

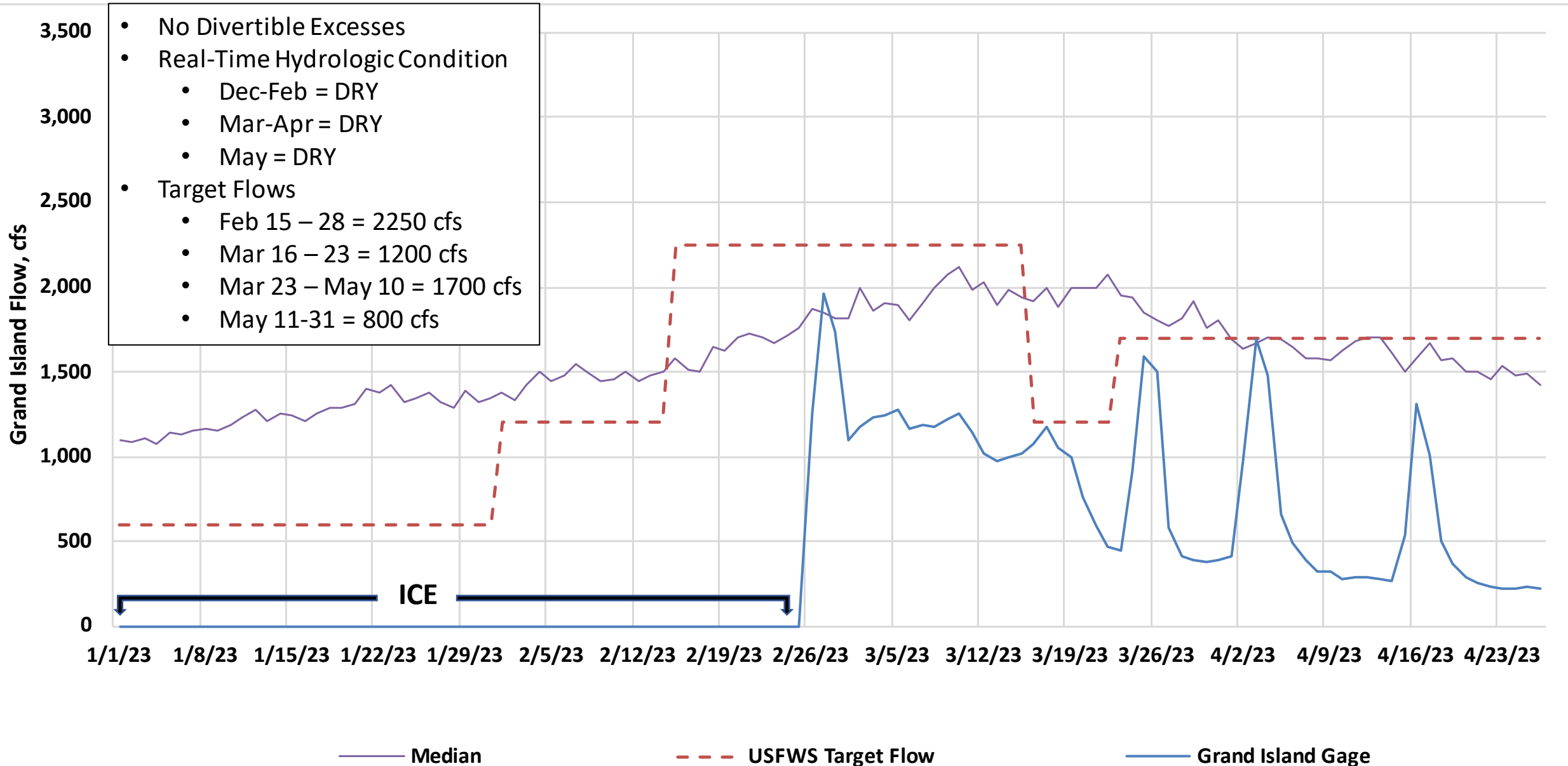
Platte Basin Hydrology Update

PRRIP Water Advisory Committee

May 2, 2023

Ed Weschler

Flow updates



U.S. Drought Monitor

High Plains

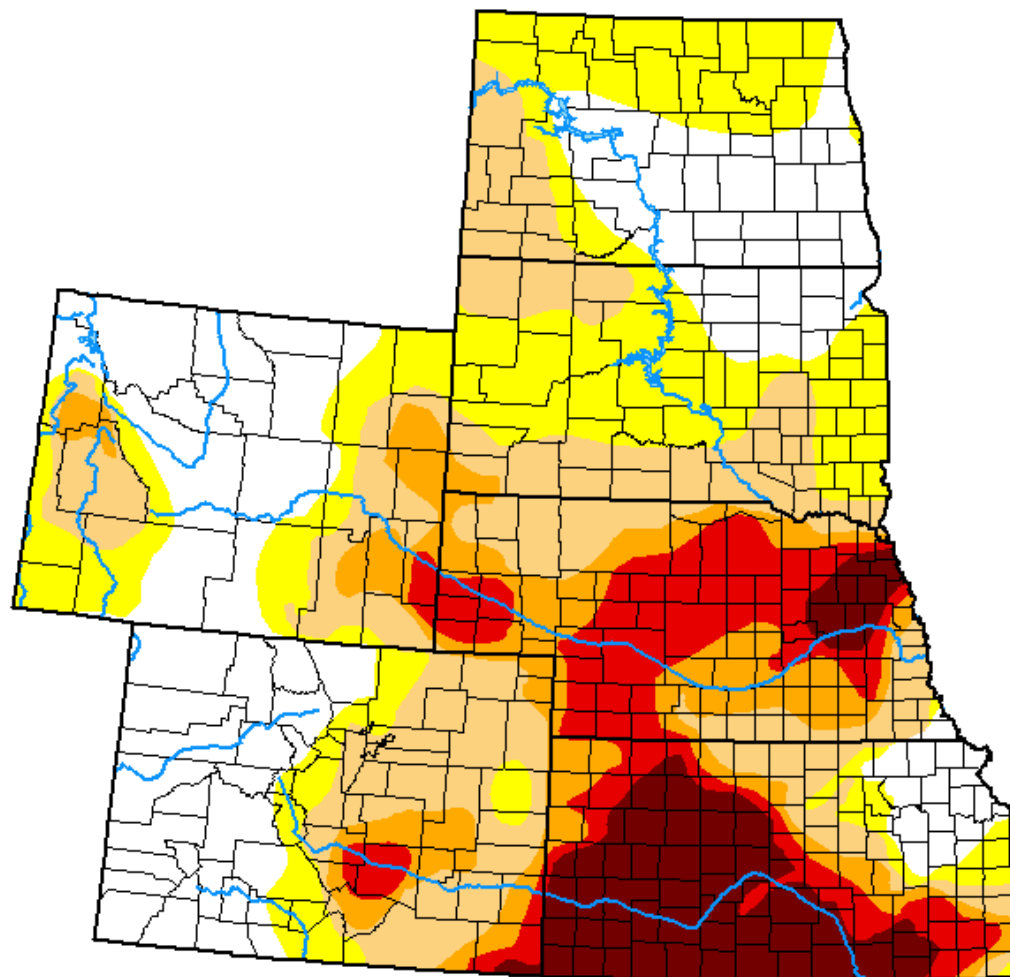
April 25, 2023

(Released Thursday, Apr. 27, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.21	71.79	50.53	28.40	17.82	8.52
Last Week 04-18-2023	27.64	72.36	49.64	27.95	14.74	8.13
3 Months Ago 01-24-2023	15.12	84.88	64.87	33.80	17.23	7.57
Start of Calendar Year 01-03-2023	13.54	86.46	66.35	37.03	18.35	7.83
Start of Water Year 09-27-2022	7.60	92.40	66.34	33.68	15.17	5.92
One Year Ago 04-26-2022	14.33	85.67	75.36	47.03	11.67	0.44



Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

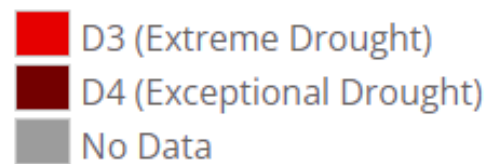
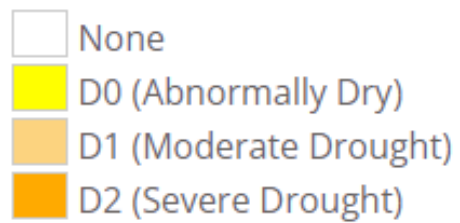
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

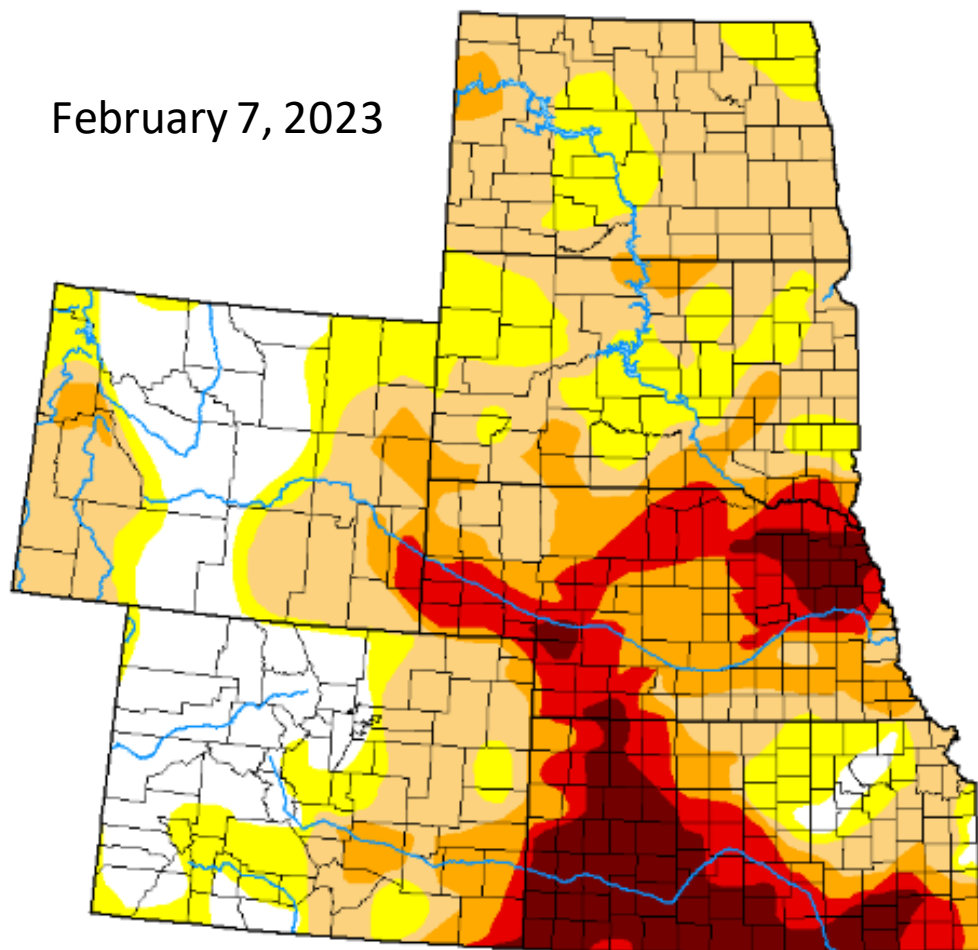
Richard Tinker
CPC/NOAA/NWS/NCEP



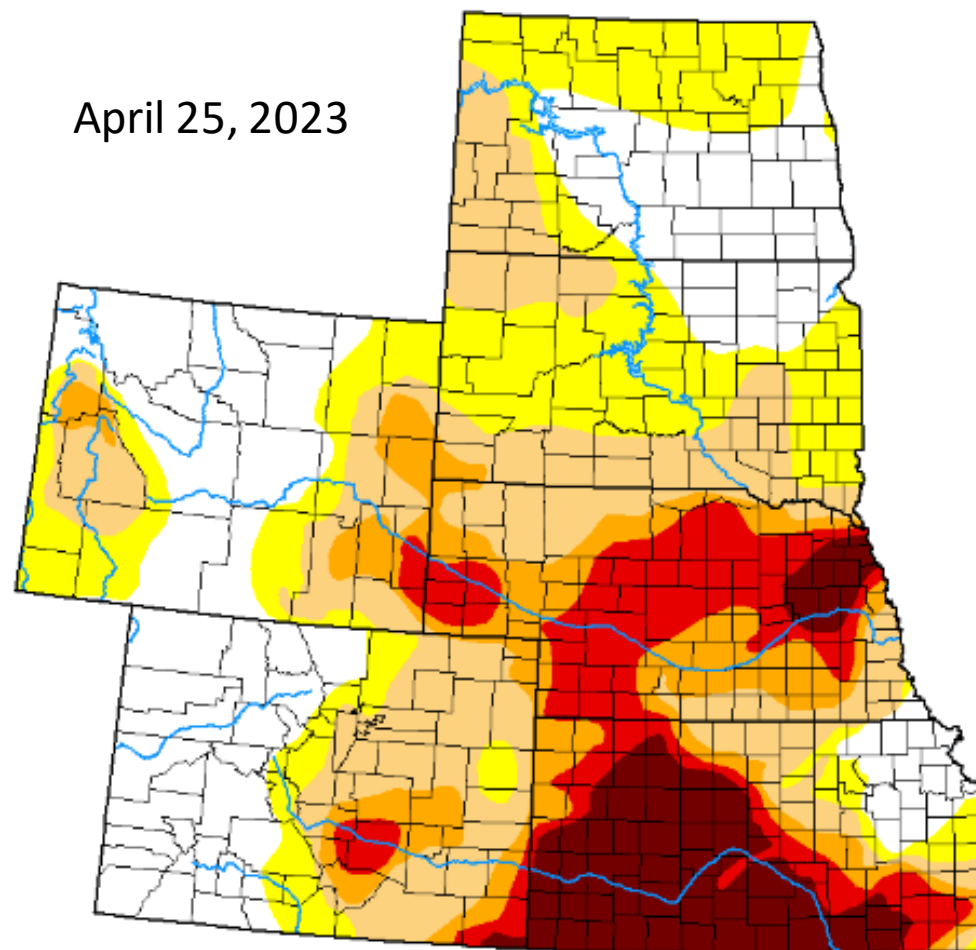
droughtmonitor.unl.edu



February 7, 2023



April 25, 2023



SIWY
1490 cfs

MBWY
279 cfs

SEMINOE RESERVOIR (SEMR)
Top 1017273 af, 6357.0 ft
Current 456503 af, 6319.9 ft
To fill 560770 af, 37.1 ft
Computed Inflow 2309 cfs

