NWS FORM E-5	**U.S. Department of Commerce** NOAA, NATIONAL WEATHER SERVICE	**HSA OFFICE:** **Grand Rapids, MI**
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		REPORT FOR (MONTH & YEAR): **July 2021**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: August 17, 2021
		SIGNATURE: Daniel K. Cobb, MIC Andrew Dixon, Service Hydrologist

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

☐ An **X** inside this box indicates that no flooding occurred within this hydrologic service area.

Summary

Overall, July was a fairly typical month in terms of both temperatures and precipitation across Lower Michigan. Numerous days of thunderstorms led to locally heavy rainfall, though no significant regional rainstorms occurred (unlike in June). So while several events led to minor flooding on roads and other poor drainage areas, these were handled with flood advisories that lasted only several hours. There were two more significant local rain events that resulted in flood warnings. The first occurred in northern Newaygo and Mecosta counties on July 6, where 4+ inches of rain fell in a short span. Despite this impressive amount of rainfall, the dry and sandy soils were able to keep impacts to a relative minimum in this area. The 2nd flood warning event happened on the north side of Kalamazoo County on July 17. Because this was a more developed and urban area, localized flooding on roadways was more pronounced, but still did not result in significant or prolonged impacts.

Even though there were no major rainstorms, the drumbeat of active weather and storms was enough to result in continued improvement in the lingering drought conditions across the area, and by the end of the month the analyzed drought conditions across the area were almost completely gone.

As for Lake Michigan, the water from the late June flooding working through the river systems actually helped cause a rise of between 2 and 3 inches during the month. However, water levels are still running about 18 inches lower than last year at this time,

providing needed relief to beleaguered lakeshore communities dealing with erosion and flooding over the last few years.

Flood Conditions

The Grand and Kalamazoo River Systems began the month very high for this time of year (thanks to the late June regional rainstorm). In fact, the lower portions of the Grand River set new all-time high water levels for July - though this is a little deceiving because normals levels are so consistently low this time of year. Thus, this is how all-time July high water levels can be set without any significant flooding. Drier conditions allowed both of these river systems to drop down to near the 75th percentile flow for this time of year, and spent most of the rest of the month at this same level. The Muskegon River basin was a bit drier, and hovered around normal levels for most of the month.

Flood Stage Report

No forecast points exceeded flood stage during the month. Thus, the NWS Form E-3 “Flood Stage Report” was not issued.

River Conditions

The end of July percentage of normal flow for selected rivers is listed below:

Location	River	% of Normal
Scottville	Pere Marquette	111
Whitehall	White	89
Evart	Muskegon	111
Mt. Pleasant	Chippewa	100
Lansing	Grand	N/A
Grand Rapids	Grand	148
East Lansing	Red Cedar	176
Hastings	Thornapple	189
Battle Creek	Battle Creek	333
Battle Creek	Kalamazoo	171

General Hydrologic Information

July precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 4.44, 1.73, and 2.69 inches, respectively (Figure 1). Monthly departures were +0.58, -1.21, and -0.06 inches, respectively. Yearly departures were -1.34, -2.33 and -2.47 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for July 2021 is shown in Figure 2.

Temperatures for the month of July at Grand Rapids, Lansing and Muskegon were near normal. The monthly average temperature departures for these sites were -0.5, +0.7, and -0.2 degrees Fahrenheit, respectively.

