

2025 Annual Rainfall Report

Monitoring and Modeling



Saskatoon Water
Utilities and Environment Division



EXECUTIVE SUMMARY

The following report provides a summary of Saskatoon's 2025 seasonal rainfall (April to September) and a comparison with historical data. This report also includes the total annual precipitation (January to December) from 2025 to 2014. Highlights of the report include the following:

- In 2025, 280 mm of rainfall accumulated from April to September, which was more than the historical average of 263 mm and the 41st highest seasonal rainfall total out of 126 years since 1900.
- On average, at least 1 mm of rainfall occurred on 16% of days in 2025.
- Based on the weighted average, 39 mm was the largest amount of rainfall to accumulate in a single day.
- Saskatoon had a normal spring in 2025. The average rainfall between April and June since 1900 is 127 mm. Saskatoon received 221 mm which falls in the 52nd percentile for this time period.
- Saskatoon had a moderately wet summer in 2025. The average rainfall between July and September since 1900 is 136 mm. Saskatoon received 159 mm which falls in the 69th percentile for this time period.
- At one or more of the eleven rain gauges, a 2–5-year rain event occurred on June 19th, July 6th, July 20th, and August 5th. A 5–25 year rain event occurred on August 8th.
- In 2025, 385 mm of precipitation accumulated from January to December which was above the 12-year historical average of 357 mm.



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INTRODUCTION

The purpose of this report is to provide a summary of the 2025 rainfall season in Saskatoon and a comparison of this rainfall data with historical rainfall data. Within the scope of this report, a rainfall season is defined as the time period between April 1st and September 30th. This report also includes total annual precipitation data which is defined as the time period between January 1st to December 31st.

Data between 1900 and 2011 was obtained from the Environment Canada rain gauge and in 2012 to 2022 data was obtained from eight City of Saskatoon rain gauges then in 2023 three more rain gauges were added for a total of eleven. The name, location, approximate area, and total seasonal rainfall of each rain gauge is shown below.

