2025

State of
SASKATOON STORM WATER INFRASTRUCTURE

City of
Saskatoon

CONTENTS

The State of Report is a standardized Corporate Asset Management tool designed to give City Council and Executive Leadership a strategic overview of each infrastructure portfolio. It outlines the current condition, performance, risk levels, service level achievement and asset management capacity, promoting transparent, evidence-based decision-making across the organization. A Corporate Asset Management Consolidated Report consolidates findings from all asset portfolio State of Reports into one overall executive summary report.

INTRODUCTION

This report examines the current state of the City of Saskatoon's (City's) storm water assets, including inventory, condition ratings, and data reliability to provide a clear understanding of the system's health and performance. It evaluates service performance metrics to determine whether storm water services meet established service levels.

Additionally, the report outlines investment needs, covering operational, maintenance, and capital cost projections necessary for sustaining and improving the storm water system. It also assesses risk profiles and mitigation strategies, addressing potential vulnerabilities such as climate adaptation and emergency response planning.

"The storm water infrastructure service program, which is funded and managed by the City of Saskatoon's Storm Water Utility, works to ensure Saskatoon residents are provided storm water management and flood protection services, managing storm water as it is collected from properties and roads to the South Saskatchewan River. Additionally, the service program monitors and mitigates damage to strategic public infrastructure along the riverbank."

Furthermore, the report identifies data gaps and proposes action plans to improve asset management and decision-making. By highlighting challenges and opportunities within the storm water system, this report equips City Council and senior management with the insights needed to prioritize investments, enhance service delivery, and ensure the long-term sustainability of Saskatoon's storm water infrastructure.

STEWARDS

The City's Storm Water Utility is the primary owner of storm water assets. Multiple civic departments receive funding from the Storm Water Utility for asset preservation, operations and maintenance, and other initiatives related to storm water infrastructure. Table 1 summarizes the roles and responsibilities of various departments related to storm water infrastructure.

Table 1: List of Storm Water Internal Stakeholders

Department	Roles and Responsibilities	Lifecycle Phases
Saskatoon Water (SW)	• Asset management planning for ponds, outfalls, culverts • Long-range system planning • Storm sewer modelling • Development review and enforces storm water design standards	Planning, Acquisition, Renewal, Condition Monitoring, Improvement

	• Operations, maintenance, and asset management planning of storm water pump stations	
Water and Waste Operations	• Day-to-day operations and maintenance of storm sewers, ponds, and outfalls • Inspections (CCTV, manholes, catch basins) • Emergency repairs • Asset condition updates	Operations, Maintenance, Emergency Repair, Minor Renewal
Roadways, Fleet, & Support	• Day-to-day operations and maintenance of surface drainage (culverts, swales) • Fall street sweep to minimize debris into storm sewers • Support for spring melt drainage management	Operations, Maintenance
Technical Services	• Asset condition assessments for linear storm infrastructure (CCTV, visual inspections) • Asset preservation planning for linear storm infrastructure (lining, replacements) • Capital renewal prioritization	Inspection, Condition Monitoring, Renewal, Replacement
Construction & Design	• Surveying, inspection, and shallow utility review • Project management for capacity improvement and asset rehabilitation projects • Project management for the construction of new infrastructure	Acquisition, Construction, Commissioning
Community Standards	• Drainage bylaw enforcement, including drainage inspections • Development of drainage regulations	Regulation, Risk Mitigation
Sustainability	• Provides environmental policy and supports initiatives that protect watersheds and natural resources (including storm water quality, low impact development, wetlands, and climate action initiatives)	Innovation, Environmental Protection, Climate Adaptation
Communications & Public Engagement	• Public outreach campaigns • Supports communications related to Storm Water Utility projects	Customer Communication, Risk Awareness, Education
Finance & Revenue	• Storm water utility billing and collection services • Financial reporting and reserve management	Revenue Collection, Funding Administration
Planning and Development	• Leadership for future growth planning	Growth Planning, Acquisition Support

| Parks | • Maintenance of dry ponds, landscaping adjacent to wet ponds, swales, and other natural infrastructure in parks
• Landscaping design of new storm water dry ponds | Operations, Maintenance, Commissioning |
| Recreation and Community Development | • Planning and overseeing recreational use of storm ponds | Customer Communication, Amenity Development |

Additionally, select external organizations have a vested interest in the City's storm water network. These include organizations that have received financial or staff in-kind support from the City related to maintenance or research projects for storm water infrastructure, organizations that have provided funding to the City for capacity improvement or asset rehabilitation projects, and regulatory agencies. These organizations and their respective roles and responsibilities are summarized in Table 2.