SWWY
139 cfs

KORTES RESERVOIR (KORR)
Top 4739 af, 6142.0 ft
Current 4716 af, 6141.7 ft
To fill 23 af, 0.3 ft
Computed Inflow 2817 cfs
Total Outflow 2811 cfs

PATHFINDER RESERVOIR (PATR)
Top 1070000 af, 5852.5 ft
Current 399257 af, 5811.2 ft
To fill 670743 af, 41.3 ft
Computed Inflow 3188 cfs

CAWY
0 cfs

PAWY
77 cfs

ALCOVA RESERVOIR (ALCR)
Top 184405 af, 5500.0 ft
Current 178768 af, 5497.7 ft
To fill 5637 af, 2.3 ft
Computed Inflow 899 cfs

GRAY REEF RESERVOIR (GRAR)
Top 1800 af, 5332.0 ft
Current 1464 af, 5330.0 ft
To fill 336 af, 2.0 ft
Computed Inflow 415 cfs
Total Outflow 449 cfs

ORWY
904 cfs

GLENDO RESERVOIR (GLER)
Top 492022 af, 4635.0 ft
Current 361435 af, 4622.8 ft
To fill 130587 af, 12.2 ft
Computed Inflow 947 cfs
Total Outflow 1507 cfs

GUERNSEY RESERVOIR (GUER)
Top 45612 af, 4420.0 ft
Current 22627 af, 4409.1 ft
To fill 22985 af, 10.9 ft
Computed Inflow 1364 cfs
Total Outflow 907 cfs

ICWY
885 cfs

WHWY
13 cfs

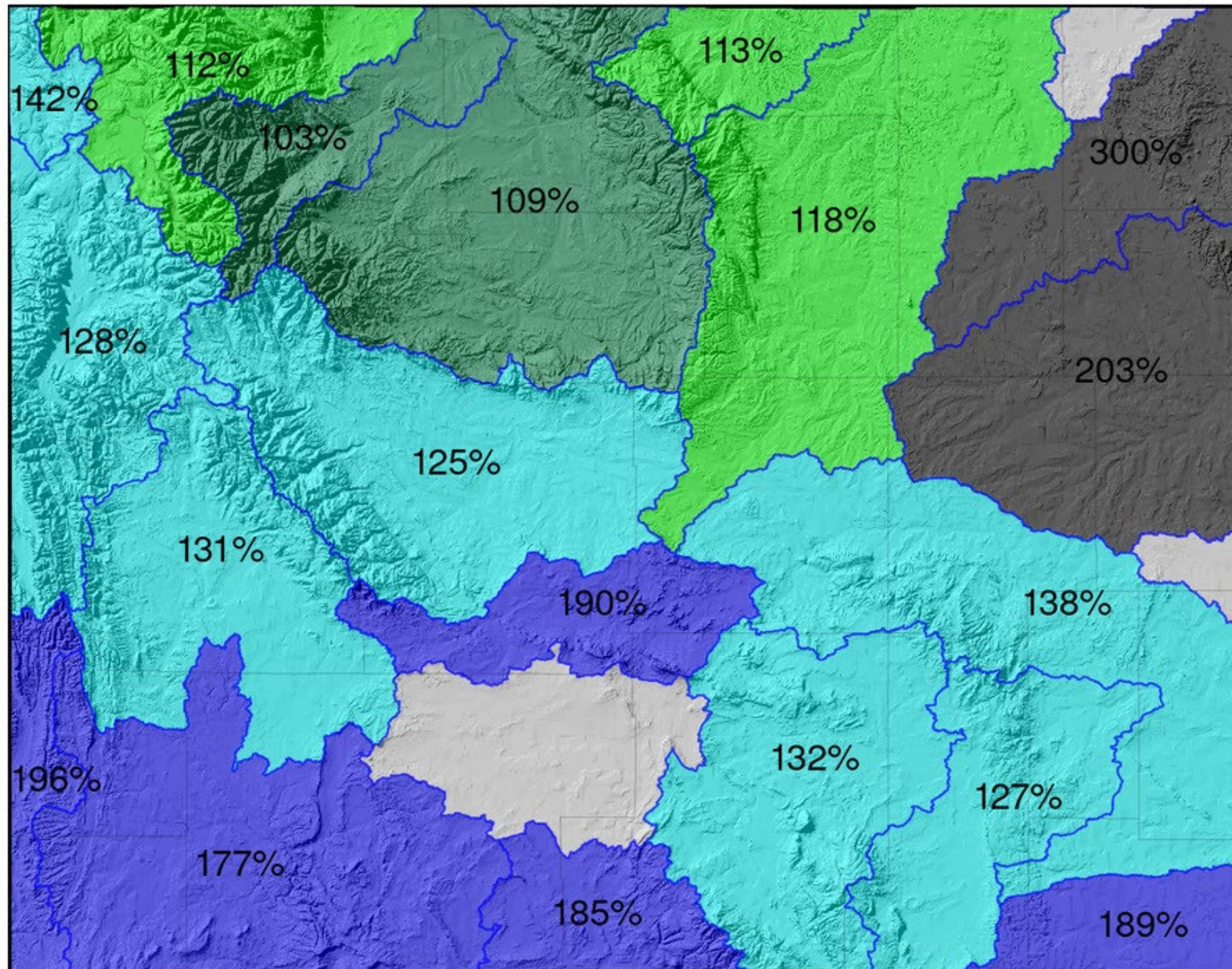
FCWY
0 cfs

NORTH PLATTE RIVER BASIN
Data as of 04/25/2023

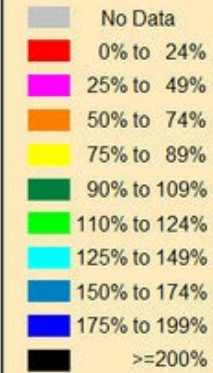
Pathfinder Ownership

- 34 Account (Pathfinder EA)
 - April 25 – 8,488 AF
- 20 Account (Municipal Account)
 - April 25 – 14,318 AF

