

# Lake Levels and Spring Flooding Risks

National Weather Service  
February 19, 2020

National Weather Service... Helping to Build a Weather-Ready Nation



## How did we get here? What happens next?

- How high is the water right now?
- Why is there so much water?
- What is the water level forecast
- Storms
- Spring River Flooding Potential



## Great Lakes Water Levels and Shore Erosion What Are the Lanes?

 National Weather Service  
Weather Forecasts  
Winds, Waves, Rain  
Potential/ Expected Impacts of Winds, Waves, Rain



US Army Corps of Engineers  
Great Lakes Water Levels  
Measuring, Reporting, Forecasting  
Record Keeping - Declaring Record Levels  
<https://www.southwest.delt.state.gov/RecordKeeping/>



Michigan Department of Environment,  
Great Lakes & Energy  
Shoreline Protection  
<http://michigan.gov/shorelands>

## Lake Michigan water levels since 1918



## Lake Michigan water levels since 1980



## Why is there so much water?

- Overall, the last 10 years have been MUCH wetter than normal across the Great Lakes states.
- As a whole, the state of Michigan is in the middle of the wettest 1 year period, 3 year period, and 5 year period since records began over 120 years ago.

## Latest Water Levels – Army Corps of Engineers

<http://le-wm.usace.army.mil/ForecastData/weekly.pdf>

Forecasted Water Level for Feb	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
582.24	581.80	580.60	579.20	578.00	576.80	575.60	574.40	573.20	572.00	570.80	569.60	568.40	567.20	566.00	564.80	563.60	562.40	561.20	560.00	558.80	557.60	556.40	555.20	554.00	552.80	551.60	550.40	549.20	548.00	546.80	545.60	544.40	543.20	542.00	540.80	539.60	538.40	537.20	536.00	534.80	533.60	532.40	531.20	530.00	528.80	527.60	526.40	525.20	524.00	522.80	521.60	520.40	519.20	518.00	516.80	515.60	514.40	513.20	512.00	510.80	509.60	508.40	507.20	506.00	504.80	503.60	502.40	501.20	500.00	498.80	497.60	496.40	495.20	494.00	492.80	491.60	490.40	489.20	488.00	486.80	485.60	484.40	483.20	482.00	480.80	479.60	478.40	477.20	476.00	474.80	473.60	472.40	471.20	470.00	468.80	467.60	466.40	465.20	464.00	462.80	461.60	460.40	459.20	458.00	456.80	455.60	454.40	453.20	452.00	450.80	449.60	448.40	447.20	446.00	444.80	443.60	442.40	441.20	440.00	438.80	437.60	436.40	435.20	434.00	432.80	431.60	430.40	429.20	428.00	426.80	425.60	424.40	423.20	422.00	420.80	419.60	418.40	417.20	416.00	414.80	413.60	412.40	411.20	410.00	408.80	407.60	406.40	405.20	404.00	402.80	401.60	400.40	399.20	398.00	396.80	395.60	394.40	393.20	392.00	390.80	389.60	388.40	387.20	386.00	384.80	383.60	382.40	381.20	380.00	378.80	377.60	376.40	375.20	374.00	372.80	371.60	370.40	369.20	368.00	366.80	365.60	364.40	363.20	362.00	360.80	359.60	358.40	357.20	356.00	354.80	353.60	352.40	351.20	350.00	348.80	347.60	346.40	345.20	344.00	342.80	341.60	340.40	339.20	338.00	336.80	335.60	334.40	333.20	332.00	330.80	329.60	328.40	327.20	326.00	324.80	323.60	322.40	321.20	320.00	318.80	317.60	316.40	315.20	314.00	312.80	311.60	310.40	309.20	308.00	306.80	305.60	304.40	303.20	302.00	300.80	299.60	298.40	297.20	296.00	294.80	293.60	292.40	291.20	290.00	288.80	287.60	286.40	285.20	284.00	282.80	281.60	280.40	279.20	278.00	276.80	275.60	274.40	273.20	272.00	270.80	269.60	268.40	267.20	266.00	264.80	263.60	262.40	261.20	260.00	258.80	257.60	256.40	255.20	254.00	252.80	251.60	250.40	249.20	248.00	246.80	245.60	244.40	243.20	242.00	240.80	239.60	238.40	237.20	236.00	234.80	233.60	232.40	231.20	230.00	228.80	227.60	226.40	225.20	224.00	222.80	221.60	220.40	219.20	218.00	216.80	215.60	214.40	213.20	212.00	210.80	209.60	208.40	207.20	206.00	204.80	203.60	202.40	201.20	200.00	198.80	197.60	196.40	195.20	194.00	192.80	191.60	190.40	189.20	188.00	186.80	185.60	184.40	183.20	182.00	180.80	179.60	178.40	177.20	176.00	174.80	173.60	172.40	171.20	170.00	168.80	167.60	166.40	165.20	164.00	162.80	161.60	160.40	159.20	158.00	156.80	155.60	154.40	153.20	152.00	150.80	149.60	148.40	147.20	146.00	144.80	143.60	142.40	141.20	140.00	138.80	137.60	136.40	135.20	134.00	132.80	131.60	130.40	129.20	128.00	126.80	125.60	124.40	123.20	122.00	120.80	119.60	118.40	117.20	116.00	114.80	113.60	112.40	111.20	110.00	108.80	107.60	106.40	105.20	104.00	102.80	101.60	100.40	99.20	98.00	96.80	95.60	94.40	93.20	92.00	90.80	89.60	88.40	87.20	86.00	84.80	83.60	82.40	81.20	80.00	78.80	77.60	76.40	75.20	74.00	72.80	71.60	70.40	69.20	68.00	66.80	65.60	64.40	63.20	62.00	60.80	59.60	58.40	57.20	56.00	54.80	53.60	52.40	51.20	50.00	48.80	47.60	46.40	45.20	44.00	42.80	41.60	40.40	39.20	38.00	36.80	35.60	34.40	33.20	32.00	30.80	29.60	28.40	27.20	26.00	24.80	23.60	22.40	21.20	20.00	18.80	17.60	16.40	15.20	14.00	12.80	11.60	10.40	9.20	8.00	6.80	5.60	4.40	3.20	2.00	0.80	0.00	-0.80	-1.60	-2.40	-3.20	-4.00	-4.80	-5.60	-6.40	-7.20	-8.00	-8.80	-9.60	-10.40	-11.20	-12.00	-12.80	-13.60	-14.40	-15.20	-16.00	-16.80	-17.60	-18.40	-19.20	-20.00	-20.80	-21.60	-22.40	-23.20	-24.00	-24.80	-25.60	-26.40	-27.20	-28.00	-28.80	-29.60	-30.40	-31.20	-32.00	-32.80	-33.60	-34.40	-35.20	-36.00	-36.80	-37.60	-38.40	-39.20	-40.00	-40.80	-41.60	-42.40	-43.20	-44.00	-44.80	-45.60	-46.40	-47.20	-48.00	-48.80	-49.60	-50.40	-51.20	-52.00	-52.80	-53.60	-54.40	-55.20	-56.00	-56.80	-57.60	-58.40	-59.20	-60.00	-60.80	-61.60	-62.40	-63.20	-64.00	-64.80	-65.60	-66.40	-67.20	-68.00	-68.80	-69.60	-70.40	-71.20	-72.00	-72.80	-73.60	-74.40	-75.20	-76.00	-76.80	-77.60	-78.40	-79.20	-80.00	-80.80	-81.60	-82.40	-83.20	-84.00	-84.80	-85.60	-86.40	-87.20	-88.00	-88.80	-89.60	-90.40	-91.20	-92.00	-92.80	-93.60	-94.40	-95.20	-96.00	-96.80	-97.60	-98.40	-99.20	-100.00

