

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

May 29, 2014

SIGNATURE:

Daniel K. Cobb, MIC

Mark L. Walton/Mark Sekelsky

TO: NATIONAL WEATHER SERVICE (W/OS31)
HYDROMETEOROLOGICAL INFO CENTER
1325 EAST-WEST HIGHWAY, RM 13468
SILVER SPRING, MD 20910

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 significant flooding occurred within this Hydrologic Service Area.

Summary

Record flooding occurred in our Hydrologic Service Area (HSA) during the month of April 2014. On April 16, 2014 the Muskegon River at Evart, Michigan, with a flood stage of 12 feet, set a record crest at 15.97 feet, surpassing the previous record of 14.99 feet set in March 31, 1989. The Muskegon River at Croton, Michigan, with a flood stage of 9 feet, recorded its second highest crest on record on April 15, 2014 at 12.89 feet. The flooding along the Muskegon River impacted over 410 properties and caused over 11 million dollars in flood damages. Newaygo, Osceola, Isabella, Lake, Muskegon and Mecosta counties declared a local state of emergency due to the flooding. Governor Snyder declared a State of Disaster declaration for the counties of Newaygo and Osceola on April 17, 2014, and later added Muskegon, Mecosta, and Isabella counties on May 7, 2014. No fatalities and only 5 injuries were reported for this event. Over 280 households had to be evacuated and over 100 roads closed due to flooding.

Flood Conditions

Friday, April 4th

At 8:20 AM EDT a river flood warning was issued for the Portage River near Vicksburg, Michigan. Minor flooding was occurring and minor flooding was forecast.

At 10:56 AM EDT the river flood warning for the Portage River near Vicksburg was updated. Minor flooding was occurring and minor flooding was forecast.

At 11:13 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was still forecast.

Saturday, April 5th

At 11:01 AM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

At 9:33 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

Sunday, April 6th

At 10:28 AM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

At 11:15 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

Monday, April 7th

The 6:18 AM EDT HWO highlighted the potential for a heavier rain event for the next weekend that would exacerbate flooding issues for the entire area.

At 12:22 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

The 12:51 PM EDT Hydro section of the AFD mentioned substantial melting snow in the upcoming week and the potential for heavy rain the following weekend.

At 10:52 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

Tuesday, April 8th

At 11:47 AM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

At 10:39 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. Minor flooding was forecast.

Wednesday, April 9th

At 10:06 AM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. River was slowly falling and minor flooding was forecast.

At 10:46 AM EDT Hydro Section of the AFD mentions “we do need to monitor the Saturday night into Monday event. This system has a couple of ingredients that could lead to heavy rain which could cause hydro impacts”

At 9:32 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. River was slowly falling and minor flooding was forecast.

Thursday, April 10th

At 9:19 AM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. River was slowly falling and minor flooding was forecast.

At 9:24 PM EDT a river flood statement was issued updating the river forecast for the river flood warning for the Portage River near Vicksburg. River was slowly falling and minor flooding was forecast.

Friday, April 11th

At 11:34 AM EDT the river flood warning was cancelled for the Portage River near Vicksburg, Michigan when the river fell below flood stage.

At 3:59 PM EDT a flood watch was issued for 15 counties located in the Northern two-thirds of our HSA from Saturday afternoon through Monday morning. Due to recent snowmelt the rivers were running significantly above normal and the forecast called for very heavy rain over saturated soils which would push river levels even higher.

Saturday, April 12th

At 4:04 AM EDT the flood watch continued for the 15 counties. The heavy rain was forecast to move into the watch area this afternoon.

The 4:40 AM EDT HWO highlights the Pere Marquette, White and Muskegon river basins for possible flooding

At 11:09 AM EDT river flood warnings based on observed and forecasted 48 hour precipitation were issued for the following rivers:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

At 11:56 AM EDT the flood watch continued for the 15 counties.

At 3:50 PM EDT the flood watch continued for the 15 counties. The heavy rain is now forecast to arrive this evening.

At 8:30 PM EDT the flood watch continued for the 15 counties. Heavy rain was falling over the watch area.

At 8:56 PM EDT areal flood warnings were issued for Newaygo and Oceana Counties until 9:00 AM EDT Sunday. Thunderstorms with very heavy rain, producing rainfall rates of over an inch per hour, were moving over the warned area.

At 9:43 PM EDT an areal flood warning was issued for Muskegon County until 9:30 AM EDT Sunday. Thunderstorms with very heavy rain, producing rainfall rates of over an inch per hour, were moving over the warned area.