Snow Water Equivalent Percent of Median (1991-2020) 28 Apr 2023



SWE Percent



Snow Water Equivalent Data
NRCS
<https://www.nrcs.usda.gov>



Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>

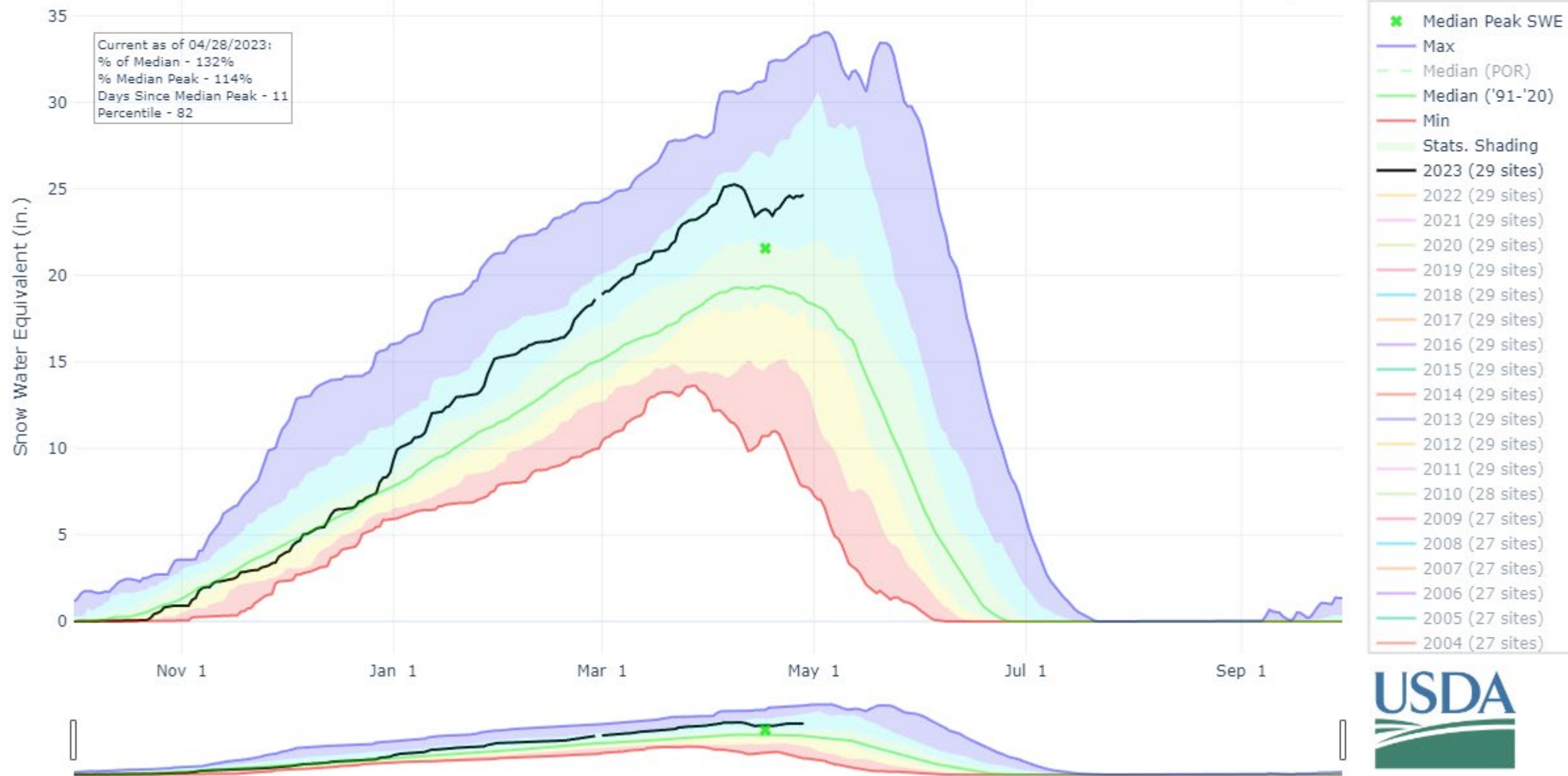


SNOW WATER EQUIVALENT IN NORTH PLATTE

Reset Range

[Link to data: CSV / JSON](#)

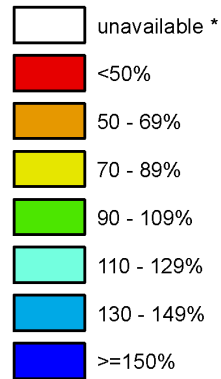
Station List



Colorado SNOTEL Current Snow Water Equivalent (SWE) % of Normal

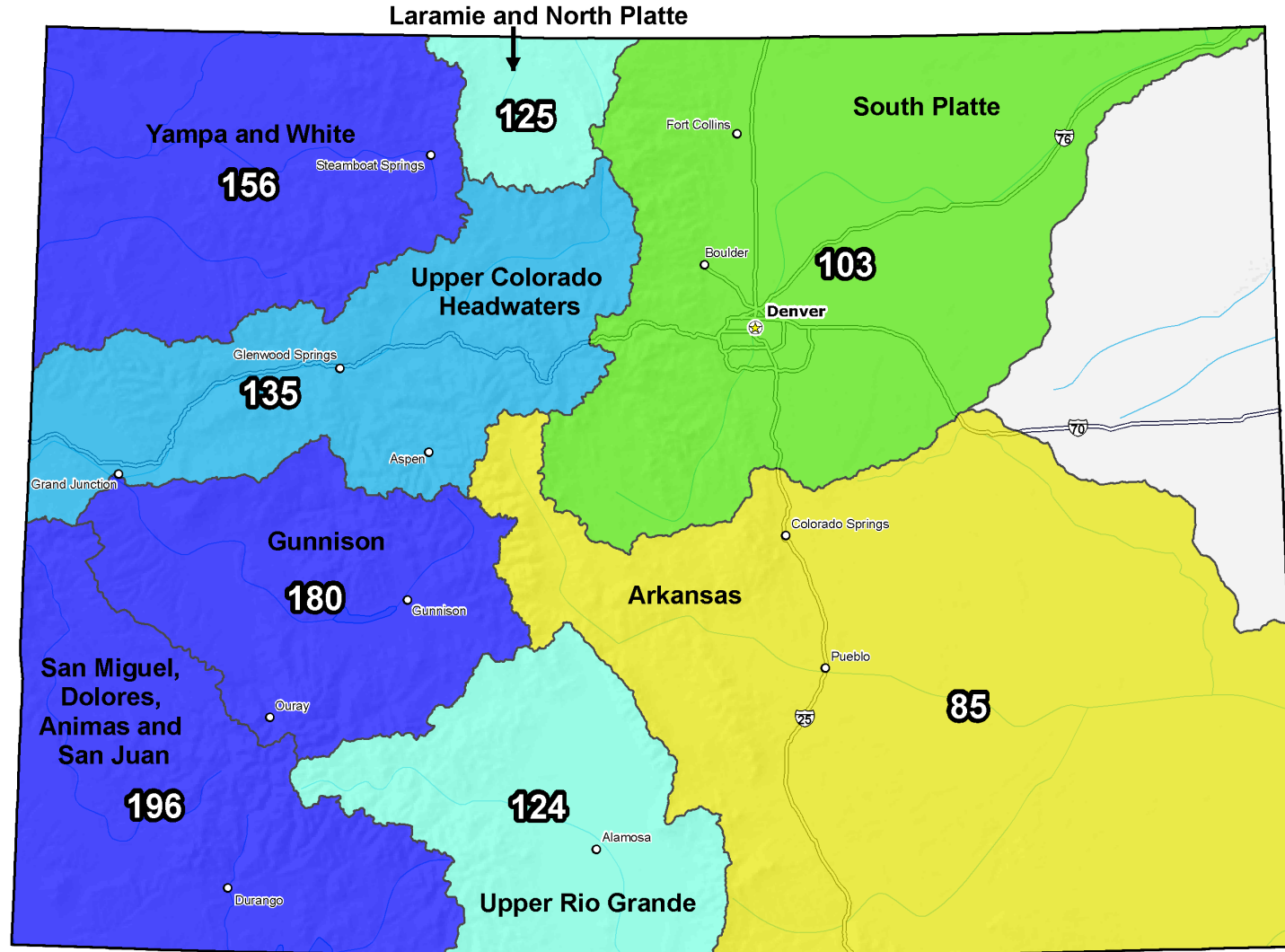
Apr 28, 2023

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1991-2020 Median

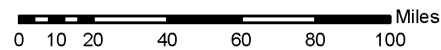


* Data unavailable at time of posting or measurement is not representative at this time of year

*Provisional Data
Subject to Revision*



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).



