Stormwater Management

Led by: Director of Water Services

Service 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.

Service Updates

Highlights

The updated Stormwater Management Strategy sets long-term direction to support growth while exploring new and innovative ways to manage stormwater runoff, improve water quality and decrease pressure on our shared system. Coupled with a climate change lens, we incorporated feedback from the public, partner organizations and industry. This shared responsibility approach remains key for this service.

The N.W. Inner City Upper Plateau Separation project contributes to flood mitigation, climate resilience and public safety. This project reduces flood risks in Sunnyside by providing a new route to the Bow for excess stormwater accumulated in the Rosedale community. In Q2, a tunnel near Rosedale Park to the Bow River was completed using technology called microtunneling. By using this technology, the project was completed with minimal community impact and crossed underneath Memorial Drive to avoid road closures during excavation.

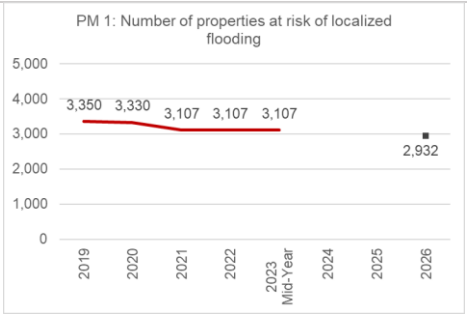
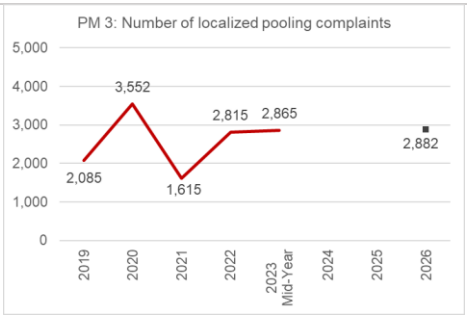
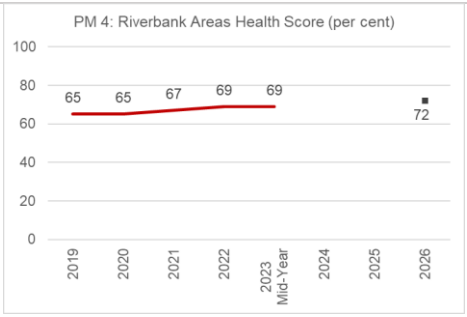
Challenges

Spring melt conditions lead to significant pooling of surface water on primarily residential roads. During a two-week period there were 2,847 service requests to 311. Many catch basin leads were frozen solid below ground and required thawing equipment. The Stormwater Operations and Climate Adaptation Teams have been working collaboratively to collect information and further understand conditions that contribute to frozen catch basins.

While we will still see highly variable annual and seasonal trends, it is likely that frozen catch basins, surface pooling, and fast spring melt conditions will be exacerbated by climate change. Stormwater Operations will be working with Mobility to put together a more preventive response plan for future years. However, with over 60,0000 catch basins in Calgary, we will also need to engage with public to build an understanding of what to expect in a changing climate and how they can continue to help with local drainage issues during thawing events.

Measuring Our Performance

Legend Actuals | Expected Future Performance | Progressing as planned | Not progressing as planned