Table 2: List of Storm Water External Stakeholders

Organization	Roles and Responsibilities	Lifecycle Phases
University of Saskatchewan	• Partner on storm water and climate change related research projects	Inspection, Innovation, Improvement
Meewasin Valley Authority	• Partners on storm water quality research and community education/awareness initiatives	Innovation, Environmental Protection, Operations
Saskatchewan Association of Watersheds (SAW)	• Partners on storm water quality research and community education/awareness initiatives	Innovation, Environmental Protection, Operations
Government of Canada	• Partners on capital projects improving existing storm water assets or providing flood mitigation	Renewal, Improvement
Government of Saskatchewan	• Partners on capital projects improving existing storm water assets	Renewal, Improvement
Water Security Agency	• Regulates aquatic habitat protection of natural water bodies upstream and downstream of the City's storm water system, including the South Saskatchewan River	Operations, Environmental Protection

CURRENT INVENTORY AND VALUE

The Storm Water Utility's **minor system** consists of piping, manholes, catch basins, and outfall structures that can convey runoff from more frequent, lower intensity storm events (up to a "1-in-2-year" storm).

The **major system** consists of overland street drainage, dry ponds, wet ponds, major ditches, swales, and any other land that is required to convey runoff from less frequent, higher intensity storms that produce runoff in excess of what the minor system typically handles.

The City's storm water infrastructure has a replacement value of approximately $3.0 billion. The inventory for each asset was sourced from the City's GIS database up to December 31, 2024.

Replacement values were updated to reflect contract costs from contracts up to and including 2024. Some values have changed from previous reporting due to variations in costs, system growth, and updated data. Notably, certain inventory numbers have decreased from previous reporting due to a revised methodology used to calculate inventory values, which incorporates GIS data.

Table 3: Storm Inventory and Valuation

Asset	Inventory	Replacement Value
Sewer Mains	717 km	$ 2,477 M
Manholes	8,099	$ 149 M
Valves	328	$ 2 M
Force Mains	3.7 km	$ 8 M
Service Connections[1]	2,871	$ 29 M
Catch Basins	13,423	$ 75 M
Catch Basin Leads	155 km	$ 85 M
Dry Ponds	13	$ 20 M
Wet Ponds	34	$ 102 M
Culverts	11 km	$ 7 M
Outfalls[2]	91	$ 4 M
Sub-drainage[3]	40 km	$ 15 M
Oil & Grit Separators	1	$ 0.05 M
Lift Stations	2	$ 23 M
TOTAL		**$ 3.0 Billion**

[1]*Service connections are split responsibility of City and private property owners*

[2]*Includes City-owned and maintained storm water outfalls only. This does not include sanitary outfalls, or storm water outfalls owned and maintained by private owners or agencies.*

[3]*The sub-drainage system, which includes 38.7 km of roadway sub-drainage and 1.7 km of riverbank sub-drainage, is currently an unfunded asset.*

THE ASSET PERFORMANCE WITH DATA CONFIDENCE

Data Confidence and Reporting Levels

To support more transparent reporting and insights, the framework reports two metrics alongside the data: Data Confidence and Reporting Levels, which are defined in Table 4 and Figure 1, respectively. Reporting metrics for the City's Storm Water Data is shown in Table 5.

Table 4: Data Confidence – Perceived Accuracy of the Information

Rating	Description	Description
5	Highly Reliable	High-quality data sources (trusted, timely, complete, consistent, accurate and relevant)
4	Reliable	Mix of high-quality and some lower-quality data sources requiring SME assumptions
3	Uncertain	High-level assumptions by SMEs inferred from suspect quality data sources
2	Very Uncertain	Primarily based on high-level SME assumptions
1	Unknown	Data source is not known

Figure 1: Reporting Levels: Availability of data in mandatory fields for each asset

0% Reporting
No information was available

50% Reporting
Information was available for half of the assets in this portfolio

100% Reporting
All necessary information was available.
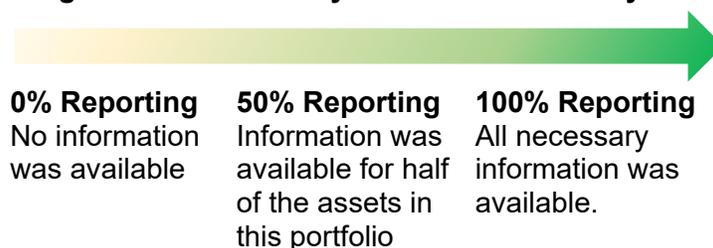
Table 5: Current Condition of Assets

