

PROBABILISTIC HYDROLOGIC OUTLOOK...CORRECTION
NATIONAL WEATHER SERVICE QUAD CITIES IA IL
507 PM CST THU FEB 18 2016

...2016 Spring Flood and Water Resources Summary and Outlook...

This is the first of two planned Spring Flood and Water Resources Outlooks for the Quad Cities Hydrologic Service Area, which covers portions of eastern Iowa, northwest and west central Illinois, and extreme northeast Missouri. This includes the Mississippi River and its tributaries from above Dubuque, Iowa to below Gregory Landing, Missouri. The primary tributary river basins include the Maquoketa, Wapsipinicon, Cedar, Iowa, Skunk, and Des Moines Rivers in Iowa; the Fox River in Missouri; and the Pecatonica, Rock, Green, and La Moine Rivers in Illinois. The outlook is for the time period from late February through April.

...There is an Elevated Risk for Flooding this Spring...

Much of the area will have near to above normal chances for flooding this season.

Mississippi river - near to above normal

Mississippi River Tributaries across Iowa - above normal

Mississippi River Tributaries across Illinois and Missouri - near to above normal

*** Flood Outlook Summary ***

Wet conditions in the late fall and early winter periods have led to above normal streamflows and nearly saturated soils, which are the leading factors for the increased risk for spring flooding in 2016. With nearly saturated soils, almost all snow cover and any rainfall will turn into runoff this spring, rather than soaking into the soils.

In addition, with rivers already running high, it will take less runoff to reach flood stages. The higher potential for flooding is in place, regardless of the snow pack being below normal.

NOTE: A heightened risk for flooding is not an indicator of severity.

Many factors are considered when determining the overall flood risk for the season, with the combination of these influences factoring into the final determination. These actors are discussed in detail below.

.Seasonal Precipitation: Above Normal

November and December were very warm and wet across the region as record precipitation was measured across much of Iowa, Illinois, and Missouri. Warm conditions led to a majority of this precipitation falling as rain rather than snow, with some areas receiving rainfall amounts in excess of 5 inches above normal through his time period. Even with near to below normal precipitation for January and February, amounts have been well above normal for the winter as a whole.

.Snow Cover and Liquid Water Content: Below Normal

Snowfall has been below normal for much of the local area so far this winter season. Heavier snow has fallen across central and northeast Iowa, with seasonal amounts up to 15 inches above normal. As of February 18th, liquid content of the snow pack was 2 to 4 inches in the upper portions of the Des

Moines, Skunk, Iowa, Cedar, Wapsipinicon, and Maquoketa River basins. In the Mississippi River headwater areas across Minnesota and Wisconsin, snow pack and snow water content is below normal.

There is potential for additional snowfall this season which could change the impact of this factor to the flood chances this spring.

.Soil Conditions: Much Above Normal

Due to the high precipitation amounts that fell in the late fall and early winter seasons, soils across much of the Upper Mississippi River Basin are experiencing well above normal moisture values. Almost the entirety of the basin is experiencing values in the 90th to 99th percentile. Therefore, soils are nearly saturated and not able to hold much additional moisture.

.Frost Depth: Near Normal

After a warm start to the winter, colder conditions have been in place for much of January and February which has allowed the soils to freeze. Frost depths are generally less than a foot, with deeper frost depths across Minnesota and Wisconsin of 1 to 2 feet. These reports are near normal for this time of year.

.River Conditions: Much Above Normal

Streamflows are very high for this time of year. In late December, the majority of local rivers were running at historically high levels. Although there has been a decline in flows over the past month, levels remain well above normal. Rivers across Iowa are running in the 85th to 95th percentile for this time of year, with rivers over northeast Missouri and western and north central Illinois in the 70th to 90th percentile range. The Mississippi River is also running at high levels, around the 85th percentile.

.Ice Jam Flooding: Below Normal

There is low potential for ice jam flooding. While some area rivers are ice-free, the return of below freezing temperatures during the first part of February caused some rivers to re-develop ice cover. Below normal ice thickness due to a short period of ice formation will allow for a quicker melt and break-up of the ice, which would end the threat of break-up ice jam flooding.

Additional ice jams could develop if colder air returns to the region, but as the season progresses, there is a reduced chance of that occurring.

..Drought...

The entire Upper Mississippi River Basin is free of drought conditions.

.Weather Outlooks...

The outlook for precipitation and temperatures through May suggests higher chances for above normal temperatures throughout the Upper Mississippi River region. In terms of precipitation, there is equal chances for above, near or below normal precipitation for areas west of the Mississippi River and higher chances for below normal precipitation for areas east of the Mississippi River.

.Numerical River Outlooks...

This outlook is divided into three parts, the first part for the probabilities of minor, moderate and major flooding, the second part for high water and the final part for low water.

