management infrastructure improvements.
- Calgary's estimated flood risk has been reduced by approximately 55 per cent since 2013. Once the Springbank Reservoir is operational in 2024, Calgary's flood risk will have been reduced by approximately 70 per cent, with the remaining risk mostly on the Bow River.
- Previous Council Direction: 2018 May 9, Council approved a recommendation to formally contact the Government of Alberta on the status of the Bow River Reservoir Options study work and other key Government of Alberta flood mitigation initiatives.
- Strategic Alignment to Council's Citizen Priorities: *A City of Safe and Inspiring Neighborhoods* and *A Healthy and Green City*: This work aligns with The City's Environmental Strategy, Climate Strategies and Greater Downtown Plan by increasing Calgary's resilience to flooding and supporting adaptation to climate change.
- Background and Previous Council Direction is included as Attachment 1.

## DISCUSSION

Established in 2014 after the 2013 floods, The City's Flood Resilience Program (Flood Program) provides an annual update of major developments and milestones. The Flood Program continually assesses progress within Calgary and by other orders of government to drive

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opportunities to reduce Calgary's flood risk. The City has a multi-disciplinary team dedicated to the Flood Program.

Details on 2021 progress are in Attachment 2. A comprehensive overview of The City's Flood Program and progress since 2013 are in Attachment 3. In addition to managing river flood risk, The City helps protect vulnerable areas from damages caused by stormwater flooding by investing in infrastructure upgrades through the Community Drainage Improvement and Local Drainage Improvement programs. The City is also finalizing an updated city-wide stormwater management strategy.

2021 was a significant year for the Flood Program, as the City:

- Began construction of the Downtown Flood Barrier and Upper Plateau Separation;
- Integrated the Sunnyside Flood Barrier project into the Memorial Parkway Program;
- Continued progress on the Calgary River Valleys Plan update; and
- Successfully participated in the regulatory hearing for the Government of Alberta's Springbank Offstream Reservoir project, which is now beginning construction.

The Government of Alberta also extended its seasonal operating agreement with TransAlta Corporation in 2021, reducing flood risk on the Bow River, including Calgary, until 2026.

In addition to the progress made in 2021, the Government of Alberta is currently undertaking two major projects that will influence The City's ongoing flood resilience efforts:

- The Bow River Reservoir Options study (currently in Phase 2 feasibility study)
- Updates to Alberta's regulatory Flood Hazard Area maps.

The current phase of the Bow River Reservoir Options study is comparing the feasibility and benefits of three potential new reservoir sites upstream of Calgary to mitigate flooding and drought. If constructed, a reservoir will significantly reduce river flood risk in Calgary on the Bow River and work with community mitigation infrastructure toward The City's 1:200 year flood mitigation target. The Government of Alberta indicates at least 14 years before construction may begin, with detailed design, budgetary approvals, complex engagement, and regulatory review needed before proceeding. All three options have complex stakeholder considerations.

The Phase 2 feasibility study report is expected in late 2023. The report will inform whether the Government of Alberta chooses to proceed with one site for detailed design and regulatory approvals after 2023. The City is actively involved in the Government of Alberta's Bow River Working Group, which brings together stakeholders to discuss progress, raise concerns, and identify opportunities to support the Bow River Reservoir Options study.

The Government of Alberta has been working on updated Flood Hazard Area maps since 2015. Draft non-regulatory flood inundation maps were released for public engagement in December 2020. Flood Hazard Area maps showing regulatory zones have yet to be released. The new mapping will support The City's Calgary River Valleys Plan update, which will integrate flood, riparian, climate resilience, equity, and reconciliation objectives for Calgary's river valleys into The City's Next Generation Planning system. Updated flood maps inform Calgarians of their personal risk, create clarity and consistency around planning or land use decisions in river communities, and enable planning and infrastructure design reflecting mitigation efforts to date. The City maintains a close working relationship with its counterparts in the Government of Alberta and has been preparing for the release of updated Flood Hazard Area maps since 2019.

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The City has identified these two items as critical components for the Government of Alberta to advance in 2022 and 2023, given their importance to Calgary's flood resilience amidst an uncertain, changing future climate. Communicating the importance of these items and their potential impact on Calgarians will help continue the productive and collaborative relationship between The City and the Government of Alberta on this work.

