



Minnesota Department of Natural Resources
Division of Ecological and Water Resources



Hydrologic Conditions Report

June 2019

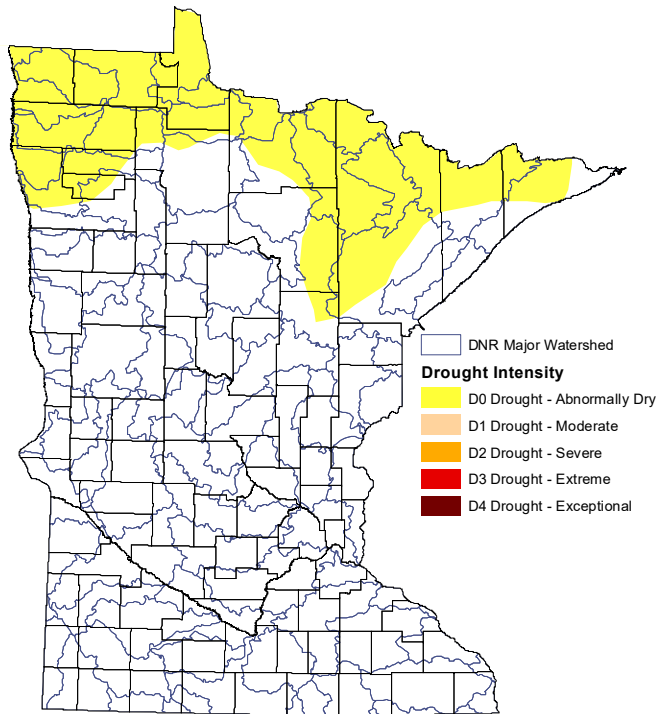
Previous reports at: https://www.dnr.state.mn.us/current_conditions/hydro_conditions.html

- June 2019 showed a wide variation in precipitation across the state. In general rainfall totals were below normal in the north and well above normal in the south. The preliminary statewide average precipitation total was 3.86 inches or 0.44 inches below normal. Rochester continues to be the epicenter of the heaviest rainfall with 9.08 inches in June, which is 4.40 inches above normal. The combined May and June 2019 total at Rochester is 18.50 inches, making the third wettest May-June on record. The driest location in the state was Crookston in northwest Minnesota that reported only 1.39 inches of rain for June 2019, 2.41 inches short of normal. The U. S. Drought Monitor map released on July 3 depicts 23% of the state in Abnormally Dry conditions confined to northern Minnesota. This is an increase from May conditions. The U.S. Drought Monitor index is a blend of science and subjectivity where drought categories (Moderate, Severe, etc.) are based on several indicators.
- As a result of the below normal rainfall in the northern half of the state, flows continued to recede. Above normal rainfall in the southern half of the state caused rivers to rank mostly Above Normal (75-90th percentile) and High (>90th percentile). The lack of rain in the north is starting to show in the discharge record with the Little Fork River gage ranked Below Normal Flows for the month (10 - 25th percentile).
- When comparing June 2019 lake levels to their entire historic record, fifty-three percent of the lakes with reported lake levels are High or Above Normal. Seventy-three percent of gaged lakes showed June lake elevations above their average recorded lake level. Over 62% of these "above average" lakes reported lake elevations more than ½ foot higher than their average. Sturgeon Lake in Pine County reached its highest reported lake level in June. Ten of the 23 selected lakes in this report showed High or Above Normal percentiles in June. Two lakes in NE Minnesota showed Below Normal and Low percentiles for this month.
- Groundwater level data for the sites submitted in June 2019 show above average to high water levels throughout a large southern portion of the state. Seven groundwater sites recorded their highest water levels for their June period of record including one site with a 45 year period of record. A number of wells in the northwest of the state show below average water levels but do indicate an increase from low water levels reported in May. This area ended 2018 with Low to Normal water levels and continues to be low to below average in 2019.

