

2017 Rain Events

In 2017, severe rainfall events on July 10 and August 8 resulted in localized flooding in south-central Saskatoon. On July 10, accumulated rainfall of 45 mm was recorded at the Saskatoon Light & Power rain gauge. On August 8, Environment Canada reported 57 mm of rainfall at an unofficial rain gauge in the Nutana area, while the closest Saskatoon Water rain gauge at the Acadia Reservoir recorded 26 mm of rainfall. Eleven of the 30 prioritized flood risk areas are located in south-central Saskatoon where flooding was primarily concentrated. Both rain events were rated as a “1-in-25 year” in the areas with the highest official and unofficial accumulated rainfall, and up to a “1-in-2 year” rainfall in most other areas of the city.

In September 2017, 480 flyers inviting residents to complete an on-line questionnaire were delivered in the 11 areas that had been identified to be at highest risk of flooding. The flyers were followed up with phone calls and e-mails to the residents in the top five flood risk areas. As of October 26, 2017, 114 citizens in the 11 areas completed the survey.

The following are survey highlights based on the responses:

- During the July 10 rain event, surface water entered 16 houses and reached the base of an additional 19 houses but did not penetrate the house.
- During the August 8 rain event, surface water entered 41 houses and reached the base of an additional 12 houses.
- Over half of the houses with flooding had less than 2.5 cm of water depth in their house. Fifteen houses had water depth between 2.5 cm and 30 cm (one inch to one foot) and five houses experienced water depth of more than 30 cm (one foot). Three of these houses with more than 30 cm of water were in the First Street/Dufferin Avenue area.
- Of the houses that flooded, fourteen had less than \$1,000 in damage, eight had between \$1,000 and \$10,000, eleven had between \$10,000 and \$50,000, and seven experienced more than \$50,000 in damage.
- Of the houses that experienced flooding, water entered the majority through basement windows. Water also entered via doors, the garage, seepage through the foundation, air conditioning lines, and crawl spaces. Eight properties experienced sewer back-up.

The questionnaire responses confirming flooding were mapped and compared to debris lines and models to determine the estimated number of houses in the top five risk areas that experienced flooding on August 8. The table below shows that based on an extrapolation of the surveys, the maximum number of houses and businesses with water in or at the building in the top five areas on August 8 was 81, with 63 of those being in the top three areas. These numbers based on actual reported flooding indicate that the impact was closer to a “1-in-5 year” modelled rain event, in which 118 properties would be expected to experience water at the base or in their buildings (204 buildings in a “1-in-10 Year” rain event).

Top Five Flood-Risk Areas	Number of survey respondents indicating water reached or entered the building	Maximum houses or businesses with water to the base or in the building extrapolated from surveys and maps	Maximum houses or businesses with expected flooding based only on modelling for a “1-in-10 Year” rain event
1. Ruth Street/Cairns Ave.	17	21	54
2. First Street/Dufferin Ave.	11	19	39
3. Cascade Street/Dufferin Ave.	12	23	41
4. Early Drive/Tucker Ave.	3	9	47
5. Seventh Street/Cairns Ave	7	9	23
Total for five areas	50	81	204

Climate change could result in more frequent, high-intensity rain events in the future. If a “1-in-10 year” design standard is implemented, properties will still be at risk of flooding when intense rains exceed the “1-in-10 year” modelled rain event. Each rain event is different and the impacts are influenced by many factors, including:

- Amount of rainfall
- Intensity
- Duration
- Soil saturation from previous rainfall or snowmelt
- Topography
- Measures taken by homeowners to make their properties more flood resilient.

Municipalities and homeowners can invest in measures to increase flood resiliency. However, there will always be a chance of basement flooding, no matter what municipalities or private homeowners do to reduce the risk.¹

¹ Dan Sandink, *Handbook for Reducing Basement Flooding*, Institute for Catastrophic Loss, June 2009, pg 4.