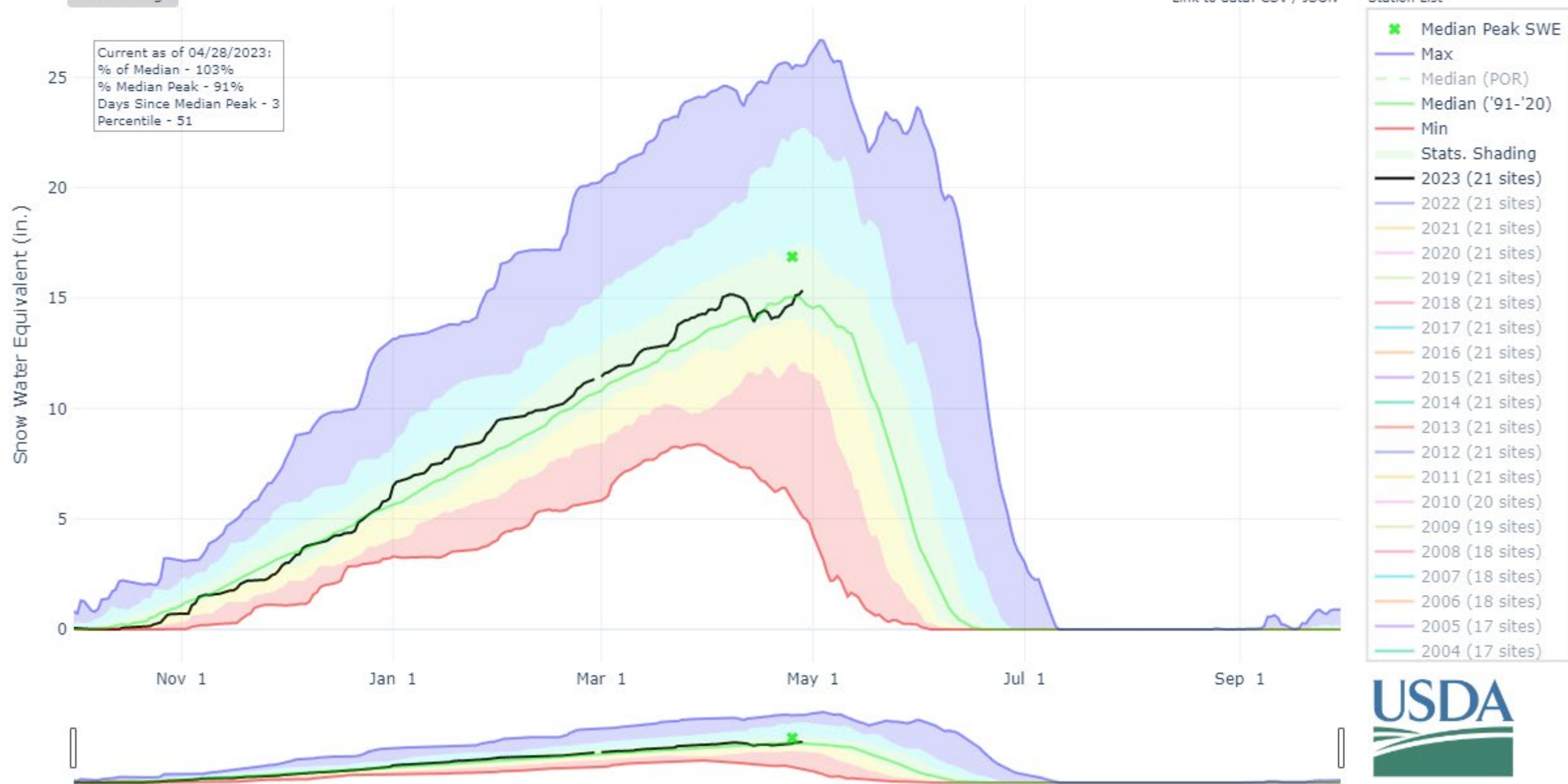
Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<https://www.nrcs.usda.gov/wps/portal/wcc/home/>

SNOW WATER EQUIVALENT IN SOUTH PLATTE

Reset Range

[Link to data: CSV / JSON](#)

Station List



Questions?

Update on Nebraska New Depletion Plan & IMP Monitoring

PRRIP Water Advisory Committee Meeting
May 2, 2023

Jennifer J. Schellpeper,
Water Planning Division Manager

Kari Burgert,
Environmental Specialist III



Review of Nebraska New Depletion Plan (NNDP) Requirements

Jennifer J. Schellpeper

Review of NNDP Requirements – Overarching Premises

➤ Moratoriums

- New surface water appropriations in the Platte River Basin upstream of the confluence of the Platte River with the Loup River
 - Implemented in early 90's
- There is a moratorium on the issuance of new groundwater well permits greater than 50 gpm in the NRDs within the 28/40 area
 - Implemented subsequent to 2004 (LB 962)

➤ Anything subject to the **Federal Depletions Plan** will not require offset by Nebraska

- Not tracked as part of NNDP

➤ New use:

- Groundwater and surface water uses begun or expanded between July 1, 1997 and Dec. 31, 2005, regardless of location
 - That causes a depletion to the Platte River or tributary thereof
 - Which impacts
 - USFWS “target flows”
 - “state-protected flows”
 - Will be estimated and offset

Review of NNDP Requirements – Overarching Premises

➤ Permitted New Activities:

- DNR or NRD permitted activities after January 1, 2006 will require an offset from the permittee

➤ Location:

- For groundwater: In the watershed of the Platte River upstream of Chapman Nebraska and Within the 28/40 area
- For Surface Water: In the watershed of the Platte River upstream of the confluence with the Loup River

➤ Unpermitted Activities:

- Sandpits, unpermitted small reservoirs, wells less than 50 gpm, not covered by Federal Depletions Plan

Review of NNDP Requirements – Overarching Premises

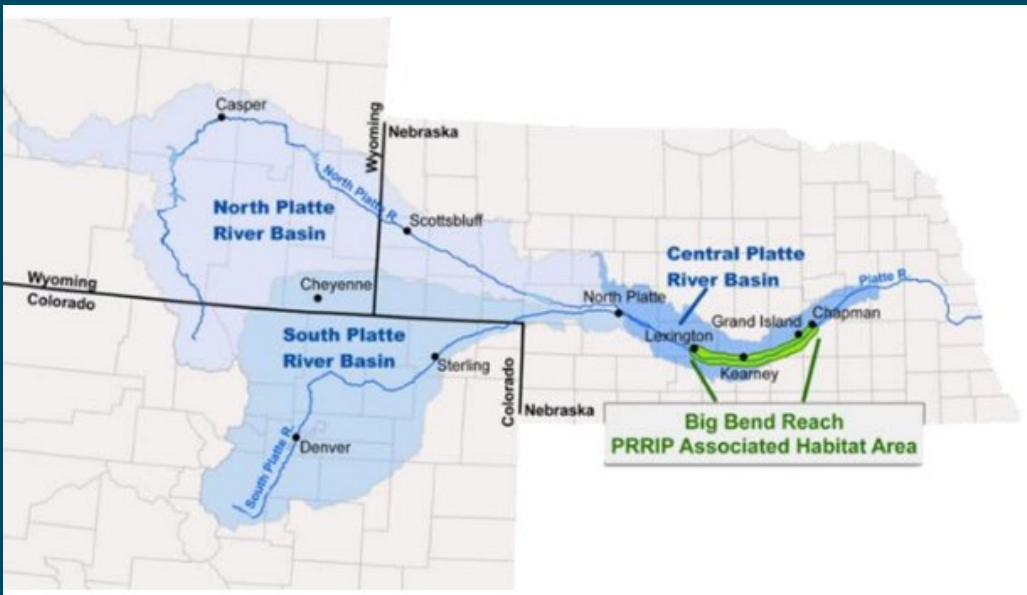
- Nebraska's will develop and maintain the hydrologic tools used by the state and the NRDs to determine the amount, timing, and location of depletions to state-protected flows, and target flows, and also to evaluate the effectiveness of proposed offset projects.
- In all cases, the offset objective will be to replace the water depleted in the amounts needed and at the times and locations needed to prevent harm to the water uses and/or the target flows for which such flow protection is required.
- All offset measures shall be constructed and operated or implemented so that they do not cause additional shortages to either target flows or state protected flows.