At 10:05 PM EDT areal flood warnings were issued for Gratiot, Isabella, Mecosta, and Montcalm Counties until 10:00 AM EDT Sunday. Thunderstorms with very heavy rain, producing rainfall rates of over an inch per hour, were moving over the warned area. Rainfall totals across the warned area were pushing two to three inches over the past 24 hours and more rain was on the way.

At 10:19 PM EDT a river flood warning was issued for the Portage River near Vicksburg, Michigan. Minor flooding was forecast.

At 10:31 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

Sunday, April 13th

At 12:22 AM EDT a flood statement was issued indicating the areal flood warning for Oceana and Newaygo Counties continued until 9:00 AM EDT Sunday. Thunderstorms with very heavy rainfall were moving across the warned area.

At 12:27 AM EDT a flood statement was issued indicating that the areal flood warning for Muskegon County continued until 9:30 AM EDT Sunday. Rounds of thunderstorms with very heavy rainfall were moving over the warned area.

At 12:36 AM EDT a flood statement was issued indicating the areal flood warning for Montcalm, Mecosta, Isabella and Gratiot Counties continued until 10:00 AM EDT

Sunday. Locally in excess of 2 inches was estimated to have fallen, especially across northwest Montcalm County. The Little Muskegon River basin had seen some of the heaviest rain. The north branch of the Chippewa River had also seen a considerable amount of rain. The flood statement highlighted the possibility of flooding of small streams and rivers across the warned area.

At 3:13 AM EDT the flood watch continued for the 15 counties. More rounds of rain and storms were forecast over the watch area today and through tonight.

At 8:51 AM EDT areal flood warnings were extended for Newaygo and Oceana Counties until 9:00 PM EDT Sunday. Local law enforcement officials reported water still over roadways in the warned area.

At 9:06 AM EDT the areal flood warning was extended for Muskegon County until 9:30 PM EDT Sunday. Local law enforcement officials reported several roads still under water.

At 9:53 AM EDT areal flood warnings were extended for Gratiot, Isabella, Mecosta, and Montcalm Counties until 10:00 PM EDT Sunday. Local law enforcement officials reported water still over roadways in the warned area. Local officials were also concerned that high water releases from the Barryton Dam on the Chippewa River might flood homes in the Chippewa Vista Subdivision located downstream.

At 12:19 PM EDT a river flood warning was issued for the Grand River near Comstock Park, Michigan, and reissued for the Pere Marquette River when the river forecast was changed from minor flooding to moderate flooding.

At 12:45 PM EDT the flood watch continued for the 15 counties.

At 12:47 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Rogue River below Rockford, Michigan
- Portage River near Vicksburg, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

At 1:19 PM EDT areal flood warnings were issued for Clare, Lake, Mason, and Osceola Counties until 1:00 AM EDT Monday. Local law enforcement officials reported water over some roads in Mason and Osceola Counties. Rainfall reports indicate that as much as 3.48 inches of rain had fallen near Hersey, Michigan, with radar showing a large swath of heavy rain over most of Central Lower Michigan.

At 8:17 PM EDT areal flood warnings were extended for Newaygo and Oceana Counties until 9:00 PM EDT Monday. Local officials reported water still over roadways and the forecast called for another one to two inches of rain over the next 24 hours.

At 8:24 PM EDT the areal flood warning for Muskegon County was extended until 9:30 PM EDT Monday. Local officials reported water still over roadways and the forecast called for another one to two inches of rain over the next 24 hours.

At 9:01 PM EDT the flood watch continued for the 15 counties. An additional one to two inches of rain were forecast overnight.

At 9:10 PM EDT areal flood warnings were extended for Gratiot, Isabella, Mecosta, and Montcalm Counties until 10:00 PM EDT Monday. Local officials reported water still over roadways and the forecast called for another one to two inches of rain over the next 24 hours. Montcalm County Dispatch reported water covering some roads in the cities of Langston and Lakeview.

At 9:26 PM EDT a river flood warning was issued for the Pine River at Alma, Michigan,

and reissued for the White River above Whitehall, Michigan, when the river flood forecast changed from Minor to Moderate flooding.

At 9:42 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Grand River near Comstock Park, Michigan
- Rogue River below Rockford, Michigan
- Portage River near Vicksburg, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan
- Pine River at Alma, Michigan

At 10:31 PM EDT areal flood warnings were extended for Clare, Lake, Mason, and Osceola Counties until 1:00 AM EDT Tuesday. Heavy rain was moving back into the warned area and streams were already full and in some cases flowing over roads from the recent heavy rain. Flooding issues were mainly in the southern part of Clare County there were several roads closed with some washouts. Lake County also reported some roads were still closed around Baldwin, Michigan.