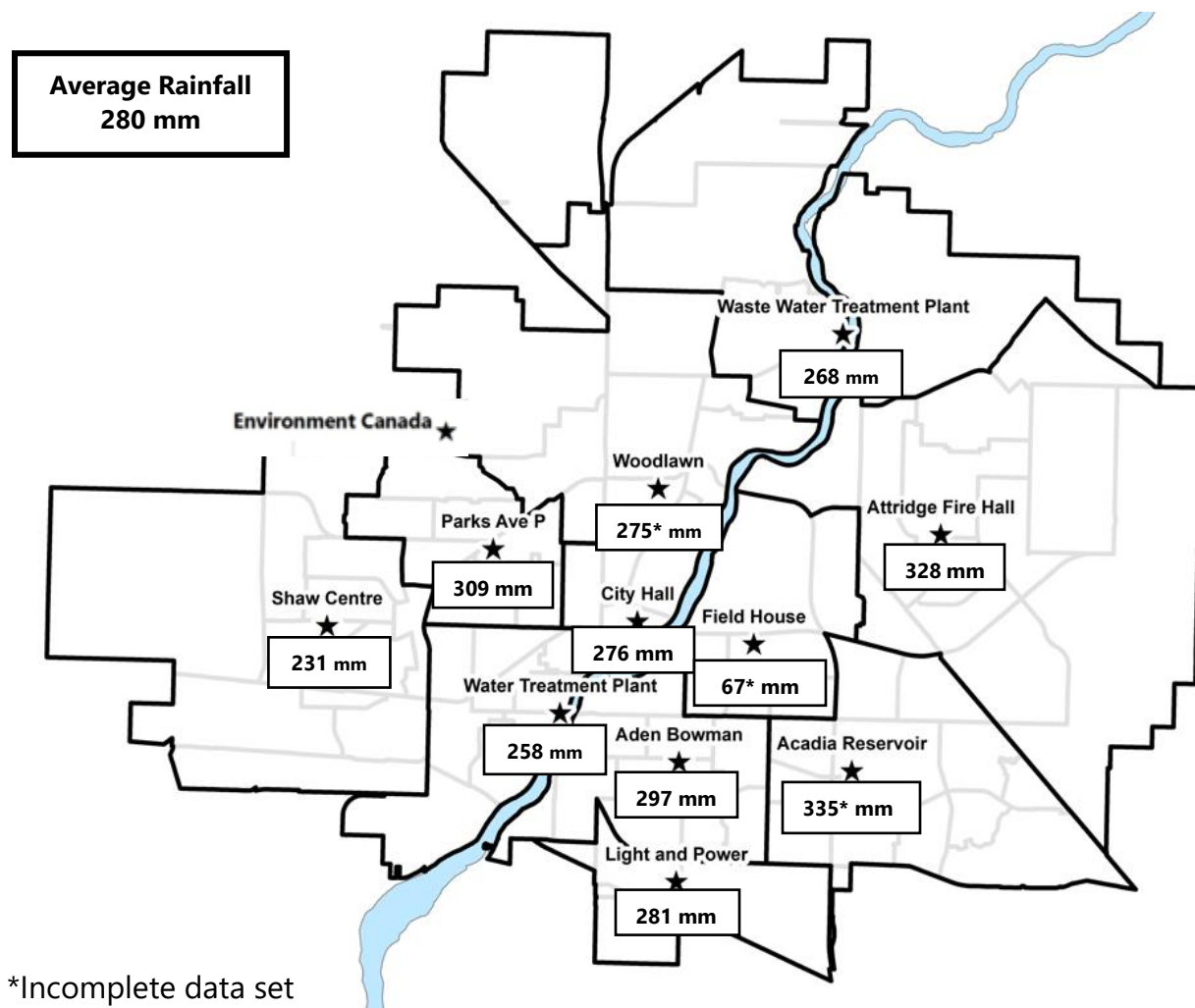


Figure 1: Overview of rain gauges.



SUMMARY OF RAINFALL IN 2025

A daily weighted average for all City of Saskatoon rain gauges was calculated to determine the average daily