

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

REPORT FOR (MONTH & YEAR):
March 2010

DATE:
May 5, 2010

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

SIGNATURE:
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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 inside this box indicates that no significant flooding occurred within this Hydrologic Service Area.

Summary

Minor flooding occurred during the month of March along the Grand and Thornapple Rivers. River flood advisories were issued for 22 river forecast points. Urban and small stream flood advisories were issued for 20 counties in our Hydrologic Service Area.

Flood Conditions

Thursday, March 11th

At 3:45 AM EST, the hydrology section of the area forecast discussion mentioned the possibility of significant rises on area streams over the weekend due to runoff from snowmelt and the forecast for rain on Thursday evening and Friday.

At 11:14 AM EST, a river flood advisory was issued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River above Hastings
- St Joseph River at Burlington

At 2:47 PM EST, an areal flood advisory for urban and small streams was issued for Calhoun, Eaton, Ionia, Allegan, Barry, Kalamazoo, Kent, Ottawa, Van Buren, Muskegon, Newaygo and Oceana Counties until 2:30 PM EST Friday. Recent snowmelt had caused many small streams to be near bankfull and the forecast for additional rain would only cause them to rise higher.

At 10:03 PM EST, a river flood advisory was issued for the Grand River at Lowell, the Pere Marquette River near Scottville, the White River near Whitehall, and continued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River above Hastings
- St Joseph River at Burlington

At 10:17 PM EST, the areal flood advisory for urban and small streams continued for Calhoun, Eaton, Ionia, Allegan, Barry, Kalamazoo, Kent, Ottawa, Van Buren, Muskegon, Newaygo and Oceana Counties until 2:30 PM EST Friday. Many small streams were reaching bankfull.

Friday, March 12th

At 1:44 AM EST, an areal flood advisory for urban and small streams was issued for Clare, Gratiot, Isabella, Mecosta, Montcalm, Osceola, Lake, and Manson Counties until 1:30 PM EST Friday. Many small streams and creeks were showing significant rises.

At 5:10 AM EST, the areal flood advisory for urban and small streams continued for Calhoun, Eaton, Ionia, Allegan, Barry, Kalamazoo, Kent, Ottawa, Van Buren, Muskegon, Newaygo and Oceana Counties until 2:30 PM EST Friday. Over an inch of rain had fallen overnight leading to significant rises on our smaller streams and creeks.

At 6:23 AM EST, a river flood advisory was issued for the Grand River near Comstock Park, the Grand River near Robinson Township, the Looking Glass River near Eagle, the Rogue River near Rockford, and continued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- St Joseph River at Burlington

At 7:20 AM EST, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River near Robinson Township
- Sycamore Creek at Holt
- Looking Glass River near Eagle
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- White River near Whitehall

At 11:50 AM EST, a river flood advisory was issued for the Kalamazoo River near New Richmond, Muskegon River near Croton, Chippewa River near Mt. Pleasant, and continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River near Robinson Township
- Sycamore Creek at Holt
- Looking Glass River near Eagle
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- White River near Whitehall

At 11:52 AM EST, the areal flood advisory for urban and small streams was canceled for Calhoun, Eaton, Ionia, Allegan, Barry, Kalamazoo, Kent, Ottawa, and Van Buren Counties until 2:30 PM EST Friday. The road commissions for these counties indicated the minor nuisance flooding of secondary roads had ended and the water on these roads had receded. The areal flood advisory for urban and small streams continued for Muskegon, Newaygo, and Oceana Counties. County road commissions for these counties indicated that the water had not yet receded off of some secondary roads and that some roads were still closed.

At 11:55 AM EST, the areal flood advisory for urban and small streams was canceled for Gratiot, Isabella, and Clare Counties. The road commissions for these counties indicated the minor nuisance flooding of secondary roads had ended and the water on these roads had receded. The areal flood advisory for urban and small streams continued for Montcalm, Mecosta, Osceola, Lake, and Mason Counties. County road commissions for these counties indicated that the water had not yet receded off of some secondary roads and that some roads were still closed.

