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): **May 2022**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: June 15, 2022
		SIGNATURE: Richard Wagenmaker, 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

May 2022 shook off the cold and cloudy pattern of April and was consistently warmer than normal for the bulk of the month. We moved into a very springlike pattern where most of the rain fell in localized bullseyes associated with thunderstorms, as opposed to area-wide steady rain events. Several rounds of heavy thunderstorms moved through the area during the month that dropped a quick 1 or 2 inches of rain and were handled by flood advisories. The exception to this was a very unusual thunderstorm event on May 11 that featured slow moving torrential rain/storms moving from east to west from the Mount Pleasant area over to Big Rapids and on into Oceana county. A quick 2-3 inches fell over much of this area. However, an area north of Mount Pleasant near Rosebush and another area in downtown Big Rapids saw things go to another level, with between 3 and 4.5 inches of rain falling in just an hour or two. This produced widespread flooding of roads, fields, and a few structures in Isabella county. In the urban area of Big Rapids, small streams were turned into destructive torrents, and caused nearly $2.5 million in damage - primarily to roads, bridges, culverts, and parks. Flood warnings were issued for both of these more isolated areas.

Flood Conditions

The Muskegon River spent most of the month within a fairly normal range for this time of year, but with heavier rains in the 2nd half of the month focusing more to the south, the Muskegon River did drop slightly below normal by the end of the month. Meanwhile, the Grand and Kalamazoo basins started above normal (near the 75th to 90th percentile for this time of year) and slowly slipped toward the normal range by the end of the month. No significant river flooding was experienced in May.

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 May percentage of normal flow for selected rivers is listed below:

Location	River	% of Normal
Scottville	Pere Marquette	100
Whitehall	White	93
Evart	Muskegon	99
Mt. Pleasant	Chippewa	148
Lansing	Grand	170
Grand Rapids	Grand	137
East Lansing	Red Cedar	139
Hastings	Thornapple	244
Battle Creek	Battle Creek	140
Battle Creek	Kalamazoo	112

General Hydrologic Information

May precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 4.07, 4.76, and 1.80 inches, respectively (Figure 1). Monthly departures were +0.07, +1.10, and -1.58 inches, respectively. Yearly departures were +3.37 +2.82 and -0.24 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for May 2022 is shown in Figure 2.

Temperatures for the month of May at Grand Rapids, Lansing and Muskegon were above normal. The monthly average temperature departures for these sites were +2.3, +4.8, and +4.0 degrees Fahrenheit, respectively.