Asset	Amount Rated	Amount Unrated	Total	Data Confidence (1-5)	Reporting Level (% of data available)
Storm Water Mains - Collectors	135 km	512 km (79%)	647 km	5	21%
Storm Water Mains - Trunks	16 km	54 km (77%)	70 km	5	23%
Catch Basin Leads	0.54 km	154.46 km (99.7%)	155 km	5	0.3%

Storm Ponds	45	2 (4%)	47	4	96%
Outfalls	91	0	91	4	100%
Lift Stations	2	0 (0%)	2	4	100%
Manholes	0	8,099	8,099	1	0%
Valves	0	328 (100%)	328	1	0%
Force Mains	0	3.7 km (100%)	3.7 km	1	0%
Catch Basins	0	13,423 (100%)	13,423	1	0%
Ditches	0	TBD	TBD	1	0%
Culverts	0	11 km (100%)	11 km	1	0%
Subdrainage	0	40 km (100%)	40 km	1	0%
Oil and Grit Separators	0	1 (100%)	1	1	0%

Condition Assessment Methodology and Programs

The physical conditions of storm water assets have been assessed and rated based on a sample of CCTV inspections for the storm water mains (2022), catch basin leads (2022), and visual inspections of storm water ponds (2024), and outfalls (2022). As of the end of 2024, approximately 21% of the storm infrastructure network (storm sewer, outfalls, manholes, catch basins, culverts, ponds, etc.) has been inspected. Over 207 km of storm pipes have been inspected (23% of linear storm sewer pipe system), and 152 km of these have been rated (21% of linear storm sewer pipe system).

Physical condition of storm water assets varies by each asset type and by the defects used to develop the condition rating. The physical condition grades are assigned on a five-point scale from "A" to "F". The grading system developed is shown in Table 6 and Table 7, and the storm infrastructure condition information is shown in Table 8.

While many assets are inspected on a regular basis, as shown in Table 8, there are also some storm water assets where the condition is not currently rated. Additional information regarding these unrated assets is described in Table 9.

Table 6: Storm Water Asset Grading System

Grade	Implication	Action
A: Very Good	No structural problems evident	Ongoing monitoring and maintenance only.
B: Good	Some structural deficiencies noted	Ongoing monitoring and maintenance only.
C: Fair	Sewer main showing deterioration	Some rehabilitation may be recommended for highly critical mains. Less critical mains should be flagged for increased monitoring
D: Poor	Physical condition is near failure	Rehabilitation is likely necessary in 5 to 10 years and should be considered for long-term budgeting.
F: Very Poor	Physical condition has failed	Rehabilitation or replacement is recommended. Mains should be prioritized for annual rehab programs based on defect severity, main criticality and budget availability.

Table 7: Pond and Outfall Condition Classification System

Asset	Description
Good (A)	Ponds: No Moderate, High or Urgent Action item, 0-5 low or monitoring action items.
	Outfall: The outfall has little to no sediment in the flow path, no objects obstructing the pipe or flow path, no damage to the outfall that would reduce efficiency, minimal erosion, little to no sediment build-up in pipe, and little to no deterioration of the outfall structure.
Average (B)	Ponds: No high or Urgent Action items, 6+ moderate, low or monitoring action items.
	Outfall: The outfall has little to moderate sediment in the flow path, minimal objects obstructing the pipe or flow path, minimal damage to the outfall that would reduce efficiency, little to moderate sediment buildup in pipe, a slightly damaged grate, and/or little to moderate deterioration of the outfall structure.
Poor (C)	Ponds: One or more high or urgent deficiencies.
	Outfall: The outfall has moderate to severe sediment that is obstructing the flow path, moderate objects obstructing the pipe or flow path, moderate damage to the outfall that would reduce efficiency, severely broken grates to missing grates where necessary, and/or the outfall has ponding water that is not able to drain to the river.
Very Poor (D)	Used only to classify outfalls, the outfall has severe to completely obstructing sediment in flow path and/or pipe, the pipe is severely to completely full of sediment, has become separated, there is ponding present in the outfall and it is unable to drain to river, pipe is buried.

