Stormwater Management Report

Protecting our rivers for tomorrow

"Water sustains all living things. It's up to us to sustain our water resources."

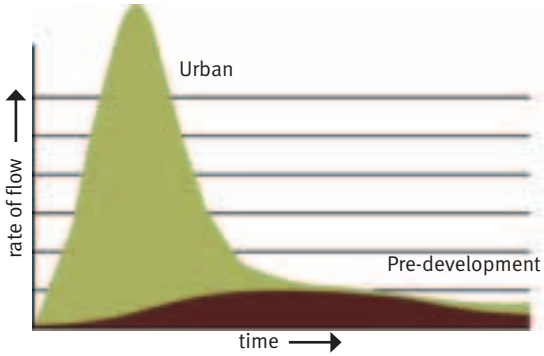
The Bow and Elbow rivers are the source of drinking water for many Albertans, including Calgarians. Maintaining the water quality in these rivers is important to ensure that high-quality drinking water is available for future generations. It is equally important to the fish and wildlife that call these waterways home.

How sediment loading affects our rivers.

Rainwater and snowmelt that enter Calgary's stormwater system carry sediment and debris from roofs, lawns, roadways, pavements and construction sites to our rivers.

This sediment clouds and pollutes the water. This affects the health of our streams and rivers and the land surrounding them. Cloudy water makes it harder for fish to find food, reduces their growth rates, and makes them more susceptible to disease.

Effects of urbanization on volume and rates of surface water runoff



Urbanization increases the flow rate and volume of stormwater, and the amount of sediment that it carries into our rivers. The larger the urban area, the greater the quantity of sediment entering our rivers. Controlling stormwater discharges is essential in maintaining our water quality and protecting our wildlife.

Working together to protect our rivers for tomorrow.

To ensure we are doing our part to protect our rivers and wildlife, The City has developed a Stormwater Management Strategy. It seeks to maintain current levels of sediment loading into the Bow River over the next ten years. Progress is being made but efforts need to continue to produce long-term beneficial results. Its success is dependent on everyone's participation.

Water entering the stormwater system eventually ends up in our rivers with limited treatment. You can do your part to help maintain and protect our rivers.

See the back of this report for ways you can help.

Key indicator: Total Suspended Solids (TSS)

TSS is a water quality measurement that takes into account the solid materials — both organic and inorganic — that are suspended in both stormwater and wastewater. Stormwater contributes approximately ten times more TSS to the rivers then wastewater.

The City of Calgary is growing rapidly. Urbanization removes protective ground covers and natural wetland settling areas and increases the amount of hard surfaces. This increases the amount of surface runoff and TSS that flows into our streams and rivers. The result? The health of our drainage basins and rivers, including the Bow River, is being affected.

Why is this important?

Suspended solids affect the aquatic and plant life within a body of water. They also affect the quality of our drinking water. High TSS in stormwater often means higher concentrations of bacteria, nutrients, pesticides and metals in the river.

What is The City doing to reduce TSS?

Our Stormwater Management Strategy aims to protect the health of our watersheds by reducing the rates and volumes of stormwater runoff, controlling sediment loads, and developing sustainable stormwater management solutions for new development areas.

Our strategy includes five components:

1 Leading by example.

2 Aligning policy with stormwater objectives.

3 Developing technical tools.

4 Raising awareness.

5 Education and outreach.

The mighty Bow River is the source of drinking water for many Albertans, including Calgarians.

Did you know?

The Bow River watershed is home to many different kinds of aquatic life including the Tiger Salamander. One of the largest threats to Tiger Salamander populations is the reduction of wetlands.

1. Leading by example

a) The City's new Water Centre building incorporates several elements designed to minimize the amount of TSS that enters the stormwater system. The Water Centre has a system in place to reuse stormwater and grey water. The site also minimizes stormwater runoff through bioretention (using grass and vegetation to limit runoff), a green roof, and porous pavement in the parking lot.