Monday, April 14th

At 3:16 AM EDT the flood watch continued for the 15 counties. Rain was forecast to move out of the watch area this morning.

At 7:51 AM EDT the flood watch was cancelled for the 15 counties. Heavy rain had moved out of the area.

At 10:25 AM EDT the river flood warning for the Portage River near Vicksburg, Michigan was cancelled when the river fell below flood stage.

At 11:16 AM EDT the river flood warning was reissued for the Muskegon River at Ewart, Michigan, when the river forecast was upgraded from Moderate to Record flooding. Overnight an additional two inches of rain fell over the upper reaches of the basin.

At 11:36 AM EDT a flood statement was issued cancelling the river flood warning for the Grand River near Comstock Park, Michigan and updating the river forecast for river flood warnings for the following rivers:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan
- Pine River at Alma, Michigan

At 4:03 PM EDT areal flood warnings were extended for Clare, Lake, Mason, and Osceola Counties until 3:30 PM EDT Tuesday. Local emergency management and county officials reported ongoing flooding across the warned area. Many roads have been washed out and are closed due to high water.

At 5:02 PM EDT a flood statement was issued updating the river forecast for the river flood warning for the Muskegon River near Croton, Michigan. River levels were still rising and moderate flooding is occurring and moderate flooding is forecast.

At 5:33 PM EDT a flood watch was issued for the potential for flash flooding on the Hersey River below the Miller Pond Dam located in Osceola County. Local emergency

management reported the Miller Pond Dam was approaching capacity due to high water and could possibly fail. The nearest downstream town is Reed City which is located one mile downstream from the dam. People in those low lying areas below Miller Pond Dam were urged to keep abreast of the situation and stay alert to changing conditions, including possible evacuations.

At 5:44 PM EDT a flood statement was issued for the areal flood warning for Montcalm, Mecosta, Isabella, and Gratiot Counties until 10:00 PM EDT tonight. Emergency management reported that flooding was occurring in many streams and creeks throughout the warned area. Numerous roads were closed due to high water levels and washouts. Mecosta County in particular had extensive flooding in the Chippewa Subdivision.

At 5:47 PM EDT a flood statement was issued for the areal flood warning for Muskegon County until 9:30 PM EDT tonight. Local emergency management reported that flooding was occurring in across much of the White River basin. M120 was closed between Marvin and Maple Island roads due to rising water in Cedar Creek.

At 5:56 PM EDT a flood statement was issued for the areal flood warning for Oceana and Newaygo Counties until 9:00 PM EDT tonight. Local emergency managers reported that flooding was occurring in Newaygo and Oceana Counties. The northern half of Oceana County was hit particularly hard. Numerous roads were closed throughout these counties.

At 7:33 PM EDT the flood watch continued for Osceola County and was expanded to include the county of Newaygo. A flood watch for potential flash flooding was issued for the White River below the White Cloud Dam located in Newaygo County. Local emergency management reported the White Cloud Dam was approaching capacity due to high water and could possibly fail. The nearest town downstream of the dam is city of White Cloud which is located one mile downstream from the dam. People in those low lying areas below White Cloud Dam were urged to keep abreast of the situation and stay alert to changing conditions, including possible evacuations.

At 7:59 PM EDT the flood watch for Osceola and Newaygo Counties was extended through Tuesday evening. Local emergency management reported both dams near capacity and sandbagging was occurring to shore up the dams.

At 8:14 PM EDT areal flood warnings were extended for Newaygo and Oceana Counties until 9:00 PM EDT Tuesday. Emergency managers reported that flooding was occurring in Newaygo and Oceana counties. The northern half of Oceana County was hit particularly hard. Numerous roads were closed throughout these counties.

At 8:29 PM EDT the areal flood warning for Muskegon County was extended until 9:30 PM EDT Tuesday. Emergency management reported that flooding was occurring across much of the White River basin. M120 was closed between Marvin and Maple Island roads due to rising water in Cedar Creek.

At 8:34 PM EDT the areal flood warning was extended for Gratiot, Isabella, Mecosta, and Montcalm Counties until 10:00 PM EDT Tuesday. Emergency management reported that flooding was occurring along many streams and creek throughout the warning area. Numerous roads were closed due to high water levels and washouts. Mecosta County in particular had extensive flooding in the Chippewa Subdivision.