The City regularly re-evaluates the Flood Program's progress, adapting tactics within its layered approach based on arising information, including better understanding the current and future impacts of climate change. The Flood Program also looks to understand community concerns and reflect community feedback as part of its decision-making around flood mitigation efforts.

### **STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)**

Stakeholder dialogue/relations were undertaken

The City undertook comprehensive city-wide engagement and used citizen feedback to inform the development of the Flood Program's strategic approach and plan. The City maintains ongoing relationships with key stakeholders, responding to inquiries and providing information when available. The City remains committed to working with stakeholders and communities to build effective, climate-resilient flood mitigation. Engagement for individual projects occurs as they are developed and when appropriate. An annual Flood Awareness campaign continues offering multiple means for Calgarians to stay informed. Citizens can find information about flood resilience and how to be personally prepared for flooding at [calgary.ca/floodinfo](http://calgary.ca/floodinfo).

### **IMPLICATIONS**

#### **Social, Environmental, and Economic Implications**

The Flood Program seeks to reduce the environmental impacts from river flooding in Calgary and considers the impacts of a changing climate. Flood mitigation actions undertaken to date have reduced damages to property, infrastructure, and reduce potential economic losses caused by disruptions from flooding. Communities have varying degrees of flood risk and The City looks to work closely with stakeholders to identify opportunities to reduce flood risk while reflecting community concerns where possible.

A new reservoir on the Bow River will have significant impacts on the Bow River watershed. Potential flood mitigation and water supply benefits are being assessed as part of the Government of Alberta's study. The City is supporting this work through the Bow River Working Group. This reservoir is an important long-term milestone and foundational to The City of Calgary's flood resilience strategy.

#### **Service and Financial Implications**

#### **Other:**

The Flood Program is primarily funded through utility rates, with all planned actions, projects, and full-time equivalent staff factored into The City's four-year service plans and budgets. The City continually seeks opportunities for funding support from the Government of Alberta and Government of Canada, which has helped deliver over \$150 million in flood

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mitigation infrastructure since 2013.

### RISK

#### 1. Flood Hazard Area maps delayed

The City is actively working to update its land use and development policies and regulations related to flood prone areas as part of the Calgary River Valleys Plan update. Delayed release of updated Flood Hazard Area maps could result in a prolonged period where policies in flood prone areas do not match the expected risk or updated regulatory zones, resulting in inconsistency in understanding property owners' individual flood risk or when dealing with re-development applications.

#### 2. New Bow River upstream reservoir uncertainty

A new reservoir upstream of Calgary will offer significant flood mitigation for Calgary and communities on the Bow River. However, the Government of Alberta has noted that a new reservoir is at least 14 years from being constructed, assuming it chooses to proceed with detailed design and regulatory approvals on one of the three potential reservoir sites. The City has noted to the Government of Alberta that one of the potential sites known as the Glenbow East option, if selected, would have considerable impacts on developed lands and lands approved by The City of Calgary for future development.

#### 3. Residual risk in Calgary and impacts on City flood mitigation efforts

Assessing Calgary's future flood risk is heavily influenced by upstream mitigation being constructed by the Government of Alberta. Proceeding with a new reservoir on the Bow River will influence The City's future capital planning, budget, and resource needs. Upstream mitigation is a key factor in discussions with communities around risk, development patterns, and community mitigation. The City maintains an active dialogue with the Government of Alberta and proactively manages new information as it emerges.

### ATTACHMENTS

1. Attachment 1 – Previous Council Direction, Background
2. Attachment 2 – 2021 Flood Mitigation and Resiliency Annual Update
3. Attachment 3 – The City of Calgary's Flood Resilience Plan
4. Attachment 4 – Annual Flood Resilience Presentation to Committee
5. **Attachment 5 – Public Submissions**

Department Circulation

General Manager/Director	Department	Approve/Consult/Inform
Francois Bouchart	UEP – Water Resources	Approve
Carolyn Bowen	PDS – Climate and Environment	Approve
Michael Thompson	UEP – General Manager's Office	Approve
Stuart Dalgleish	PDS – General Manager's Office	Inform