Data from February 14, 2020

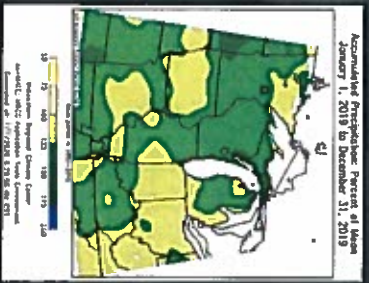
## If The Entire Great Lakes Drainage Area Had Rain...

Roughly Half of That Rain  
Would Fall Directly Into the Lakes



Great Lakes Drainage Area  
Where Water Flows

# It Has Been Awfully Wet Recently...



2019



2018



2017

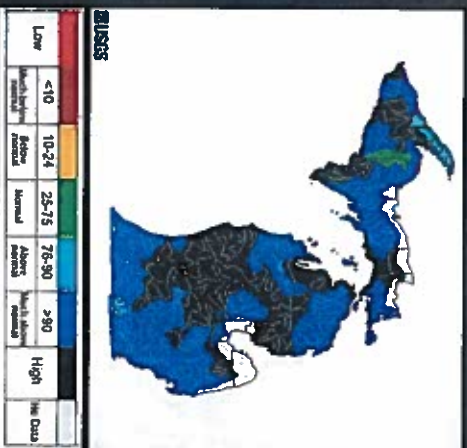
# Michigan 5-Year Rolling Total Precipitation



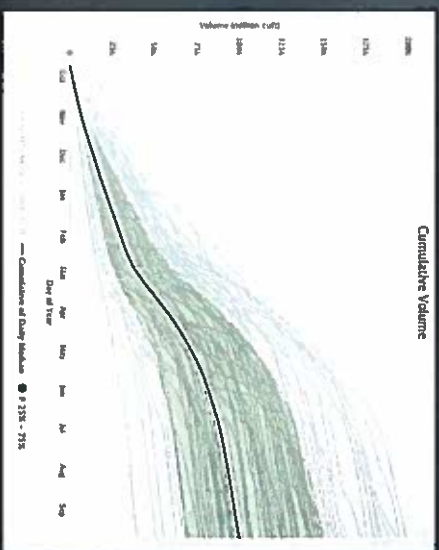
# Michigan 5-Year Rolling Total Precipitation



