

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM
2023 PERMITTED ACTIVITIES FOR CENTRAL PLATTE, NORTH PLATTE,
SOUTH PLATTE, TRI-BASIN, AND TWIN PLATTE NATURAL RESOURCES
DISTRICTS FOR THE 2024 BASIN-WIDE MEETING

I. INTRODUCTION

This report is to satisfy, in part, the tracking and reporting requirements as described in Chapter 10.7, the Monitoring and Evaluation section of the Central Platte, North Platte, South Platte, Tri-Basin, and Twin Platte Natural Resources Districts (Platte Basin NRDs) second increment integrated management plans (IMPs).

For the Central Platte NRD second increment IMP, Chapter 10.7.2, paragraph III states:

(2) The reports from the CPNRD and the NeDNR should include information on the location, amount, and timing of the depletions caused by each permitted new or expanded water use, as well as the associated offset and the location, amount, and timing of the offset's accretions to the river. The depletions and/or the accretions should be reported for each year throughout the ten-year increment.

Each of the five Platte Basin NRD IMPs requires that the Department and the NRDs annually track and report new or expanded water use activities. These new or expanded uses are then evaluated along with any offsets to estimate the location, amount, and timing of impacts to the river and to aid in the annual assessment of the progress being made toward achieving the goals and objectives of the IMP for the second 10-year increment, as required by the IMPs. The accretion and depletion analysis of the NRD issued permits is reported in this document. For details on the permitting activities of each NRD, refer to their individual reports on new or expanded permit activities for the 2023 calendar year.

This will be the fourth report on depletions and mitigations from permitted activities for the second increment of the IMPs.

1. Analysis of NRD 2023 permitted activities.

Table 1 shows the depletions, mitigations (accretions), and net effect of the 2023 permitted new or expanded uses reported by each of the five NRDs through the remainder of the second increment of the IMPs (which ends in 2029), and 1 year into the third increment, as well. A positive value in Table 1 indicates that the accretive effect of the mitigation activities exceeded the depletive effect of the new or expanded permitted uses. Effects to the river were estimated for each permitted action representing a new consumptive use of water and the corresponding mitigation for each new use. For each permitted action evaluated, there was a new use initiated and an existing use retired. Some of the permits listed in the individual NRD reports are not for

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM 2023 PERMITTED ACTIVITIES

new or expanded consumptive uses of water and are therefore not included in the analysis of depletions. The number of permits used to calculate depletions and accretions to the river in each NRD is shown at the top of Table 1.

The depletion and accretion analysis was performed following the guidance document developed by the technical committee for the Platte Basin Habitat Enhancement Project for the first increment IMP. In general, for actions where the new and retired uses were a change in agricultural land use, the difference in consumptive use was estimated based on land use data provided with the permit information, or on land use conversions typical of the area (i.e., irrigated corn to dryland corn, or vice versa) if specific data was not available. The change in consumptive use for other types of uses, such as new industrial uses, was estimated based upon available data. The annual effect to the river from each individual permitted action (new/expanded uses or mitigations) was estimated using an annual depletion percentage series developed using the Hunt (1999)¹ equation and average hydraulic characteristics taken from the original COHYST data as developed by the technical committee. The guidance document for the annual calculations, *Basin-wide Technical Committee Guidance Document – Procedures for Annual Accounting Review and Robust Review to Assist Integrated Management Planning and Facilitate Reporting to the Platte River Recovery and Implementation Program*, can be found on the Department’s website at: <https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/upper-platte/other/basin-wide-technical-committee-guidance20120814.pdf>.

Because completing the Robust Review took longer than anticipated, the methodology for the depletions and accretions analysis has not been updated and remains consistent with previous years.

2. Analysis of Progress Towards Second Increment Goals and Objectives

NeDNR and the Platte Basin NRDs completed the 2023 Robust Review in late 2023 in accordance with applicable Nebraska state statutes, the Basin-wide Technical Committee Guidance Document², and with individual NRD’s IMPs. The 2023 Robust Review included major updates to both the models

¹ Hunt, B. (1999). Unsteady Stream Depletion from Ground Water Pumping. *Ground Water*, 37(1), 98-102.

²Basin-wide Technical Committee Guidance Document – Procedures for Annual Accounting Review and Robust Review to Assist Integrated Management Planning and Facilitate Reporting to the Platte River Recovery and Implementation Program
<https://dnr.nebraska.gov/sites/default/files/doc/water-planning/upper-platte/other/basin-wide-technical-committee-guidance20120814.pdf>

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM 2023 PERMITTED ACTIVITIES

and input datasets. The 2023 Robust Review analysis showed that with continued implementation of management actions, all 5 Platte Basin NRDs will be able to provide offsets to the river equal to or exceeding the depletions from post-1997 new and expanded uses of water. More information regarding updates, methodology, inputs, and results can be found in the 2023 Robust Review Report, which will be finalized at the end of 2024.

Results of the 2023 Robust Review were presented to each NRD's Board of Directors and to the Water Advisory Committee (WAC) and Governance Committee (GC) of the Platte River Recovery Implementation Program in 2024. Western Water Use Model (WWUM) Robust Review results were presented to the South Platte NRD and North Platte NRD Boards on March 13 and 14, 2024, respectively. COHYST Robust Review results were presented to the Central Platte NRD, Twin Platte NRD, and Tri-Basin NRD Boards on March 28, April 11, and May 14, 2024, respectively. Basin-wide results were presented to the WAC on May 7 and the GC on June 11.

Table 2 summarizes the projected streamflow impacts by reach from the 2023 Robust Review. The next Robust Review is scheduled for completion in 2027.

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM 2023 PERMITTED ACTIVITIES

Year	CPNRD (99 Permits)			NPNRD (No Permits)			SPNRD (3 Permits)*			TBNRD (7 Permits)			TPNRD (9 Permits)			All NRDs
	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Total Net Effect
2023	-10	12	1	0	0	0	0	0	0	-2	3	1	-21	30	9	12
2024	-23	29	6	0	0	0	0	0	0	-4	5	1	-29	38	10	17
2025	-34	43	9	0	0	0	0	0	0	-5	6	1	-33	43	10	20
2026	-44	55	11	0	0	0	0	0	0	-6	7	1	-37	47	10	22
2027	-52	65	13	0	0	0	0	0	0	-7	8	1	-39	49	10	24
2028	-60	73	14	0	0	0	0	0	0	-8	9	1	-41	51	10	25
2029	-66	80	14	0	0	0	0	0	0	-8	10	1	-43	53	10	26
2030	-72	87	15	0	0	0	0	0	0	-9	10	1	-45	55	10	26

Table 1. Depletions and mitigations from analyzed NRD 2023 permits (in acre-feet). Positive values indicate accretions and negative values indicate depletions.

*Transfers within sections or to adjacent sections resulted in a net-zero impact.

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM
2023 PERMITTED ACTIVITIES

Year	Impacts Upstream Elm Creek (AF)	Impacts Elm Creek to Chapman (AF)	Combined Impacts Upstream Chapman (AF)
2022	33,400	22,100	55,500
2023	28,900	23,000	51,900
2024	34,600	26,100	60,700
2025	26,300	23,400	49,700
2026	27,800	27,800	55,600
2027	28,300	18,900	47,200
2028	26,500	19,800	46,300
2029	23,300	20,600	43,900
2030	20,200	26,600	46,800
2031	28,700	22,200	50,900
2032	29,800	26,700	56,500
2033	33,100	26,900	60,000

Table 2. Aggregated projected streamflow impacts in the Upper Platte River Basin by reach from the 2023 Robust Review. Positive values indicate accretions.