rainfall for Saskatoon. The following graph depicts the average daily rainfall that occurred in Saskatoon throughout the 2025 rainfall season.

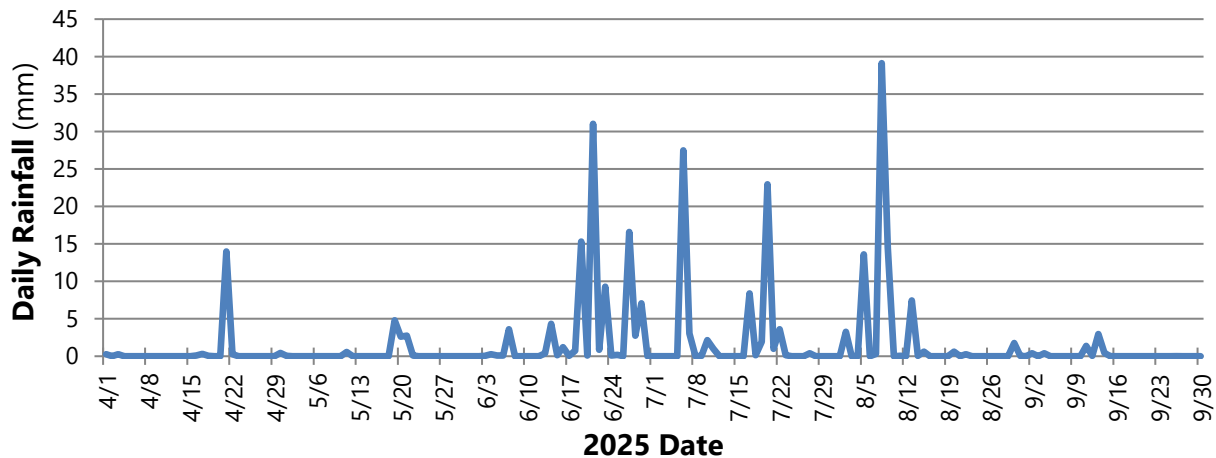


Figure 2: 2025 daily rainfall.