Table 8: Storm Infrastructure Physical Condition Information

Asset	Description	Rating	Number	Percent
Storm Water Mains-Collectors	Known conditions of Collector Mains. Rated A, B, C, D, F as very good, good, fair, poor and very poor respectively as of December 31, 2024.	A: Very Good	90 km	13.9%
		B: Good	20 km	3.1%
		C: Fair	16 km	2.5%
		D: Poor	7 km	1.1%
		F: Very Poor	2 km	0.3%
		Not Rated	512 km	79.1%
		Total	**647 km**	**100%**
Storm Water Mains-Trunks	Known conditions of Trunks. Rated A, B, C, F as very good, good, fair, and very poor respectively as of December 31, 2024.	A: Very Good	12 km	17.1%
		B: Good	1 km	1.4%
		C: Fair	3 km	4.3%
		F: Very Poor	0 km	0.0%
		Not Rated	54 km	77.1%
		Total	**70 km**	**100%**
Catch Basin Leads	Known conditions of Catch Basin Lead. Rated A, B, C, D, F as very good, good, fair, poor and very poor respectively as of December 31, 2024.	A: Very Good	0.37 km	0.24%
		B: Good	0.02 km	0.01%
		C: Fair	0.07km	0.05%
		D: Poor	0.03 km	0.02%
		F: Very Poor	0.05 km	0.03%
		Not Rated	154.46 km	99.65%
		Total	155 km	**100%**
Storm Ponds	Storm water pond inspections were completed in 2024. Visual assessment was based on the condition of inlet and outlet pipes, structures, and grates, culverts throughout the park area (as applicable), shoreline and water appearance, erosion control, overland drainage/sump pump discharge, sediment buildup, invasive species, algae and any other visual concerns. Ponds were assigned a condition of good, average and poor. *Note the Weaver Dry Pond was not inspected in 2024.	Good	4	8.9%
		Average	34	75.6%
		Poor	7	15.5%
		Total	**45**	**100%**
Outfalls	Conditions and based on 2022 visual inspection ratings. Inspection ratings incorporated outfall pipe and structure condition, handrail and grate condition, and any factors impeding outflow or causing erosion such as overgrowth, sedimentation, or lack of erosion protection.	A: Good	12	12.8%
		B: Average	51	54.3%
		C: Poor	24	25.5%
		D: Very Poor	7	7.4%
		Total	**94**	**100%**

Table 9: Unrated Storm Water Assets

Asset	Description
Manholes	Manholes are not currently assigned a rating, as only deficiencies are noted in maintenance logs. Implementing a rating system is recommended to be explored in the future based on guidance from National Association of Sewer Service Companies (NASSCO).
Valves	Condition assessment is not currently documented for valves.
Force Mains	Condition assessment is not currently documented for force mains.
Catch Basins	Catch basins are not currently assigned a rating, as only deficiencies are noted in maintenance logs. Implementing a rating system is recommended to be explored in the future based on guidance from National Association of Sewer Service Companies (NASSCO).
Ditches	Condition assessment is not currently documented for Ditches. Ditches are currently an unfunded asset.
Culverts	Condition assessment is not currently documented for culverts. Culverts are currently an unfunded asset.
Subdrainage	Condition assessment is not currently documented for subdrainage. Riverbank subdrainage is funded by the Storm Water Utility; however, roadway subdrainage is currently an unfunded asset.
Oil and Grit Separators	Condition assessment is not currently documented for oil and grit separators. Inspections are completed at minimum annually, and cleaning is completed as required.
Storm Water Lift Stations	The condition assessment of lift stations was last documented by an external consultant in 2018. At that time, one lift station was considered to be in good condition, while the other was recommended to require moderate investment within the next 10 years (upgrades have not yet been completed at the time of reporting).

Service Levels

Storm water service levels are defined in two terms: customer levels of service and technical levels of service. Each level of service measure is categorized within seven areas of customer values that define the expectations of the City's storm water management customers. Table 10 summarizes typical customer expectations for storm water infrastructure.

Table 10: Storm Water Management Customer Expectations

Customer Value	Customer Expectations
Available, Reliable	Sufficient capacity prevents flooding during snow melt and intense rain events up to 1:5 year. Storm water assets function as required, with service requests for maintenance being promptly completed.
Cost Effective, Fiscally Responsible	Storm water management costs are affordable and managed at the lowest possible costs for the required service level.
Responsive	People are informed and consulted, and stakeholders are given opportunities to be involved in the decision-making process. Customers

	are treated with respect and empathy, and prompt responses are provided for storm water-related inquiries.
Sustainable	Long-term plans are prepared, and assets are being managed to provide the required functions for future generations.
Safe	Citizens, customers, and staff are safe when working with storm water assets.
Suitable	Storm ponds are multi-functional, providing required functions, and passive and/or active recreation opportunities as well as habitat for native species.
Environmental Stewardship	Assets are operated and managed in a manner that minimizes damage to the environment, and a vision that views storm water as a valuable resource.