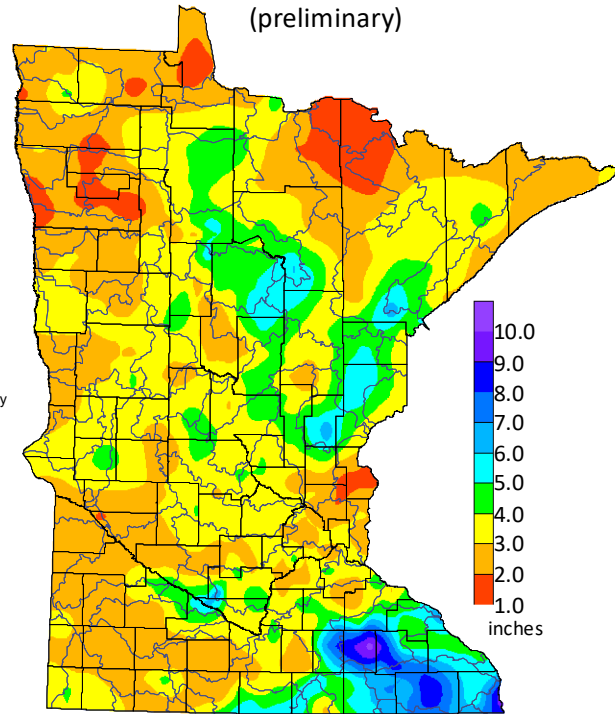
The information in this report is provided by DNR through long term programs committed to recording and tracking the long term status of our water resources. The current conditions of precipitation, stream flows, lake levels, and ground water levels in this report provide valuable information for natural 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

