

June 20, 2022 Rain Event Response

ISSUE

On June 20, 2022, Saskatoon experienced heavy rain with accumulations concentrated in the south, southeast and north sides of the city. Upwards of 60 millimeters were received in some areas over the course of one hour. This report provides an overview of the rain event, including the City of Saskatoon's (City) response, impact to civic services and work underway to mitigate future risk from rain events.

BACKGROUND

The City manages rain gauges at eight locations throughout the city to monitor rainfall and its impact to the city's storm sewer infrastructure. Data from the rain event is included in the table below.

Data	Acadia Reservoir	Aden Bowman	City Hall	Fire Hall #9 (Attridge)	Saskatoon Light & Power	Shaw Centre	Wastewater Treatment Plant	Woodlawn Cemetery
Accumulation (mm)	56	65	60	28	69	3	44	27
Peak Intensity (mm/Hr)	96	50	89	46	134	7	91	31
Duration (minutes)	210	240	220	250	225	200	135	375
Return Period (year)	5-25	5-25	5-25	2-5	25-100	<2	5-25	2-5

The peak intensity of the rain event occurred from 12 noon to 2 p.m., resulting in several flooded streets, intersections, as well as private and civic property. Some streets were impassible for a period of time, including portions of Circle Drive, 8th Street and various local streets.

The area receiving the most rainfall during this time period was in the south area of the city, near Stonebridge, with 69mm of rain over the course of the rain event. For short durations up to about 30 minutes, the storm intensity was a 1 in 25-year storm; however, it became closer to a 1 in 100-year storm for periods exceeding 75 minutes duration, as per the current City of Saskatoon Intensity-Duration-Frequency (IDF) curves. Conversely, the areas around the Shaw Centre received only 3mm of rain in the same time period, equating to a 1 in less than 2-year storm.

CURRENT STATUS

Operational Response

The immediate response to the rain event involved emergency services personnel from the Saskatoon Fire Department (SFD) and Saskatoon Police Service (SPS) to ensure the safety of stranded road users, as well as crews from Roadways, Fleet and Support, Water and Waste Operations and Transportation departments. The City's Emergency Operations Centre (EOC) was activated at 3 p.m. on June 20, 2022, to allow for centralized communication, decision-making and planning related to the rain event.

Representatives from 12 civic departments as well as the SPS worked together to ensure the safety of the public and mitigate risk to private property and the city's infrastructure. A representative from Environment and Climate Change Canada was also supporting the EOC.

Various crews worked throughout the afternoon and evening to clear catch basins, address popped manhole covers, open streets once storm water had dissipated, and sweep streets to remove debris.

Some civic services were temporarily impacted during the rain event as follows:

- Some transit routes were detoured to avoid local streets impacted by flooding. The transit terminal at Market Mall was temporarily inaccessible due to surface flooding and stalled vehicles on adjacent streets;
- Garbage collection in a small area of the Avalon neighbourhood was deferred due to flooded rear lanes;
- Three civic facilities were closed due to flooding, including the Saskatoon Field House, Lawson Civic Centre and Lions Arena; and
- Rock Your Roots Walk for Reconciliation was cancelled due to safety concerns posed by flooding and the risk of lightning.

The EOC was deactivated at 9:30 a.m. on June 21, 2022. While some departments were continuing to recover from the storm, normal operations resumed in most cases and enhanced coordination and communication was no longer required. Some of the ongoing work included tracking debris lines in flooded areas to collect data for storm model calibration, monitoring of the riverbank and ongoing repairs at the Wastewater Treatment Plant (WWTP).

Impact to WWTP

The city's storm sewer infrastructure includes lift stations, storm ponds and linear systems (pipes). Storm water is collected via storm drains, usually located at the curbs of streets, and then moved via pipes to large mainline pipes. Eventually the storm water flows into the South Saskatchewan River.