At 10:11 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Evart, Michigan
- Muskegon River near Croton, Michigan

- Chippewa River below Mount Pleasant, Michigan
- Pine River at Alma, Michigan

Tuesday, April 15th

At 5:27 AM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan

At 9:36 AM EDT the flood watch for potential flash flooding was cancelled for Osceola County but continued for Newaygo County. Osceola emergency management reported that the situation had stabilized at the Miller Pond Dam and water levels had receded. Newaygo emergency management reported that water levels at the White Cloud Dam were still high, but receding.

At 10:52 AM EDT the river flood warning for the Muskegon River near Croton, Michigan was reissued when the river forecast was upgraded from Moderate to Major flooding. The USGS river gage on the Muskegon River near Croton went down overnight and local emergency management was taking readings off of reference points to determine the height of the river. USGS would get the river gage back up and running that afternoon.

At 11:01 AM EDT a flood statement was issued cancelling the river flood warning for the Pine River at Alma, Michigan and updating the river forecast for river flood warnings for the following rivers:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

At 11:44 AM EDT the river flood warning for the Pere Marquette River near Scottville, Michigan was reissued when the river forecast was upgraded from Moderate to Major flooding.

At 2:17 PM EDT the areal flood warning for Gratiot County was cancelled.

At 2:27 PM EDT the areal flood warning for Clare, Lake, Mason, and Osceola Counties until 3:30 PM EDT Wednesday. Local officials had reported extensive flooding across the warned area.

At 2:31 PM EDT a flood statement was issued that continued the areal flood warning for Oceana and Newaygo Counties until 9:00 PM EDT Tuesday. Local emergency management and local officials reported that flooding was still occurring, especially in the eastern and southeastern portions of Oceana County and much of Newaygo County. Various roadways remained closed due to washouts and ponding water.

At 2:38 PM EDT a flood statement was issued to continue the areal flood warning for Muskegon County until 9:30 pm Tuesday. Many roads remained under water.

At 4:51 PM EDT the flood watch for potential flash flooding was cancelled for Newaygo County. Newaygo emergency management reported that the situation had stabilized at the White Cloud Dam and water levels had receded.

At 7:58 PM EDT the areal flood warning for Newaygo and Oceana Counties had been extended until 9:00 PM EDT Wednesday. Flooding was still occurring, especially in eastern and southeastern portions of Oceana County and much of Newaygo County.

Various roadways remain closed due to washouts and ponding water.

At 8:42 PM EDT the areal flood warning for Muskegon County was extended until 9:30 PM EDT Wednesday. Local officials reported flooding was still occurring, especially in the northern sections of Muskegon County. Many roadways are still under water including some major roadways. Smaller tributaries such as Cedar Creek and Brooks Creek remain high.

At 8:46 PM EDT the areal flood warning for Isabella, Mecosta, and Montcalm Counties was extended until 10:00 PM EDT Wednesday. Local officials reported flooding was still occurring with many roads still closed due to high water and wash outs.

At 10:13 PM EDT a flood statement was issued updating the flood warning for the following forecast points:

- Rogue River below Rockford, Michigan
- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

Wednesday, April 16th

At 7:39 AM EDT a flood statement was issued cancelling the flood warning for the Rogue River below Rockford. The Rogue River had fallen below flood stage.

At 11:17 AM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- White River above Whitehall, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

At 12:59 PM EDT a flood statement was issued updating the areal flood warning for Montcalm, Mecosta and Isabella counties that was in effect until 10:00 PM EDT.

Flooding continued with many roads flooded, but water levels appeared to have peaked.

At 1:10 PM EDT the areal flood warning for Newaygo and Oceana counties was updated. Flooding continued, but water levels have peaked.

At 1:13 PM EDT the areal flood warning for Muskegon County was updated. Many roads remain closed, but water levels have peaked.

At 3:23 PM EDT the areal flood warning for Lake, Mason, and Osceola Counties was extended until 3:30 PM EDT Thursday. Local law enforcement and county officials reported that flooding was occurring throughout the warned area. Many secondary roads were still under water. Small creeks and streams had peaked and were beginning a slow fall.

At 8:17 PM EDT the areal flood warning for Newaygo and Oceana Counties was extended until 9:00 PM EDT Thursday. Local emergency management reported areas of flooding were still occurring. Many secondary roads were still under water. Small creeks and streams had peaked and were beginning a slow fall.

At 9:14 PM EDT the areal flood warning for Muskegon County was extended until 9:30 PM EDT Thursday. Local emergency management reported areas of flooding were still occurring. Many secondary roads were still under water. Small creeks and streams had peaked and were beginning a slow fall.