The service level targets and the service provided in 2024 are defined in Table 11 and presented in Table 12. While general descriptions of service levels have been established within each of the following seven areas, specific metrics, asset custodians, and targets for these service levels are not yet fully defined for all assets. Service level targets will be determined as part of the asset management planning process, and as some of the following asset management gaps are addressed:

- Develop and implement sediment and erosion control design and construction guidelines for new developments to reduce sediment deposition in new ponds.
- Operations and Maintenance activities are currently underfunded for the roadway sub-drainage system, ditches and culverts.
- Preservation activities are currently underfunded for lift stations.
- At current funding levels, the City is able to maintain the storm sewer linear network and make incremental progress in reducing the backlog of assets rated in "Poor" condition. There are currently no funding gaps in the capital preservation programs based on existing service level targets. However, continued investment will be required to prevent the growth of that backlog and avoid deterioration in overall network condition.
- Maintenance levels of service are not documented for manhole repairs, outfall repairs, sub-drainage systems, oil-grit separators, ditches, lift stations, and storm pond maintenance. Maintenance is completed based on an emergency or complaint-driven basis.
- The City has two overland drainage neighbourhoods – Montgomery Place and CN Industrial – that are serviced through ditches and culverts. The Storm Water Utility, through capital programs, is improving ditch drainage for the two neighbourhoods. A long-term asset preservation plan is needed to maintain these assets.
- Wet storm ponds are designed to capture sediment and prevent it from discharging into the South Saskatchewan River. These ponds will require dredging in the future as they continue to accumulate sediment. Defined service levels, maintenance plans, and funding are required in the future to implement a dredging program.

Table 11: Levels of Service Grading System

🟩	Achieving the targeted Levels of Service
🟨	Achieving most or very close to the targeted Levels of Service
🟥	Missing key levels of Service targets

Table 12: Service Level Targets and Achievements

Customer Level of Service Description	Service Targets	Service Achieved
Number of properties with sanitary sewer backups due to rain events	0	2
Number of properties/vehicles damaged from flooding due to frozen culverts or catch basins	0	2 (2024)
Number of complaints about storm water charges	0	49 (2024)
Number of storm water infrastructure failures requiring unplanned capital expenditures	0	0 (2024)
Timely distribution of storm water bills and information	By July 31 (odd years)	By September 30 (2024)
Number of wet ponds with active recreation opportunities	12+	12 (2024)
Annual review of and update of City design and development standards manual, storm water drainage system	Annually	2024 Completed
New projects leveraging external resources	Minimum three annually	1 (2024)
Storm water charges ranking among Canadian utilities, single-family residential	Ranks in the lowest half	Ranks 4th lowest among 13
Storm water charges ranking among Canadian utilities, commercial properties	Ranks in the lowest half	Ranks 9th lowest among 13
Investment per property protected from flooding (for 1-in-10-year design storm)	FCS investment of less than $250k/property	$130K/property projected for the first three projects completed to date (February 2024)
Kilometres of storm sewers with an F rating	<5.0 km	2.0 km (2020)
Number of outfalls with urgent or high maintenance rankings	Urgent: 0	Urgent :0
	High: 3	High:15
Number of storm water ponds with high priority rating	High:0	High:0

Storm water bills are accurate with updated Equivalent Runoff Units	Full review every two years	Full review last completed in 2023
Reviews to keep the Storm Water website and related engagement pages current	6 reviews with new rates posted by January 7	8 reviews updates (2024)
Communication initiatives to increase awareness about storm water	Minimum 12 initiatives	17 (2024)
Timely Storm Water Annual report completion	Public release by the end of June	Released in August 2024
Collaboration in innovative Green Infrastructure or environmental stewardship projects	One new or expanded project each year	One (2024)
Number of properties/vehicles with damage from surface flooding in a 1–10-year rain event or less	0	0 (2024)

Asset Criticality and Risk

Storm water risk profiles were evaluated based on an assessment of the asset condition rating, the likelihood of asset failure or asset management hazard (Table 13), and criticality rating, which is the severity of the consequences in case of asset failure (Table 14). Potential consequences considered included risks to assets; incremental maintenance requirements; and other impacts on the City, its citizens, and the environment.