Review of NNDP Requirements – Uses not Subject to the NNDP

- New and expanded uses of groundwater
 - begun on or after January 1, 2006 and
 - are outside the watershed boundaries of the North Platte, South Platte and Platte Rivers and/or the 28% in 40 year lines
 - are not subject to this plan and therefore do not require mitigation for any adverse effects on state-protected flows or target flows,
 - every five years, any such uses will be assessed
- If the aggregate new depletions to target flows associated with all such uses are greater than 2,000 AF per year by the end of the next Program increment, for such subsequent increment, the depletion plan exemption for any such additional new or expanded uses may not be acceptable to the Governance Committee

Review of NNDP Requirements – Implementation Tasks

- A. Refine the COHYST models as needed following the completion of peer review;
- B. Determine the extent of any increase in irrigated acreage in the COHYST modeled area between 1997 and 2005 (moratoriums limited development after this time-frame);



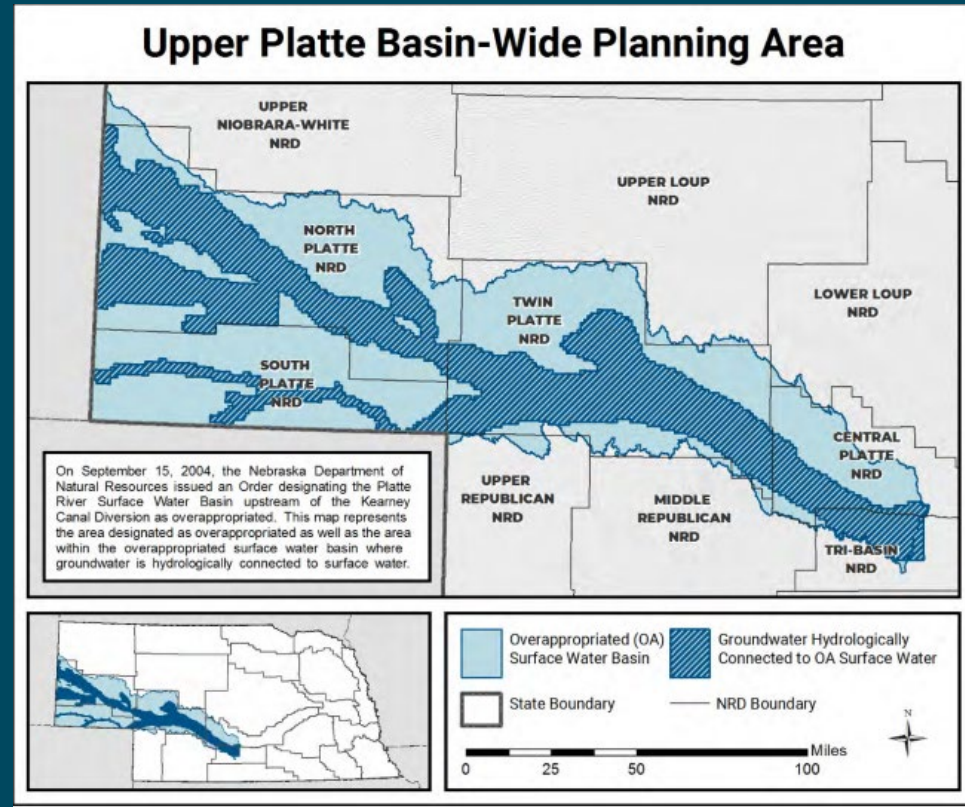
Review of NNDP Requirements – Implementation Tasks

- C. Determine the extent of any increase in average annual consumptive water use by municipalities, industries, rural domestic and other new water related activities in the COHYST modeled area subsequent to 1997;
- D. Determine the amount, timing and location of any depletions to the Platte River or a base flow tributary because of any increase described in b. or c. above;
- E. Determine what measures will be utilized to offset, in amount, timing and location, the depletions quantified above;
- F. Adopt and implement, in at least six natural resources districts, integrated management plans governing the initiation of new water related activities and the expansion of water related activities that have been initiated through 2005; such plans will encompass at least the geographic area that is within the Platte River Basin and inside the 28% in 40 year lines for the Platte and base flow tributaries.

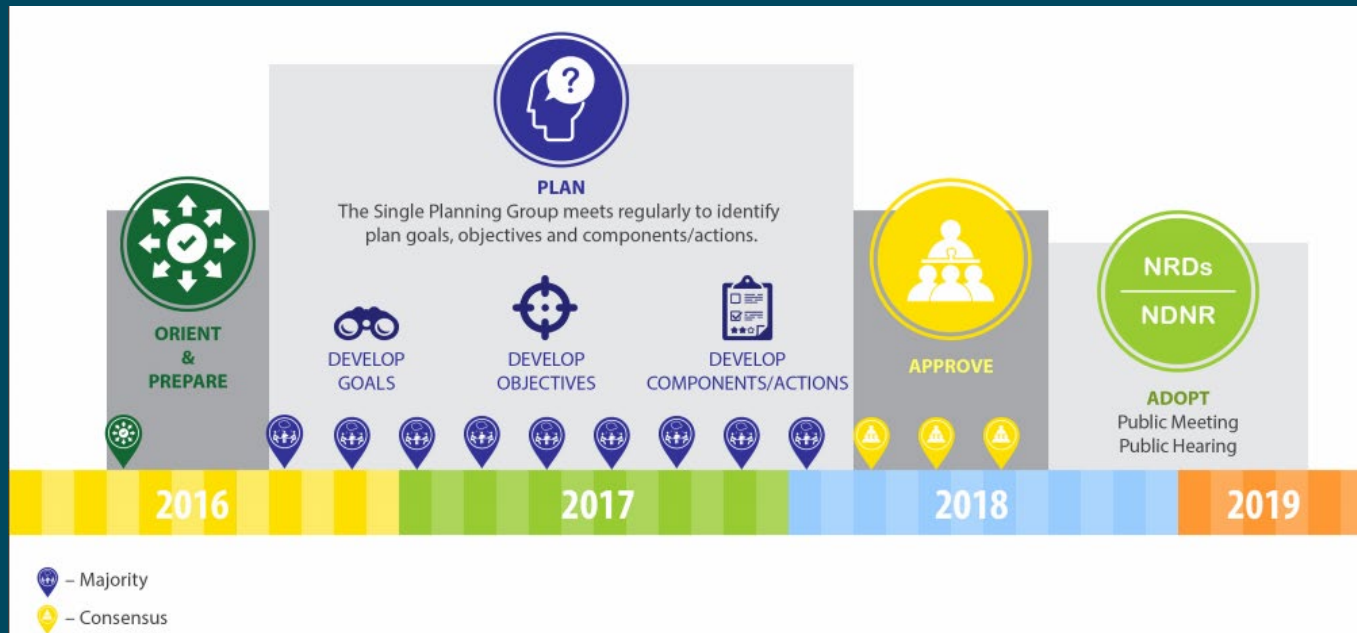
Review of 2019 Nebraska Basin-Wide Plan and Integrated Management Plans