In Table 1 below, the current (CS) and historical (HS) or normal probabilities of exceeding minor, moderate and major flood stages are listed for the valid time period.

CS values indicate the probability of reaching a flood category based on current conditions.

HS values indicate the probability of reaching a flood category based on historical or normal conditions.

When the value of CS is greater than HS, the probability of exceeding that level is higher than normal. When the value of CS is less than HS, the probability of exceeding that level is lower than normal.

...Table 1--Probabilities for minor, moderate and major flooding...
Valid Period: 02/21/2016 - 05/21/2016

Location	Categorical Flood Stages (ft)			: Current and Historical Chances of Exceeding Flood Categories as a Percentage (%)					
	Minor	Mod	Major	: Minor		Moderate		Major	
	Minor	Mod	Major	CS	HS	CS	HS	CS	HS
:Mississippi River									
Dubuque LD11	16.0	17.0	20.5	42	44	30	35	15	10
Dubuque	17.0	18.0	21.5	54	51	40	41	16	11
Bellevue LD12	17.0	18.0	20.0	28	32	18	20	14	10
Fulton LD13	16.0	18.0	20.0	42	50	24	26	16	10
Camanche	17.0	18.5	20.5	40	41	26	28	17	11
Le Claire LD14	11.0	12.0	13.5	43	48	31	32	19	14
Rock Island LD15	15.0	16.0	18.0	64	56	44	47	23	19
Ill. City LD16	15.0	16.0	18.0	56	54	40	45	25	20
Muscatine	16.0	18.0	20.0	70	59	40	45	23	18
New Boston LD17	15.0	16.5	18.5	75	60	47	49	30	25
Keithsburg	14.0	15.5	17.0	77	60	48	47	35	25
Gladstone LD18	10.0	12.0	14.0	80	60	44	45	32	21
Burlington	15.0	16.5	18.0	74	59	45	45	34	25
Keokuk LD19	16.0	17.5	19.0	39	33	32	24	19	11
Gregory Landing	15.0	18.0	25.0	83	62	47	37	<5	<5
:Maquoketa River									
Manchester Hwy 20	14.0	17.0	20.0	16	18	11	11	6	<5
Maquoketa	24.0	26.0	28.5	14	23	7	16	<5	6
:Wapsipinicon River									
Independence	12.0	13.0	15.0	13	12	9	7	6	6
Anamosa Shaw Rd	14.0	15.5	19.0	35	27	23	20	11	8
De Witt 4S	11.0	11.5	12.5	84	67	81	64	28	30
:North Skunk River									
Sigourney	16.0	18.0	21.0	53	57	34	40	6	11
:Skunk River									
Augusta	15.0	17.0	20.0	46	41	26	31	12	13
:Cedar River									
Vinton	15.0	18.0	19.0	45	22	12	7	11	5
Cedar Rapids	12.0	14.0	16.0	59	26	34	14	16	7

Conesville	13.0	15.0	16.5	: >95	54	57	27	14	7
:Iowa River									
Marengo	14.0	15.5	18.5	: >95	72	95	63	12	5
Iowa City	22.0	23.0	25.0	: 11	8	8	7	<5	<5
Lone Tree	15.0	16.5	18.0	: 24	25	15	15	6	9
Columbus Jct	19.0	22.0	23.0	: >95	54	40	22	28	14
Wapello	20.0	22.0	25.0	: >95	60	70	43	21	11
Oakville	10.0	12.0	19.0	: >95	57	47	30	<5	<5
:English River									
Kalona	14.0	16.0	18.0	: 55	54	30	32	10	15
:Des Moines River									
Keosauqua	22.0	25.0	27.0	: 11	9	<5	<5	<5	<5
St Francisville	18.0	22.0	25.0	: 74	47	13	11	<5	<5
:Fox River									
Wayland	15.0	18.0	20.0	: 24	23	9	10	<5	<5
:Pecatonica River									
Freeport	13.0	14.0	16.0	: 56	41	24	17	<5	<5
:Rock River									
Como	10.0	11.0	12.0	: 61	43	41	26	25	18
Joslin	12.0	14.0	16.5	: 70	49	41	26	17	16
Moline	12.0	13.0	14.0	: 71	51	49	30	30	22
:Green River									
Geneseo	15.0	16.5	18.0	: 25	25	18	18	12	9
:La Moine River									
Colmar	20.0	22.0	24.0	: 75	67	61	52	30	22

Legend
 CS = Conditional Simulation (Current Outlook)
 HS = Historical Simulation
 ft = Feet

In Table 2 below, the 95 through 5 percent columns indicate the probability of exceeding the listed stage levels (ft) for the valid time period.

....Table 2--Exceedance Probabilities...