Based on the weighted average, the largest amount of rainfall occurred on August 8th, 2025, with a total of 39 mm. This rainfall accounted for approximately 14% of the total rainfall that occurred in 2025.

Table 1 presents the percentage of days with total rainfall greater than or equal to 0.2 mm, 1 mm, 5 mm, 10 mm, and 25 mm at each rain gauge.

Table 1: Total daily rainfall percent occurrence.

	≥ 0.2 mm	≥ 1 mm	≥ 5 mm	≥ 10 mm	≥ 25 mm
Percentage of Days	26%	16%	7%	5%	2%

On average, least 1 mm of rainfall occurred on 16% of days in 2025.



SUMMARY OF RAINFALL IN 2025

The daily weighted average rainfall was added together to calculate the total seasonal rainfall. The total seasonal rainfall for 2025 was 280 mm. Figure 3 depicts the accumulation of rainfall throughout the 2025 season.

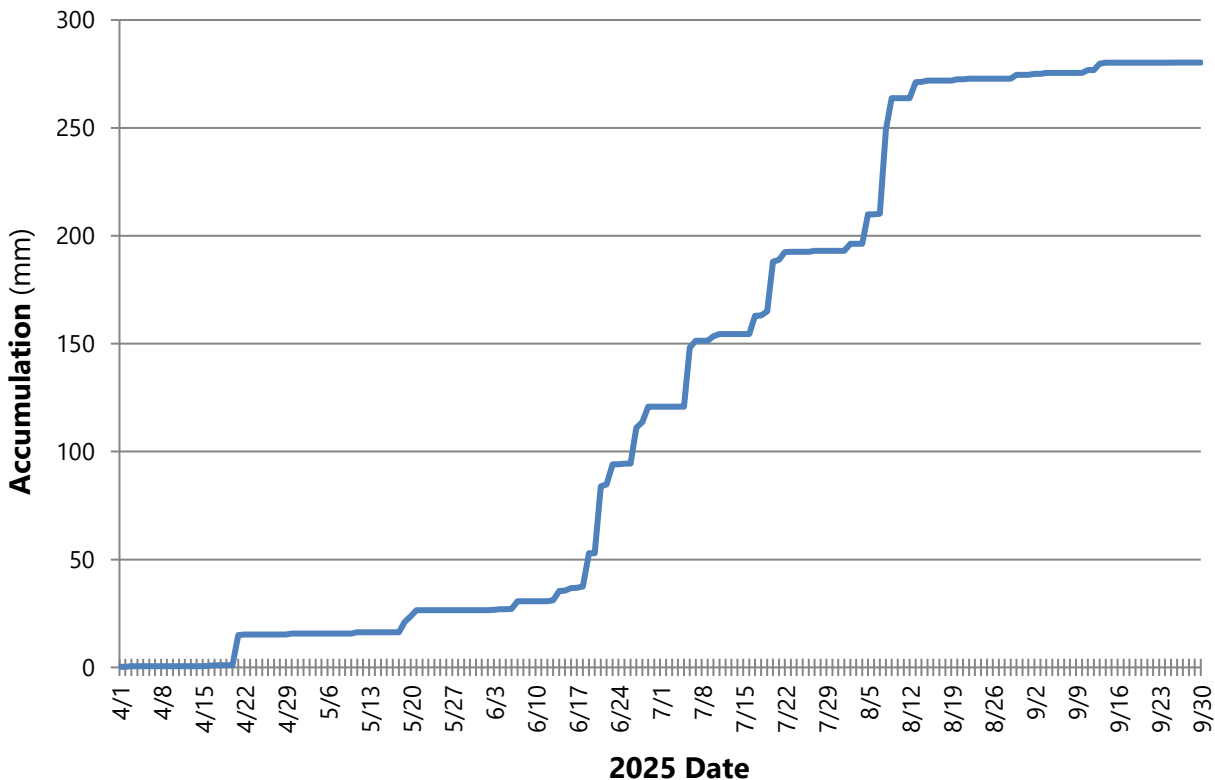


Figure 3: 2025 seasonal rainfall accumulation.