Table 13: Criteria for Likelihood of an Asset Management Hazard

Probability	Description
Low (L)	Unlikely to occur or may occur once during the assets' operational life cycle. Not likely to become critical or increase in intensity or duration.
Moderate (M)	Likely to occur more than once during the assets' operational life cycle. Likely to increase in intensity or duration over the life cycle.
High (H)	Likely to occur more frequently during the assets' operational life cycle (i.e. more than once per decade). Likely to increase in intensity or duration over a decade.

Table 14: Criteria for Determining Asset Management Hazard Consequence Severity

Factor Degree	Description
Low (L)	Likely to cause no to few impacts to the assets or their performance, with minimal damage or repair costs.
Moderate (M)	Likely to cause manageable impact or some damage to the assets or their performance but maintenance or repair costs would be higher than previously budgeted.
High (H)	Likely to cause considerable impact or damage of assets, and maintenance or repair costs would be significant and could require full replacement.

A risk evaluation matrix (risk heat map) was developed to utilize the condition and criticality ratings of each asset management interaction and uses a scale from low to extreme risk. Table 15 categorizes the potential asset management hazards and assigns risk ratings to the Major System Green Infrastructure, which includes storm ponds, swales, and ditches. Table 16 categorizes the potential asset management hazards and assigns risk ratings for the Minor System Grey Infrastructure, which includes storm water trunks, collectors, catch basins, and outfalls.

Table 15: Risk Ratings for Major System Green Infrastructure Vulnerabilities

Consequence Rating		Likelihood Rating		
		Low	**Moderate**	**High**
High		**Moderate Risk** -	**High Risk**	**Extreme Risk** -
Moderate		**Low Risk** -	**Moderate Risk** *Major System Design Standards, Sedimentation, Invasive Species, Contaminants, City Wetland Policy, Heavy Precipitation*	**High Risk** -
Low		**Low Risk** -	**Low Risk** *Construction Debris, Droughts, Freeze/Thaw Cycles*	**Moderate Risk** *Vegetation Growth, Algae*

Table 16: Risk Ratings for Minor System Grey Infrastructure Vulnerabilities

Consequence Rating		Likelihood Rating		
		Low	**Moderate**	**High**
High		**Moderate Risk** -	**High Risk** -	**Extreme Risk** -
Moderate		**Low Risk** -	**Moderate Risk** *Contaminants, As-Builts, Regulatory Requirements*	**High Risk** *Minor System Design Standards*
Low		**Low Risk** -	**Low Risk** *Freeze/Thaw Cycles, Age of Existing Infrastructure, Sedimentation & Debris*	**Moderate Risk** -

INVESTMENT STRATEGIES AND NEEDS

Lifecycle Programs and Analysis

Asset Creation

New storm water infrastructure will be constructed between 2019 and 2028 through the $54 million Flood Control Strategy (FCS). Through nine projects, the FCS will reduce the flooding impacts for at least ten areas with a high risk of flooding. The first three projects of the FCS, W.W. Ashley Park, Churchill Park, and Weaver Park Dry Ponds are now in service, reducing flooding for approximately 114 properties. Additionally, the construction of underground storage tanks in Brevoort Park South was completed in 2024 and is in service to reduce flooding. The park is expected to reopen to the public in 2026 once the landscaping has been completed.

Construction for the Cumberland and University of Saskatchewan (USask) Dry Ponds began in 2025. It will mitigate flooding for properties near the Cumberland Avenue and Main Street, as well as the Cumberland Avenue and 14th Street intersections.

On June 25, 2025, City Council approved the seventh and eighth FCS projects, which include the construction of a dry pond in Cahill Park and storm sewer upgrades along 4th Avenue North and 24th Street East (Downtown). Public engagement and detailed designs for both projects are anticipated to be completed in 2025.

Asset Renewal

Montgomery Place Drainage Improvement Project
This project will improve ditch drainage to reduce flooding in the Montgomery area by reconstructing ditches and driveway crossings, as well as installing standardized culverts. Construction of Phase 2 of the project was completed in 2024, with some remaining outstanding deficiencies to be addressed in 2025. Phase 3 construction is expected to commence in late summer 2025. Phase 3 construction work will be completed in collaboration with roadway preservation work.