At 9:18 PM EDT the areal flood warning for Isabella, Mecosta, and Montcalm Counties

was extended until 10:00 PM EDT Thursday. Local emergency management reported areas of flooding were still occurring. Many secondary roads were still under water. Small creeks and streams had peaked and were beginning a slow fall.

At 9:55 PM EDT a flood statement was issued cancelling the river flood warning for the White River at Whitehall and updating the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

Thursday, April 17th

At 10:42 AM EDT a flood statement was issued cancelling the areal flood warning for Lake and Mason Counties and continuing the warning for Osceola County until 3:30 PM EDT. Numerous roads remained closed throughout Osceola County.

At 10:50 AM EDT a flood statement was issued cancelling the areal flood warning for Montcalm and Mecosta Counties and continuing the warning for Isabella until 10:00 PM EDT. Isabella County Emergency Management had reported a debris jam on the Chippewa River at Pickard RD. Water levels had receded in Mecosta and Montcalm Counties.

At 10:54 AM EDT a flood statement was issued cancelling the area flood warning for Oceana County, and continuing the warning for Newaygo County. While many roads remain flooded in Newaygo County, water levels had receded enough in Oceana County to cancel the warning. The warning for Newaygo County remained in effect until 10:00 PM EDT.

At 10:55 AM EDT a flood statement was issued cancelling the area flood warning that was in effect for Muskegon County as water levels had receded.

At 11:00 AM EDT the areal flood warning was extended for Osceola County until 12:00 PM EDT Friday. Numerous roads remain under water and were closed throughout the county.

At 11:03 AM EDT the areal flood warning was extended for Newaygo County until 12:00 PM EDT Friday. Numerous road closures due to ongoing flooding were occurring across the county. Road commission officials continued to assess area roads, several of which have been washed out while water remains over other roads where road closures were in effect.

At 11:06 AM EDT the areal flood warning for Isabella County was extended until 12:00 PM EDT Friday. Local emergency management had reported water covering Pickard Road crossing the Chippewa River west of Mount Pleasant due to a debris jam against the bridge. Assessment of area roads continued across the county due to flood waters.

At 11:15 AM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River at Ewart, Michigan
- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

At 9:40 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River at Ewart, Michigan

- Muskegon River near Croton, Michigan
- Chippewa River below Mount Pleasant, Michigan

Friday, April 18th

At 10:47 AM EDT the areal flood warning for Osceola County was cancelled as water levels had receded.

At 10:51 AM EDT the areal flood warning for Newaygo County was extended until noon EDT Saturday. County emergency management indicated that there were still roads scattered across the county that were closed due to water over the roads.

At 10:56 AM EDT a flood statement was issued cancelling the flood warning for the Chippewa River at Mount Pleasant when the river fell below flood stage. This statement also updated the river forecast for river flood warnings for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River at Evart, Michigan
- Muskegon River near Croton, Michigan

At 3:27 PM EDT a flood statement was issued cancelling the flood warning for the forecast point on the Pere Marquette River at Scottville when the river fell below flood stage.

At 8:55 PM EDT the river flood warning for the Muskegon River near Croton, Michigan continued. River levels were falling but still above flood stage.

At 8:58 PM EDT the river flood warning for the Muskegon River near Evart was cancelled.

Saturday, April 19th

At 10:10 AM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Muskegon River at Evart, Michigan
- Muskegon River near Croton, Michigan

At 9:08 PM EDT the river flood warning for the Muskegon River at Evart, Michigan continued. River levels were falling but still above flood stage.

At 9:13 PM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Muskegon River near Croton, Michigan

Sunday, April 20th

At 8:34 AM EDT a flood statement was issued updating the river forecast for river flood warnings for the following rivers:

- Muskegon River at Evart, Michigan
- Muskegon River near Croton, Michigan

At 9:24 PM EDT a flood statement was issued cancelling the flood warning for the forecast point at Evart on the Muskegon River when the river fell below flood stage. This product also updated the river forecast for river flood warning for the following river:

- Muskegon River near Croton, Michigan

Monday, April 21st

At 8:30 AM EDT a flood statement was issued cancelling the flood warning for the forecast point at Croton on the Muskegon when the river fell below flood stage.