The 2025 rainfall season began with a normal spring (April to June) accumulating a total of 121 mm compared to the average spring accumulation of 127 mm. This was followed by a moderately wet summer (July to September) which accumulated 160 mm compared to an average summer rainfall of 135 mm. The 2025 summer rainfall total falls in the 69th percentile and was ranked the 39th highest summer rainfall total out of 126 years since 1900.



HISTORICAL COMPARISON

The average seasonal rainfall from 1900 to 2025 in Saskatoon is 263 mm which is depicted by the light blue line in Figure 4. The 2025 seasonal rainfall of 280 mm was above average and the 41st highest rainfall out of 126 years since 1900.

The lowest seasonal rainfall occurred in 2001 with 131 mm and the highest seasonal rainfall occurred in 2010 with 569 mm. A table containing the seasonal rainfalls from 1900 to 2025 is shown in Appendix A.

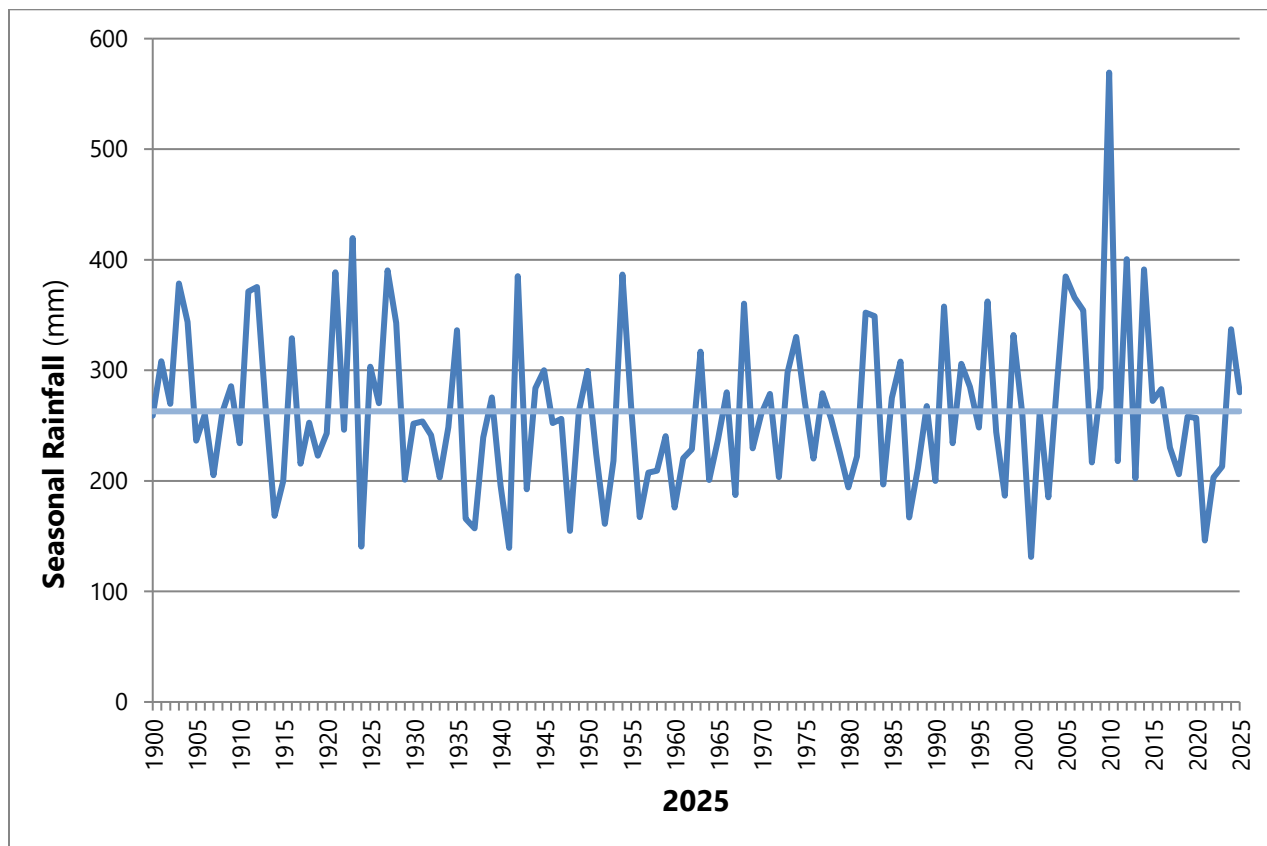


Figure 4: Seasonal rainfall (1900-2025).

The following table presents the total annual precipitation that occurred each year from January 1st to December 31st.

Table 2: Total annual precipitation in mm.

Time Period	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Jan. 1 - Dec. 31	476	392	391	282	254	339	367	222	387	276	514	385



HISTORICAL COMPARISON

The following graph provides a comparison of the maximum amount of rainfall to occur in a single day in each season. The average maximum rainfall in a single day in a season is 36 mm from the years 1900 to 2025 and is represented by the light blue line in Figure 5. During the 2025 rainfall season, the maximum rainfall to occur within a single day was 39 mm, which was on August 8th.