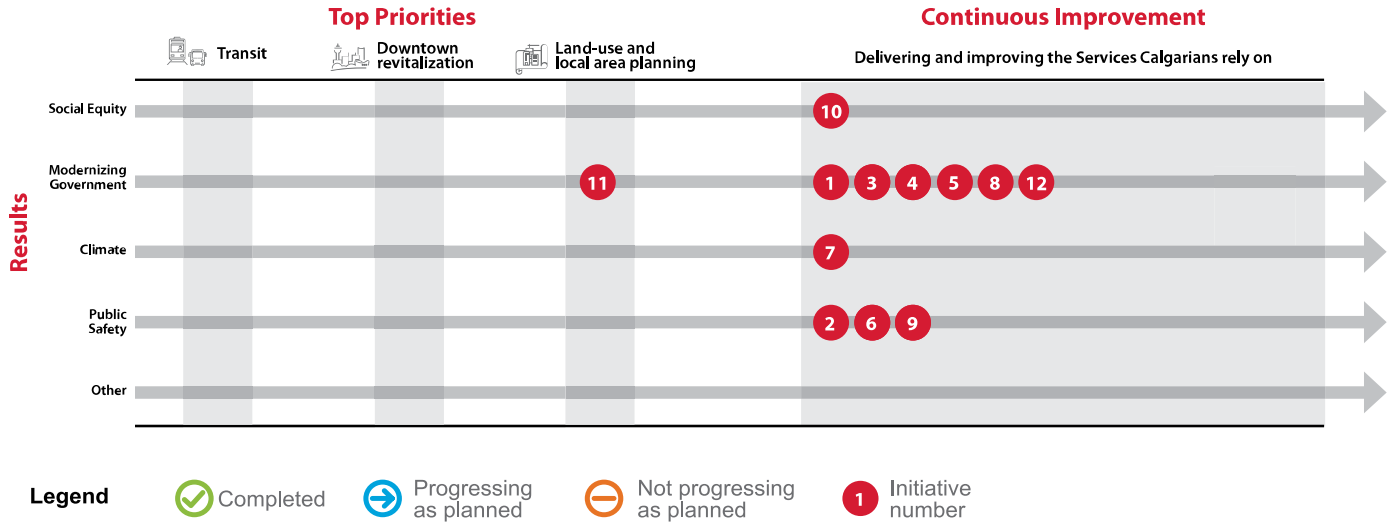
Performance Measures	Story behind the numbers	Status
	Calgarians trust the Stormwater service to protect public safety and reduce damage to property. Key focuses to protect vulnerable areas from flooding damages during intense storms are the Community Drainage Improvement (CDI) program and a citywide macro scale modelling initiative. Establishing levels of service for localized 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 the safety of residents.	Progressing as planned
	Stormwater pooling complaints are seasonal and variable dependent on snowpack, temperature fluctuations and intensity of rainfall events. In continuing to maintain and operate assets, Stormwater crews completed ~3,600 work orders and ~1,400 preventative maintenance inspections. Operations are continuously evaluating ways to better manage assets and respond to customers, while aligning with the new Stormwater Strategy. Resourcing is being put in place to increase responsiveness to extreme weather events driven by climate change and to increase customer understanding of the stormwater system.	Not progressing as planned
	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 establishes actions to protect and manage river banks and sets a 2026 target of a city-wide average riparian health score of 72%. The score has increased to 68.9% from the 2007-2010 baseline of 61%. This improvement is the result of ongoing City investment in riparian/bank restoration.	Progressing as planned

Note: Not all performance measures were reported on for this report. To see the 2022 data for performance measures, please visit Service plans and budgets (calgary.ca). Additional measures that will be included in the 2023 year-end performance report include:

PM 2: Number of properties at risk of river flooding
PM 5: Stormwater sediment entering the Bow River (kg/day)

Progress on Service Delivery

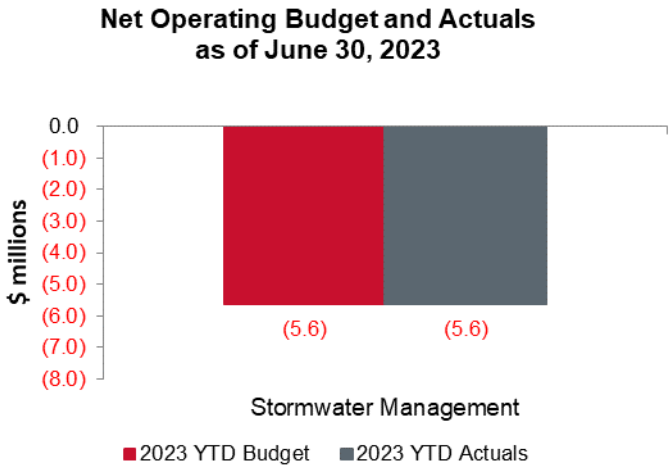
Alignment with Council Refined Priorities and Result Areas



	Initiative	Initiative Update	Status
1	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.	The Accelerated Community Drainage Improvement (CDI) program has established city-wide modelling in an effort to include inundation mapping approaches to quantify flood risk in established areas. Work is underway to update our approach to quantify the potential impact of stormwater flooding on a monetary basis.	
2	Create safe and resilient communities through the continued delivery of strategic initiatives and capital flood mitigation projects to reduce the risk of river flooding.	Progress with flood mitigation has eliminated 55 per cent of risk Calgary had in 2013. Progress continues Springbank Off-Stream Reservoir, flood hazard mapping updates and upstream reservoir options on the Bow. New flood infrastructure (like Glenmore Dam gates) has made it easier to accommodate drought as well as flood.	
3	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.	Options for a stormwater incentive program will be further explored, in connection with new programs and leveraging opportunities to improve working group composition.	
4	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).	Accountability for stormwater has formally transferred to a dedicated division within the Water Utility. The new Stormwater Operational Performance team has new leadership in place and new operational engineering positions are being resourced. Work to build out Asset Management and Operational and Maintenance plans identified in the Stormwater Strategy has started.	