Location	Chance of Exceeding Stages at Specific Locations						
	Valid Period: 02/21/2016 - 05/21/2016						
	95%	90%	75%	50%	25%	10%	5%
:Mississippi River							
Dubuque LD11	11.0	12.1	13.5	15.5	17.6	21.5	23.7
Dubuque	12.7	13.7	15.1	17.2	19.2	23.0	25.1
Bellevue LD12	11.3	12.2	13.3	15.1	17.2	20.8	22.4
Fulton LD13	11.1	12.3	14.0	15.8	17.8	21.3	23.2
Camanche	12.8	13.5	14.7	16.4	18.5	22.4	24.4
Le Claire LD14	8.3	8.8	9.7	10.7	12.5	15.8	17.5
Rock Island LD15	11.5	12.2	14.2	15.7	17.8	21.0	22.5
Ill. City LD16	11.2	12.0	13.8	15.2	18.0	21.5	23.6
Muscatine	12.6	13.5	15.4	16.9	19.9	22.5	24.2
New Boston LD17	12.6	13.4	14.9	16.2	19.2	22.1	23.8

Keithsburg	12.4	12.8	14.1	15.4	17.9	20.2	21.2
Gladstone LD18	8.5	8.8	10.2	11.7	14.6	17.3	18.6
Burlington	13.5	13.8	14.9	16.3	18.9	21.8	22.8
Keokuk LD19	10.2	10.7	12.6	14.5	18.5	21.1	22.6
Gregory Landing	12.8	13.8	15.4	17.3	21.1	23.4	24.9
:Maquoketa River							
Manchester Hwy 20	7.4	8.1	8.8	10.2	12.1	17.5	20.2
Maquoketa	14.6	15.3	16.5	19.2	22.0	25.5	26.6
:Wapsipinicon River							
Independence	7.0	7.2	7.9	8.5	9.8	12.5	17.0
Anamosa Shaw Rd	9.6	10.4	11.6	12.6	14.9	19.1	22.5
De Witt 4S	10.1	10.7	11.7	12.1	12.6	13.1	13.3
:North Skunk River							
Sigourney	8.9	12.2	14.1	16.4	18.9	20.3	21.5
:Skunk River							
Augusta	5.5	8.8	10.4	13.7	17.2	20.4	22.3
:Cedar River							
Vinton	12.1	12.5	13.6	14.8	16.3	19.4	20.7
Cedar Rapids	9.2	9.6	11.1	12.6	14.8	19.4	21.9
Conesville	13.6	13.9	14.5	15.1	16.0	17.4	18.2
:Iowa River							
Marengo	15.5	16.1	16.4	16.8	17.7	18.5	19.2
Iowa City	18.2	18.9	19.3	19.4	19.5	22.5	23.7
Lone Tree	12.3	12.9	13.5	14.3	14.9	17.5	18.0
Columbus Jct	19.2	19.6	20.2	21.0	23.2	26.0	27.3
Wapello	20.8	21.3	21.9	22.7	24.9	27.3	29.3
Oakville	10.3	10.7	11.2	11.8	13.9	16.4	18.6
:English River							
Kalona	8.6	10.1	12.9	14.1	16.3	18.0	19.1
:Des Moines River							
Keosauqua	16.8	17.6	18.6	19.6	20.9	22.2	24.2
St Francisville	15.6	16.6	17.8	19.2	21.1	22.6	24.3
:Fox River							
Wayland	5.7	5.9	8.7	11.9	14.7	17.8	18.9
:Pecatonica River							
Freeport	10.4	11.2	12.0	13.2	13.9	14.8	15.3
:Rock River							
Como	7.4	7.8	8.5	10.6	11.9	12.9	14.2
Joslin	10.0	10.5	11.6	13.3	15.0	17.1	18.8
Moline	10.4	10.9	11.7	12.9	14.5	15.5	17.6
:Green River							
Geneseo	7.6	8.4	10.6	12.8	15.0	18.8	20.9
:La Moine River							
Colmar	13.2	16.6	20.2	22.5	24.5	25.7	27.0

In Table 3 below, the 95 through 5 percent columns indicate the probability of falling below the listed stage levels (ft) for the valid time period.

...Table 3--Non-Exceedance Probabilities...