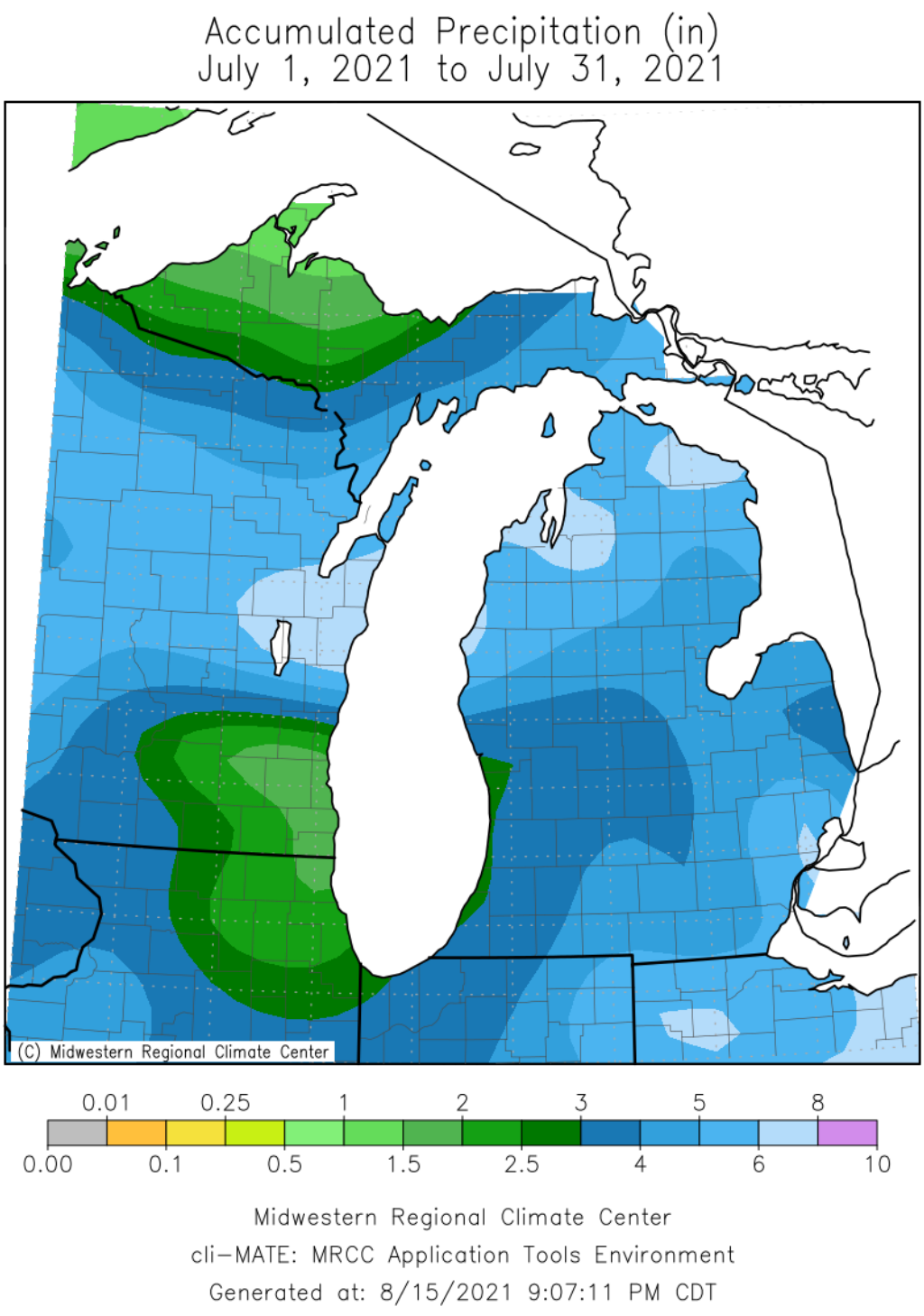

Figure 1. July 2021 Monthly Precipitation Totals.

