Low Flow and Wastewater Facility Effluent Limits

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Mud River near Grygla

Middle Branch, Two Rivers (Hallock)

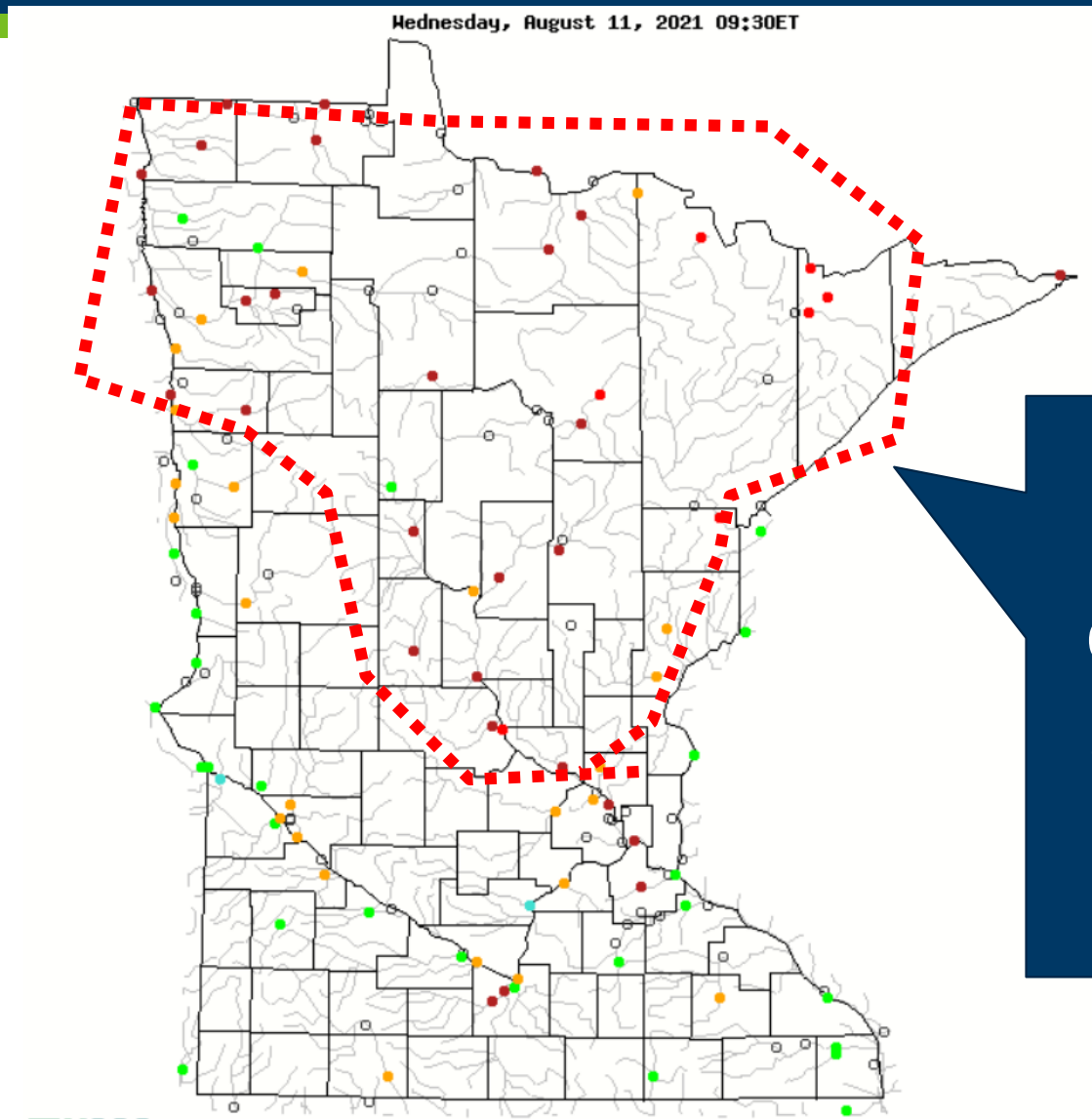
Yellow Medicine River

- Many rivers and streams have gone to extremely low flows or are dry.
- Approaching levels from 1988 drought, or even conditions during the 1930s.

