

Stormwater Management

Led by: Director of Water Services

Description

Stormwater Management is a highly regulated, essential and public health focused service that protects property from flooding and ensures our watersheds are healthy by working with citizens and partners. Our service manages water from rain or snow/ice melt by collecting, storing, or moving it into the nearest river or creek through storm drains, pipes, ponds and outfalls. To prepare Calgarians for emergency response to flooding, we work with the community and other levels of government. We monitor river water quality and quantity, assess riverbank health, and we are involved in land use and development issues to reduce water quality impacts and flood risk in Calgary and the region.

Value and benefits

Stormwater Management service plays a critical role to ensure public safety, mitigate property damage and reduce localized and river flooding. Through multi-pronged river bank preservation, public flood readiness programs and climate change response, we improve our city's resilience. Our riparian areas help make Calgary a great place to live. Recreation and enjoyment are key for Calgarians and 83 per cent say that river areas are important to them. We limit sediment going to the river, ensuring healthy rivers for Calgarians and downstream users that value river protection and habitat preservation. We integrate infrastructure to enhance the vibrancy of the natural environment and create unique spaces that connect us to each other, our history and nature. We closely monitor and prioritize spending to deliver great service value for our customers.

Customers

All Calgarians benefit from stormwater management, particularly homes, businesses and communities at higher risk of flooding. Developers also receive guidance and oversight as they complete stormwater design and planning. To be future-ready, we must listen to citizens, businesses and customers. These conversations lead to innovation.

What we deliver

Stormwater, the water from rain and melting snow, is collected and diverted, reducing local and river flooding. Storm ponds and green infrastructure treat the stormwater, sediment and other pollutants before they are released to rivers, creeks and local water bodies. Customers can trust that we work with communities and partners to protect rivers and natural areas.

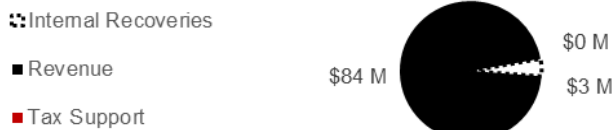
Partners

Non-governmental organizations, community groups and education partners; Government agencies (Alberta Environment and Parks, Infrastructure Canada); Upstream/downstream municipalities, river users and infrastructure operators; Landowners and Developers; City services (Fire, Emergency Management, Transportation, Parks, Planning); Regional municipalities and Calgary Metropolitan Regional Board

342	storm ponds and wetlands throughout city
934	outfalls flowing back to rivers/creeks
26,291	catch basins cleared to reduce flooding
\$92M/year	damage avoided from flood mitigation

Stormwater Management

2022 Budgeted Gross Operating Expenditures Funding Breakdown (\$ Millions)*



* Gross operating budget may include internal recoveries that are also included in other services' gross operating cost.

Note: Internal recoveries is how The City accounts for the costs of goods or services between services

Key assets

Stormwater Management has a growing network of 334 ponds and wetlands, 33 lift stations, 934 outfalls and over 5,000 km of underground pipes throughout our city. Paired with flood protection barriers, embankments, and ditches, this critical infrastructure makes up the holistic system our customers count on to ensure safety, protect property, reduce flooding and preserve the environment.

What we have heard & what we are watching

What we have heard

We prioritize understanding our customers' values, priorities, and service expectations to develop levels of service, guide continuous improvement, and inform long-term planning. Based on our most recent research, our customers' top priorities are the health of the river, public safety and reducing the risk of river and street flooding. Customers expect a low risk of localized and river flooding events that cause property damage, disrupt travel or pose safety risks. Two-thirds of customers expect us to manage stormwater quality and riverbank health to maintain river water quality and riparian health at current levels. Customers want storm ponds in their community to be well maintained, functional and safe. Customers expect us to deliver this and more at a fair price, with predictable and accurate billing.