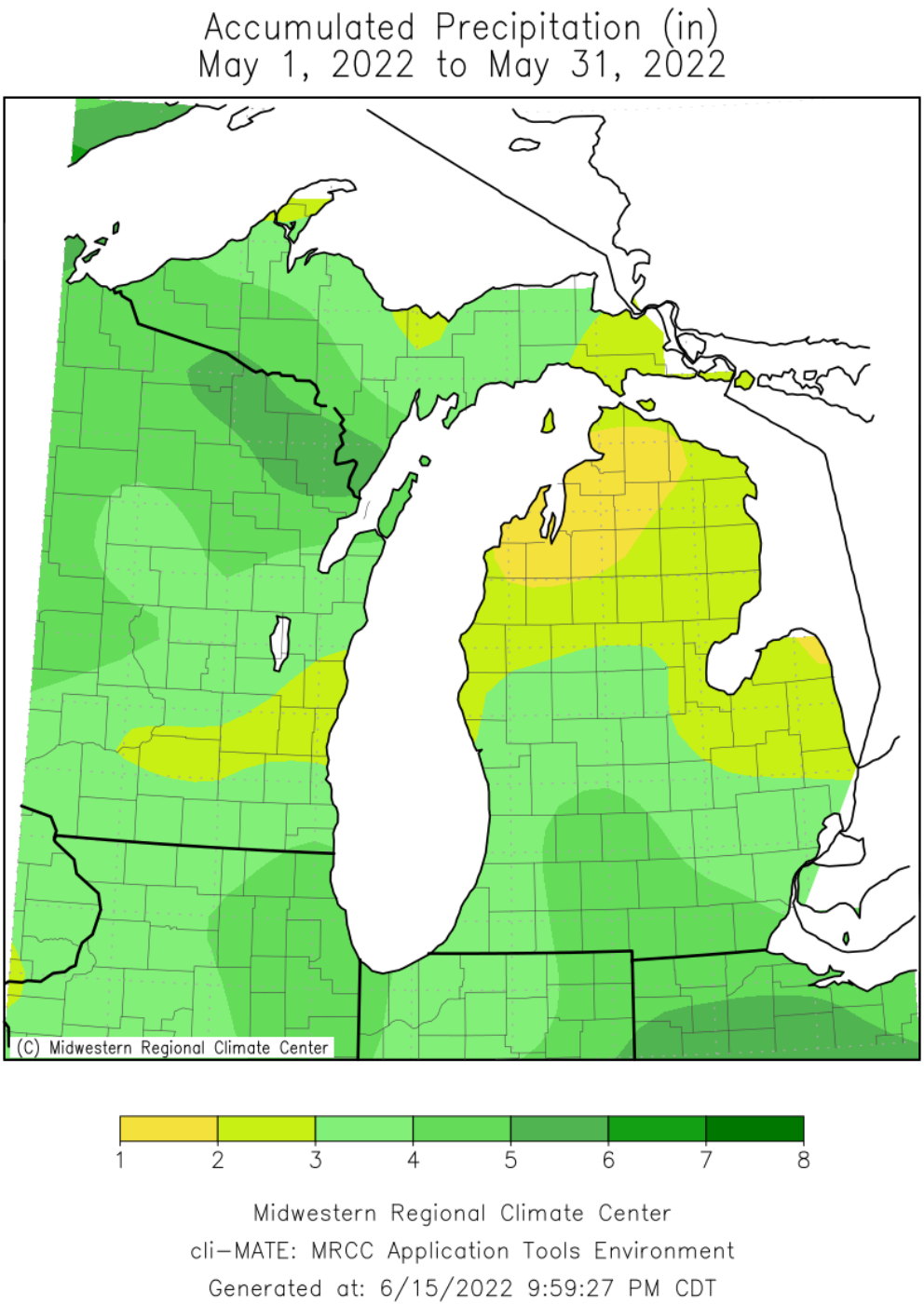

Figure 1. May 2022 Monthly Precipitation Totals.