	Initiative	Initiative Update	Status
5	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.	The updated Stormwater Strategy was finalized and was presented to Council. Part of the strategy was to re-engage with partners and external stakeholders to validate the strategy and address any questions. This process ultimately resulted in letters of support from seven critical industry and watershed groups.	
6	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 stormponds to meet program goals for safety.	The first phase of the Storm pond safety project is complete with insights and recommendations coming forward in Q3 of 2023. This work has focused upon coordinating awareness, education and outreach on the dangers of storm ponds.	
7	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.	For 2023, Water Services has initiated planning steps to build out plausible future scenarios (2050s, 2090s, 2100s), enabling us to further understand how climate change might impact the watershed and the region. This approach will help us prioritize risks and actions needed to prepare for this future reality. Additionally, positions are in the process of being added to increase focus on climate related Stormwater Management opportunities in addition to those captured in the Stormwater Strategy.	
8	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.	Stormwater Strategy implementation is taking shape around the four cornerstone focal areas. The work is encompassing and bringing holistic focus to complex issues like Green Stormwater Infrastructure and watershed targets. Continued engagement with the development industry has occurred around Nose Creek annual volume targets, supporting strategies and implementation plans.	
9	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.	The Emergency Response Plan for spills into stormwater is being strengthened to prepare for larger scale releases and plan more effective coordination between Field Operations, communications and contractor services. The Stormwater Pollution Prevention Team worked closely with Industry to develop a code of practice which defines a review and approval process. We continue to track below regulatory limits and within targets for loadings of total suspended solids and nutrients. Work is ongoing to enhance the Shepard wetland, and stormwater loading software is being used to model future trends.	
10	Establish levels of service, optimize value, and deliver service equity by leveraging innovation, data, technology, and customer insights.	In the first half of 2023, the Water Utility established a more formalized and rigorous customer research program which will increase understanding of customer needs and experience. These customer insights will be used to drive equity and innovation work. The Water Utility is also focused on defining clear service levels for established communities, green stormwater infrastructure and performance targets.	
11	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.	Detailed planning is underway to create a comprehensive Stormwater Asset Management and Preventative Maintenance Plan to align capital investments, maintenance contributions and operational resources. A draft plan is expected later in 2023.	
12	Build shared priorities, develop objectives and improve activity planning by building partnerships across internal city business units.	The service team used the draft Stormwater Strategy as a foundation to strategize stormwater objectives across departments and business units.	

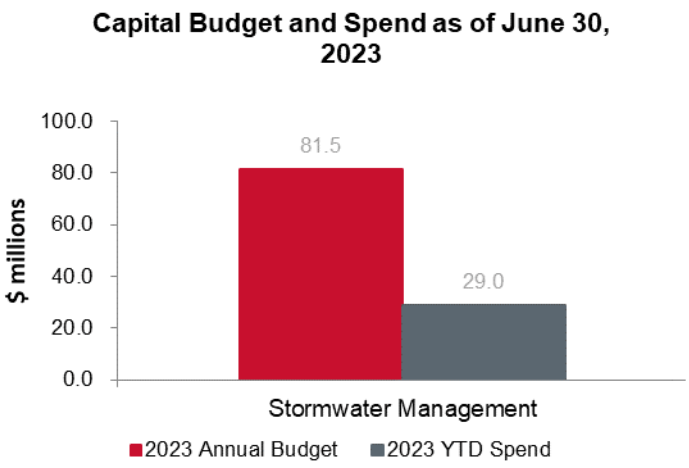
Service Updates on Financial Performance



Operating Budget Updates - 2023 YTD net operating budget vs actuals:

The Stormwater Management service is self-supported. The year-to-date (June 30, 2023) variance is $0.01 million favourable after transferring the operating surplus of $15.9 million to reserve. The transfer to reserve was higher than the budget of $13.0 million, with higher than budgeted revenue, lower than budgeted Materials, Equipment and Supplies and Salaries and Wages offset by higher Contract and General services and Utilities expenses.

The transfer to reserve is used to fund capital expenditure including replacements, upgrades and investment that occur year after year. The planned transfer to reserve also builds the line of service sustainment reserve balance to the Council approved target. Because the transfer is larger than planned, the reserve target may be achieved sooner.



Capital Budget Updates - 2023 total capital budget vs 2023 YTD spend:

The 2023 capital budget is $81.5 million with a year to date spend of $29.0 million. The projected year end spend is $81.5 million (100 per cent). Capital investments focus on improving watershed health and mitigating flood risks. Supply chain issues affecting the availability of material and resources continue to have impacts on project delivery. Examples of major investments include:

•Community Drainage Improvement ($8.7 million invested to date in 2023). Investments continue in northwest inner-city communities including the Upper Plateau Separation project. Improvements involve engineering design and construction to enhance the stormwater service potential and capacity to reduce the risk of flooding and improve resiliency against the impact of climate change.

•Downtown Flood Barrier ($1.1 million invested to date in 2023). Construction of a permanent flood barrier on the south bank of Bow River between Eau Claire Park and Reconciliation Bridge is slated for completion in 2025.