At 1:26 PM EST, the areal flood advisory for urban and small streams was extended for Mecosta, Montcalm, Osceola, Lake and Mason Counties until 1:30 PM EST Saturday.

At 1:33 PM EST, the areal flood advisory for urban and small streams was extended for Muskegon, Newaygo, and Oceana Counties until 2:30 PM EST Saturday.

At 4:36 PM EST, a river flood advisory was issued for the Red Cedar River near East Lansing.

At 10:12 PM EST, a river flood advisory was issued for the Grand River at Grand Rapids, the Muskegon River at Ewart, and continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River near Robinson Township
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Looking Glass River near Eagle
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- White River near Whitehall
- Chippewa River near Mt. Pleasant
- Muskegon River near Croton

At 10:35 PM EST, the areal flood advisory for urban and small streams continued for Muskegon, Newaygo, and Oceana Counties until 2:30 PM EST Saturday. County road commissions for these counties indicated that the water had not yet receded off of some secondary roads and that some roads were still closed.

At 10:37 PM EST, the areal flood advisory for urban and small streams continued for Montcalm, Mecosta, Osceola, Lake and Mason Counties until 1:30 PM EST Saturday. County road commissions for these counties indicated that the water had not yet receded off of some secondary roads and that some roads were still closed.

At 10:55 PM EST, a river flood advisory was issued for the Red Cedar River near Williamston.

Saturday, March 13th

At 4:33 AM EST, the areal flood advisory for urban and small streams continued for Muskegon, Newaygo, and Oceana Counties until 2:30 PM EST Saturday.

At 4:34 AM EST, the areal flood advisory for urban and small streams continued for Montcalm, Mecosta, Osceola, Lake and Mason Counties until 1:30 PM EST Saturday.

At 10:17 AM EST, the river flood advisory was canceled for the Looking Glass River near Eagle.

At 10:37 AM EST, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near Williamston
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Looking Glass River near Eagle
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Muskegon River near Evart
- Muskegon River near Croton
- Chippewa River near Mt. Pleasant

At 10:43 AM EST, the areal flood advisory for urban and small streams was canceled for Montcalm, Osceola, Lake and Mason Counties. The areal flood advisory for urban and small streams continued for Mecosta County until 1:30 PM EST. Mecosta county law enforcement reported that M-20, between the village of Mecosta and Nine Mile Road, remained closed due to water over the road.

At 10:45 AM EST, the areal flood advisory for urban and small streams was canceled for Muskegon, Newaygo, and Oceana Counties.

At 12:58 PM EST, the areal flood advisory for urban and small streams was extended for Mecosta County until 2:30 PM EDT Sunday. Mecosta county law enforcement reported that M-20, between the village of Mecosta and Nine Mile Road, remained closed due to water over the road.

At 10:28 PM EST, the river flood advisory was canceled for the Red Cedar River near Williamston, White River near Whitehall, and continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near Williamston
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Looking Glass River near Eagle
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Muskegon River near Evart
- Muskegon River near Croton
- Chippewa River near Mt. Pleasant

At 10:59 PM EST, the areal flood advisory for urban and small streams continued for Mecosta County until 2:30 PM EDT Sunday. Mecosta county law enforcement reported that M-20, between the village of Mecosta and Nine Mile Road, remained closed due to water over the road.

At 11:30 PM EST, the river flood advisory was continued for the St. Joseph River at Burlington.

Sunday, March 14th

At 5:18 AM EDT, the areal flood advisory for urban and small streams continued for Mecosta County until 2:30 PM EDT Sunday. Mecosta county law enforcement reported that M-20, between the village of Mecosta and Nine Mile Road, remained closed due to water over the road, but that the water was receding.

At 9:52 AM EDT, a river flood advisory was issued for the Thornapple River near Caledonia.

At 9:55 AM EDT, the river flood advisory was canceled for the Muskegon River near Croton.

At 11:09 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Rogue River near Rockford
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Muskegon River near Ewart
- Chippewa River near Mt. Pleasant

At 12:31 PM EDT, the areal flood advisory for urban and small streams was canceled for Mecosta County. Local officials had reported that water had finally receded and the previously closed sections of M-20 were now open.

