

WATERSHED MANAGEMENT PLANNING UPDATE 2015

EXECUTIVE SUMMARY

From the river to the tap – and back again, The City is dedicated to protecting and managing precious water resources. The City demonstrates leadership of this holistic approach by considering the watershed in its entirety in order to protect our water supply, use water wisely, keep our rivers clean, build resiliency to flooding and be good neighbours through our work with regional partners.

Calgary is achieving its established Utility targets relating to river water withdrawal, per capita water consumption, and total suspended solid loading to the river. Moving forward, the Utilities will continue to refine watershed management strategies, based on an integrated approach, by reviewing and assessing goals, current and future risks, targets, key performance indicators and reporting mechanisms, and through the development and implementation of programs for each goal.

ADMINISTRATION RECOMMENDATION(S)

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

PREVIOUS COUNCIL DIRECTION / POLICY

On 2005 November 07, Council adopted the 30-in-30 Water Efficiency Plan (UE2005-55) and Stormwater Management Strategy (UE2005-35) and requested annual progress updates.

On 2007 July 16, Council approved the Nose Creek Watershed Water Management Plan (UE2007-22) and on 2008 September 08, Council approved the Bow Basin Watershed Management Plan (UE2008-25) and the Elbow River Water Management Plan (UE2008-26).

At the 2009 September 28 Regular Meeting of Council, Council approved the Calgary Transportation Plan (CTP) and Municipal Development Plan (MDP), which include policies to protect the watershed.

On 2011 March 01, Council received the 2020 Sustainability Direction (C2011-20) for information which includes targets for water quality and quantity.

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, reports UCS2014-0108 (2014 March 19) and UCS2015-0080 (2014 March 20) were received for information.

On 2014 May 05, Council approved the 2015-2018 Indicative Drainage Charge (C2014-0324) which outlined the drainage line of service.

At its meeting of 2015 April 14, Council approved a Notice of Motion from Councillors Pootmans, Carra, Pincott, Farrell, Sutherland and Woolley to direct Administration to report back to Utilities and Corporate Services as part of the Annual Watershed Management Plan Update by the end of Q1 2016 with a progress report on the Water Supply Management Plan, which characterizes and evaluates a spectrum of current and future risks facing The City's water

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supplies. On 2016 February 24 the SPC on Utilities and Corporate Services approved a deferral of this Notice of Motion response to no later than end of 2016 June.

BACKGROUND

Watershed protection in Calgary aligns with the provincial Water for Life strategy and supports regional Watershed Management Plans (Bow Basin, Elbow River and Nose Creek). Water quality protection is guided by The City's Approval to Operate, granted by Alberta Environment and Parks, which outlines sediment management and pollutant loading objectives for the Bow River through the Total Loading Management Plan. As well, given challenges such as a finite water supply, a growing population in the city and the region, and impacts of climate change, The City is managing Calgary's water use to ensure a reliable and sustainable water supply in the future.

The City of Calgary takes an integrated watershed management approach to protecting public health, conserving our water resources, and supporting the needs of a growing city. Our approach aims to achieve the following goals:

1. *Protect our water supply* by reducing upstream risks to our water source;
2. *Use water wisely* through responsible and efficient use;
3. *Keep our rivers clean* by reducing Calgary's impacts on the rivers; and,
4. *Build resiliency to flooding*.

The City also aligns with regional partners to collaborate to manage water for all users. The City is actively involved in a number of watershed stewardship groups in the region including the Bow River Basin Council, Elbow River Watershed Partnership and Nose Creek Watershed Partnership.

For each goal, a strategy framework is created that:

- Sets overarching goals;
- Assesses the current situation and risks;
- Sets targets, key performance indicators and defines reporting mechanisms;
- Develops a program and implementation plan; and,
- Uses adaptive management to continually evaluate progress, risk and program effectiveness.

In 2005, City Council approved the Water Efficiency Plan and Stormwater Management Strategy which outline goals and strategies to address long term health of our watershed.

INVESTIGATION: ALTERNATIVES AND ANALYSIS

Based on the integrated watershed management approach, The City continues to build or refine targets, key performance indicators, and define reporting mechanisms. Work continues to build program and implementation plans to ensure activities are coordinated and deliver on expected outcomes. Highlights of progress and planned activities are summarized in Attachment 1 and described in detail in Attachment 2.

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1. Goal: Protect our water supply.

Reliable, secure, high quality water supplies are essential for Calgary and the region. Several challenges, such as rapid growth and Calgary's climate continues to put upward pressure on water resources in the Bow River watershed.

To meet these challenges, a strategy to protect water supply, including target setting are in development. In 2015, The City:

- Made progress on a Water Supply Management Plan by first conducting a source watershed assessment and risk characterization project to assess all risks in the Bow and Elbow watersheds upstream of The City of Calgary's water treatment plant intakes.
- Monitored and coordinated cross-department preparedness and oversaw communication initiatives to prepare citizens for the flood and drought season through Administration's Water Oversight Committee.
- Conducted regular watershed monitoring and analysis as part of water treatment operations and to inform long term watershed planning.

