



Fire Department

MEMO

Date: April 12, 2018
To: Keith Hunke, City Administrator
From: Gary Stockert, City Emergency Manager
Re: 2018 flood risk assessment

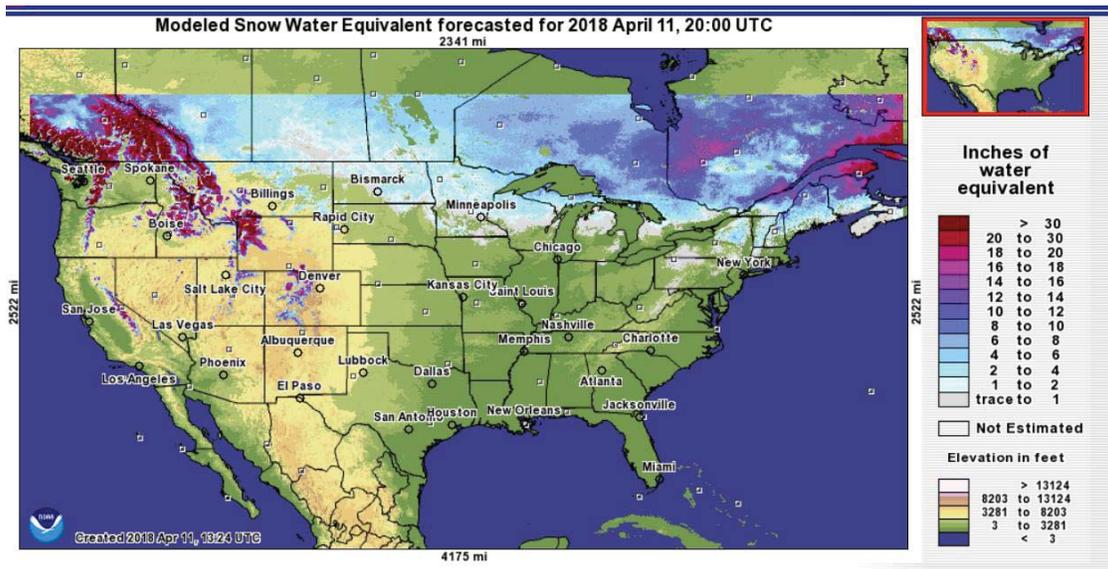
Mr. Keith Hunke,

I've communicated with Allen Schlaag, NWS Service Hydrologist, Todd Lindquist, Operations Project Manager (Garrison Project), and John Remus, Missouri River Basin Water Management Division Chief to review current potential for river flooding in the Bismarck area. Based on those communications including a review the above average annual runoff forecast and other forecasted conditions as of mid-April, there is no specific threat of river flooding in the Bismarck area.

The current forecasted conditions do not create any concerns from the viewpoint of USACE and NWS personnel referenced above. The current runoff forecast for the Missouri River Basin is 30.2 Million Acre Feet (MAF), which is roughly half of the runoff volume experienced in 2011, and is a very similar volume to what we experienced in the basin last year.

On April 5, The US Army Corps of Engineers issued the "Upper Missouri River Basin April 2018 Calendar Year Runoff Forecast." The report summary states "...the annual runoff forecast for the Missouri Basin above Sioux City, IA is 30.2 MAF, 119% of average. Looking short-term, runoff in April is forecast to be above average for the upper Basin – about 120% -- particularly in the Fort Peck and Garrison reaches due to the remaining plains snowpack, wet soil moisture conditions, and precipitation outlooks. Looking a bit further down the road, the runoff forecast for the May through July period in the Fort Peck and Garrison reaches – the two reaches that are affected by mountain snowpack – is 130% of average. Runoff in these two reaches is mostly influenced by the above-average mountain snowpack, as well as the above-normal precipitation outlook for Montana and the current soil moisture content...." Source: http://www.nwd-mr.usace.army.mil/rcc/reports/runoff_narrative.pdf

As snow melt occurs in Montana, the NWS expects to issue additional flood warnings in the Williston area within the next week or two, which may extend for 30 days. The water equivalency in the MT and ND plains is not significant as noted in the NOAA modeled snow water equivalent forecast:

