

## Watershed Management Planning 2013 Progress

***From the river to the tap – and back again, The City is dedicated to protecting and managing our precious water resource.***

We are proud of this holistic approach that considers the watershed in its entirety. Key priorities include reducing upstream risks to our water source, reducing Calgary's impacts on the rivers (Stormwater Management Strategy and Total Loading Management Plan) and conserving this limited resource through its responsible and efficient use (30-in-30 Water Efficiency Plan.) Together, the Strategy and Plans improve watershed management by protecting and reducing consumption of our water resources.

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 wastewater Approval to Operate, managing sediment and pollutant loadings to the Bow River. As well, given challenges such as a finite water supply, a growing population and 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.



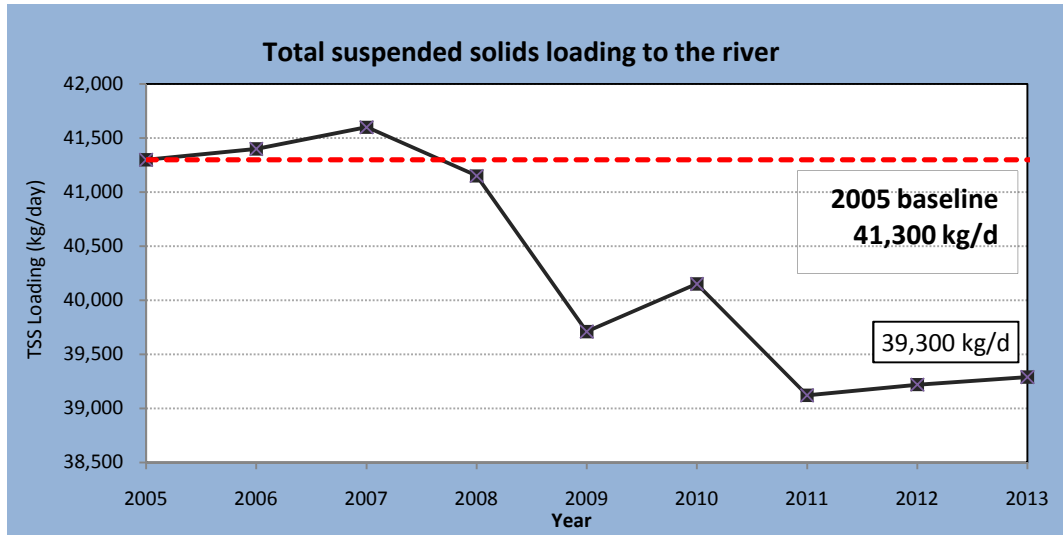
- Total suspended solids entering the Bow River remain below 2005 levels with the construction of stormwater quality retrofit projects to treat stormwater from existing development that previously had little or no stormwater treatment.
- With strong customer engagement, adoption of water efficiency technology and changes in City operations, The City is on track to achieve the 30-in-30 Water Efficiency Plan goal of accommodating Calgary's continuing population growth with the same amount of water removed from the river as in 2003.

## Key Performance Goals

The City uses key performance goals as set out in the Stormwater Management Strategy and Water Efficiency Plan. The following outlines target goals and indicators that are helping to measure and achieve success toward watershed management.