Location	Chance of Falling Below Stages at Specific Locations						
	Valid Period: 02/21/2016 - 05/21/2016						
	95%	90%	75%	50%	25%	10%	5%
:Mississippi River							
Dubuque LD11	6.4	6.3	6.2	6.1	5.6	5.0	4.8
Dubuque	8.8	8.7	8.6	8.5	8.2	7.9	7.7
Bellevue LD12	7.0	6.6	6.3	6.1	5.6	4.9	4.5
Fulton LD13	6.6	6.3	6.2	5.9	5.5	5.0	4.7
Camanche	9.8	9.7	9.6	9.5	9.4	9.2	9.0
Le Claire LD14	5.6	5.3	5.3	5.2	5.1	4.9	4.7
Rock Island LD15	7.0	6.5	6.4	6.3	6.2	5.8	5.0
Ill. City LD16	5.4	5.1	5.0	5.0	4.9	4.7	4.1
Muscatine	7.3	7.1	7.0	7.0	6.9	6.7	6.4
New Boston LD17	6.2	5.8	5.6	5.6	5.6	5.2	4.2
Keithsburg	8.3	7.6	7.5	7.4	7.4	6.7	6.0
Gladstone LD18	3.1	2.9	2.8	2.8	2.8	2.3	1.7
Burlington	9.5	9.1	9.0	8.9	8.9	8.5	8.1
Keokuk LD19	5.5	5.3	5.3	5.3	5.2	4.6	3.4
Gregory Landing	7.8	7.5	7.3	7.3	7.1	6.7	6.4
:Maquoketa River							
Manchester Hwy 20	4.4	4.3	4.2	4.0	3.9	3.8	3.8
Maquoketa	12.0	11.8	11.6	11.3	11.1	10.8	10.7
:Wapsipinicon River							
Independence	5.3	5.3	5.0	5.0	4.9	4.9	4.8
Anamosa Shaw Rd	6.4	6.2	5.9	5.6	5.4	5.2	5.1
De Witt 4S	7.2	6.8	6.6	6.1	6.0	5.5	5.4
:North Skunk River							
Sigourney	6.1	5.8	5.2	4.9	4.6	4.2	4.1
:Skunk River							
Augusta	4.2	3.8	3.2	2.9	2.4	1.9	1.8
:Cedar River							
Vinton	5.1	4.6	4.2	3.7	3.4	3.2	3.1
Cedar Rapids	4.8	4.7	4.4	4.2	4.0	3.9	3.9
Conesville	8.4	8.2	7.6	7.3	6.9	6.5	6.4
:Iowa River							
Marengo	9.3	9.0	8.1	7.7	7.3	6.9	6.7
Iowa City	11.4	11.1	10.9	10.7	9.9	9.3	9.1
Lone Tree	8.0	7.4	6.8	6.1	5.1	4.4	4.2
Columbus Jct	13.0	12.7	11.9	11.4	10.5	9.9	9.7
Wapello	14.1	13.8	13.1	12.5	11.7	11.1	10.9
Oakville	4.1	3.9	3.2	2.7	1.9	1.3	1.1
:English River							
Kalona	5.1	4.9	4.7	4.4	4.2	3.9	3.8
:Des Moines River							
Keosauqua	14.5	13.4	13.0	12.4	11.7	11.4	11.0
St Francisville	12.7	11.1	10.4	9.4	8.6	8.1	7.7
:Fox River							

Wayland	2.2	2.1	2.0	1.9	1.8	1.7	1.6
:Pecatonica River							
Freeport	7.8	7.6	7.0	5.9	5.3	4.8	4.6
:Rock River							
Como	5.8	5.5	5.2	4.7	4.1	3.7	3.6
Joslin	8.0	7.7	7.3	6.7	5.9	5.5	5.2
Moline	9.5	9.3	9.1	8.8	8.5	8.3	8.2
:Green River							
Geneseo	4.7	4.4	4.2	4.0	3.7	3.4	3.3
:La Moine River							
Colmar	5.3	4.7	4.5	4.2	3.9	3.6	3.4

These long-range probabilistic outlooks contain forecast values that are calculated using multiple-season scenarios from 30 or more years of climatological data including current conditions of the river, soil moisture, snow cover, and 30 to 90 day long-range outlooks of temperatures and precipitation. By providing long-range probabilities, the level of risk associated with long-range planning decisions can be determined. These probabilistic forecasts are part of the National Weather Service's Advanced Hydrologic Prediction Service (AHPS).

Information in this outlook has been collected from numerous sources, including the United States Geological Survey (USGS), the US Army Corps of Engineers (USACE), the Midwest Regional Climate Center (MRCC), and the National Operational Remote Sensing Center (NOHRSC).

Further weather and water information, including the statistical data available in graphical format can be found at the following location:

<http://www.weather.gov/dvn>. Additional information can be found at the North Central River Forecast Center's website at: <http://www.crh.noaa.gov/ncrfc>.

This is the first Spring Flood and Water Resources Outlook for 2016. The next scheduled Spring Flood and Water Resources Outlook will be issued on March 3, 2016.

Regular long-range probabilistic outlooks are typically issued near the end of the month throughout the year.

Any questions concerning this outlook can be directed to:

Jessica Brooks
 Service Hydrologist
 National Weather Service Quad Cities
 9050 Harrison St
 Davenport, IA 52806
 563-391-7094 ext 493
 Jessica.Brooks@noaa.gov

\$\$