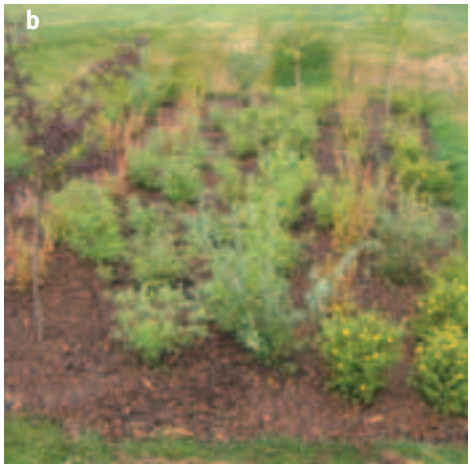
b) The Aurora Business Park, in north Calgary, is a City development designed with sustainable stormwater management in mind. Stormwater is guided through vegetated swales, rather than concrete pipes. Many sustainable practices, including green roofs, bioretention, and porous pavement, will be incorporated into the lot design.

c) The City is committed to finding ways to reduce the runoff and sediment loads from older neighbourhoods that currently do not have stormwater treatment facilities. The Sustainable Streetscape Project involves the construction of a model residential street that improves rainwater management by controlling the quality and quantity of runoff at the source. The project's goal is to evaluate the social, environmental and economic benefits.

d) The City is also conducting stormwater quality improvement studies, which involve identifying potential locations for constructing stormwater treatment retrofit projects, both at a site and community level.

The Water Centre

Bioretention at work



A sustainable streetscape in Seattle

An example of a bioswale

Did you know?

Roads spring-cleaning activities removed about 35,000 tonnes of debris from over 4,200 kilometres of paved roads last year, helping to prevent materials from entering our waterways.

2. Aligning policy with stormwater objectives

The City is working to develop stormwater policies and practices that will promote smart growth and better site design and ensure the protection of our wetlands and the banks of our streams and rivers.

Nose Creek Watershed Water Management Plan

This Water Management Plan outlines ways to protect Nose Creek and the West Nose Creek watersheds. It includes recommendations for policies that will improve water quality, preserve the wetlands and protect the riparian areas and minimize the impacts of urban development.

Pine Creek Drainage Study

The City has also developed new stormwater targets for Pine Creek, intended to protect the creek and minimize the impact of future development on this watershed. New developments within this watershed will be required to apply low-impact development strategies, including containing 90 per cent of annual rainfall events on site.

3. Developing technical tools

The City is conducting a variety of research and demonstration projects to ensure we can successfully implement sustainable stormwater practices in the future. These initiatives include the construction and monitoring of pilot projects, like bioretention, a method of managing stormwater with areas of vegetation that can mimic the natural process for filtering and reducing runoff. We're also exploring porous pavement options, which help reduce the amount of runoff that enters our stormwater system.

Did you know?

TSS can clog fish gills, reduce growth rates and lower their resistance to disease. When suspended solids settle to the bottom of a river, they can smother the eggs of fish and aquatic insects as well as fill in the gravel beds in natural spawning areas.

4. Raising awareness

The City is a founding member of the Alberta Low Impact Development Partnership (ALIDP). The primary goal of ALIDP is to promote changes in land development practices that prevent or reduce the degradation of the natural environment.

ALIDP includes government agencies and non-profit organizations committed to protecting the integrity of our rivers and streams and the land surrounding them, while promoting the growth and prosperity of Alberta's urban centres.

The City is also working with a number of developers who are interested in implementing sustainable stormwater practices in the design of new subdivisions.

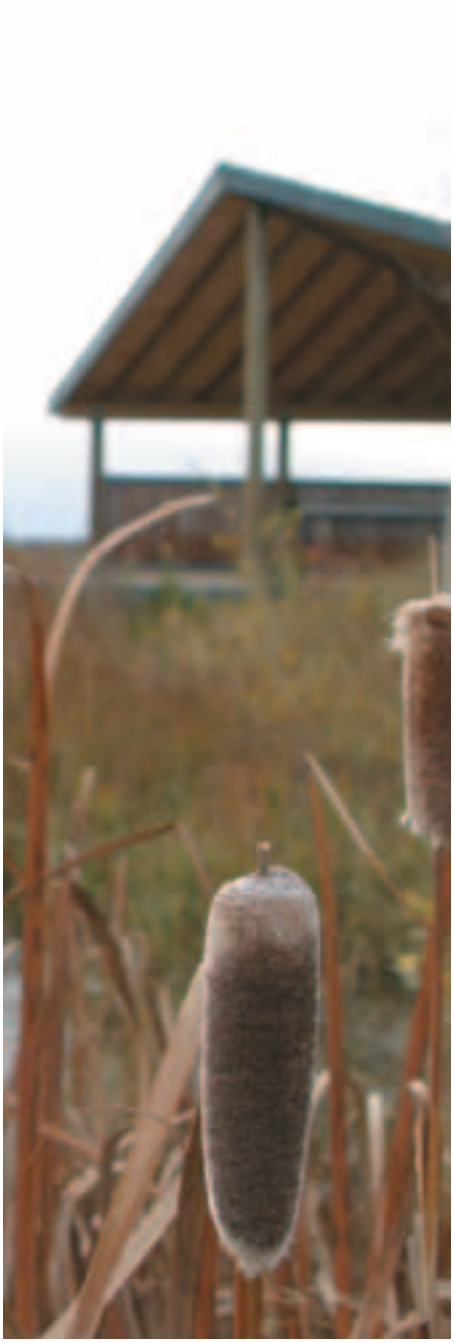
Inside The City, we're working with other business units to identify how stormwater best practices can be incorporated in urban design.