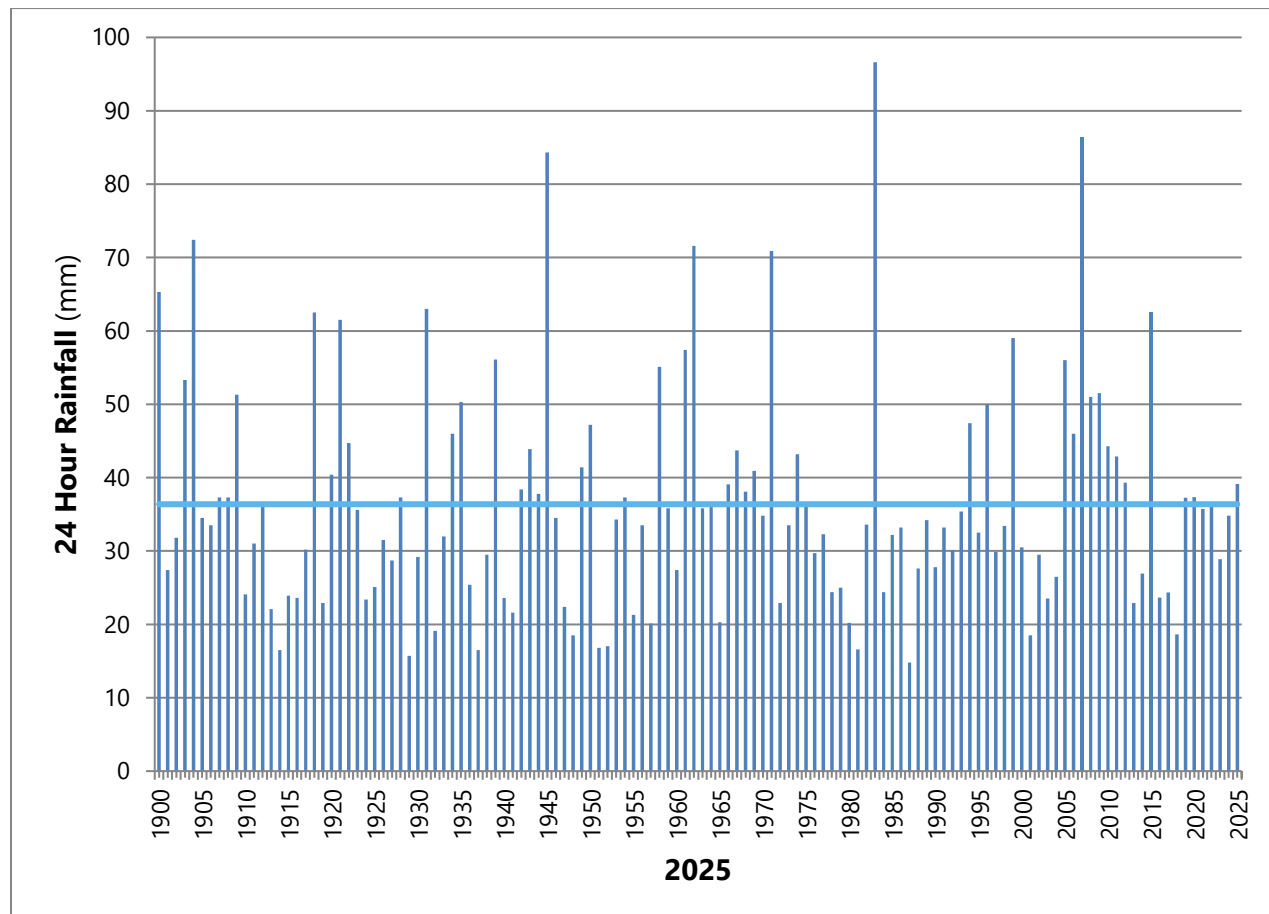


Figure 5: Maximum daily rainfall.

As can be seen in the graph above, the lowest maximum daily rainfall occurred on July 19th, 1987, with a total of 15 mm and the highest occurred on June 24th, 1983 with a total of 97 mm.



CLASSIFYING RAIN EVENTS

Rain events in Saskatoon are often localized. Therefore, a rain event may only occur at a few of the eleven rain gauges located throughout the city. To compare the severity of rain events, their return period must be determined. A return period provides an indication of the likelihood of an event. For example, a rain event with a return period of 2 years has a 50% chance of occurring in any given year. For comparison, a rain event with a return period of 100 years has a 1% chance of occurring in any given year. The following table provides a summary of the criteria used to determine the return period of each rain event.

Table 3: Criteria for determining return period of a rain event.

Time (minutes)	Intensity (mm/hr)			
	2-Year	5-Year	25-Year	100-Year
10	53	85	132	168
15	41	67	104	133
30	26.4	46.1	74	97
60	16.6	28.9	46.5	60
120	10.7	17.5	27.3	35
360	4.7	7.0	10.3	12.9
720	2.73	3.90	5.59	6.91
1440	1.56	2.18	3.07	3.76

For the purposes of this report, two different methods were utilized to determine the number of rain events with a return period of 2, 5, 25, or 100 years between 2012 and 2025. It should be noted that within this report, rain events with the same return period may include any of the durations as outlined in Table 3. The first method determined the average number of rain events for each return period by adding together the number of events in a season with the same return period at each of the city's rain gauges and dividing that number by the total number of rain gauges. The following table provides a summary of these values. A detailed table showing return periods recorded at each rain gauge is provided in Appendix B.

Table 4: Average frequency of rain events.

Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Avg	2 – 5 Year	4	1	3	1	1	1	3	2	1	1	1	2	2	24
	5 – 25 Year	0	0	0	1	0	0	0	0	0	1	0	0	1	2
	25 – 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	> 100 Years	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		4	1	3	2	1	1	3	2	1	2	1	2	3	26



CLASSIFYING RAIN EVENTS

In Table 5, the rain events were tallied using the same method as Table 4, except only rain events with a duration of 1 hour or greater were counted.

Table 5: Average frequency of rain events greater than or equal to 1 hour duration.

Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Avg 2 – 5 Year	3	1	2	1	0	1	0	1	2	1	0	1	1	2	16
5 – 25 Year	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
25 – 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
> 100 Years	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	1	2	2	0	1	0	1	2	1	0	1	1	3	18

The second method determined the number of days per year that a major rain event occurred at one or more rain gauges. If the rain gauges throughout the City recorded varying return periods on a given day, the maximum return period was counted as the rain event for that day. The following table provides the number of days per year that a major rain event occurred at one or more rain gauges.

Table 6: Overall frequency of rain events.

Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Overall 2 – 5 Year	8	5	6	3	3	2	3	5	2	2	0	4	3	4	50
5 – 25 Year	0	1	1	0	0	1	0	2	0	1	1	0	1	1	9
25 – 100 Year	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
> 100 Years	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	6	7	4	3	3	3	7	2	3	2	4	4	5	61

In Table 7, the days per year were tallied using the same method as Table 6, except only days with a rain event of 1 hour duration or greater were counted.

Table 7: Overall frequency of rain events greater than or equal to 1 hour duration.

Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Overall 2 – 5 Year	6	4	3	1	2	1	2	2	2	1	0	3	3	3	33
5 – 25 Year	0	0	0	0	0	1	0	0	0	1	0	0	1	1	4
25 – 100 Year	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
> 100 Years	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	4	3	2	2	2	2	2	2	2	1	3	4	4	39



CONCLUSION

Overall, the 2025 seasonal rainfall and annual precipitation accumulation were above average compared to the historical average. In 2025, four rain events occurred with a maximum return period of 2 – 5 years and one rain event with return period of 5 – 25 years. Based on a weighted average, the most rainfall to occur within a single day was 39 mm, which was on August 8th, 2025.



APPENDICES

Appendix A – Total Seasonal Rainfall (1900-2025)



APPENDIX A

Year	Rain (mm)	Rank	Year	Rain (mm)	Rank	Year	Rain (mm)	Rank
1900	259	60	1942	385	8	1984	197	108
1901	308	28	1943	193	111	1985	275	46
1902	270	50	1944	284	38	1986	308	29
1903	379	10	1945	300	32	1987	167	118
1904	344	20	1946	252	67	1988	211	95
1905	236	77	1947	256	64	1989	268	52
1906	260	58	1948	155	122	1990	200	106
1907	205	99	1949	263	54	1991	358	16
1908	262	55	1950	300	33	1992	234	79
1909	286	36	1951	224	85	1993	306	30
1910	234	80	1952	161	120	1994	285	37
1911	371	12	1953	218	90	1995	248	70
1912	375	11	1954	387	7	1996	362	14
1913	266	53	1955	268	51	1997	244	72
1914	168	116	1956	167	117	1998	187	113
1915	200	107	1957	208	97	1999	332	24
1916	329	26	1958	209	96	2000	259	59
1917	216	93	1959	241	75	2001	131	126
1918	253	66	1960	176	115	2002	262	56
1919	223	86	1961	221	88	2003	185	114
1920	243	73	1962	229	83	2004	288	35
1921	389	6	1963	317	27	2005	385	9
1922	246	71	1964	201	105	2006	366	13
1923	420	2	1965	236	78	2007	354	17
1924	141	124	1966	280	42	2008	217	92
1925	303	31	1967	187	112	2009	284	39
1926	270	49	1968	360	15	2010	569	1
1927	391	5	1969	229	82	2011	218	91
1928	343	21	1970	261	57	2012	401	3
1929	201	104	1971	279	44	2013	202	103
1930	252	68	1972	203	100	2014	391	4
1931	254	65	1973	298	34	2015	272	47
1932	241	74	1974	330	25	2016	283	40
1933	203	101	1975	271	48	2017	230	81
1934	249	69	1976	220	89	2018	206	98
1935	336	23	1977	279	43	2019	258	61
1936	166	119	1978	256	63	2020	257	62
1937	157	121	1979	226	84	2021	146	123
1938	239	76	1980	194	110	2022	203	102
1939	275	45	1981	222	87	2023	213	94
1940	196	109	1982	352	18	2024	337	22
1941	139	125	1983	349	19	2025	280	41



