

## 2016 WATERSHED PLANNING UPDATE

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### EXECUTIVE SUMMARY

The City takes a customer-focused approach to integrated watershed management to ensure a healthy, resilient watershed that provides clean, reliable water for current and future generations. The City's commitment to watershed protection considers the needs of a growing customer base and balances the environmental, social and economic impacts of service delivery on Calgarians and neighbouring communities.

The City is achieving its targets relating to river water withdrawal, water consumption, and reducing total suspended solids loading to the river. The City continues to make progress on building flood resiliency, implementing green stormwater infrastructure, and protecting riparian areas. This report summarizes the actions taken in 2016 to protect Calgary's water supply, use water wisely, keep our rivers healthy, and build resiliency to flooding.

### ADMINISTRATION RECOMMENDATION:

That the SPC on Utilities and Corporate Services receive this report for information.

### PREVIOUS COUNCIL DIRECTION / POLICY

On 2013 May 29, the SPC on Utilities and Corporate Services received the Watershed Management Planning Annual Update (UCS2013-0046) report for information which included annual progress updates for the Water Efficiency Plan and Stormwater Management Strategy.

Subsequently, Watershed Management Planning Update reports UCS2014-0108 (2014 March 19), UCS2015-0080 (2015 March 20), and UCS2016-0167 (2016 April 27) were received for information.

On 2016 May 25, an update to the Community Drainage Improvement (CDI) program was provided as part of the Drainage Financial Plan Progress Report (UCS2016-0414). This report included the updated prioritized CDI Project List, totalling \$246 million in infrastructure upgrades, as well as a commitment to ongoing evaluation of opportunities to accelerate projects within the CDI stream of work.

### BACKGROUND

Increased pressure on our watershed from regional growth and land use, combined with climate change impacts, make watershed management one of Calgary's most critical resiliency challenges. The City works with the Province and regional partners on integrated watershed management, which includes addressing the important relationship between watershed protection, climate resiliency, and land use.

Our integrated watershed management approach aims to achieve the following goals:

1. Protect our water supply
2. Use water wisely
3. Keep our rivers healthy
4. Build resiliency to flooding

### INVESTIGATION: ALTERNATIVES AND ANALYSIS

Attachment 1 describes in detail the actions The City is taking in the goal areas outlined above, as well as challenges and priorities for 2017.

## 2016 WATERSHED PLANNING UPDATE

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### **Goal #1: Protect our water supply.**

Reliable, secure, high-quality water supplies are essential for Calgary and the region. In 2016, The City:

- Completed a watershed assessment and risk study of Calgary's source watersheds which identified potential contamination from wildfires and stormwater from land development as the two primary risks to Calgary's water supply.
- Improved drought preparedness by updating the Drought Operational Response Guidelines.
- Initiated an Integrated Water Supply Management Strategy to support financial and operational decision making.
- Initiated a climate resiliency program to address climate impacts on the watershed and improve the Utility's water resource, energy and carbon management. This work is aligned with the renewed Corporate Climate Program (UCS2017-0054).

### **Goal #2: Use water wisely**

The City is on track to achieve the Council approved Water Efficiency Plan (WEP) target to accommodate Calgary's continuing population growth with the same amount of water removed from the river in 2033 as in 2003. In 2016:

- The City reviewed the WEP, resulting in a shift towards market-based programming specifically targeting the irrigation and landscape sectors.
- Annual water withdrawn from the Bow and Elbow rivers was 18 per cent less than the 2003 benchmark, despite a population growth of 30 per cent since 2003.
- Calgary's overall water use is on track to meet the 2033 target, with total per capita water demand decreasing by 30 per cent since 2003. Residential water demand was approximately 214 litres per capita per day in 2016.
- Calgary's highest total water use in a single day occurred on June 6 and remained below the current capacity of The City's water treatment plants.
- The City continued to identify and fix watermain leaks, saving an estimated 10 million litres per day in 2016.

### **Goal #3: Keep our rivers healthy**

Protection of Calgary's waterways is guided by The City's Approval to Operate its wastewater system. This Provincial approval outlines sediment management and pollutant loading objectives to keep Calgary's rivers healthy. In 2016, The City:

- Continued capital upgrades to the Bonnybrook Wastewater Treatment Plant, initiated the Win-Win program to address high-strength wastewater challenges, and formalized the fats, oils, and grease (FOG) program to reduce impacts on the wastewater system.
- Kept sediment loadings from stormwater below provincial objectives, and updated the Bow River Water Quality Model used to monitor pollutant loadings to the Bow River.
- Completed internal engagement to inform the development of a strategy for Green Stormwater Infrastructure (GSI), formerly called LID.
- Continued to advance the Riparian Action Program by restoring four riparian areas in addition to mapping, monitoring, and education and outreach.