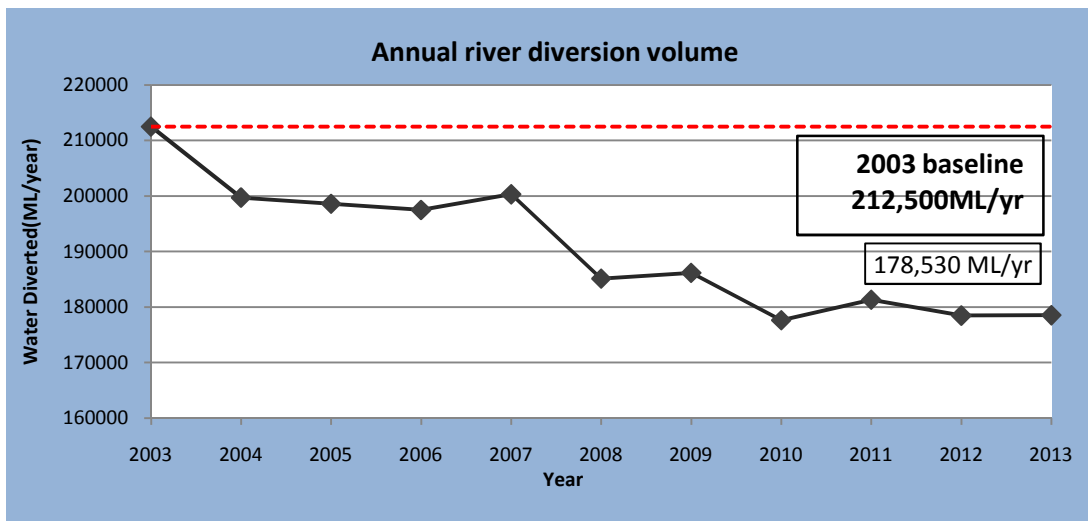
### Total Suspended Solids

Goal area	2013	Target
Total suspended solids loading to the Bow River	39,300 kg/day	Total suspended solids entering the Bow River continue to remain below 2005 levels (41,300 kg/day)



### Annual river water diversion

Goal area	2013	Target
River water withdrawal	178,530 million litres/year (ML)	Accommodate population growth with the same amount of water we removed from the river in 2003 (212,500 million litres)



## Indicators

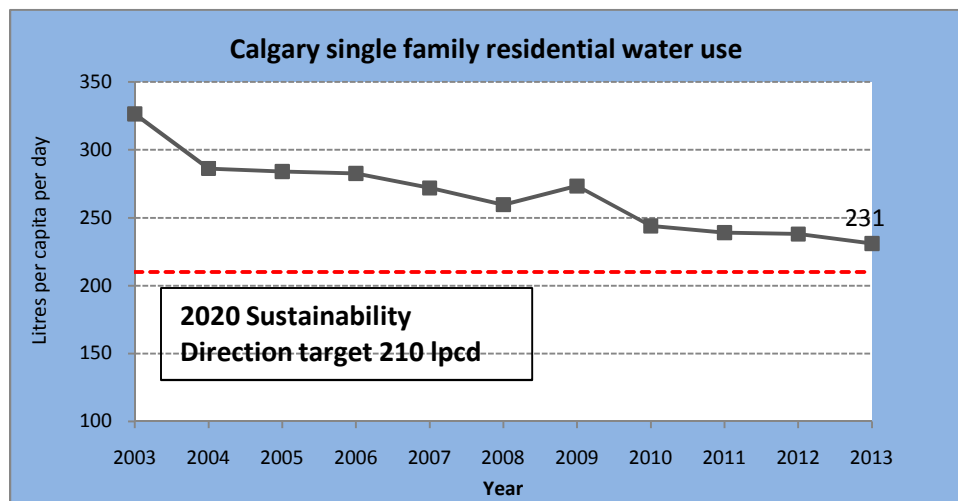
In addition to key goals, indicators for water efficiency are tracked to determine how far along The City is in reaching the 30-in-30 goal.

### Universal Metering

The goal of the metering program is to have all single family customer accounts metered by 2014 December 31. The program is on track with approximately 11,350 residential flat-rate accounts remaining, bringing metering to 97 per cent.

### Per capita demand

Per capita demand is the average amount of water used in the city. It is calculated by dividing the total city-wide demand (including residential, commercial and municipal use) by the population



and is measured in litres per capita per day (lpcd). In 2013 this overall water use was 403 lpcd, which is below the projected value of 448 lpcd. Of the overall water use, single family residential demand was estimated to be 231 lpcd, which is trending toward the 2020 Sustainability Direction target of 210 lpcd.

### Peak day demand

Peak day demand is the one day in the year in which Calgary requires the most drinking water. It typically falls during irrigation or outdoor water use season (May – September.) The target is to keep the peak day demand below 950 ML. In 2013, peak day demand was 658 ML, on September 2.

### Non-revenue water

Non-revenue water is reported as an Infrastructure Leakage Index benchmarked between 3.1 and 3.9 in 2009. The Infrastructure Leakage Index was measured in 2012 at 3.13, within the 2009 benchmark range.

## **Strategic Actions in 2013**

The City's water management planning is guided by four strategies:

- Leading by example;
- Aligning policy to watershed objectives;
- Developing technical tools and promoting adoption of improved technology;
- Building awareness and action through education and outreach.

