



Red River and Devils Lake Basin - 2019 Spring Flood Outlook

Discussion Points 3/7/2019 (updated from 2/21/2019 outlook)

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This outlook is for the U.S. portion of the basin and is based on conditions through Tuesday, 3/5/2019. All graphics, probabilities, and related discussions are available at weather.gov/fgf. Another update may be issued by 3/22/2019.

Bottom Line up Front!

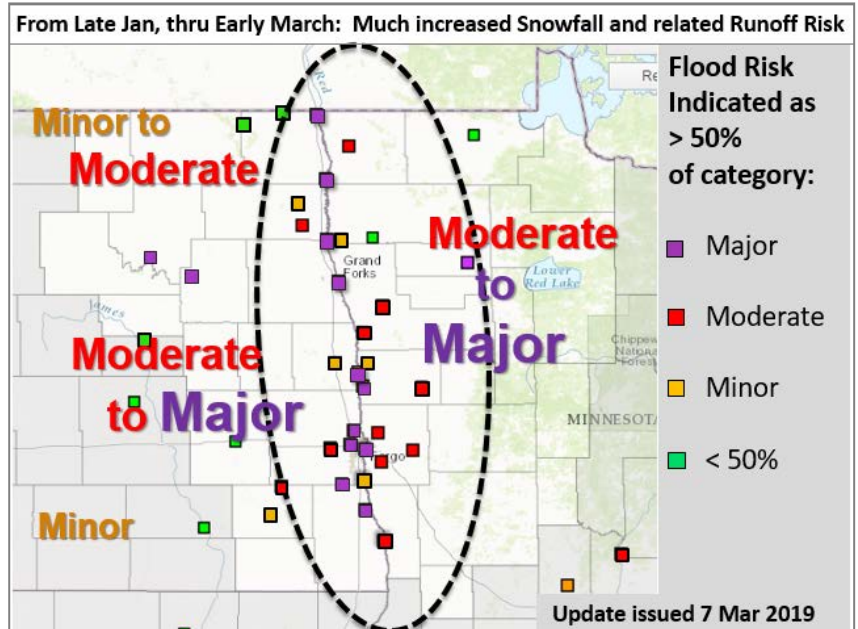
- **March has been and will likely stay Unmerciful!** Now with prospects for delayed thaw and continued excessive snowfall, through much of March.

- **The threat for significant snowmelt flooding has further increased across the main-stem Red River and its sub-basins.**

- **Above normal snowfall has occurred and is expected to continue.** The next two weeks should see more substantial snowfall, so that widespread, above normal runoff is likely.

- **The deep frost is still present, even deeper, and should limit snowmelt infiltration,** though soils are dry enough to handle some melt runoff... *if* the thaw cycle allows.

- **Climate outlooks still indicate a later snowmelt and runoff cycle which increases our risk for rapid and/or rainfall enhanced runoff.** With a hint of near normal conditions by late March, and perhaps thaw commencing...



Long Story Short: The risk for significant snowmelt flooding has further increased, running well above long-term historical averages across the Red River and Devils Lake Basins (U.S. portions).

Key Snowmelt Flood Components:

1. Base Streamflow: Still frozen, with near normal north, slightly above normal south. USGS analyses indicate that the Red River and its ND and MN tributaries are thick ice covered and/or flowing within long-term normal ranges, between 25th and 75th percentiles north of Fargo. Some higher quartile flows, 76% to 95%, were noted south of Fargo.

2. Soil Moisture at Freeze-up: Above normal south, near normal central, below normal far north.

3. Frost Depth: Deeper than normal everywhere. Extreme cold late Dec-Feb has driven frost from 35 to 45 inches in most areas, with river-ice and lake-ice thicknesses near to above seasonal normal ranges.

** With ice mainly in the lower channels, Ice Jams should be more of a risk on tributaries, less on the mainstem Red **

4. Winter Snowpack/SWE: above/much above normal. Since Dec 1st, snowfall has run from 90-160 percent of normal - least in east-central ND and most from northcentral MN into the central and southern RRV. The water content (SWE) ranges from 2.5 to 4.0 inches across most areas – including the Devils Lake Basin.

5. Total Precipitation, Oct 1st to Mar 5th is High. Total precipitation (rain and snow-water) measured across the Basin from Oct 1st through Mar 5th ranged from 1-3 inches above the long-term normal for most of the central and southern Red River Basin... with much above normal precipitation (an inch or more) expected through the next 7 days.

New! Along with our flood partners, we've developed a display graphic which relates the current flood outlook to our historical flood levels (for now, just along the mainstem Red River). **Check it out at:** <https://www.weather.gov/fgf/PFOS>

DEVILS LAKE & STUMP LAKE... Long-Range Probabilistic Outlook
Valid March 4, 2019 - September 30, 2019

LOCATION	95%	90%	75%	50%	25%	10%	05%
CREEL BAY	1449.1	1449.2	1449.5	1449.8	1450.3	1450.7	1451.4
EAST STUMP LAKE	1449.1	1449.2	1449.5	1449.8	1450.3	1450.7	1451.4

The current heights of Devils Lake and Stump Lake are ~1448.3 ft. MSL.

