Precipitation was highly variable across the state in August 2019, depending upon where the thunderstorms fell. There were pockets that had above normal precipitation. Cass Lake in north central Minnesota recorded 4.99 inches of precipitation, which is 2.02 inches above normal. The town of Morris in west central Minnesota recorded 5.53 inches, which is 2.20 inches above normal. One of the wettest locations in the state was Stillwater in east central Minnesota that had 7.96 inches or 3.15 inches above normal. On the other end of the spectrum was the station 7 miles northwest of Two Harbors that finished with 1.99 inches of precipitation that is 1.75 inches short of normal. Rochester also recorded 1.54 inches for August 2019, which is 2.98 inches below normal. Rochester has been very wet this year and August was the first month since March that was below normal. The preliminary statewide average was 3.25 inches or 0.67 inches below normal. The U. S. Drought Monitor map released on September 5th depicts 9.8 percent of the state in the Abnormally Dry category, confined to northwest Minnesota. One year ago, 27 percent of the state had Abnormally Dry conditions and 7 percent of the state was categorized to be in Moderate Drought. The U.S. Drought Monitor index is a blend of science and subjectivity where drought categories (Moderate, Severe, etc.) are based on several indicators.

The overall trend continues: higher than normal flows in the south and mostly normal flows in the north. In the north, watersheds 3, 4, 73, 74, 76 ranked at Below Normal (10-25\textsuperscript{th} percentile). This area is also noted as "Abnormally Dry" on the September 5\textsuperscript{th} Drought Monitor.

When comparing August 2019 lake levels to their entire historic record, 52\% of the lakes with reported lake levels are in the Normal percentile, 32\% are Above Normal, and 16\% are Below Normal. Fifty-three percent of gaged lakes still showed August lake elevations above their average lake level of the entire historic record. Over half of these "above average" lakes reported August lake elevations more than ½ foot higher than their average. Two lakes in Morrison and Scott Counties reached their highest reported August lake level this year. Eleven of the 23 selected lakes in this report showed High or Above Normal percentiles in August. Four lakes in NE and South Central Minnesota showed Below Normal percentiles again for this month.

Groundwater levels for August 2019 remain relatively high in our indicator well network across much of Minnesota, especially in the southern half of the state. Six well locations report High (> 90\textsuperscript{th} percentile) water levels, and all but five reporting locations show water levels at Normal (25-75\textsuperscript{th} percentile) or higher level. Those five wells that are below normal water level or at low water level are in the northwest portion of the state and in locations where precipitation in August is at or below normal levels. All but one of the indicator wells in Minnesota had water levels that remained the same or declined from July 2019 to August 2019. Declines are not a surprise late in this summer because of seasonal drawdown and precipitation amounts that were about 0.67 inches below normal in August of 2019.

The information in this report is provided by DNR through long-term programs committed to recording and tracking the long term status of our water resources. The current conditions of precipitation, stream flows, lake levels, and groundwater levels in this report provide valuable information for natural and economic resource management on a state, county, and watershed level. If you have questions on the content of this report please contact DNR Climatology Office: climate@umn.edu
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Surface Water: Stream Flow

Stream Flow Conditions
August 2019

Designated major watershed gage

* Percentile ranking based on mean daily flows for the current month averaged and ranked with all historical mean daily flows for that month.
A watershed ranked at zero means that the present month flow is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record.
A ranking at the 50th percentile (median) specifies that the present-month flow is in the middle of the historical distribution.

High Flows (>90th percentile)
Above Normal Flows (75 - 90th percentile)
Normal Flows (25 - 75th percentile)
Below Normal Flows (10 - 25th percentile)
Low Flows (<= 10th percentile)
Flow affected by ice
Flow affected by backwater
Rating being developed or revised
No Data
Surface Water: Lake Levels

Lake Level Status
August 2019

* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month.
A lake ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record.
A ranking at the 50th percentile (median) specifies that the present-month reported lake level is in the middle of the historical distribution.

Source data from: MN DNR Waters Lake Level Minnesota Monitoring Program
Groundwater Level Historical Rankings
August 2019

* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month. A water level ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record. A ranking at the 50th percentile (median) specifies that the present month reported water level is in the middle of the historical distribution.

Source data from: MN DNR Groundwater Level Monitoring Program