While the sanitary and storm sewer systems are designed to operate independently, storm water does infiltrate the sanitary system through weeping tile, infiltration into pipes, manholes and sump pump connections. The typical average daily flow into the WWTP is estimated at 79 Million Litres per Day (MLD). During the peak of this storm, flows of up to 270 MLD were received. For reference, the previous highest flow rate into the plant in recent history was 170 MLD in 2017. To help reduce flows into the WWTP, residents were asked via social media and news releases to avoid running washing machines, dishwashers or flushing toilets unless absolutely necessary.

While the high flows into the sanitary system during a storm help to flush out debris and solids in the pipes, these materials and increased flows travel through lift stations, the sanitary collection system and end up at the WWTP. The WWTP was operating at maximum capacity and became overwhelmed with the amount of inert materials

entering the facility. This resulted in a minor spill of approximately 70 cubic metres of raw sewage to the river at a rate of roughly 0.025 cubic metres per second for 45 minutes (equivalent to approximately 0.02% of the river flow). As per protocol, the spill was reported to the provincial spill centre and downstream users. Due to the minimal amount of sewage spilled, there is no risk to the public to utilize the river for recreation.

To manage the high flows at the WWTP, emergency flow procedures were enacted and plant processes were manually operated. The WWTP diverted 10 Million litres of flow to process tanks strategically made available to handle high flow events. This decreased the total volume of flow the plant had to treat and helped protect the plant from longer term quality impacts.

Customer Care Centre

Over a 24-hour period beginning at 1 p.m. on June 20, 1214 total calls were received in the Customer Care Centre, with almost half being categorized specifically as water concerns, and another 500 categorized as roadway, sewer or general concerns. In addition, approximately 50 emails were received and responded to.

To manage the incoming requests for service, Fusion's Enterprise Asset Management module was used to track and ensure all requests were addressed. In total, 117 of the 1214 calls required City crews to attend the site to clear catch basins, replace manhole covers and inspect severe surface flooding. Additional requirements for service were made based on inspections by City staff in the field.

Emergency Services

The SPS received 23 calls for service during the rain event, with 17 calls (75%) coming from the east side of the city. Not all calls were attended as some of the reported issues had resolved themselves before officers were dispatched to the scene. The SPS Communications Section reported that they were inundated for several hours with the public calling 911 to report a host of flood-related issues. In most of these cases, callers were transferred to the Customer Care Centre. Call volume reduced once barricades were in place in key locations.

The SFD responded to a total of 80 calls in a 24-hour period on June 20. Out of the 80 calls that day, there were 14 incidents directly related to the rain event in a 4-hour period in the afternoon. During this time, there were 11 additional incidents potentially related to weather; however, there is no direct indication to SFD that weather was the cause of these incidents. The types of calls received include:

- 5 calls of stranded vehicles in flood water on streets;
- 4 downed electrical lines;
- 9 structural safety systems activating alarms; and
- 7 water and flood concerns at residences and businesses.

To provide sufficient emergency coverage where fire crews were already engaged, SFD relocated apparatus from fire stations that did not receive flooding to areas that were extremely busy. SFD was able to respond to all calls to the public in a timely manner.

Communications

The City and SPS coordinated communications activities upon activation of the EOC. Social media was used to advise residents on the impact of the storm to streets and civic services. News releases, a virtual news conference, and several media interviews were also used to create awareness and provide accurate and reliable information on the impacts of the rain event.

The notifynow mass emergency alert is the City's public safety alert program used to notify the public in real-time of a public safety situation. notifynow is used for emergency life safety issues and/or public safety events where residents are required to take action to ensure their safety. It was not activated during the rain event as residents were not required to immediately shelter in place, evacuate or take other immediate life-safety action.