Review of Nebraska Basin-Wide Plan Goals

- Ensure compliance with PRRIP through the NNDP
- Incrementally work to achieve a fully appropriated condition (required under state law)
- Work with M&I users to maximize water use efficiency
- Identify and resolve disputes among water users
- Improve information and data sharing



Basin-Wide and Integrated Management Plans



- Implement the necessary incentive-based and regulatory-based management actions to achieve the goals
- Other key components left unchanged from the first increment
- Maintain first increment progress
- Update targets for post-1997 depletions (Robust Review)
- Sharpen focus on drought contingency planning

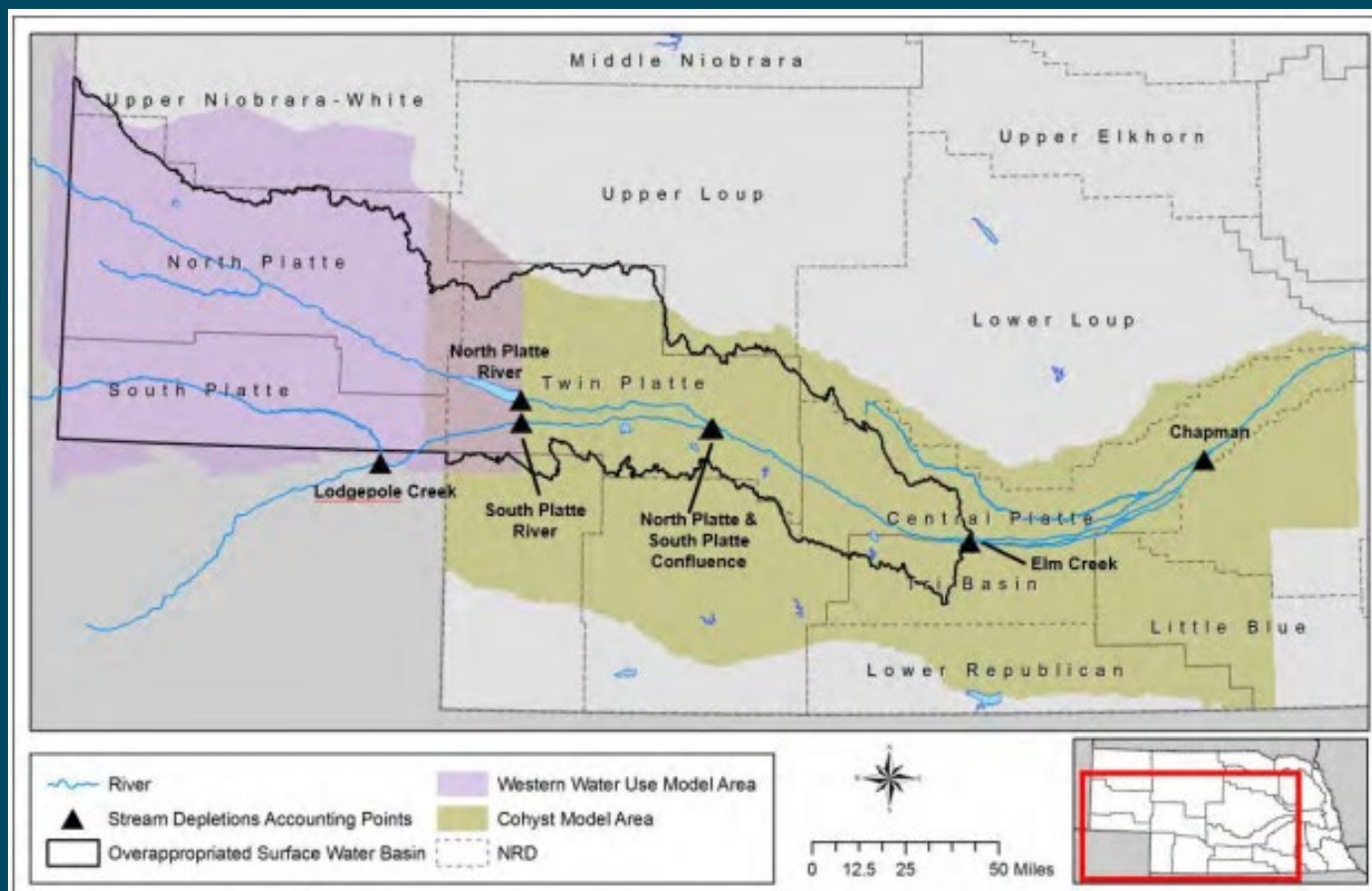
BWP & IMP Robust Review

NNDP: Nebraska will conduct a new land use inventory and will collect such other information as is necessary to assess the sufficiency of the combined NRD required and state offset measures implemented because of new and expanded uses of surface water and groundwater subject to this plan.

Goals of “Robust Review”

- Update new net depletions due new or expanded uses of water subsequent to July 1, 1997
 - Evaluated outside of Groundwater Model
 - Small reservoirs/sand pits (unpermitted) changes
 - Rural domestic population and livestock changes
 - Evaluation using a Groundwater Model
 - Groundwater irrigated acres
 - M&I changes
 - Crop-type changes
 - Management actions (regulatory and non-regulatory)
 - Canal recharge (gw model)
 - Augmentation (combination)
 - Allocation (gw model)
 - Retirements/leases (combination)

Robust Review Model Simulations



- COHYST and WWUM models
- Evaluation period 2020 - 2070 (50-years)

Robust Review Model Simulations

- COHYST & WWUMM updated to Modflow 6
 - Updates to packages
 - Updates to geology in WWUMM
- Include changes in groundwater irrigated acres and crop types after 1997
 - Use metered pumping in SPNRD and NPNRD (allocations)
 - Updates to water use from 2013 through 2020
 - Future Climate Scenarios will be representative of expected average conditions & based on available data
- Include changes in M&I pumping since 1997
- Include management actions implemented through 2020

Summary

- Second increment goals changed due to:
 - Model assumptions (updated soil water balance modeling, more intensive land use updates, improved M&I data, model recalibration)
 - Management actions (excess flows, retirements, allocations)

- Various assumptions will be revisited:
 - Impacts of conservation practices (primarily tillage)
 - Land use/crop typing updates/water use measurements
 - New management actions subsequent to 2013
 - Assumed climate conditions

- Updates to Robust Review scheduled for 2023 and 2027
 - If the Robust Review indicates annual depletion or accretion values different from those in Goal 1 Table 1, revisions may be necessary. For example, the IMP may be revised to attach the results of a future Robust Review including updated targets and triggers