At 8:11 PM EDT, a river flood advisory was issued for the Chippewa River near Mt. Pleasant.

At 10:56 PM EDT, a river flood warning was issued for the Thornapple River near Hastings.

At 11:09 PM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Thornapple River near Caledonia
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Muskegon River near Ewart
- Chippewa River near Mt. Pleasant

At 11:12 PM EDT, the river flood advisory for the Thornapple River near Hastings was canceled because it had been upgraded to a river flood warning.

At 11:20 PM EDT, the river flood advisory continued for the Flat River near Smyrna.

Monday, March 15th

At 10:32 AM EDT, a river flood statement was issued for the Thornapple River near Hastings that continued the river flood warning.

At 10:35 AM EDT, a river flood advisory was issued for the Kalamazoo River at Comstock.

At 10:59 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River near Comstock Park
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Caledonia
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Muskegon River near Evart
- Chippewa River near Mt. Pleasant

At 8:31 PM EDT, a river flood advisory was issued for the Thornapple River near Hastings.

At 8:33 PM EDT, the river flood warning was canceled for the Thornapple River near Hastings when it fell below flood stage.

At 9:26 PM EDT, a river flood warning was issued for the Grand River near Comstock Park.

At 9:31 PM EDT, the river flood advisory was canceled for the Grand River near Comstock Park because it was upgraded to a river flood warning.

At 10:01 PM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Grand Rapids
- Grand River near Robinson Township
- Red Cedar River near East Lansing
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Caledonia
- Kalamazoo River at Comstock
- Kalamazoo River near New Richmond
- St Joseph River at Burlington
- Pere Marquette River near Scottville
- Chippewa River near Mt. Pleasant

At 10:07 PM EDT, the river flood advisory for the Muskegon River at Evert was canceled.

Tuesday, March 16th

At 10:42 AM EDT, a river flood statement was issued for the Grand River near Comstock Park that continued the river flood warning.

At 11:00 AM EDT, a river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- Thornapple River near Caledonia
- Kalamazoo River at Comstock
- St Joseph River at Burlington

At 11:04 AM EDT, the river flood advisory was canceled for the following rivers:

- Red Cedar River at East Lansing
- Kalamazoo River near New Richmond
- Chippewa River near Mt. Pleasant

At 10:03 PM EDT, the river flood advisory was canceled for the following rivers:

- Grand River at Robinson Township
- Thornapple River near Caledonia
- Kalamazoo River at Comstock
- Pere Marquette River near Scottville

At 10:17 PM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

At 10:21 PM EDT, a river flood statement was issued for the Grand River near Comstock Park that continued the river flood warning.

Wednesday, March 17th

At 9:10 AM EDT, a river flood statement was issued for the Grand River near Comstock Park that continued the river flood warning.

At 9:40 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

At 10:53 PM EDT, the river flood advisory was issued for the Grand River near Comstock Park and continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

At 10:56 PM EDT, the river flood warning was canceled for the Grand River near Comstock Park when the river fell below flood stage.

Thursday, March 18th

At 10:18 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Comstock Park
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

At 9:23 PM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Comstock Park
- Grand River at Grand Rapids
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

Friday, March 19th

At 9:46 AM EDT, the river flood advisory was cancelled for the Grand River at Grand Rapids when the river fell below bankfull.

At 9:56 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Grand River at Lowell
- Grand River at Comstock Park
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River near Hastings
- St Joseph River at Burlington

At 9:12 PM EDT, the river flood advisory was cancelled for the Thornapple River near Hastings, the Flat River near Smyrna, the Grand River at Lowell, and the Grand River at Comstock Park, and continued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- St Joseph River at Burlington

Saturday, March 20th

At 10:26 AM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- St Joseph River at Burlington

At 9:13 PM EDT, the river flood advisory continued for the following rivers:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- St Joseph River at Burlington

Sunday, March 21st

At 10:18 AM EDT, the river flood advisory was canceled for the Sycamore Creek at Holt, St. Joseph River at Burlington, and continued for the Grand River at Ionia and the Maple River at Maple Rapids.