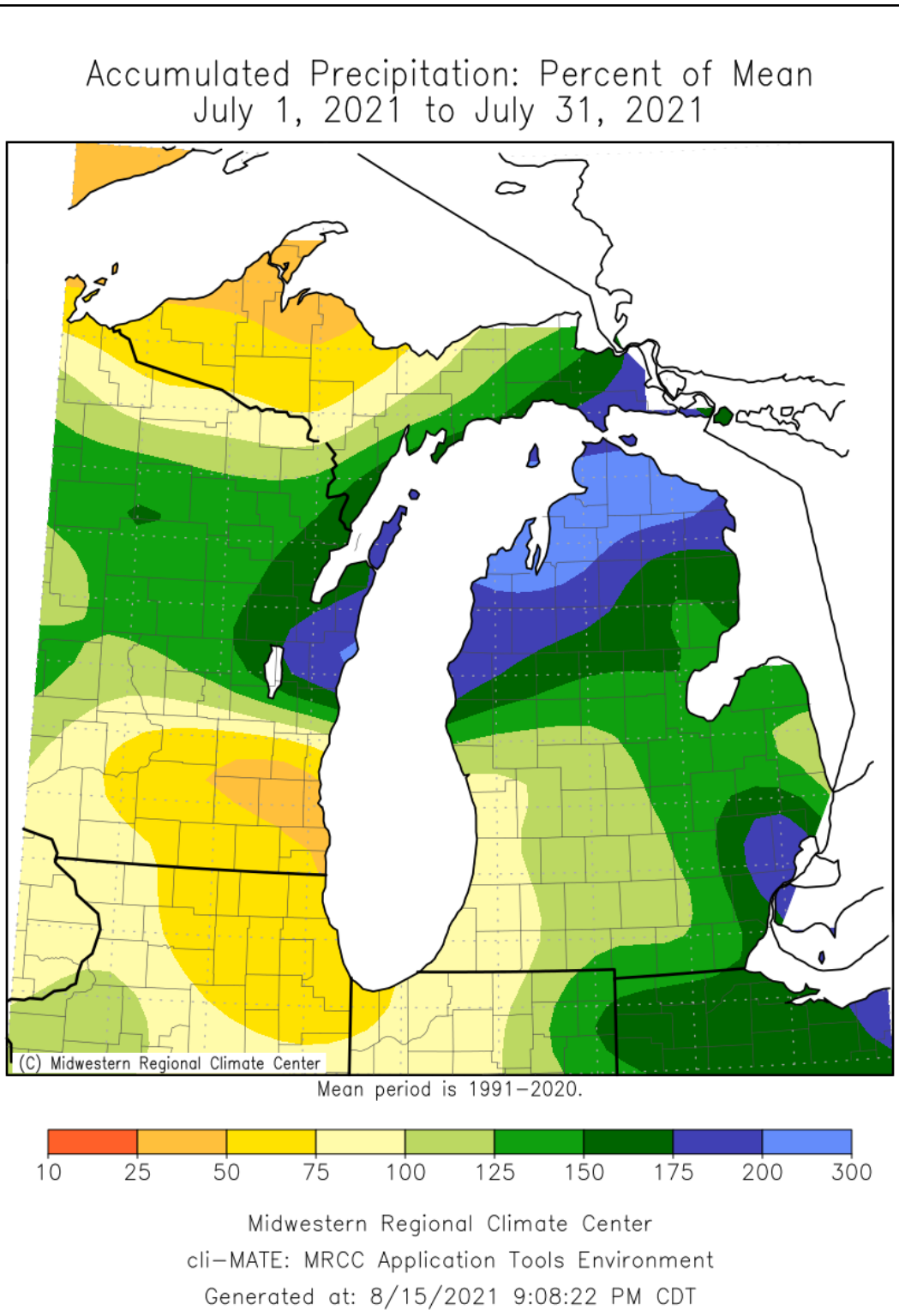

Figure 2. July 2021 Percent of Mean of Accumulated Precipitation.