Summary

- Nebraska has completed all tasks required in the NNDP
- Nebraska is mitigating post-1997 water use activities through various management actions
- IMPs will result in statewide compliance in excess of post-1997 mitigation requirements by 2029 (state law based requirements)

Links to More Information:

- <https://dnr.nebraska.gov/water-planning/upper-platte-basin-wide-plan>
 - links to robust review documentation, basin-wide plan, and stakeholder presentations
- <https://dnr.nebraska.gov/water-planning/central-platte-nrd>
- <https://dnr.nebraska.gov/water-planning/north-platte-nrd>
- <https://dnr.nebraska.gov/water-planning/south-platte-nrd>
- <https://dnr.nebraska.gov/water-planning/tri-basin-nrd-0>
- <https://dnr.nebraska.gov/water-planning/twin-platte-nrd>
- links to each respective NRDs IMP page with copies of plans and stakeholder materials

Annual Update on 2021 permitted activities

Kari Burgert

Update on Nebraska's New Depletion Plan

- 2021 Permitted Activities
- Estimated Depletions
- Offsets and Accretions
- Update on other activities



2021 Permitted Water Uses

- Permits issued by the NRDs and the Department

Type	Total
Groundwater Transfers	60
Groundwater Wells	47
Groundwater Variances	8
Surface Water Permits	10

2021 Groundwater Transfer Permits

	Upstream of AHR	Within AHR	Total
Groundwater Transfers	31	29	60

2021 Groundwater Well Permits

Type	Upstream of AHR	Within AHR	Below AHR	Total
Aquaculture	1	-	-	1
Domestic	1	-	-	1
Irrigation	5	-	-	5
Replacement	24	6	-	30
Supplemental Groundwater	1	2	-	3
Dewatering	-	7	-	7
Total	32	15	--	47

2021 Groundwater Variance Permits

Type	Upstream of AHR	Within AHR	Total
Well Spacing	-	7	7
Livestock Conversion	-	1	1
Total	-	8	8

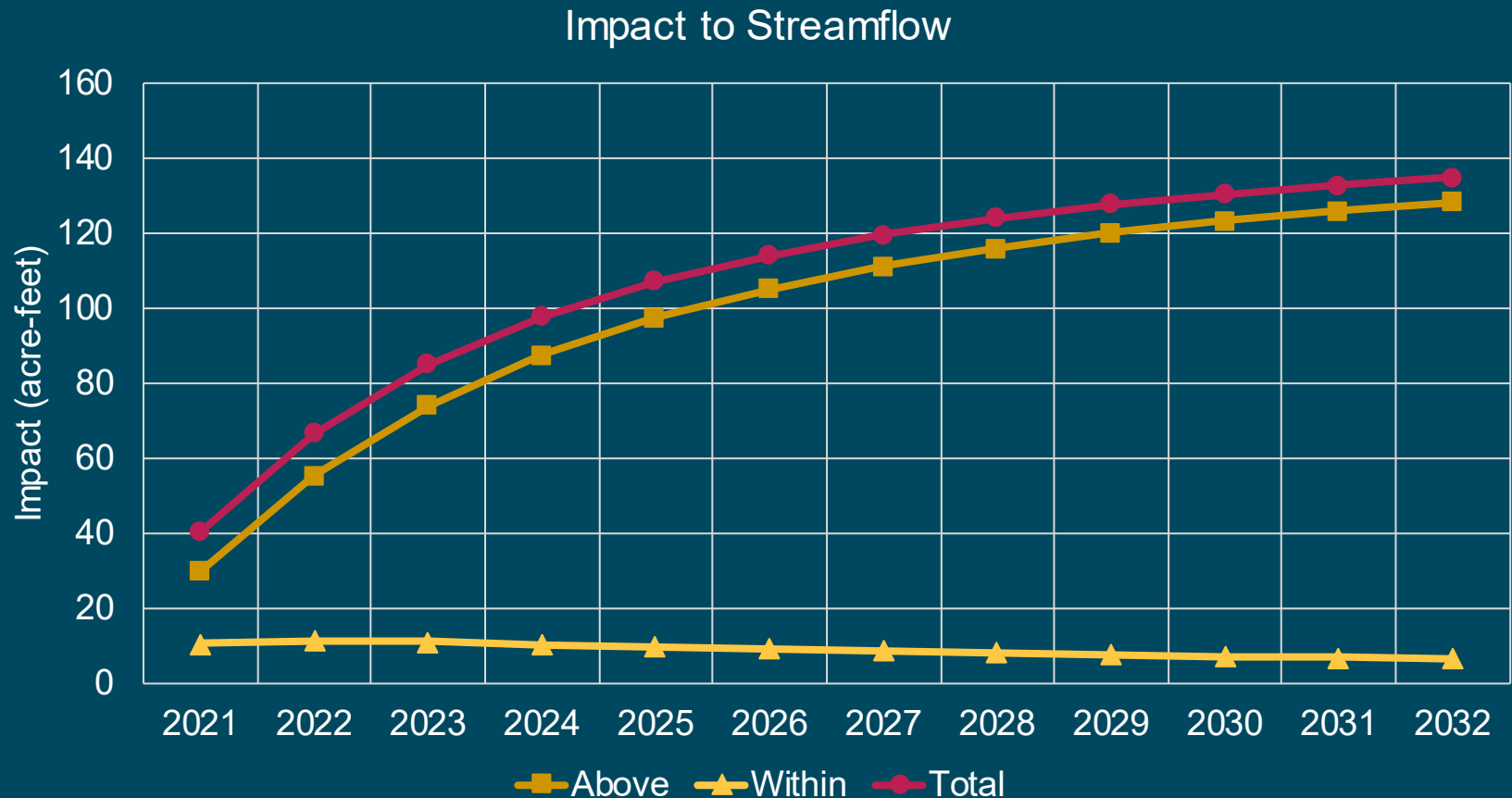
2021 Surface Water Permits

Type	Upstream of AHR	Within AHR	Total
Recharge (Temporary)	10	-	10
Total	10	-	10

Effects to Streamflow from 2021 Permitted Activities

Year	Upstream of AHR			Within AHR			Both Reaches
	Mitigations	New Uses	Net Effect	Mitigations	New Uses	Net Effect	Net Effect
2021	53.76	-24.04	29.73	25.58	-15.02	10.55	40.28
2022	99.14	-43.73	55.41	40.37	-29.01	11.35	66.76
2023	129.2	-55.11	74.1	50.19	-39.26	10.94	85.03
2024	150.65	-63.19	87.46	57.37	-47.04	10.33	97.79
2025	166.95	-69.52	97.43	62.92	-53.2	9.72	107.15
2026	179.88	-74.76	105.12	67.37	-58.24	9.13	114.25
2027	190.47	-79.28	111.19	71.05	-62.46	8.6	119.78
2028	199.34	-83.27	116.08	74.16	-66.06	8.1	124.18
2029	206.93	-86.86	120.07	76.84	-69.19	7.65	127.72
2030	213.51	-90.14	123.37	79.17	-71.93	7.23	130.6
2031	219.28	-93.17	126.11	81.22	-74.37	6.85	132.96
2032	224.41	-95.99	128.42	83.05	-76.56	6.49	134.91

Net Effect to Streamflow from 2021 Permitted Activities



NEBRASKA

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Questions?

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Office: 402-471-5277

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THANK YOU

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