The following outlines the program successes for 2013 under each of these strategic areas considering work in the areas of protecting source water quality and quantity, protecting waterways, promoting efficiency in water use and innovative stormwater management.

### **Leading by example**

#### **Water efficiency in our operations**

- In 2013, City crews surveyed more than 385 kilometres of aging water mains. Through these surveys they also located and fixed 18 water main leaks and more than 35 service connection leaks providing long-term sustainability and resilience of Calgary's water supply.
- There was an increase in awareness of water consumption in City operations as City business units continued to track, benchmark and reduce water use.

#### **Major stormwater retrofit projects**

In 2013, the design of two stormwater management facilities continued.

- Bowmont East stormwater quality retrofit pond adjacent to the communities of Varsity and Silver Springs was designed to reduce the risk of flooding and the total suspended solids discharged to the Bow River.
- South Highfield storm pond redesign to address and incorporate the extensive damage to riverbank and change of river course from the June 2013 flood event (resulting in loss of approximately 25 per cent of proposed pond area).

## **Working across the Corporation to implement innovative stormwater management**

A green infrastructure pilot site was completed in the community of Kensington demonstrating how a dense commercial street can manage stormwater directly on-site using trees and soil. A cross-Corporate team collaborated to install “soil cells,” a modular suspended pavement system that allows for increased soil volume supporting larger tree growth and providing on-site stormwater treatment prior to discharging to the nearby Bow River. The lessons learned from this project will serve to guide and adapt Calgary’s future stormwater infrastructure.



## **Enhancing a community while learning about new practices**

In 2013, The City began the construction of two community rain gardens in the community of Bridgeland building on the successful implementation and community support of the Winston Heights/Mountview community rain gardens. Stormwater monitoring and an education program were put in place, supporting a multi-year strategy to demonstrate and evaluate the installation of rain gardens in existing communities. Rain gardens are an example of source



control practices, engineered to collect runoff and help treat stormwater before it enters the waterways, thus improving the overall water quality.

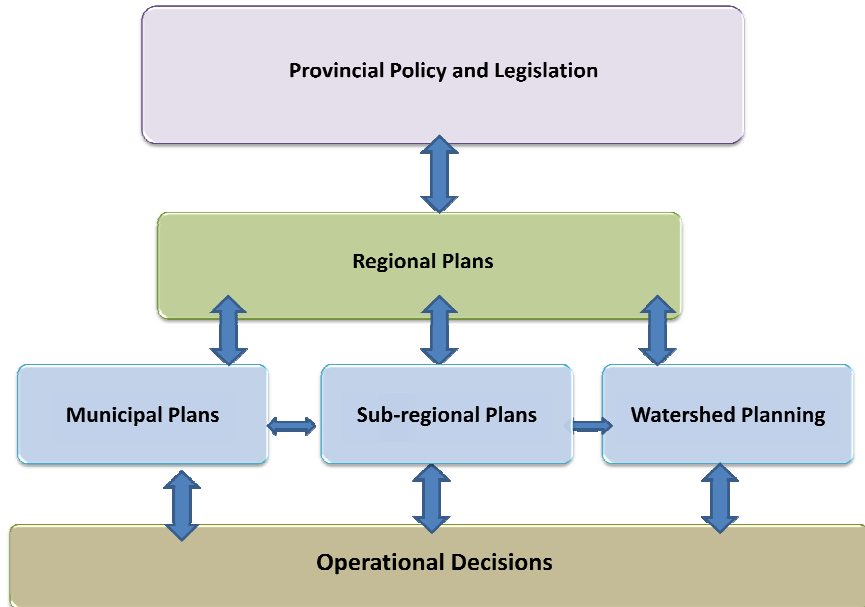


## Align policy with watershed objectives

The context of provincial, regional and corporate policies and regulations must be considered as The City incorporates watershed management outcomes in operational decisions. Conversely, as new provincial policies and regulations are introduced, it is important to communicate the operational impact of changes to policies and regulations to the Government of Alberta.