Climatology

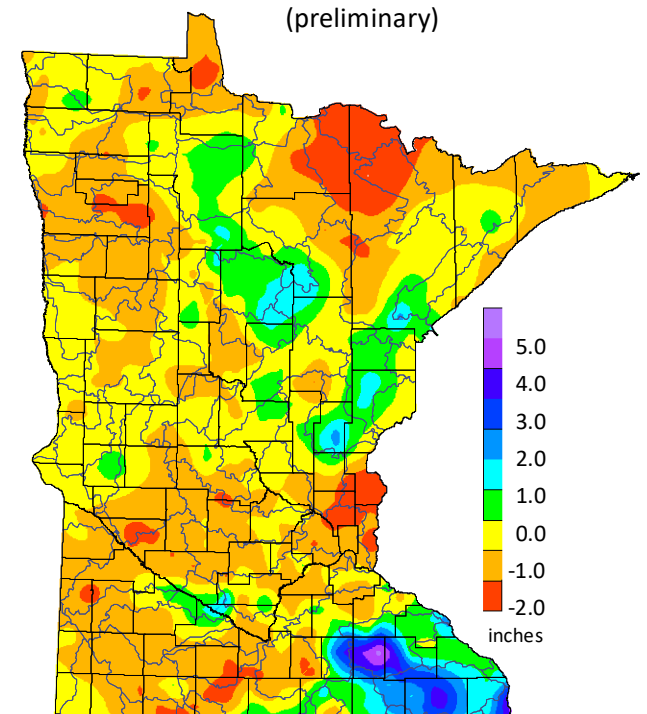
U.S. Drought Monitor
July 2, 2019



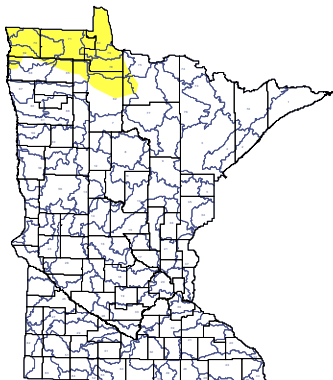
Total Precipitation
June 2019



Total Precipitation
Departure from Normal:
June 2019



June 4, 2019

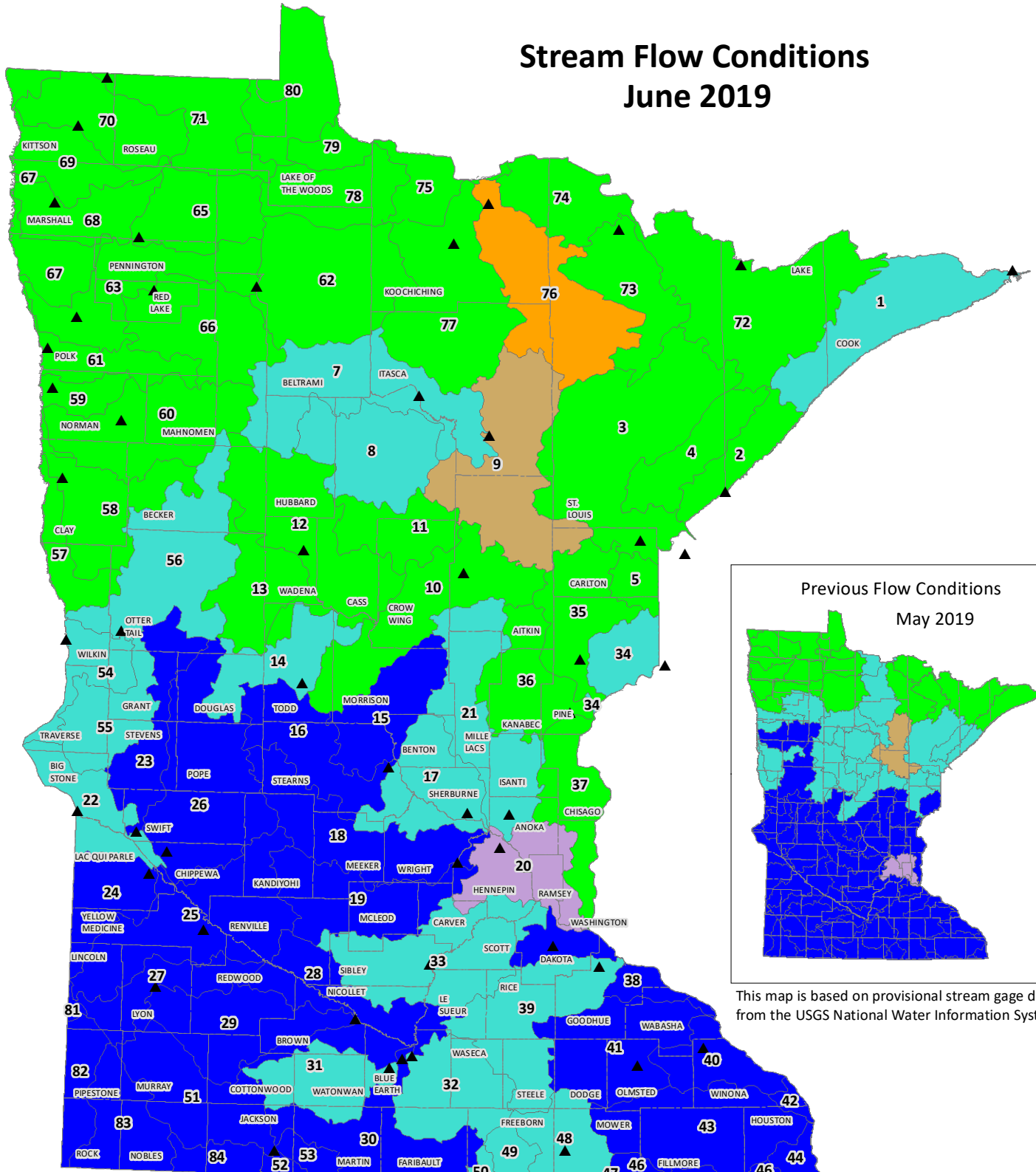


June 2019 showed a wide variation in precipitation across the state. In general rainfall totals were below normal in the north and well above normal in the south. The preliminary statewide average precipitation total was 3.86 inches or .44 inches below normal. Rochester continues to be the epicenter of the heaviest rainfall. June had 9.08 inches, 4.40 inches above normal. The combined May and June 2019 total at Rochester is 18.50 inches, the third wettest May-June on record. The driest location in the state was Crookston in Northwest Minnesota that reported only 1.39 inches of rain for June 2019, 2.41 inches short of normal.

The U. S. Drought Monitor map released on July 3 depicts 23% of the state in Abnormally Dry conditions, confined to northern Minnesota. This is an increase from the previous month. The U.S. Drought Monitor index is a blend of science and subjectivity where drought categories (Moderate, Severe, etc.) are based on several indicators.

Surface Water: Stream Flow

Stream Flow Conditions June 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.