# Current Conditions – January River Flows



## Grand River at Grand Rapids – All Years on Record

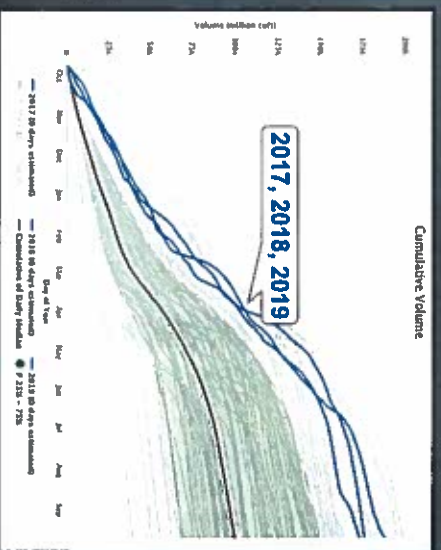


**Water Year:** Oct 1 – Sept 30

Each Water Year is a Line Showing How Much Water Flowed Through the Site

**Black Line**  
50<sup>th</sup> Percentile  
**Green Shaded Area**  
25<sup>th</sup> to 75<sup>th</sup> Percentile

## Grand River at Grand Rapids – All Years on Record

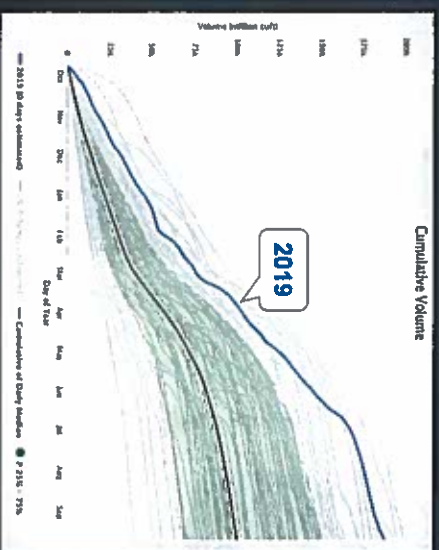


**Water Year:** Oct 1 – Sept 30

Each Water Year is a Line Showing How Much Water Flowed Through the Site

**Black Line**  
50<sup>th</sup> Percentile  
**Green Shaded Area**  
25<sup>th</sup> to 75<sup>th</sup> Percentile

## Grand River at Grand Rapids – All Years on Record

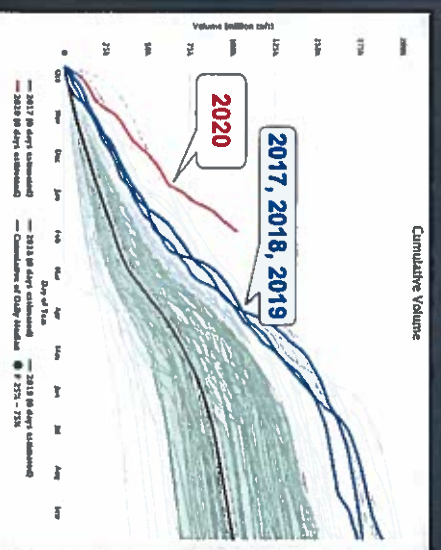


**Water Year:** Oct 1 – Sept 30

Each Water Year is a Line Showing How Much Water Flowed Through the Site

**Black Line**  
50<sup>th</sup> Percentile  
**Green Shaded Area**  
25<sup>th</sup> to 75<sup>th</sup> Percentile

## Grand River at Grand Rapids – All Years on Record



**Water Year:** Oct 1 – Sept 30

Each Water Year is a Line Showing How Much Water Flowed Through the Site

**Black Line**  
50<sup>th</sup> Percentile  
**Green Shaded Area**  
25<sup>th</sup> to 75<sup>th</sup> Percentile

# What is the Water Level Forecast?



- Annual low point typically occurs in the spring
- Annual high point typically occurs mid/late summer

# Lake Michigan-Huron 6 Month Forecast



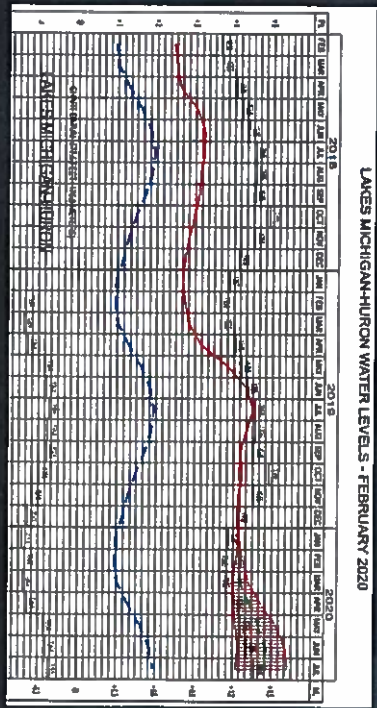
**Red line**  
Historical

**Dashed Green line**  
Forecast

**Dashed Blue line**  
Forecast

**Red shaded area**  
Forecast range

**Black horizontal line**  
Year marks



<http://www.kassas.com/Weather/State/MI/MI-Weather>