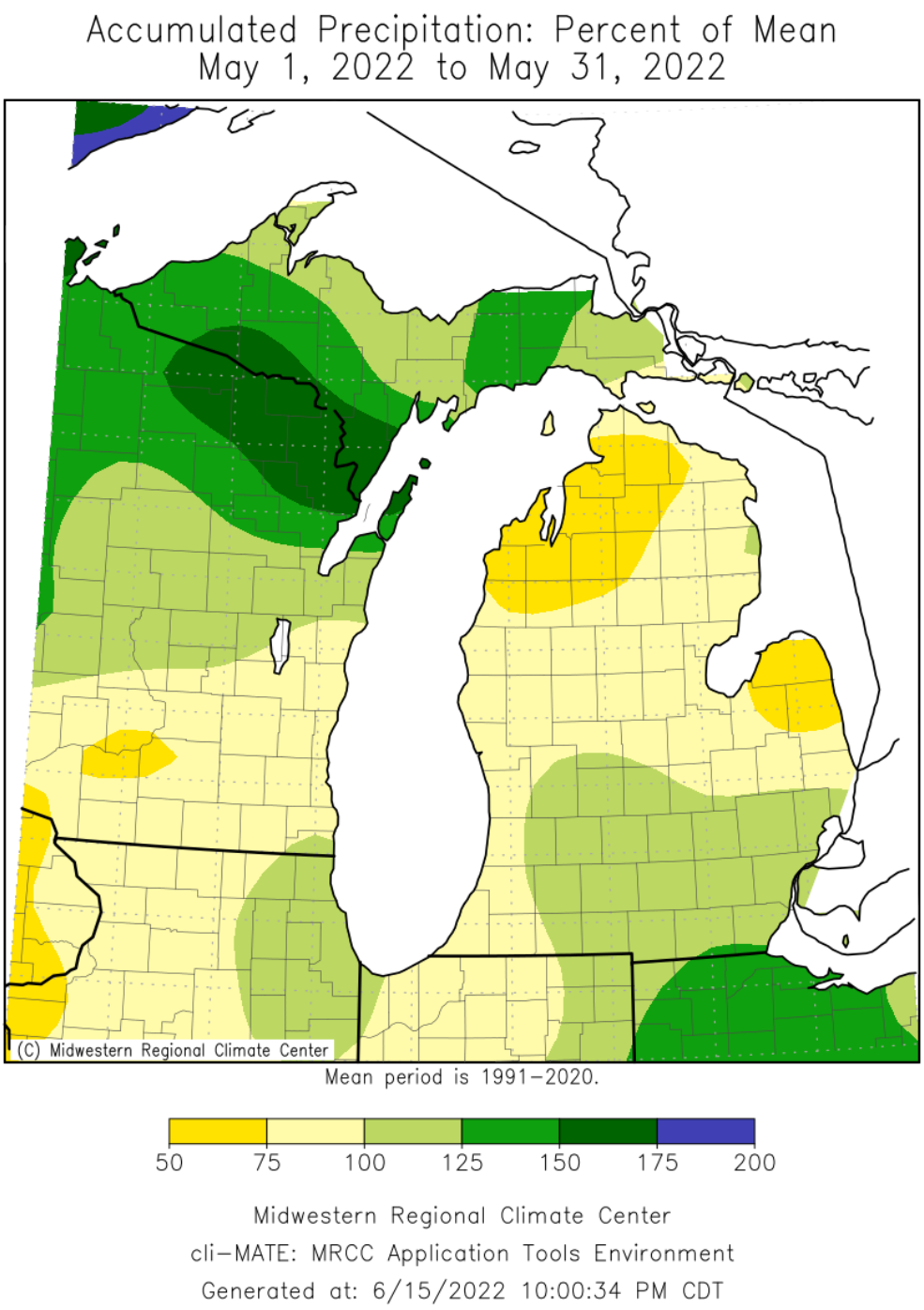

Figure 2. May 2022 Percent of Mean of Accumulated Precipitation.

