Bottom Line up Front!

- Its well past mid-winter… and there’s still a very low threat for significant snowmelt flooding, similar to spring 2018.

- Its now quite Cold and Dry:
  - Abnormally Dry to Moderate Drought conditions underlay a meager snowpack.
  - Snowfall/SWE through early February is well below long term winter season normal amounts.
  - Frost depths are digging deep, as cold air and meager snowpack has allowed for deeper frost penetration.

- A turnaround from record wettest year in 2019, and Top Ten flooding in 2020. But, a dry late summer and fall period in 2020 has depleted any residual soil moisture or streamflow.

- Climate outlooks currently indicate an increased risk for near normal temperatures but a somewhat wetter late winter early spring period, which increases our risk for late season heavy snow or rainfall.

Long Story Short: The risk for significant snowmelt flooding is quite low, running below long-term historical averages across the Red River and Devils Lake Basins (U.S. portions).

Key Snowmelt Flood Components:

1. Base Streamflow: Near to somewhat below average for this time of year. USGS analyses indicate that the Red River and most of its ND and MN tributaries (south of Grafton-Argyle) are moderate ice covered and/or flowing at in the 25% - 75% of normal ranges [link: https://waterdata.usgs.gov/nwis/rt]. Tributaries north of Grafton-Argyle at 25%.


3. Frost Depth: Deeper than normal. A mild early winter but with a very light and/or delayed snowcover has allowed for deep frost penetration in most areas. Frost depths range from 18 to 32 inches in most locations, with some lesser frost depths in upland areas on northwest MN, where snowpack was slightly higher. Lake/River ice thicknesses are somewhat less-than-normal and are quite variable. [Link: https://www.weather.gov/ncrfc/LMI_FrostDepthMap]


5. Along with our flood partners, we’ve developed a display graphic which relates the current flood outlook to our historical flood levels, now available for all our forecast locations! **Check it out at:** https://www.weather.gov/fgf/PFOS
## Devils Lake & Stump Lake...

**Long-Range Probabilistic Outlook**

Valid February 8, 2021 - September 30, 2021

<table>
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<tr>
<th>LOCATION</th>
<th>95%</th>
<th>90%</th>
<th>75%</th>
<th>50%</th>
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The current heights of Devils Lake and Stump Lake are ~1448.57 ft. MSL.

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**Red River and Tributaries...**

**Long-Range Probabilistic Outlook**

Valid February 15, 2021 – May 16, 2021

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<td>21.9</td>
<td>28.3</td>
<td>35.6</td>
<td>41.2</td>
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</table>

**Minnesota Tributaries:**

South Fork Buffalo River.....      
SABIN       11.6  11.9  12.9  13.6  14.4  15.5  16.9
Buffalo River.....               
HAWLEY   4.4   4.7   5.3   6.3   7.7   8.3   9.3
DILWORTH 10.7  12.1  13.7  17.0  19.2  21.4  22.9
Wild Rice River.....            
TWIN VALLEY 3.7   4.0   4.4   5.3   6.2   8.0   9.2
HENDRUM  7.1   9.8  11.4  17.4  21.4  25.9  28.2
Marsh River.....                
SHELLY    4.6   4.9   5.5   7.6   9.8  15.7  17.6
Sand Hill River.....            
CLIMAX    5.6   5.9   6.4   7.9  11.3  15.8  19.7
Red Lake River.....             
HIGH LANDING 4.1   4.3   4.6   5.3   7.3   8.9  10.3
CROOKSTON  6.5   6.6  13.7  19.2  21.4  25.9  28.2
Snake River.....                
ABOVE WARREN 60.9  61.0  61.5  61.9  62.5  63.0  64.6
ALVARADO  96.5  96.6  97.2  98.2  99.8 101.4 103.8
Two Rivers River.....           
HALLOCK  795.5  795.9  796.9  797.9  800.0 803.7 806.6
Roseau River.....               
ROSEAU   6.2   6.4  16.0  18.7  19.9  22.3  24.5

**North Dakota Tributaries:**

Wild Rice River.....       
ABERCROMBIE  2.7   3.3  4.8   6.6  10.6  16.6  17.1
Sheyenne River.....      
VALLEY CITY  4.7   4.7  4.7  5.0  6.0   8.4  10.6
LISBON     3.4   3.4  3.4  4.4  5.8  11.7  14.1
KINDRED   4.9   4.9  4.9  4.9  6.3  13.9  16.6
WEST FARGO DVRSN 10.8  10.8  10.8  10.8  10.9  15.1  19.3
HARWOOD   73.1  73.1  73.1  75.1  78.7  83.9  90.6
Maple River.....          
ENDERLIN   1.6   1.6  3.3  5.6  7.5  11.6  11.8
MAPLETON  8.2   9.1  10.9  13.7  17.8  20.2  22.3
Goose River.....          
HILLSBORO  1.8   1.8  1.8  2.5  3.3  4.1  5.4
Forest River.....         
MINTO     1.4   1.4  1.6  1.9  2.8  4.2  5.8
Park River.....           
GRAFTON*  7.5   7.5  7.5  7.8  8.3  8.9  9.7
Pembina River.....       
WALHALLA  1.4   1.4  2.0  3.0  3.8  5.5  7.5
NECHE    2.1   2.3  3.0  4.8  6.5 10.0 13.5

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### Notes

1. **Devils Lake Basin Runoff Risk is low.** An additional rise of 1/4 to 1/2 a foot is expected (75% to 25% risk range). A ½ to 1 ft. rise on Devils Lake is considered about normal.

   **Note:** Devils Lake is currently about half a foot lower than this time last year.

2. **Red River Basin Flood Risk is overall quite low.** All Red River main-stem points may see somewhat below normal spring runoff/flows.

   - near to below normal soil moistures, deeper than normal frost depths.
   - potentially delayed thaw cycle.

3. **Below normal snowpack and runoff potential is evident in most all MN tributaries.**

   Near to below normal soil moisture and low to very low snowpack throughout west-central and northwest MN.

4. **ND tributaries have an even lower overall runoff potential, especially across east-central and northeast ND.**

   Mid and Upper Sheyenne basin soils are quite dry, with very little snowpack.

   Lower Sheyenne through east-central ND tribus have less dry soils and a light snowpack.

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**Note:** Reduced risk expected for areas now protected by new Grafton Bypass!