APPENDICES

Appendix B – Return Period of Rain Events by Rain Gauge



APPENDIX B

	Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Waste Water Treatment Plant	2 - 5 Year	4	0	3	1	1	1	1	3	1	1	1	1	2	0	20
	5 - 25 Year	0	0	0	1	0	0	0	1	0	0	1	0	0	1	4
	25 - 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	> 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	4	0	3	2	1	1	1	4	1	1	2	1	2	1	24
Woodlawn	2 - 5 Year	5	1	3	2	1	1	0	4	2	0	2	1	2	3	27
	5 - 25 Year	0	1	0	1	0	0	0	0	0	0	0	0	1	0	3
	25 - 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	> 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	5	2	3	3	1	1	0	4	1	0	2	1	3	3	30
Shaw Centre	2 - 5 Year	5	2	5	3	1	1	1	2	1	2	1	1	1	2	28
	5 - 25 Year	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
	25 - 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	> 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	5	2	5	4	1	1	1	2	1	2	1	1	2	2	30
Nicholson Yards	2 - 5 Year	2	0	2	1	0										5
	5 - 25 Year	0	0	1	1	0										2
	25 - 100 Year	0	0	0	0	0										0
	> 100 Year	0	0	0	0	0										0
	Total	2	0	3	2	0										7
Light and Power	2 - 5 Year	2	2	3	0	1	0	1	4		2	0	0	3	1	19
	5 - 25 Year	0	0	0	0	0	1	0	0		0	1	0	0	1	3
	25 - 100 Year	0	0	0	1	0	0	0	0		0	1	0	0	0	2
	> 100 Year	0	0	0	0	0	0	0	0		0	0	0	0	0	0
	Total	2	2	3	1	1	1	1	4		2	2	0	3	2	24
City Hall	2 - 5 Year	5	3	4	1	1	1	2	2	2	1	1	2	1	2	28
	5 - 25 Year	0	0	0	0	0	0	0	1	0	0	1	0	1	1	4
	25 - 100 Year	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	> 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	5	3	4	2	1	1	2	3	2	1	2	2	2	3	33
Attridge Fire Hall	2 - 5 Year	1	1	1	1	0	0	0	2		0	2	1	3	3	15
	5 - 25 Year	0	0	0	1	0	0	0	0		0	0	0	0	1	2
	25 - 100 Year	0	0	0	0	0	0	0	0		0	0	0	0	0	0
	> 100 Year	0	0	0	0	0	0	0	0		0	0	0	0	0	0
	Total	1	1	1	2	0	0	0	2		0	2	1	3	4	17
Aden Bowman	2 - 5 Year									1	0	0	0	2	2	5
	5 - 25 Year									0	0	1	0	0	1	2
	25 - 100 Year									0	0	1	0	0	0	1
	> 100 Year									0	0	0	0	0	0	0
	Total									1	0	2	0	2	3	8
Acadia Reservoir	2 - 5 Year	4	1	2	1	2	2	0	2	2	0	1	4	1	4	26
	5 - 25 Year	0	0	0	1	0	0	0	1	0	1	1	0	0	1	5
	25 - 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	> 100 Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	4	1	2	2	2	2	0	3	2	1	2	4	1	5	31



	Return Period	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Field House	2 - 5 Year												0*	2	1	2
	5 - 25 Year												0*	0	0	0
	25 - 100 Year												0*	0	0	0
	> 100 Year												0*	0	0	0
	Total												0*	2	1	3
Parks Ave P	2 - 5 Year												0*	1	3	1
	5 - 25 Year												0*	1	0	1
	25 - 100 Year												0*	0	0	0
	> 100 Year												0*	0	0	0
	Total												0*	2	3	5
WTP	2 - 5 Year												0*	1	1	1
	5 - 25 Year												0*	1	1	1
	25 - 100 Year												0*	0	0	0
	> 100 Year												0*	0	0	0
	Total												0*	2	2	4

* Data collected from August 1 to September 30, 2023