5. Education and Outreach

Each year, The City implements an educational program to inform Calgarians about everyday things they can do to help preserve our watersheds. The program encourages citizens to use rain barrels and plant rain gardens, and offers a variety of tips and ideas they can incorporate into their daily lives. See the back of this report for some of those tips.

The City has also adopted and initiated several youth education programs, teaching children about the importance of our watersheds and how they can help protect them. Many of our initiatives involve working with groups who already operate in Calgary, like Yellowfish Road™. We also facilitate teacher workshops like the Chevron Wetlands in Prince's Island Park.

Programs like Yellowfish Road™ help educate our future generations on how they can help protect our rivers.
Photo courtesy of Trout Unlimited Canada



Did you know?

The term "watershed" refers to an area of land that drains water into a river or other body of water.

Help protect our rivers

We all play an important part in protecting our rivers' water quality. Here are a few things you can do in and around your home to help.

1 · Use a rain barrel to collect water for your garden. Rain barrels reduce runoff and ease the load on our water treatment plants.

2 · Limit the use of fertilizers and pesticides on your lawn that can be carried away by rainwater.

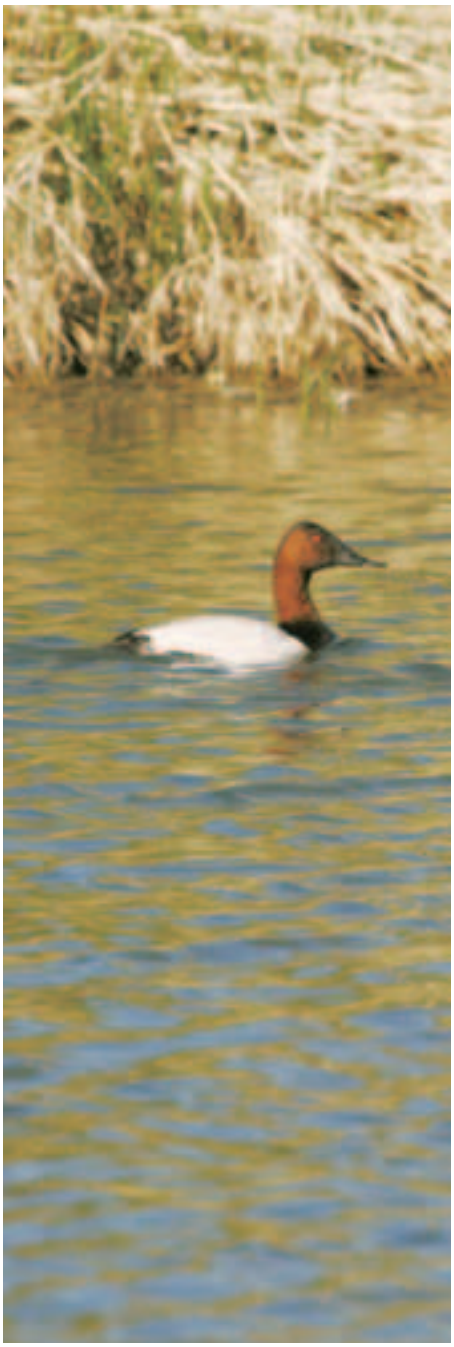
3 · Dispose of hazardous products like motor oil, antifreeze etc., at a designated fire station or landfill. Call 3-1-1 for drop-off locations near you.

4 · Wash your car at a carwash, rather than in your driveway, to prevent soapy water and sediment from entering our stormwater system.

5 · Sweep dirt from your sidewalks and driveways and put it in the garbage, instead of on the road.

6 · Pick up pet waste regularly.

7 · Ensure your downspouts drain onto your lawn or garden areas, not directly onto streets or alleys.



For more information on what you can do to use water wisely, visit calgary.ca/waterservices, or call 3-1-1.

Did you know?

Wet ponds are critical in reducing the sediment that enters the river systems, which can become a major threat to aquatic life.

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