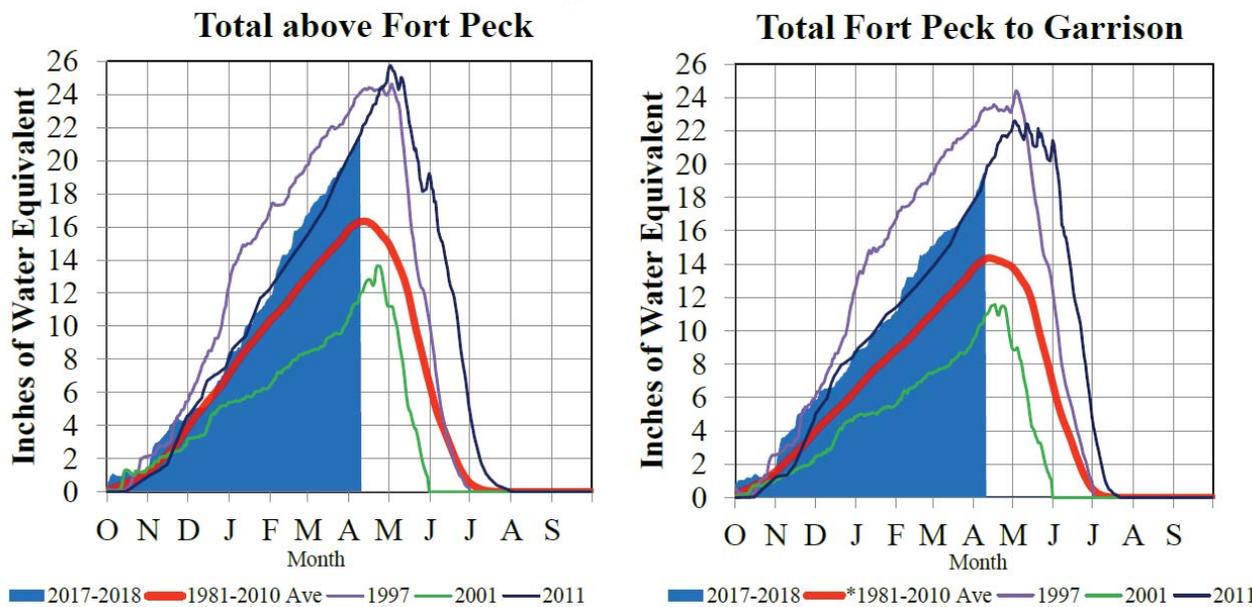


Source: <http://www.nohrsc.noaa.gov/interactive/html/map.html?zoom>

The Missouri River Basin mountain snowpack is above average, but below both the 1997 and 2011 levels. The record level was set in 1997, with 2011 being the second highest.

Missouri River Basin – Mountain Snowpack Water Content 2017-2018 with comparison plots from 1997*, 2001*, and 2011

April 9, 2018



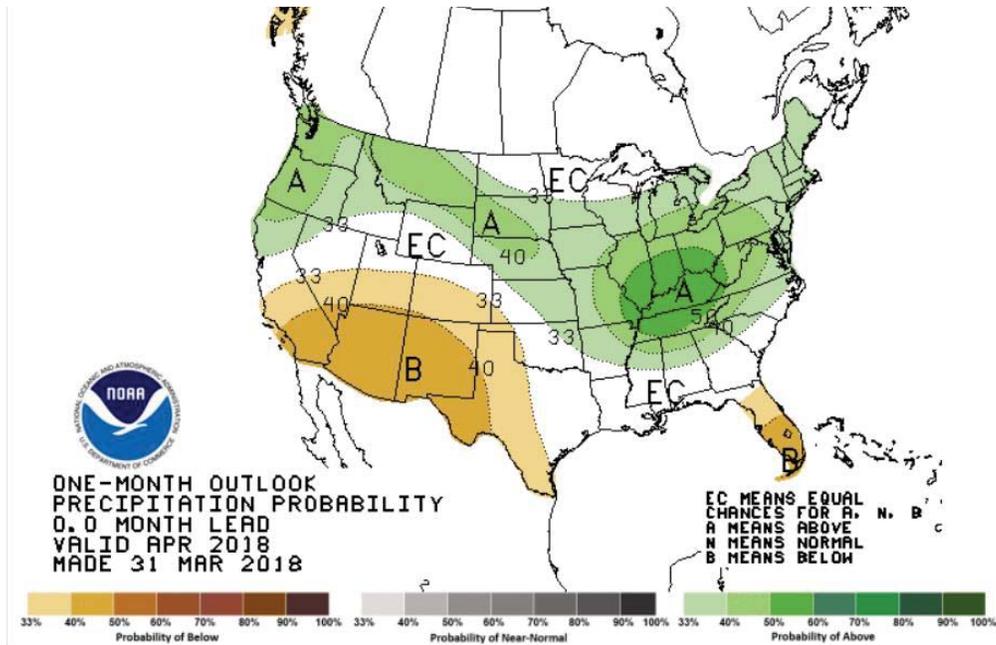
The Missouri River Basin mountain snowpack normally peaks near April 15. On April 9, 2018 the mountain Snow Water Equivalent (SWE) in the "Total above Fort Peck" reach was 21.7", 133% of the average. The mountain SWE in the "Total Fort Peck to Garrison" reach was 19.5", 137% of the average. Normally by April 1, about 97% of the peak mountain SWE has occurred in both reaches. The April 9 SWE for the "Total Above Fort Peck" reach is 133% of the normal April 15 peak. The April 9 SWE for the "Fort Peck to Garrison" reach is 136% of the normal April 15 peak.

*Generally considered the high and low year of the last 20-year period, respectively.

Provisional data. Subject to revision.

Source: <http://www.nwd-mr.usace.army.mil/rcc/reports/snow.pdf>

30 Day Precipitation Outlook:



Below is the forecasted elevations for the Garrison Dam through February 2019 and estimated releases (cubic feet per second in thousands). These forecasts are established based on anticipated run-off and other planning factors, including the core missions of the USACE. The USACE also publishes detailed forecasts identifying the daily planned releases and elevations over a three-week period. This forecast is updated on a weekly basis: <http://www.nwd-mr.usace.army.mil/rcc/reports/twregfcst.pdf>

	Date of Study: April 1, 2018											
	31-Mar-18	30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	31-Jan	28-Feb
GARRISON -----												
ELEV FTMSL	1839.0	1839.8	1840.3	1844.3	1844.9	1842.2	1840.7	1840.3	1840.2	1839.5	1838.3	1837.5
DISCH KCFS	22.4	28.0	32.0	35.0	35.0	35.0	27.4	20.0	19.7	20.5	24.0	24.0

Source: <http://www.nwd-mr.usace.army.mil/rcc/reports/resfcst.pdf>