The following rivers exceeded bankfull during the month of April 2014:

- Muskegon River near Ewart, Michigan (18 days above bankfull)
- Muskegon River near Croton, Michigan (22 days above bankfull)
- Pere Marquette River near Scottville, Michigan (22 days above bankfull)
- White River near Whitehall, Michigan (5 days above bankfull)
- Chippewa River near Mt. Pleasant, Michigan (7 days above bankfull)
- Pine River near Alma, Michigan (4 days above bankfull)
- Looking Glass River near Eagle, Michigan (11 days above bankfull)
- Maple River near Mt. Pleasant, Michigan (18 days above bankfull)
- Sycamore Creek near Holt, Michigan (4 days above bankfull)
- Grand River near Ionia, Michigan (18 days above bankfull)
- Flat River near Smyrna, Michigan (5 days above bankfull)
- Grand River near Lowell, Michigan (6 days above bankfull)
- Rogue River near Rockford, Michigan (2 days above bankfull)
- Grand River near Comstock Park, Michigan (6 days above bankfull)
- Grand River near Grand Rapids, Michigan (5 days above bankfull)
- Thornapple River near Hastings, Michigan (7 days above bankfull)
- Kalamazoo River near Comstock, Michigan (1 day above bankfull)

Flood Stage Report

Seven forecast points exceeded flood stage in our HSA during the month of April 2014. See NWS Form E-3 "Flood Stage Report" for more details.

River Conditions

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

<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	158
Whitehall	White	152
Ewart	Muskegon	153
Mt. Pleasant	Chippewa	200
Lansing	Grand	100
Grand Rapids	Grand	98
East Lansing	Red Cedar	85
Hastings	Thornapple	94
Battle Creek	Battle Creek	89
Battle Creek	Kalamazoo	97

General Hydrologic Information

Across Southwest Lower Michigan, April 2014 had near normal temperatures. April 2014 precipitation ranged from near to below normal for the Grand River basin and river basins south, to above normal precipitation for the Muskegon, Pere Marquette, White and Chippewa river basins. April precipitation totals at Grand Rapids, Lansing, and Muskegon, Michigan, were 2.62, 1.36, and 2.78 inches, respectively (Figure 1). Precipitation totals for the month at these three sites were 0.73 of an inch below normal at Grand Rapids, 1.67 inches below normal at Lansing, and 0.13 of an inch below normal at Muskegon, Michigan. Percent of mean precipitation for April 2014 is shown in Figure 2. Yearly precipitation totals were 0.47 of an inch above normal for Grand Rapids, 1.13 inches below normal for Lansing, and 0.58 of an inch above normal for Muskegon, Michigan.

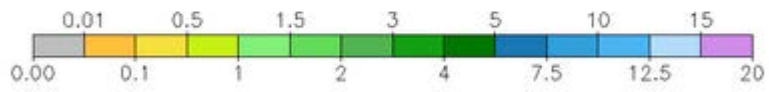
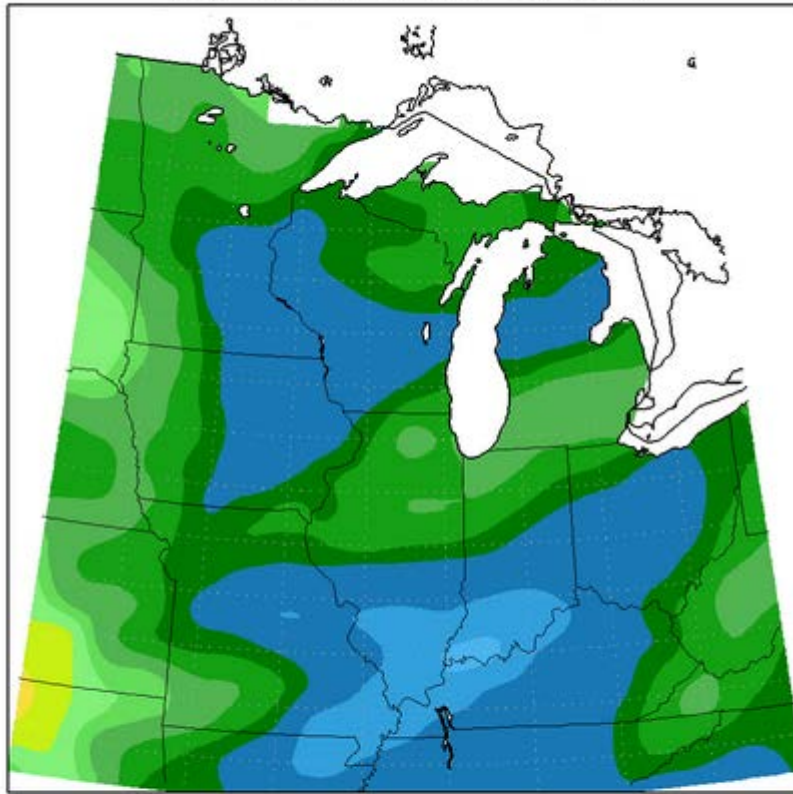
Snowfall totals for the month of April were near to below normal at Grand Rapids, Lansing, and Muskegon, Michigan were 1.8 (normal), 0.7 (1.2 below), and 1.6 (0.7 below) inches respectively.