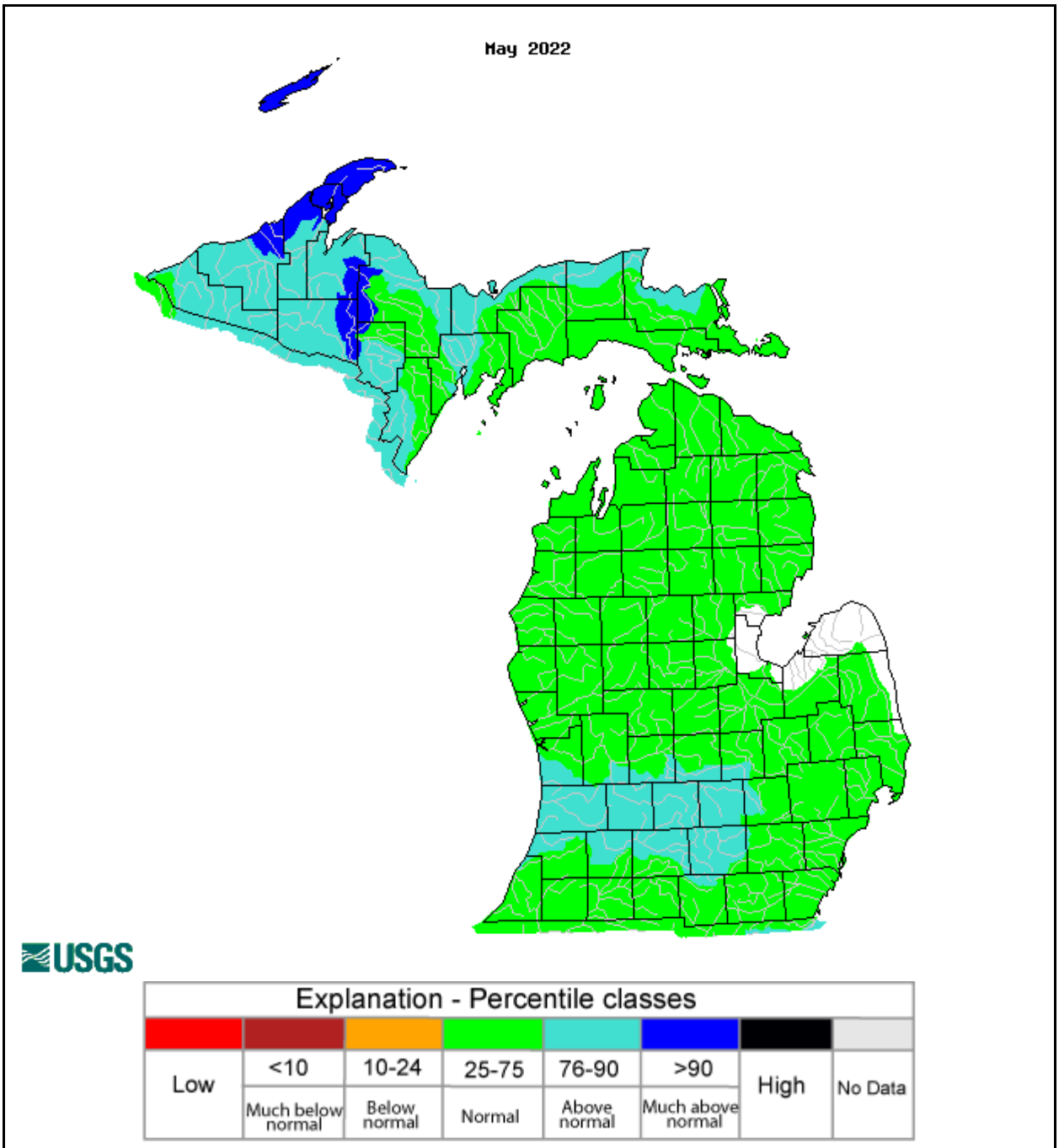

Figure 3. USGS monthly average streamflow for May, grouped by significant hydrologic units. Note streamflows near to above average across most of Lower Michigan for this time of year.

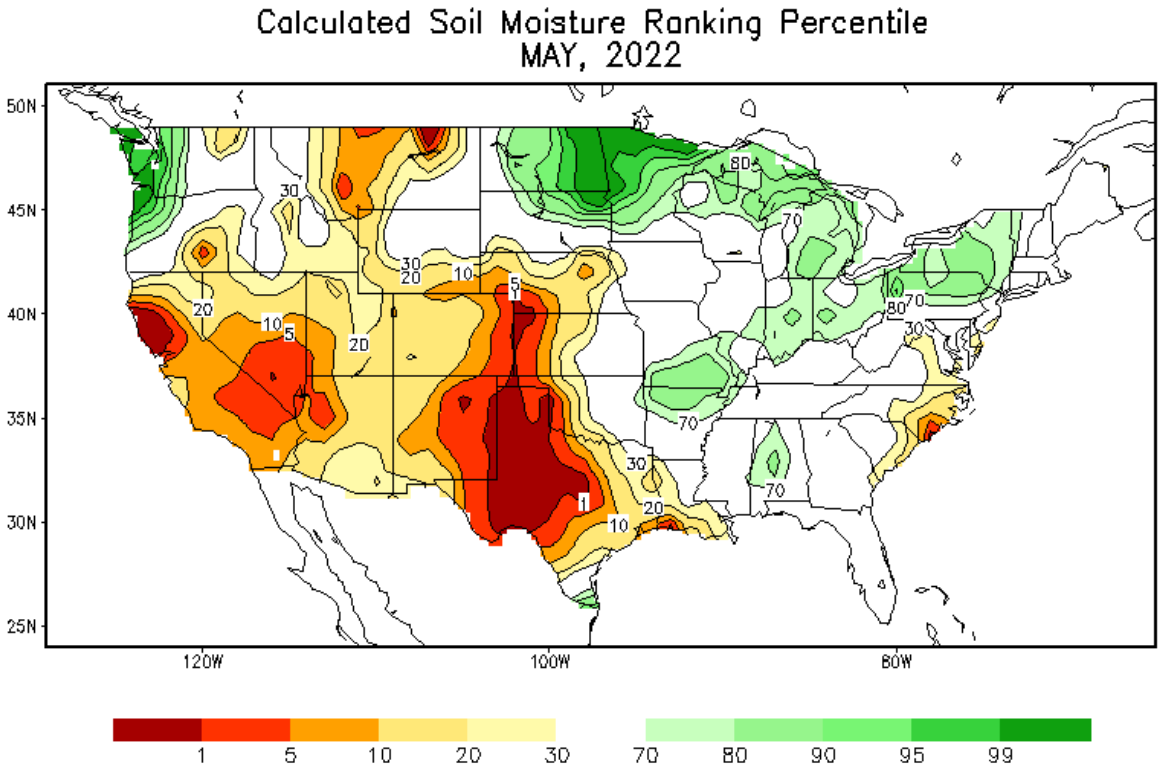

Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

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)
6 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.9and10news.com/2022/05/11/big-rapids-homeowners-clean-up-after-heavy-rainfall/

https://www.bigrapidsnews.com/news/article/Downtown-business-owners-talk-impact-of-May-11-17171372.php

https://www.wzzm13.com/article/news/local/big-rapids-flooding/69-1f895c5f-206d-4e76-a4fd-114ef09a6e99