Current MN River Flow Rates

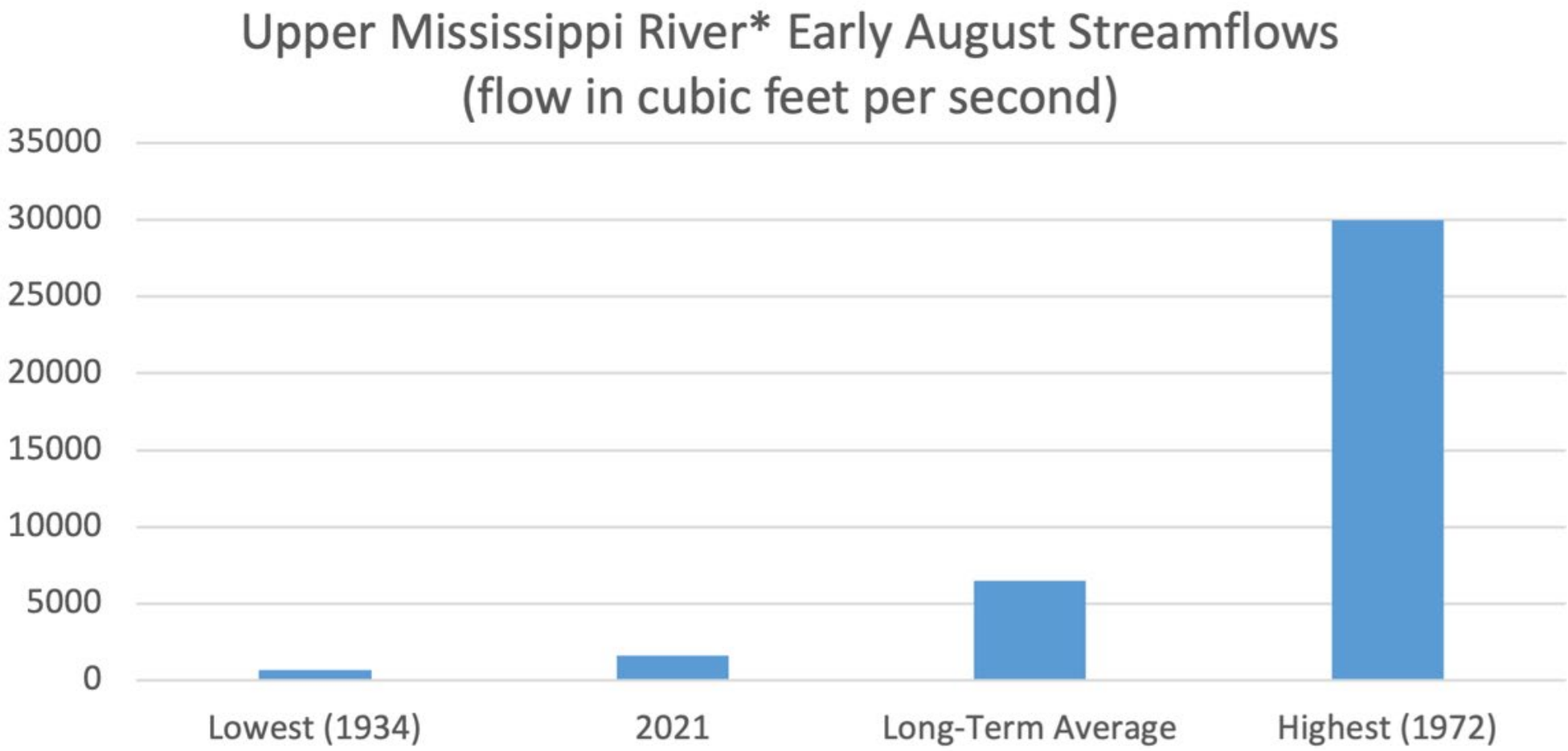
Streamflow as percentile of averaged readings from the past 30 years for August 11.

Color	Percentile
Blue	70^{th} – 90^{th}
Green	25^{th} -70^{th}
Orange	10^{th} – 24^{th}
Brown	$<10^{th}$
Red	Dry



These rivers currently have extremely low flow rates

Low flow in Upper Mississippi



* coming into Twin Cities from the north

Discharge to rivers

- Most wastewater treatment plants (WWTPs) discharge to rivers
- River dilution is used to develop effluent limits
- Effluent limits are set to protect aquatic life and aquatic habitat

St. Cloud wastewater treatment facility

How are low flow measures used in effluent limits?

7q10 = *the lowest 7-day average flow that occurs (on average) once every 10 years*

Minnesota River at Chaska

- All states (including Minnesota) use the “7q10” statistic to characterize low flow
- Data from this year will be added to the period of record for evaluating future limits
- We are at or near the 7q10 level in many parts of the state

Sampling the Minnesota River at low flow

- Monitoring in the Minnesota River tells whether there is enough dissolved oxygen to support aquatic life during this extremely low flow.
- Current conditions allow us to examine how effective our limits are.

Why low flow is important

Drought fish kill – South Twin Lake, Burnsville 2021

- Discharge from wastewater facilities impacts rivers the most during low flow

- If we protect fish and aquatic life a low flows, then they will be protected from wastewater impacts at all higher flows.

Drought

- Some parts of MN are in extreme drought
- Drought is expected to deepen through fall