2. Goal: Use water wisely

In 2005, City Council approved the Water Efficiency Plan. The City is on track to achieve the Water Efficiency Plan goal to accommodate Calgary's continuing population growth with the same amount of water removed from the river as in 2003. To measure progress on watershed management, key performance goals are monitored based on the Water Efficiency Plan. In 2015:

- Annual water diverted from the Bow and Elbow Rivers totaled 178,114 million litres (ML), remaining below the 2003 benchmark of 212,500 ML.
- Calgary's overall water use (including residential, commercial and municipal demand) was 369 litres per capita per day (lpcd), well on track to meet the 2033 target of 350 lpcd. Of the overall water use in 2015, single family residential demand was estimated to be 218 lpcd. (Per capita demand).
- Calgary's highest total water use in a single day in 2015 was 713 ML, remaining below the target value of 950 ML. However, population growth forecasts suggest that peak day demand will exceed 950 ML prior to 2033. (Peak day demand).

3. Goal: Keep our rivers clean

In 2005, City Council approved the Stormwater Management Strategy. The Strategy goal is to maintain total suspended solids levels (TSS) at or below 2005 levels, even with a growing city. In 2015:

- The estimate of TSS sediment loadings from stormwater to the Bow River is 39,620 kg/day which is below the 2005 level of 41,300 kg/day.
- The City reviewed goals and targets in the context of the 2018 Wastewater Approval to Operate.
- Work continued to expand the Bonnybrook wastewater treatment plant, including construction of the Plant D expansion to meet regulatory requirements.

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- Progress on the stormwater asset management plan, including the establishment of a storm pond condition assessment program, as well as a similar program for storm pipes.

4. Goal: Build resiliency to flooding

For river flooding, evaluation, target setting and implementation plans are being developed concurrently. This is discussed further in a separate report (Flood Resiliency and Mitigation 2015 Annual Update, UCS2016-0168) to the Standing Policy Committee on Utilities and Corporate Services.

For stormwater flooding, or Community Drainage Improvements (CDI), where some communities experience continued damages as a result of rainfall triggered local flooding, a strategy is in place and targets need to be set to focus the strategy on outcomes. In 2015, The City started construction on a CDI project in the community of Rosemont and was able to advance work earlier than anticipated in the communities of Woodlands, Woodbine, Cedarbrae and Braeside.

Stakeholder Engagement, Research and Communication

The City works internally along with numerous key external stakeholders including residents, community and regional partners, non-governmental organizations, the development industry, land owners, and the Province to achieve watershed management goals. Through the continued use of surveys, focus groups and a strong presence in the community, The City continues to learn more about its customers and their level of awareness and expectations to inform targeted programs to improve performance. As part of a broad research framework and strategy, the Utilities engage in research partnerships to address watershed management knowledge gaps.

Strategic Alignment

Watershed planning initiatives are aligned to the Municipal Development Plan and Calgary Transportation Plan, provincial Water for Life strategy and regional watershed management plans. Within Council's 2015-2018 Action Plan, watershed planning priorities are addressed through the Healthy and Green City Council Priority. The City's actions also ensure compliance to The City's Approval to Operate from Alberta Environment and Parks.

Social, Environmental, Economic (External)

Encouraging the wise use of water fosters a culture of sustainability in Calgary and responds to Calgarians' expectations of The City to promote water conservation. Watershed management programs address public safety, protection of property, public health and increase understanding about the importance of protecting our watersheds.

Through watershed management programming and projects, source water is protected, river water withdrawals are reduced, and sediment loadings to the river are managed to maintain river water quality. The City also addresses impacts outside of our municipal boundaries in collaboration with regional partners.

Secure and reliable water sources are important to the city and region's economic growth and vitality. Water efficiency measures can defer infrastructure expansions and help offset increases

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in utility rates. Ensuring sediment loadings from stormwater to the Bow River stay below loading limits is necessary to allow for continued development.

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

As a growing city, Calgary faces significant challenges in managing its water resources. Integrated watershed management planning helps to evaluate and reduce long-term risks to water quality and quantity and meet regulatory commitments.

- The City's Approval to Operate includes the requirement to ensure our pollutant loadings to the Bow River remain below certain levels as part of The City's Total Loading Management Plan. New regulations and policies, such as The South Saskatchewan Regional Plan, require The City to adapt its planning, monitoring, operations and infrastructure. The City maintains a close working relationship with regulators to help inform and anticipate upcoming regulatory changes.
- The Approval to Operate is up for renewal in 2018 and it is anticipated that more stringent sediment loading targets could be incorporated, which could result in the adjustment of the balance of stormwater quality improvement projects installed over the next ten years. This risk also applies to wastewater discharge requirements. There may be an impact the amount of infrastructure investment required in order to meet requirements that are more stringent.
- Future climate variability, growth and a closed basin to new water allocations present water supply risks for The City. The City continues to review water efficiency program effectiveness and seek new and innovative opportunities. The ongoing development of a Water Supply Management Plan will help further define current and future risks facing The City's water supplies and recommend a path forward.
- As the Drainage asset management practices evolve, the Utilities will increase their knowledge of the asset conditions. There is a risk that the actual condition of the Drainage assets may require more aggressive replacement or rehabilitation programs than currently planned.

REASON(S) FOR RECOMMENDATION(S):

This report is provided for information as an update on progress of watershed management planning.

ATTACHMENT(S)

1. Watershed Management Planning Activity and Results Summary
2. Watershed Management Planning Update 2015