At 9:32 PM EDT, the river flood advisory continued for the Grand River at Ionia and the Maple River at Maple Rapids.

Monday, March 22nd

At 9:50 AM EDT, the river flood advisory continued for the Grand River at Ionia and the Maple River at Maple Rapids.

At 9:48 PM EDT, the river flood advisory continued for the Grand River at Ionia and the Maple River at Maple Rapids.

Tuesday, March 23rd

At 3:20 AM EDT, the river flood advisory was canceled for the Maple River at Maple Rapids when the river fell below bankfull.

At 4:39 AM EDT, the river flood advisory was canceled for the Grand River at Ionia when the river fell below bankfull.

In summary, the following rivers exceeded bankfull during the month of March:

- Grand River at Ionia
- Sycamore Creek at Holt
- Maple River at Maple Rapids
- Flat River near Smyrna
- Thornapple River above Hastings
- St Joseph River at Burlington
- Grand River at Lowell
- Pere Marquette River near Scottville
- White River above Whitehall
- Grand River near Comstock Park
- Looking Glass River near Eagle
- Rogue River below Rockford
- Kalamazoo River near New Richmond
- Chippewa River below Mt Pleasant
- Red Cedar River at East Lansing
- Grand River at Grand Rapids
- Muskegon River at Ewart
- Red Cedar River above Williamston
- Thornapple River near Caledonia
- Kalamazoo River at Comstock

Flood Stage Report

Rivers with minor flooding during the month of March:

The Thornapple River near Hastings, Michigan, with a flood stage of 7.0 feet, rose above flood stage at 10:30 AM EDT on March 14th, crested at 7.09 feet at 6:15 PM EDT on March 14th, and fell back below flood stage around Noon on March 15th.

The Grand River near Comstock Park, Michigan, with a flood stage of 12.0 feet, rose above flood stage around 2 AM EDT on March 16th, crested at 12.10 feet at 03:25 PM EDT on March 16th, and fell back below flood stage around 11 AM EDT on March 17th.

River Conditions

River levels by the end of March were below normal for our HSA.

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	70
Whitehall	White	61
Ewart	Muskegon	51
Mt. Pleasant	Chippewa	63
Lansing	Grand	75
Grand Rapids	Grand	66
East Lansing	Red Cedar	55
Hastings	Thornapple	54
Battle Creek	Battle Creek	62
Comstock	Kalamazoo	83

General Hydrologic Information

March 2010 had below normal precipitation and significantly above normal temperatures.

March precipitation totals at Grand Rapids, Lansing, and Muskegon, Michigan were 1.17, 0.45, and 0.93 of an inch, respectively. Precipitation totals for the month at these three sites were 1.42 inches below normal at Grand Rapids, 1.88 inches below normal at Lansing, and 1.43 inches below normal at Muskegon, Michigan. Snowfall totals for the month were significantly below normal at Grand Rapids, Lansing, and Muskegon with 2.0 (-7.0), 1.2 (-7.5), and 0.4 (-10.7) of an inch, respectively. At the beginning of the month the snowpack depths at Grand Rapids, Lansing, and Muskegon, Michigan, were 6, 8, and 6 inches, respectively. By the end of the month, the snow was all gone at Grand Rapids, Lansing, and Muskegon, Michigan.

Temperatures for the month of March were significantly above normal at Grand Rapids, Lansing, and Muskegon, Michigan, with average monthly departures of +6.6, +5.7 and +5.9 degrees Fahrenheit, respectively.

Frost Depths across the HSA were zero at the end of the month.

Hydrologic Products issued this month:

- 2 River Flood Warnings (ARBFLWGRR)
- 6 River Flood Statements (ARBFLSGRR)
- 62 River Flood Advisories (ARBFLSGRR)
- 16 Hydrologic Statements (ARBRVSGRR)
- 3 Probabilistic Hydrologic Outlooks (ARBESFGRR)
- 31 Hydrologic Summaries (ARBRVAGRR)