What Council has directed

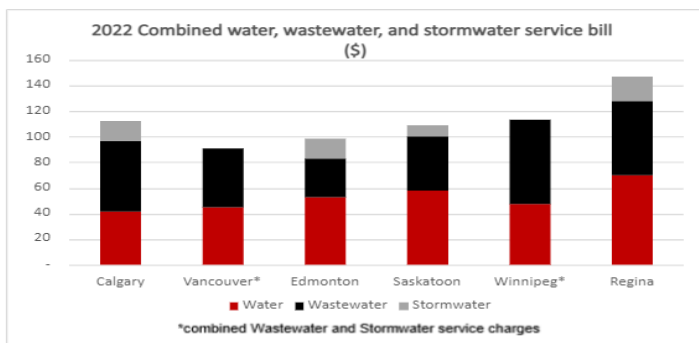
With Council oversight, we are improving water management practices, land use planning and design capacity of stormwater systems to strengthen resiliency. Our Stormwater Management Strategy identifies goals and actions we will take to further reduce flooding risk, mitigate pollutants, ensure regulatory compliance, provide recreation opportunities, preserve habitat, and protect watersheds for Calgarians and downstream users. This direction includes investing in grey, green and natural infrastructure, and ensuring services are cost effective and fair for new and existing communities. Success will be gained through a sustained effort between The City, citizens, property owners, businesses, industry, environmental organizations and watershed partners.

We are being encouraged to be bold and rethink our programs, processes and systems to make life better every day for Calgarians and thrive into the future.

What we are watching

Our customers' priorities are our priorities. Climate change will alter how and when we receive precipitation and could lead to increased localized and river flooding. Improvements in design, policy, and levels of service are required to protect property. Citizen expectations and the regulatory environment continue to evolve, resulting in increased expectations for environmental accountability and progress in spaces like stormwater re-use. This evolution requires flexibility in operations and impacts future planning.

Through engagement, improved understanding of customer expectations helps the service better respond to storm pond safety needs, facilitate collaborative opportunities with the development industry and correct drainage challenges within neighbourhoods. We are watching for opportunities to increase capacity with urban densification and create greater service equity for our diverse customer base. Underpinning everything, our services must remain affordable for everyone.



Comparing our service

In this budget cycle stormwater rates remain at \$16/month. In return, Calgarians can expect major systems investment and a lower likelihood of experiencing neighbourhood flooding.

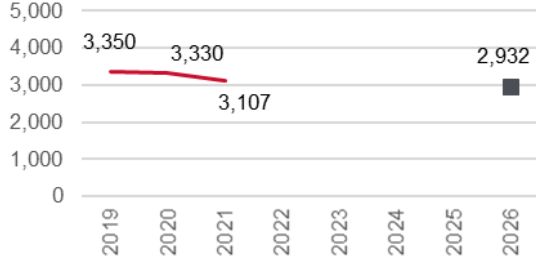
Calgary's water, wastewater and stormwater rates are at median with other cities on small rivers that have similar regulatory requirements, environmental conditions, capital obligations and complexity of systems to operate. Comparisons are challenging since growth costs and stormwater charges are calculated differently and many utilities do not pay return on equity to municipalities.

Measuring performance & where we want to go

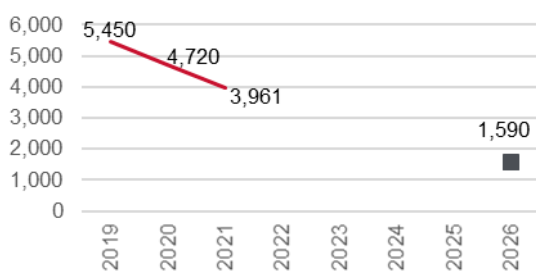
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— Actuals ■ Expected Future Performance

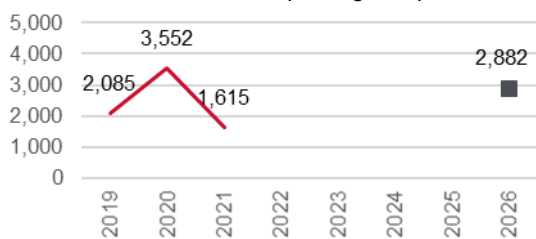
PM1: Number of properties at risk of localized flooding



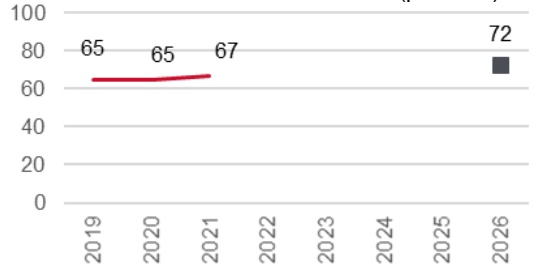
PM2: Number of properties at risk of river flooding