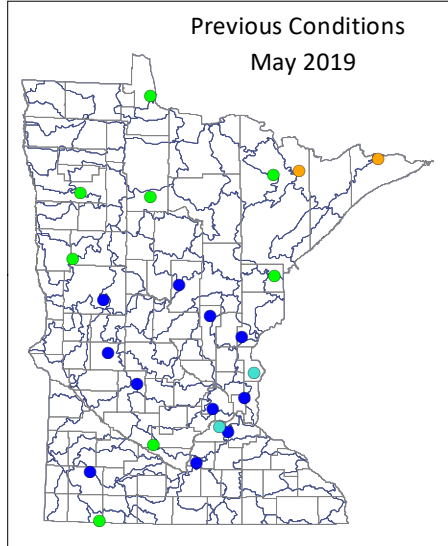
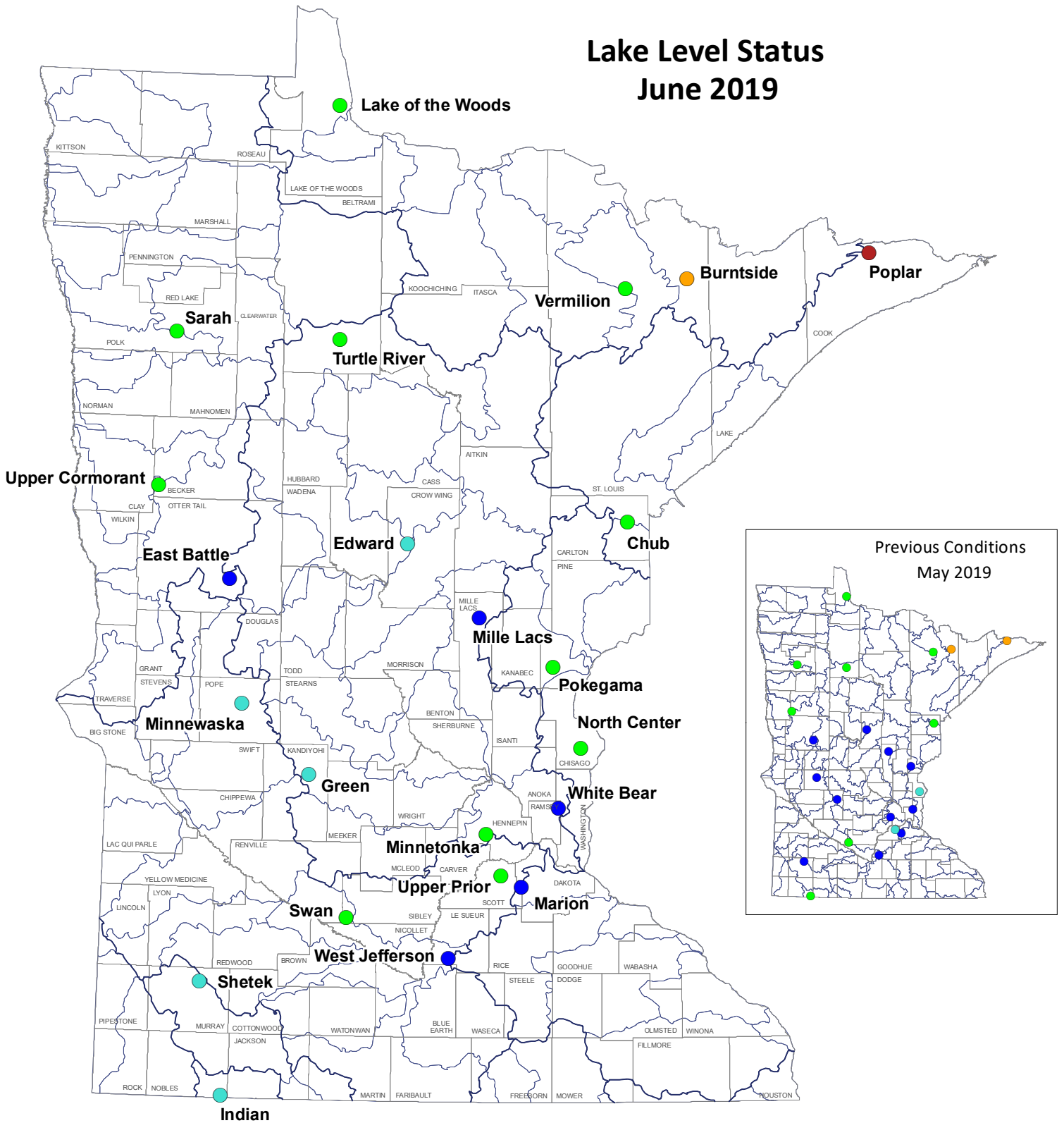
A ranking at the 50th percentile (median) specifies that the present-month flow is in the middle of the historical distribution.