Temperatures for the month of April were near normal at Grand Rapids, Lansing, and Muskegon, Michigan, with average monthly departures of -0.4, -0.4 and -1.1 degrees Fahrenheit, respectively.

At the end of April, the frost depth was zero.

Snow depth by the end of April had fallen to zero (Figure 3) and so had snow water equivalent (Figure 4).

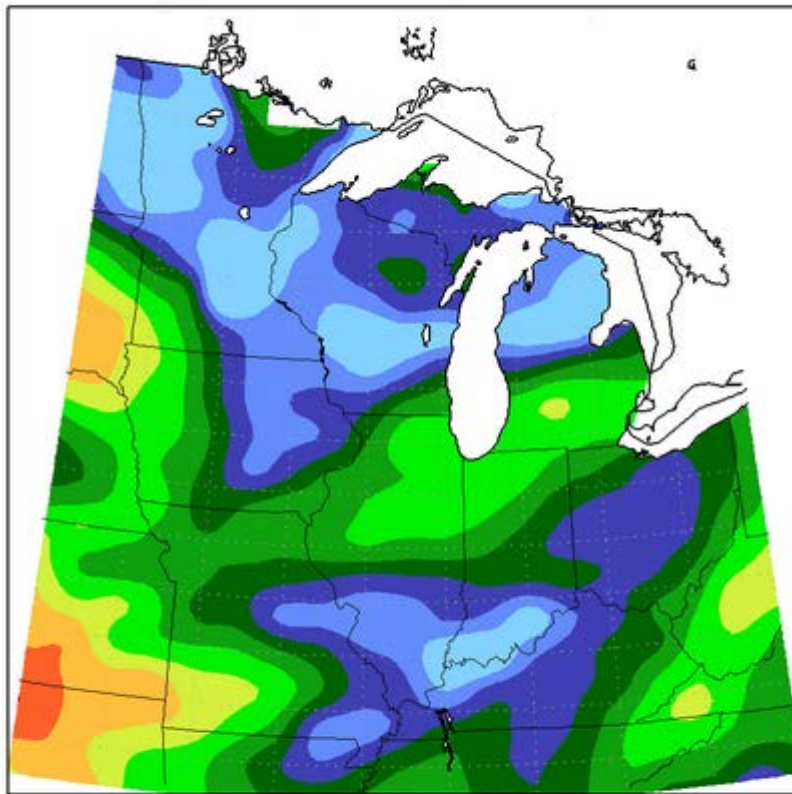
Accumulated Precipitation (in)
April 1, 2014 to April 30, 2014



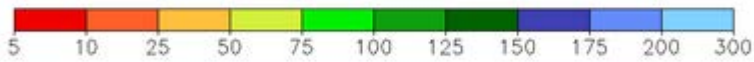
Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

Figure 1. April Monthly Precipitation Totals

Accumulated Precipitation: Percent of Mean
April 1, 2014 to April 30, 2014



Mean period is 1981-2010.



Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

Figure 2. April Percent of Mean of Accumulated Precipitation

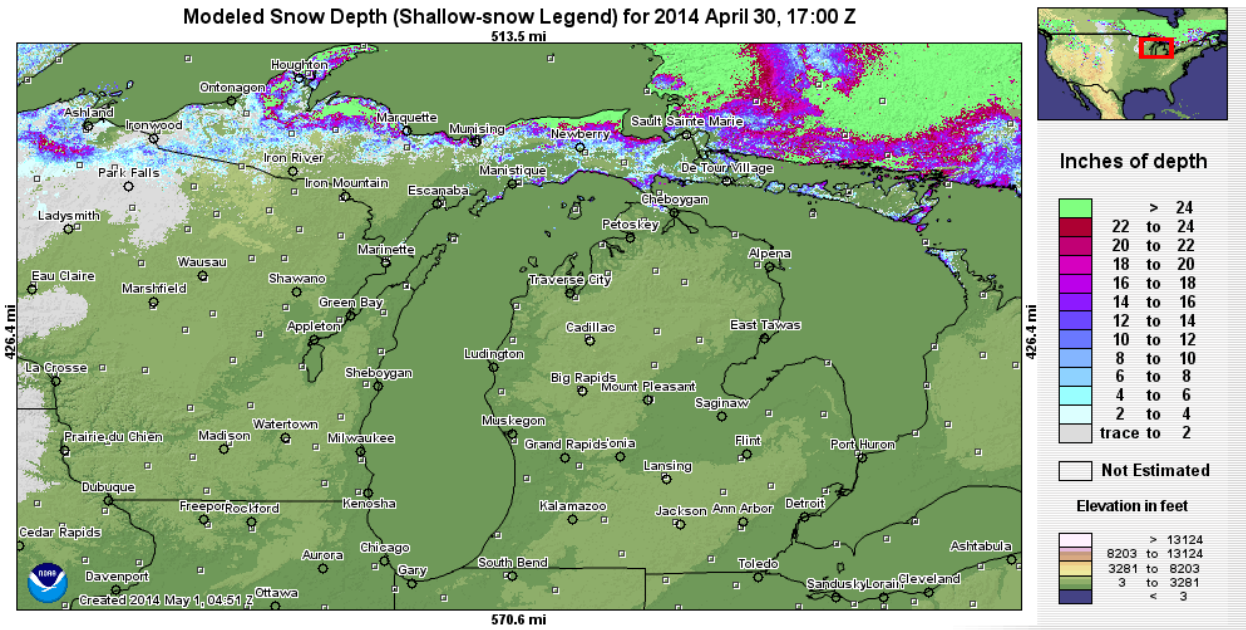


Figure 3. End of the Month Snow Depth for April

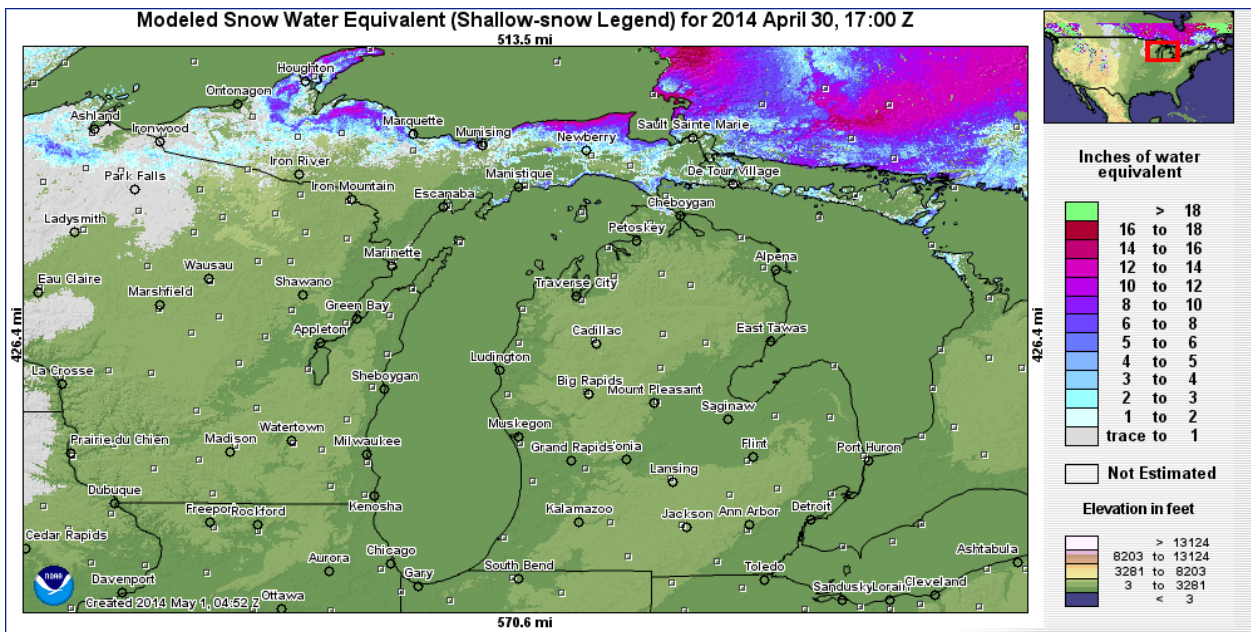


Figure 4. End of the Month Snow Water Equivalent for April

Hydrologic Products issued this month:

- 17 Areal Flood Watches (ARBFFAGRR)
- 27 Areal Flood Warnings (ARBFLWGR)
- 21 Areal Flood Statements (ARBFLSGRR)
- 11 River Flood Warnings (ARBFLWGR)
- 36 River Flood Statements (ARBFLSGRR)
- 71 River Flood Advisories (ARBFLSGRR)
- 27 Hydrologic Statements (ARBRVSGRR)

1 Hydrologic Outlook (ARBESFGRR)
30 Hydrologic Summaries (ARBRVAGRR)