CN Industrial Neighbourhood Drainage Improvement Project
The reconstruction of ditches and driveway crossings, along with the installation of standardized culverts, began on Melville Street, Jasper Avenue, and Portage Avenue in 2023 and was completed in 2024. The project also included the construction of a new storm sewer trenchless crossing and storm water outfall into Cartwright Pond. Landscape enhancements surrounding Cartwright Pond are scheduled to be completed in 2025.

71st Street Drainage Improvement Project
The project will improve drainage along 71st Street between Aronec Avenue and Burron Avenue and mitigate flooding at adjacent properties. The scope of the project includes reconstructing the existing ditch and installing new storm sewer pipes, connecting them to the existing storm infrastructure. The project is scheduled to be completed in 2025.

2025 Storm Pond/Outfall Capital Maintenance Work
As part of Saskatoon Water's ongoing efforts to maintain service levels and ensure the effective operation of existing storm sewer infrastructure, priority repair work was identified based on recommendations from the 2021 Storm Pond Visual Assessment Report and the 2022 Outfall Visual Inspection Report. This work is expected to be completed in 2025 by Water and Waste Operations (WWO) and external contractors.

Taylor Street Storm Trunk Remediation
The Taylor Street storm trunk is a critical main for storm water collection for the southeast storm water catchment area of the City. The 1.8 km main was constructed in 1954 of 1,500 mm diameter corrugated steel, while a stainless-steel liner was installed in 1960. Inspections have identified deficiencies with the stainless-steel liner that could lead to significant blockages. Remediation for the storm pipe is currently anticipated to take place in 2026.

Storm Ponds and Outfalls

Since 2020, Saskatoon Water has been completing bathymetric surveys and assessing sediment levels in the City's owned and maintained wet storm ponds, with up to five ponds being surveyed on an annual basis. To date, 18 ponds have been surveyed, with sedimentation buildup varying from as little as 13% to 145% of the dead storage volume of the ponds. The bathymetric survey program is planned to continue for the foreseeable future, with the data to be used (along with results from the current USask Storm Pond Sedimentation research project) to aid in planning of future dredging requirements, including the future development of a storm water pond dredging program.

Saskatoon Water visually inspects all storm ponds and outfalls within the City's network on a tri-annual basis. In 2024, visual inspections of the storm ponds were completed and documented the condition of the pond infrastructure, including storm sewer pipes, slopes, shoreline and water appearance. The detailed report and recommendations are being finalized at the time of this report.

The City's outfall network inspections are scheduled to be completed in 2025 with the inspection report expected to be finalized in 2026. These inspections will analyze deficiencies including but not limited to excess sediment, excess vegetation, separated pipe and the overall physical state of the outfall structure itself.

Operations and Maintenance

WWO operates and maintains below ground storm water infrastructure, including sewer mains, manholes, and catch basins. Table 17 below summarizes WWO's 2024 storm water related maintenance activities including flushing and televising storm water sewers, and cleaning and inspecting infrastructure.

Table 17: Storm Water Infrastructure Maintenance

Activity	2023	2024	Units
CCTV of Storm Mains	15,036	11,859	Meters
CCTV of CB Leads	3,417	1,297	Meters
Storm Sewer Meters	56,581	49,547	Meters
Catch Basin Leads	311	289	Each
Inspect Catch Basins	579	521	Each
Clean Catch Basin	16,174	11,101	Each
Repair Catch Basins	109 repaired	163 repaired	Each
	42 replaced	15 replaced	

Inspect Storm Manholes	319	430	Each
Repair Storm Manholes	102	60	Each
Grout MHs/CBs	15	33	Each
Outfalls	84	84	Each
Storm Ponds	57	114	Each

Research

Storm Pond Sediment Research Project

In 2024, USask began a four-year project studying sedimentation in storm ponds, with the project receiving funding from the City, Natural Sciences and Engineering Council of Canada, and Mitacs. The goal of the project is to enhance sediment retention in wet ponds, improve sediment management, and reduce overall costs for the City of Saskatoon. Outcomes from the project will be used to make future revisions to the City's Pond design standards, the development of design standards for sediment forebays, increased efficiency in pond maintenance and budgeting, and improved safety management for pond winter recreation.

Outfall Debris Catchment Bags

In 2022, the City partnered with USask on a research project funded by the Natural Sciences and Engineering Research Council of Canada. The project included the installation of trash trap nets on two of the City's storm water outfalls.

The findings of this research are expected to be finalized in 2025. Additionally, in 2025 the City piloted the installation of the nets with only an "outer net" installed, which aims to capture larger trash and debris, but would require maintenance on a less frequent basis than the previous inner and outer net installation.