### Provincial policy alignment: the Water Conversation

In the spring of 2013, the Government of Alberta initiated, “the Water Conversation,” as a means to engage stakeholders and gather feedback on future provincial water policy direction. Through written comments and participation in stakeholder sessions, The City conveyed to the Government of Alberta that it supports sustainable



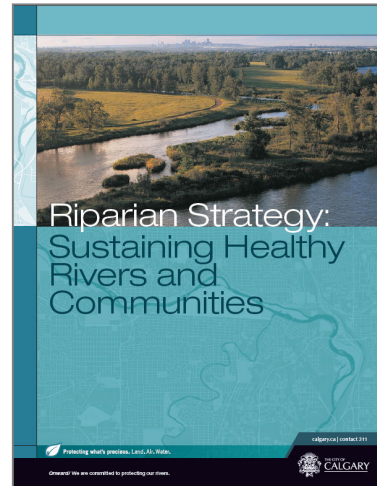
water resource management and has taken considerable measures to invest in water conservation and watershed protection. Potential changes to existing licences, governance models and policy direction could have significant impact on our long-term planning and infrastructure investments.

### Regional policy alignment: Watershed partnerships

The City works closely with its regional partners and stakeholders in watershed planning, which provides a framework for managing water resource quality and quantity within specified drainage areas. City Council has endorsed three watershed management plans: Bow Basin Watershed Management Plan (2008), The Elbow River Watershed Management Plan (2008) and the Nose Creek Watershed Management Plan (2007). Collectively, these watershed management plans provide a regional framework for improving watershed health. In 2013, The City worked with the Nose Creek Watershed Partnership to develop a drainage policy for future development in internal drainage areas and continued working with the partnership on water quality monitoring.

## Corporate policy alignment: the Riparian Strategy

The City developed a Riparian Strategy in 2013. The Riparian Strategy provides strategic direction to the protection, restoration, and management of riparian areas within Calgary. Next steps will be the development of indicators and targets and an implementation plan to ensure that riparian areas are managed and protected through an integrated and adaptive water management approach.



## Develop technical tools and promote adoption of improved technology



### Increasing adoption of water management practices

The City continues to work proactively with its partners and across the Corporation to provide ongoing training for staff and to the local development and building industry. Through this partnership staff maintain their certification and industry increases its capacity, resulting in improved implementation of best management practices in water conservation, stormwater management and erosion and sediment control.

## Replacing inefficient fixtures: diversifying toilet rebates for home and business

Recognizing the great opportunity to see significant water savings in the hotel/motel industry, in 2013 The City supported replacement rebates of 550 toilets, reducing demand by 50 million litres per year. Additionally, toilets rebated through the residential program in 2013 accounted for over 9300 toilet replacements in Calgary homes.

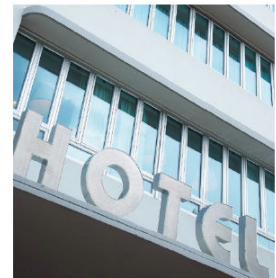
### Hotel/Motel Toilet Replacement Program

Reduce water, maintenance and repair costs by replacing old and possibly leaky toilets that flush 13 litres or more with economical tank type high efficiency (HET) or low-flush toilets.

Your establishment could benefit from:

- A \$50 rebate on HET and low-flush toilets installed under the program.
- Reducing your annual water bill by 31 cubic metres per toilet replaced.
- Recouping the cost of replacing toilets within a year.\*
- Attracting eco-conscious clients by improving your Green Key Eco-rating.\*\*

\* Values based on 2008 Pilot Project Findings.  
\*\* To find out more about the Green Key Eco-rating program, please visit [hotelassociation.ca/site/programs/green\\_key.htm](http://hotelassociation.ca/site/programs/green_key.htm)



[calgary.ca/waterservices/ici](http://calgary.ca/waterservices/ici) | call 3-1-1

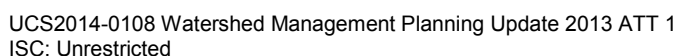
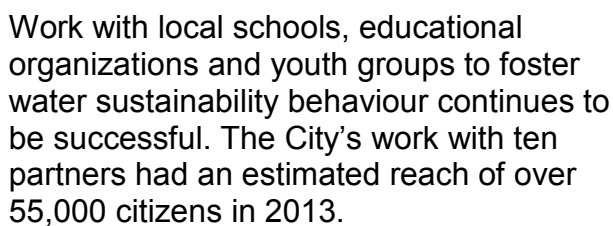


Riparian areas mapping is a tool which can be used to support and complement a wide range of corporate plans and policies and is intended to support effective riparian land management, conservation and restoration. A post-flood assessment was completed to determine the flood effects on riparian areas. In general, it was found that those sites that had been assessed as healthy in the past are in good shape following the flood. The riparian areas mapping will inform future operational decisions across The Corporation.