Color code: Below Minor Moderate Major Flood of Record

RED RIVER AND TRIBUTARIES... Long-Range Probabilistic Outlook
Valid March 11, 2019 - June 09, 2019

LOCATION	95%	90%	75%	50%	25%	10%	05%
WAHPETON	11.8	12.2	13.1	14.6	15.6	16.9	17.5
HICKSON	28.0	28.9	31.3	33.0	34.4	35.8	37.0
FARGO	31.1	31.9	33.4	34.9	36.6	38.2	39.1
HALSTAD	35.6	36.1	37.1	38.2	39.0	39.8	40.3
GRAND FORKS	44.5	44.8	46.4	47.8	49.7	52.5	54.6
OSLO	37.0	37.0	37.3	37.5	37.8	38.0	38.1
DRAYTON	41.2	41.4	42.0	42.6	43.4	44.6	45.3
PEMBINA	50.2	50.3	51.2	52.0	52.8	53.8	54.4

Minnesota Tributaries:

South Fork Buffalo River.....							
SABIN	14.2	14.4	14.8	15.6	16.6	18.3	19.6
Buffalo River.....							
HAWLEY	8.2	8.7	9.2	9.6	10.3	10.9	11.2
DILWORTH	19.9	20.4	21.3	22.2	23.2	24.7	26.2
Wild Rice River.....							
TWIN VALLEY	10.4	10.7	11.3	12.5	14.4	15.4	17.0
HENDRUM	29.7	30.3	30.9	32.0	32.8	33.7	34.5
Marsh River.....							
SHELLY	15.0	15.4	16.5	18.3	21.5	23.5	25.2
Sand Hill River.....							
CLIMAX	23.4	24.0	25.7	27.1	30.8	33.3	36.3
Red Lake River.....							
HIGH LANDING	11.6	12.3	12.8	13.1	13.3	13.6	13.6
CROOKSTON	20.2	20.9	22.4	24.5	26.1	29.3	30.7
Snake River.....							
ABOVE WARREN	64.4	64.6	65.1	65.8	67.0	69.4	71.4
ALVARADO	103.0	103.8	104.5	106.0	108.3	109.8	110.1
Two Rivers River.....							
HALLOCK	806.4	806.6	807.7	808.5	809.3	810.5	811.2
Roseau River.....							
ROSEAU	12.6	13.5	14.2	15.4	16.5	17.3	17.9

North Dakota Tributaries:

Wild Rice River.....							
ABERCROMBIE	19.2	19.8	20.6	22.0	23.4	25.4	26.2
Sheyenne River.....							
VALLEY CITY	12.4	12.6	12.8	14.0	16.5	19.6	20.8
LISBON	13.0	13.4	14.4	16.3	18.5	21.8	25.1
KINDRED	17.4	18.9	20.0	20.5	21.1	21.2	21.2
WEST FARGO DVRSN	17.2	18.7	19.5	21.3	21.3	21.3	21.3
HARWOOD	90.6	91.0	91.4	92.0	92.1	92.2	92.3
Maple River.....							
ENDERLIN	10.9	11.2	11.7	12.4	12.9	13.6	14.1
MAPLETON	21.6	21.6	21.8	22.3	22.7	23.2	23.8
Goose River.....							
HILLSBORO	8.9	9.7	11.6	12.9	14.6	15.9	17.2
Forest River.....							
MINTO	7.3	7.7	8.0	8.8	9.5	9.9	10.2
Park River.....							
GRAFTON	10.1	10.4	11.2	13.2	14.9	15.7	17.9
Pembina River.....							
WALHALLA	5.3	6.0	6.8	7.6	8.7	11.9	12.7
NECHE	9.3	10.2	11.7	13.8	16.2	20.7	21.2

Notes

1. **Devils Lake Basin Runoff Risk has not changed much since February.** A somewhat above normal rise is expected, from 1 to 2 ft. A ½ to 1 ft. rise on Devils Lake is considered about normal.

Note: Devils Lake is currently about 1.5 feet lower than this time last year.

2. **Red River Basin Runoff Risk continues to increase.** All Red River main-stem points will see significantly higher flows,

- due to higher streamflow and soil moisture/runoff from the central and southern valley,

- coupled with high snowmelt runoff potential across the RRB... especially the central and southern valley, the MN uplands, and Red Lake River Basin,

- exacerbated by deep frost and potentially delayed thaw cycle.

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

Central and North tribs now with much higher runoff risk than previously indicated.

Roseau River Basin is near normal for runoff risk.

4. **ND Wild Rice has a quite High Runoff Risk,** with much above normal snowpack.

Mid and Upper Sheyenne now has above normal snowpack.

Lower Sheyenne through east-central ND tribs are at an increasingly elevated risk.

Northeast ND is mixed, with higher risk along the Forest and Park Rivers, still fairly low along the Pembina.