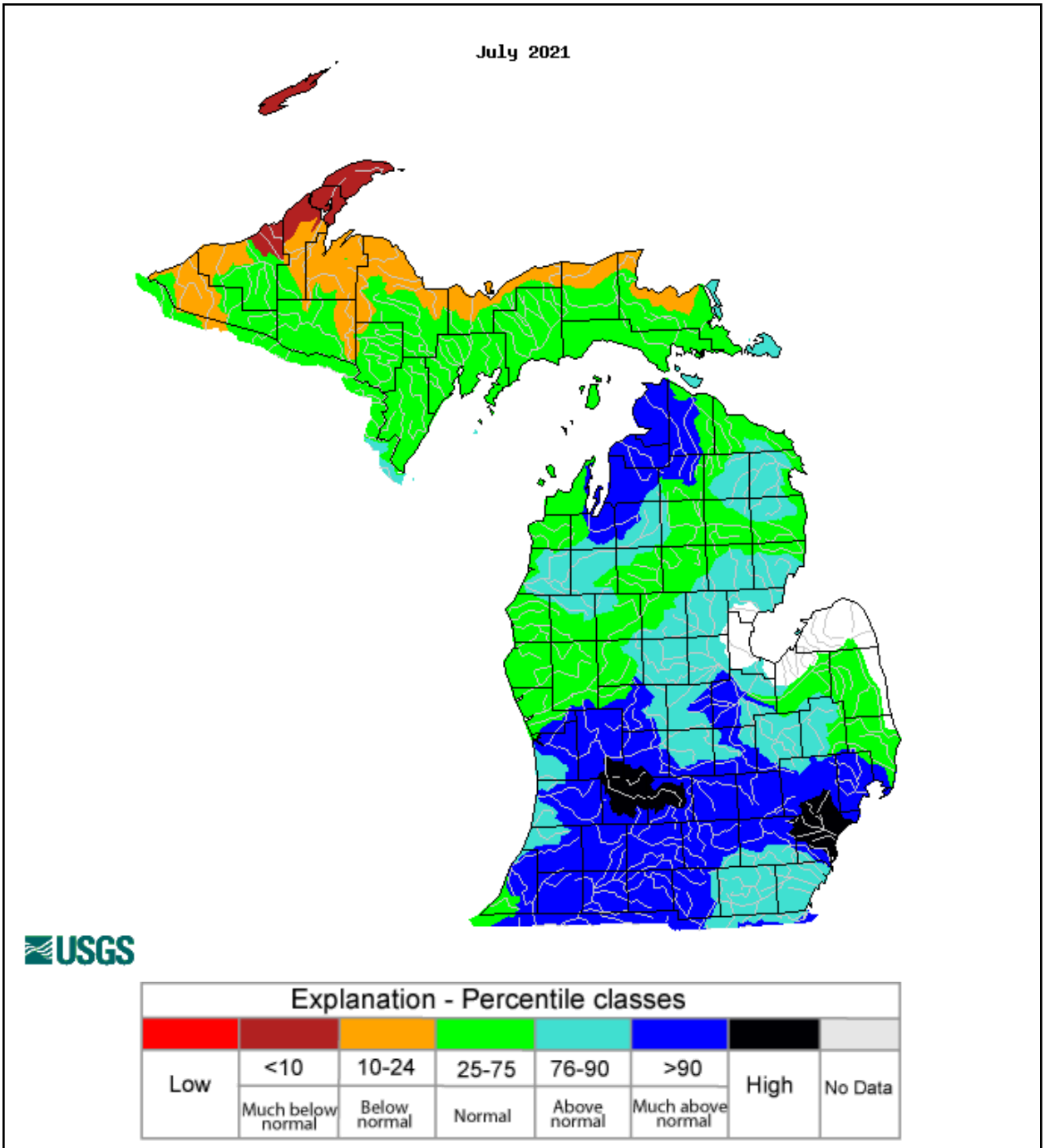

Figure 3. USGS monthly average streamflow for July, grouped by significant hydrologic units. Note streamflows across Lower Michigan significantly above-average for this time of year - a stark reversal from 6 weeks ago when drought gripped Lower Michigan