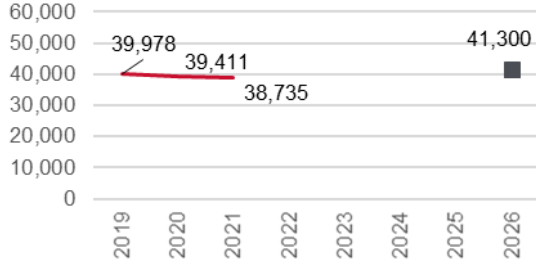
PM3: Number of localized pooling complaints



PM4: Riverbank Areas Health Score (per cent)



PM5: Stormwater sediment entering the Bow River (kg/day)



Story behind the curve

Calgarians trust the Stormwater service to protect public safety and reduce damage to property. Key focuses to protect vulnerable areas from flooding damages during intense storms are the Community Drainage Improvement (CDI) program and a citywide macro scale modelling initiative. Establishing levels of service for neighbourhood flooding and updating the CDI program will help identify required investments to address physical limitations for stormwater solutions in established communities. Planned capital upgrades of \$107M will support improved service levels and enhance safety of residents.

Key strategies to reduce river flooding risks centre on capital investments in upstream dams, reservoirs, barriers and outfalls as well as continued enhancements in flood zone regulations and public education. A standout example is the Springbank Offstream SR1 Reservoir that will work with other measures on the Elbow River to avoid nearly \$120M/year in annual flood damages. Since 2013, over half of Calgary's net economic risk exposure has been eliminated through strategic investments and partnerships with government, industry, property owners, NGOs and citizens.

Stormwater pooling complaints are highly variable and reflective of increased wet weather. In many cases water is pooling away from properties, intersections, and higher risk areas as designed. To keep this service flowing, Stormwater crews completed approximately 38,000 preventative maintenance inspections and 2,000 work orders in 2021 (receiving 163 customer compliments). Additional resourcing is being put in place to increase operational capacity for infrastructure condition assessments, respond to extreme weather events and to increase customer understanding of the stormwater system.

River banks, also known as riparian areas, are integral to maintaining healthy rivers and play a role in slowing flood waters. The City's Riparian Action Program (RAP) establishes actions to protect, manage and restore river banks and sets a 2026 performance value of a city-wide average riparian health score of 72%. The measure has increased to 67% from the 2007-2010 baseline of 61%. Improvements are due to improved management of recreational sites, ongoing riparian restoration projects and improved soil fertility and vegetation regeneration following the 2013 flood.

Sediment entering the Bow River remains below the 2005 benchmark target of 41,300 kg. In 2020, the Bebo Grove storm pond in Woodland/Woodbine was completed and resulted in 567 kg/day of sediment diverted from the river. Over the next cycle, \$32M in stormwater servicing investments will reduce stormwater impacts from new communities on the river and help the Utility and our industry partners to enable development. Continued focus on watershed health, maintaining critical stormwater infrastructure, and spill mitigation initiatives help keep this measure below the benchmark target.

What we plan to do

Result for 2023-2026

We will work with communities and partners to deliver infrastructure and programs to ensure public safety, reduce property damage, and protect our rivers. We are committed to climate change mitigation and reducing the number of properties at risk of river and community flooding.

How we are going to get there

Reduce risk of localized flooding by continuing to invest in community and local drainage improvements, evolving the community drainage program to achieve desired levels of service, and quantifying the investments needed to address gaps and physical limitations of stormwater infrastructure in established communities.

Create safe and resilient communities through the continued delivery of strategic initiatives and capital flood mitigation projects to reduce the risk of river flooding.

Build resilient communities by guiding redevelopment in established areas to mitigate flood risks and working with developers on innovative stormwater management solutions that enhance public spaces.

Maintain service resilience by ensuring appropriate resources to respond to more frequent and extreme events and operate the growing Stormwater Management network (334 ponds and wetlands, 33 lift stations, 934 outfalls and over 5,000kms of underground pipes).

Build understanding of customer interactions and expectations of the Stormwater line of service. Develop programs that build customer awareness and shared responsibility for managing water quality and quantity on private property.