## 2016 WATERSHED PLANNING UPDATE

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- Reviewed and started expanding the metrics used to evaluate watershed health to include metrics on habitat, landscape, water quality, hydrology and biodiversity.

### **Goal #4: Build resiliency to flooding**

The City continues to implement the 27 recommendations made by the Expert Panel on Flood Mitigation, and flood mitigation work is underway (UCS2017-0266). The City is also advancing strategies to accelerate the delivery of the Community Drainage Infrastructure Program, including the use of innovative, cost-effective designs, pursuing external funding, and developing alternative procurement strategies. In 2016, The City:

- Applied for provincial funding for flood mitigation projects and completed a citizen-focused assessment of potential flood mitigation measures.
- Improved processes to address impacts from increasing frequency of extreme weather events, such as the rainfall events of summer 2016, which caused stormwater flooding.
- Advanced the design of two storm ponds and storm sewer upgrades in Woodlands, Woodbine, Cedarbrae and Braeside. Construction of this infrastructure package, estimated at \$49 million, will commence in 2017 with completion planned for 2019.
- Completed stormwater improvement projects in Haysboro at a cost of \$484,000, resulting in over \$20 million in social, economic, and environmental benefits.

### **Stakeholder Engagement, Research and Communication**

The City collaborates with internal and external stakeholders including Calgarians, community groups, non-governmental organizations, the development industry, land owners, regional partners, neighbouring communities and the Province to achieve watershed management goals. Through community engagement, surveys, and a strong presence in the community, The City continues to learn more about customers, their level of awareness and expectations to inform programs to improve the Water Utility's lines of service.

### **Strategic Alignment**

The City's work aligns with the provincial Water for Life strategy and regional watershed management plans. Moving forward on watershed management goals contributes to a number of Strategic Action areas in Council's Priorities for 2015-2018:

- A city of inspiring neighbourhoods (N2 - Build resiliency to flooding, Enable developments that meet the Municipal Development Plan and Calgary Transportation Plan; N5: Systematically invest in established neighbourhoods as they evolve to accommodate changing community need; N8 -Integrate watershed protection with land use planning).
- A healthy and green city (H3 - Manage the interrelationships between flood protection, water quality and quantity, and land use; H4 - Work with our regional partners and the Government of Alberta on an integrated approach to the watershed; H6 and H10 – Lead by example and build awareness of shared responsibility to protect the environment).
- A well-run city (W5 - Integrate customer and stakeholder feedback to drive programs and service improvements).

### **Social, Environmental, Economic (External)**

The City's programs and projects protect and enhance watershed health and address public health and safety, protect property, and increase community awareness. Our watershed

## 2016 WATERSHED PLANNING UPDATE

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management initiatives work to ensure healthy rivers for Calgary and neighbouring communities.

Secure and reliable water sources are critical to economic growth and community vitality. A culture of community sustainability is fostered by promoting water conservation that can contribute to deferring infrastructure expansions and help offset increases in water utility rates. Our flood mitigation program is building community resiliency and protecting critical infrastructure and communities from flood risk.

### Financial Capacity

#### Current and Future Operating Budget:

Program initiatives to achieve the watershed management planning goals are incorporated in the 2015-2018 Utilities budget.

#### Current and Future Capital Budget:

Program initiatives to achieve the watershed management planning goals are incorporated in the 2015-2018 Utilities budget.

### Risk Assessment

Sustainable management of water resources is one of Calgary's most significant community resiliency challenges. Integrated watershed management planning helps to evaluate and take action to reduce risks to our watershed from growth, anticipated changes to service delivery, and the impacts of climate change.

- Changes to regulations and policy direction, such as the establishment of the Regional Growth Management Board and future direction on Provincial flood policy will require The City to adapt service delivery, strategies and infrastructure. The City maintains a close working relationship with regulators, partners and stakeholders to help inform and prepare for anticipated regulatory changes.
- Climate variability, regional population growth and servicing present water supply risks. Climate resiliency planning for the Water Utility and an Integrated Water Supply Management Strategy will help further define and take actions to address these risks. The City also continues to enhance water efficiency programs and seek new innovations in water conservation programming.

<b>REASON FOR RECOMMENDATION:</b> This report is provided for information as an update on progress of watershed management planning.
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### ATTACHMENTS

1. 2016 Watershed Planning Activity and Results Summary
2. 2016 Watershed Planning Update