Funding Requirements and Investment Strategies

The Storm Water Utility funds storm water management and flood protection services, including the ongoing operations and maintenance of assets with an estimated replacement value of $3.0 billion. The Storm Water Utility also monitors and stabilizes the East Riverbank to protect strategic public infrastructure.

In 2024, the Storm Water Utility had revenues of $14.2 million, with $13.9 million allocated to operating expenses, which included $9.6 million transferred to the Capital and Infrastructure Reserves. The Storm Water Utility forecasts annual revenue growth of 1-2% over the next five years.

At current funding levels, the Storm Water Utility can maintain the storm water management network and make incremental progress in reducing the backlog of assets rated in "Poor" condition. There are currently no funding gaps in the capital preservation

programs based on existing service level targets. However, continued investment will be required to prevent the growth of that backlog and avoid deterioration in overall network condition.

The service level targets are not established for all storm sewer assets, such as ditches, culverts, subdrainage systems, and lift stations. The service level targets will be determined as part of the asset management planning process, which may potentially result in funding gaps in the capital preservation program.

A sustainable long-term financial plan is essential to ensure that the storm water management network can meet current and future service needs. While current funding levels are sufficient to meet existing program targets, sustaining this position over time depends on maintaining annual increases to storm utility rates that align with service level targets and match construction cost escalation, as well as investment needs for capital renewal projects, flood mitigation projects, and operational and maintenance expenses.

RECOMMENDATIONS AND ACTION PLANS

The following is a list of action items intended to address deficiencies in storm water service levels, improve storm water asset management, and meet future investment needs.

- Develop lifecycle management strategies for critical assets, including budget requirements to improve the state of essential assets.
- Document the current level of service to optimize approved funding, identify funding gaps, and prioritize the maintenance and rehabilitation of assets that need maintenance and are at risk of failure.
- Develop and implement the Pond Dredging program subject to City Council budget approval.
- Continue to monitor and assess the performance of the storm sewer network, including storm ponds.
- Collaborate with internal and external stakeholders as well as other City departments to define storm water service levels, set key performance indicators and create formal inspection rating systems for all storm water inventory assets.
- Prepare a business case for a storm water utility rate increase (starting in 2028) to support capital programs, including flood mitigation, pond dredging, renewal and rehabilitation of at-risk assets, maintaining service levels, and operating a growing storm water management network.
- Continuous review and advancement of the Storm Water AMP to meet ISO 55000 Compliance

FORECASTED STATE OF INFRASTRUCTURE

Projecting infrastructure condition trends presents challenges due to the nature of storm water maintenance, which often addresses issues as they arise. This method limits our ability to proactively determine the condition of storm water assets and make future projections.

Despite these challenges, the following general predictions about infrastructure needs, based on historical data regarding repairs/replacements and other maintenance activities, can be made:

1. Of the 152 km of linear storm water infrastructure (collectors and trunks) rated, 81% (123 km) received a rating of Good or better. As additional linear infrastructure is inspected and rated, the percentage of assets in good or better condition is expected to remain consistent.
2. The City has 94 outfalls within its storm inventory, with 67% receiving a rating of Average or better. These percentages are expected to increase as deficiencies in the infrastructure are addressed through the 2025 Storm Pond/Outfall Capital Maintenance work and subsequent maintenance efforts in the years to follow.
3. Of the 47 storm ponds in the City's inventory, approximately 81% received a rating of Average or better. The future condition of ponds is still to be determined, although deficiencies will continue to be addressed through capital maintenance work. The sediment accumulation may begin to have a more negative impact on the capacity of existing ponds.
4. Approximately 550 catch basins (4% of the inventory) are inspected annually, with 170 being replaced or repaired each year. Over the past seven years, an estimated 21% of the catch basins have been inspected, replaced, or repaired.
5. Since 2018, an average of 100 manholes (1% of the inventory) have been repaired annually, while 350 manholes (4% of the inventory) are inspected each year.

We anticipate the annual percentages mentioned above to remain consistent or potentially increase in the coming years, with increased funding helping to reduce funding gaps.

Additionally, many storm water assets are currently unfunded or underfunded, including the ditch and culvert drainage network, as well as the roadway subdrainage system. Without a future asset preservation strategy in place, these assets will continue to deteriorate over time, potentially resulting in significant capital expenses for replacement or rehabilitation in the future.

Saskatoon Water continues to seek opportunities to address its asset management gaps and work towards enhancing the efficiency and reliability of its infrastructure.