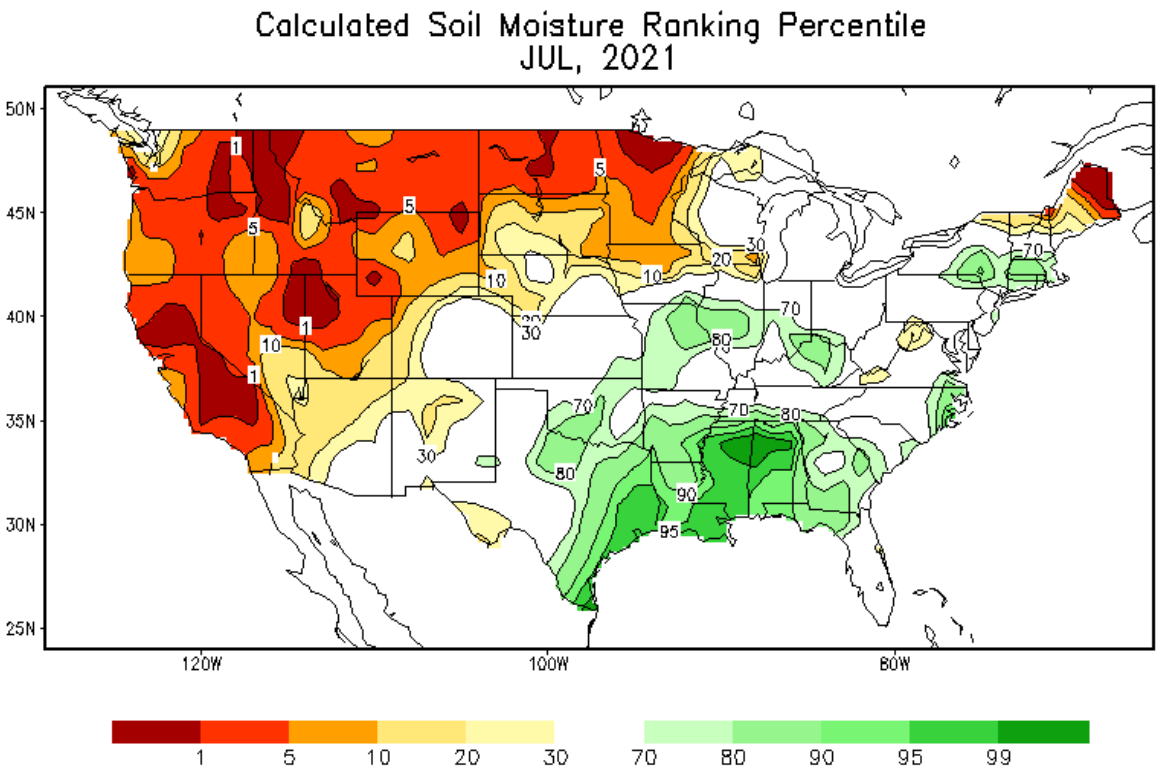

Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

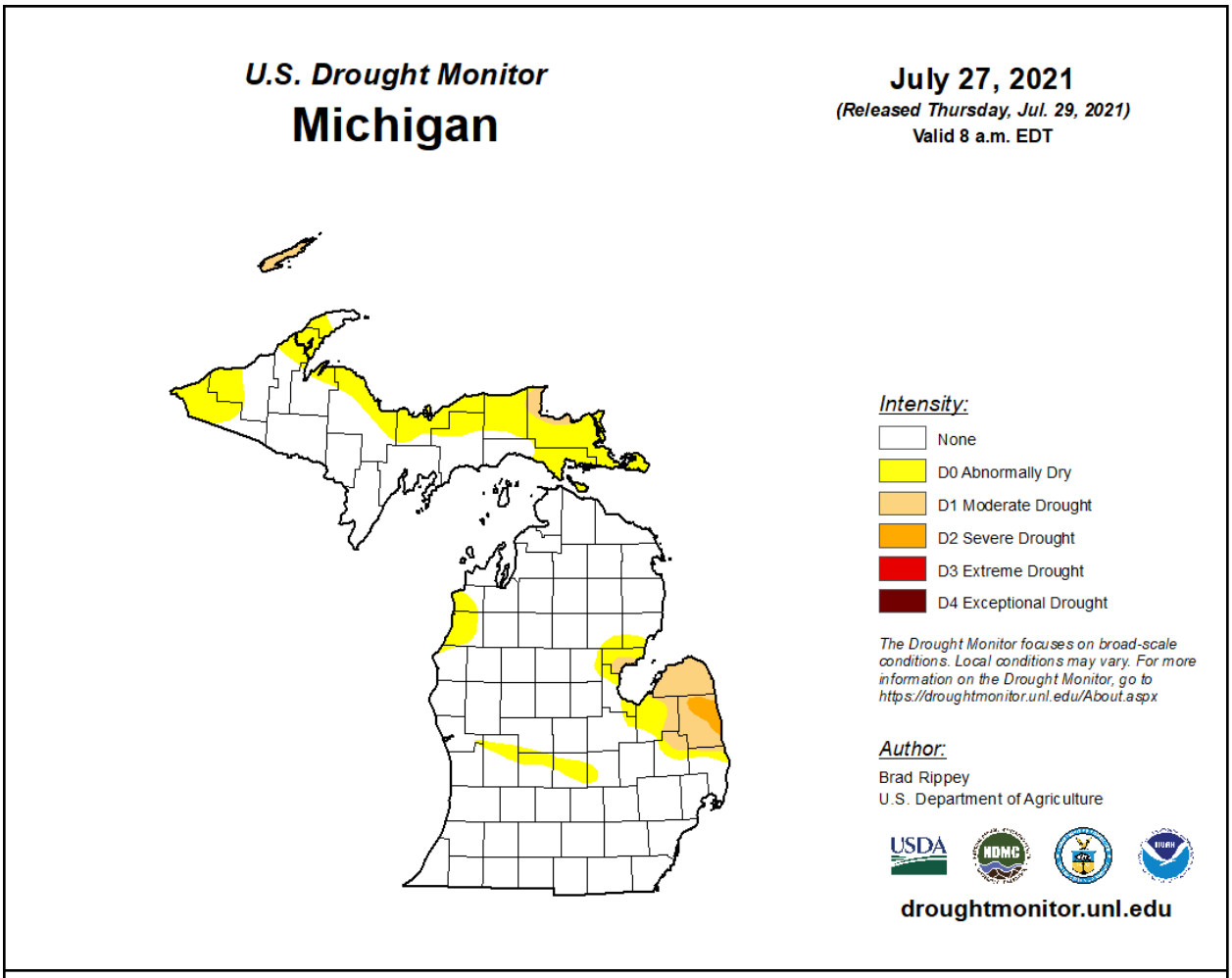

Figure 5. U.S. Drought Monitor analysis valid late July, 2021

Hydrologic Products issued this month

31 Hydrologic Summaries (ARBRVAGRR)
1 Probabilistic Hydrologic Outlook (ARBESFGRR)
0 Event-driven Hydrologic Outlook (ARBESFGRR)
31 Daily River Forecasts (ARBRVDGRR)
10 Areal Flood Advisory Statements (ARBFLSGRR)
2 Flood Warning Statements (ARBFLWGRR)
0 Flood Watch Statements (ARBFFAGRR)
0 River Statements (ARBRVSGRR)

News Articles and Related Documentation

https://www.woodtv.com/weather/bills-blog/whos-got-the-rain-magnet-in-kalamazoo-county/