DISCUSSION/ANALYSIS

Flood Control Strategy

The City's Flood Control Strategy was approved by City Council in December 2018, to mitigate flooding in the ten highest risk locations throughout the city. In partnership with the Federal Government through the Disaster Mitigation and Adaptation Fund, \$54 Million is being invested over nine years into storm water infrastructure. The first project included construction of a dry storm pond at WW Ashley Park, which was completed in 2021. The dry storm pond is designed to hold water that would otherwise cause nearby flooding during intense rainfalls. The storm water flows from properties and streets into the dry storm pond, then slowly drains into the storm sewer. The June 20 rain event was the first test of the new infrastructure. By 3 p.m., the dry storm pond was at capacity and by 8 p.m., the water from the pond had receded. All reports indicate that the adjacent locations that were historically prone to flooding, including the intersections of Lansdowne Avenue and 1st Street, Dufferin Avenue and 1st Street, and Broadway Avenue/Taylor Street, did not experience significant surface flooding (Appendix 1).

The second project included in the Flood Control Strategy is the construction of a dry storm pond in the north half of Churchill Neighbourhood Park, which is currently underway with substantial completion expected to be reached in October 2022. This project is intended to reduce the risk of flooding at properties in the vicinity of the following intersections:

- Ruth Street/Cairns Avenue;
- Bute Street/Munroe Avenue;
- Ruth Street/York Avenue; and
- Bute Street/Albert Avenue.

Public engagement is currently underway for the third project, a dry storm pond at Weaver District Park, with construction scheduled for 2023. The storm pond will mitigate the risk of flooding in the vicinity of the following intersections:

- Cascade Street/Dufferin Avenue; and
- Bute Street/Dufferin Avenue.

The remaining projects in the Flood Control Strategy will be addressed over the next five years.

FINANCIAL IMPLICATIONS

While the majority of the response occurred during regular work hours for civic staff, some overtime was incurred to complete the clean up and response to the rain event. In addition, due to the high flows experienced at the WWTP, some equipment was damaged that required repairs. Cost estimates are not yet available to quantify the incremental cost for the City's response to the rain event.

OTHER IMPLICATIONS

The Provincial Disaster Assistance Program (PDAP) may be available to cover damage or loss to uninsurable, essential property. In order to access the funds, minimum eligibility requirements must be met. The two potential categories of eligibility and claims for disaster assistance are:

- 1) Uninsured private property damage and temporary displacement claims where the property is classified as a principal residence; and
- 2) Uninsured damage to City owned property.

For private property, the uninsured loss or damage for one eligible claimant must exceed \$5,000 or \$25,000 for multiple eligible claimants. For the City itself to be eligible to submit a claim, the total uninsured loss or damage to City property must be equal to or greater than 0.10 per cent of the most recent confirmed taxable assessment.

As of the writing of this report, the minimum eligibility requirements have not been met. However, the Administration expects further reports of private property damage as insurance claims are denied, as well as additional information and details of the damage to City-owned property. If the eligibility requirements are met, the Solicitor's Office will bring forward a report for City Council's consideration to apply to PDAP to declare Saskatoon a disaster area. The Solicitor's Office will then forward the City Council resolution along with the application to PDAP within 30 days of the event. If the PDAP application is approved, claimants will have up to six months to submit claims and one year to complete all cleanup, repairs, restorations and replacements. Requests can be made to extend these deadlines if necessary.

NEXT STEPS

In order to minimize the negative impact of severe rainstorm events, including the risk of sanitary sewer back-ups and increased costs for treatment and capacity upgrades at the WWTP, work is ongoing to minimize the amount of inflow and infiltration of storm water into the sanitary sewer system.

The Administration will continue to deliver projects included in the Flood Control Strategy to minimize the risk of flooding at the 10 highest risk locations throughout the city. Further reporting to City Council will be provided as each project progresses.

City departments will continue to work with the Solicitor’s Office to determine if the PDAP eligibility requirements have been met. If they have, the Solicitor’s Office will prepare a report to City Council recommending a resolution to apply to PDAP to have Saskatoon declared a disaster area. A special meeting of City Council may be required to meet the 30-day deadline for the PDAP application.

The decision to not activate the notifynow mass emergency alert will be reviewed by the City’s Emergency Management Organization as part of the after-action review for this event. After-actions reviews are a standard process for an EOC activation. Any lessons learned from the after-action review process are used to update processes for future activations.

APPENDICES

1. W.W. Ashley Dry Pond – June 20, 2022 Rain Event

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