Reduce the risk of safety incidents on stormwater infrastructure through the development of a storm pond safety program. Build understanding of investments needed for communicating, partnering, designing, and upgrading storm ponds to meet program goals for safety.

Adapt to our future climate by delivering and enabling investments and advancing initiatives that reduce flood risks and pollutants entering the river, and ensure operational staff and systems are prepared to respond to more frequent and extreme rain and flood events.

Meet future needs and advance the Stormwater Strategy to guide prioritization and resourcing for key initiatives on low impact development, watershed targets, customer and developer engagement, and partnership in development of public spaces.

Protect the health of the river and maintain our environmental performance by continuing to meet regulatory requirements on total loadings to the river and mitigating the risk of spills into the stormwater system.

Establish levels of service, optimize value, and deliver service equity by leveraging innovation, data, technology, and customer insights.

Optimize investment decision-making and proactive service delivery through the development of Stormwater Asset Management plans and preventative maintenance plans to align capital investments, maintenance contributions and operational resources.

Build shared priorities, develop objectives and improve activity planning by building partnerships across internal city business units.

Operating budget needed to achieve results

For Council Approval

Breakdown of net operating budget (\$000s)

	2023		2024		2025		2026	
	Base	One-time	Base	One-time	Base	One-time	Base	One-time
Previous Year's Net Budget	-	-	-	-	-	-	-	-
Previously approved One-time budget	-	-	-	-	-	-	-	-
2022 One-time carry forward	-	-	-	-	-	-	-	-
Revenue Changes	(2,995)	-	(261)	-	320	-	1	-
Internal Recoveries Changes	(151)	-	(87)	-	(84)	-	(86)	-
Inflation	154	-	270	-	325	-	291	-
Operating Impact of Previously Approved Capital	1,799	-	(2,501)	-	(1)	-	(225)	-
Operating Impact of New Capital (Incremental)	299	-	1,520	-	1,741	-	1,847	-
Service Reductions	-	-	-	-	-	-	-	-
Service Increases	1,639	-	608	-	560	-	573	-
Transfers to/(from) reserves	(745)	-	451	-	(2,861)	-	(2,401)	-
Total net budget	-	-	-	-	-	-	-	-

Total Operating Budget (\$000s) for Approval

	2022 Budget	2023			2024			2025			2026		
	At April 30	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total	Base	One-Time	Total
Expenditures	87,302	90,448	-	90,448	90,796	-	90,796	90,560	-	90,560	90,645	-	90,645
Recoveries	(3,487)	(3,638)	-	(3,638)	(3,725)	-	(3,725)	(3,809)	-	(3,809)	(3,895)	-	(3,895)
Revenue	(83,815)	(86,810)	-	(86,810)	(87,071)	-	(87,071)	(86,751)	-	(86,751)	(86,750)	-	(86,750)
Net	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Figures may not add up due to rounding.

Capital budget needed to deliver service

For Council Approval

Activity	Investment Name	2023 Request (\$000s)	2024 Request (\$000s)	2025 Request (\$000s)	2026 Request (\$000s)	2027+ Request (\$000s)	Total Request (\$000s)
Annual Investment Program(s)							
		-	-	-	-	-	-
Program(s)							
453429	Drainage Facilities & Network	39,455	47,696	47,696	47,696	-	182,543
Projects(s)							
		-	-	-	-	-	-
Sub-Total (New Budget Requests)		39,455	47,696	47,696	47,696	-	182,543
Previously Approved Budget Remaining		8,241	-	-	-	-	8,241
Total Capital Investment		47,696	47,696	47,696	47,696	-	190,784

Explanation of capital budget requests

Program(s)

Activity 453429: Drainage Facilities & Network

Maintain the delivery of stormwater services in existing communities, extend services to new communities and improve service in flood prone areas.

Funding From: Capital Reserves (\$72,062 thousand) Self-supported Debt (\$110,481 thousand)

Contributing Services: None

Operating Impact: This request requires \$299 thousand base funding of operating costs starting in 2023, \$1,520 thousand base funding of operating costs starting in 2024, \$1,741 thousand base funding of operating costs starting in 2025, and \$1,847 thousand base funding of operating costs starting in 2026.