The Yard Smart program continued to encourage Calgarians to adopt water friendly behaviours. A partnership with the Calgary Horticulture Society was expanded and resulted in a demonstration garden and the ability to share expertise through the creation of four “planning your yard” videos accessible to Calgarians on [calgary.ca](http://calgary.ca).

To increase awareness and provide a new way to access our watershed, a walking tour for Calgarians in Parkdale highlighted the many unique historical and infrastructure connections the community has to the river as well as the connection and impact of resident’s own yards to the river.





## Exploring new audiences

As part of the annual Fix a Leak program, a pilot was explored with 25 multifamily residential properties. In 2013, over 3700 units were provided with education about indoor water use and leak detection tools. Of the residents surveyed, 98 per cent checked their toilets for leaks. Working with multiple stakeholders involved with multifamily properties provided valuable insight to develop future programming for this audience.



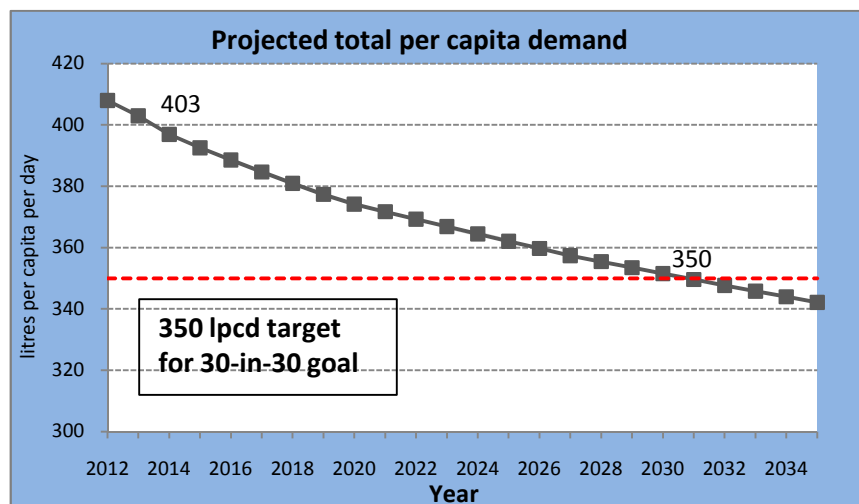
## Evaluation and future planning

### *Watershed monitoring*

Calgary's ongoing watershed monitoring measures surface and runoff water quality. The monitoring programs have been designed to characterize watershed conditions, determine long-term water quality trends, improve the predictions for Calgary's stormwater loadings, and measure the impacts of runoff water on local waterways. Monitoring records are analyzed and incorporated into The City's Total Loading Management Plan report to fulfill the regulatory requirements under The City's Approval to Operate and achieve the ultimate goal in protecting Bow River aquatic health. The monitoring plans will continue and be adapted to meet the current and emerging regulatory requirements.

### *Projected water demand*

Demand forecasting projections indicate The City continues to be on track to achieve the 30-in-30 goal of total per capita demand of 350 litres per capita per day by 2033. Remaining on track to reach the water efficiency targets requires ongoing efforts to achieve



success. As the city continues to grow, new water conservation opportunities must continue to be evaluated and developed. These future opportunities would be expected to come from all customer groups, including City operations.

## Summary

An integrated approach to watershed protection is important to ensure source water protection, flood protection, water conservation efforts, investigation of alternative sources of water, and protection of riparian areas. The City is on track and is progressing on watershed management planning. It is important to continue to work with stakeholders, monitor progress, improve programs and engage citizens to meet watershed protection goals. Moving forward, The City will continue to integrate a water management approach through ongoing source water monitoring, updating and implementing water management plans considering source, supply and quality, and will integrate this work with outcomes of flood mitigation findings. This will ensure a course is set for a proactive and sustainable approach to manage our watersheds and water resources.