- 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

This map is based on provisional stream gage data from the USGS National Water Information System

Surface Water: Lake Levels

Lake Level Status June 2019

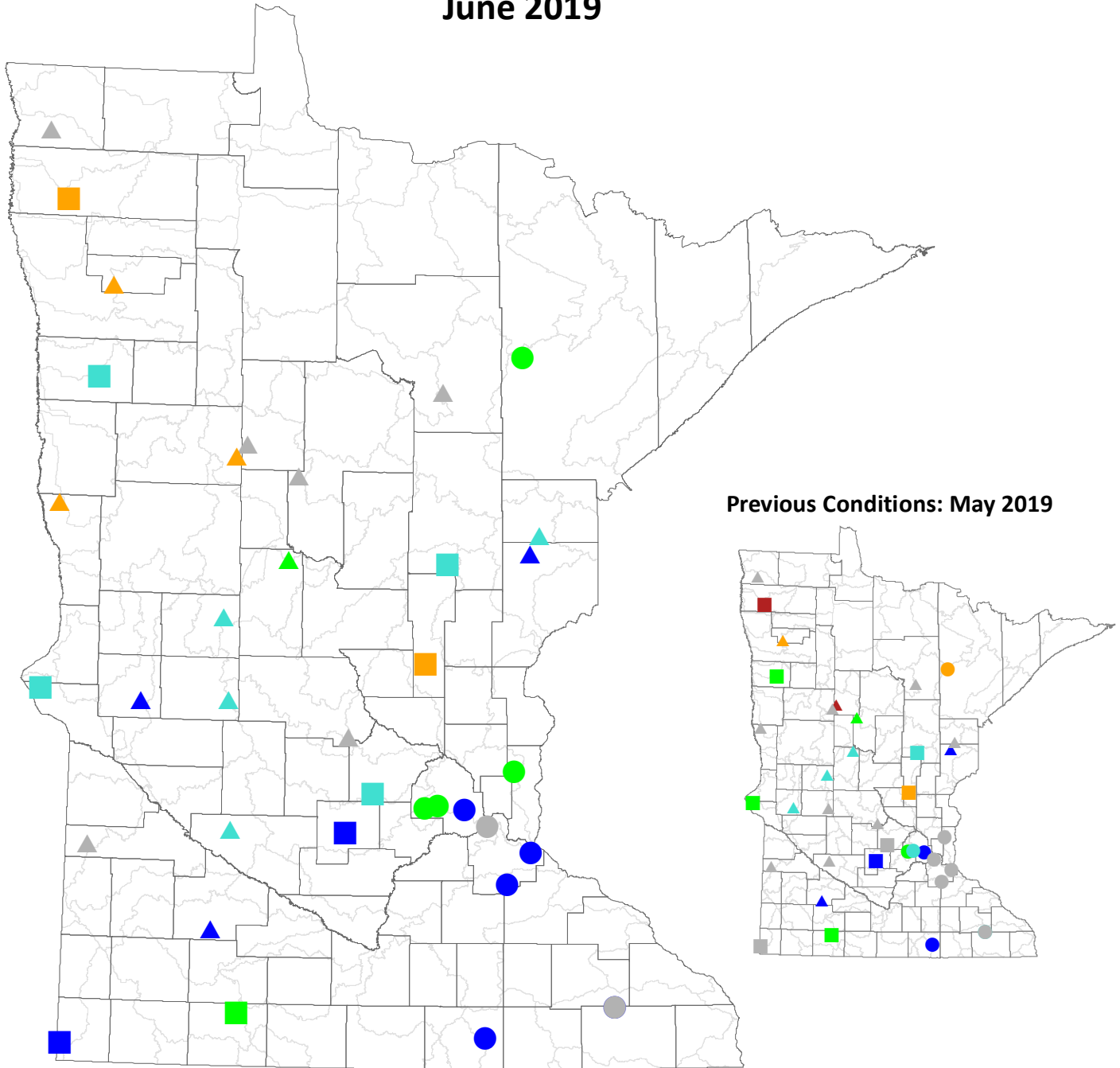


Percentile *

- High Water Levels (>90th percentile)
- Above Normal Water Levels (75 - 90th percentile)
- Normal Water Levels (25 - 75th percentile)
- Below Normal Water Levels (10 - 25th percentile)
- Low Water Levels (<= 10th percentile)
- No reading available
- Level 2 Hydrologic Unit
- DNR Major Watershed

* 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.

Groundwater Level Historical Rankings June 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

Percentile *

- High Water Levels (>90th percentile)
- Above Normal Water Levels (75 - 90th percentile)
- Normal Water Levels (25 - 75th percentile)
- Below Normal Water Levels (10 - 25th percentile)
- Low Water Levels (<= 10th percentile)
- No reading available

Aquifer Type

- ▲ Water Table
- Bedrock
- Buried Artesian