

REPORT ON THE DEPLETIONS AND MITIGATIONS (ACCRETIONS) FROM 2012  
PERMITTED ACTIVITIES FOR CENTRAL PLATTE, NORTH PLATTE, SOUTH  
PLATTE, TRI-BASIN, AND TWIN PLATTE NATURAL RESOURCES DISTRICTS  
FOR THE 2013 BASIN-WIDE MEETING

## I. INTRODUCTION

This report is intended to satisfy, in part, the tracking and reporting requirements as described in Chapter 7, Section II.A.1(b)(2), the Monitoring and Studies section of the Central Platte, North Platte, Tri-Basin, and Twin Platte Natural Resources Districts (Platte Basin NRDs) integrated management plans (IMPs). The South Platte NRD IMP Monitoring and Studies section reference is 9.3.1.1.1.1.2.2.

For the Central Platte NRD IMP, the section Chapter 7, Section II.A.1(b)(2) states:

(2) The reports from the CPNRD and the Department 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 first ten (10) year increment.*

The North Platte NRD, South Platte NRD, and Twin Platte NRD also state the above, with the exception of the Tri-Basin NRD's IMP in which the italicized sentence does not appear.

Each of the five (5) Platte Basin IMPs require that the Department and the NRDs annually track and report water use activities and annually assess the progress being made toward achieving the goals and objectives of the IMP for the first ten (10) year increment. The assessment of progress will be made following the exchange of information at the annual basin-wide meeting.

The Department reported on the accretions and depletions due to new or expanded permitted activities in their 2013 annual report. 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 2012 calendar year.

### 1. Analysis of NRD 2012 permitted activities.

Table 1 shows the depletions, mitigations (accretions), and net effect through 2019 of the 2012 permitted new or expanded use reported by each of the five (5) NRDs. A positive value in table 1 indicates that the accretive effect of the mitigations 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 new or expanded

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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 from these permits in each NRD is shown at the top of table 1. Additionally, in the CPNRD, there are permits issued that only affect streamflows in the river reach downstream from Chapman, Nebraska. New uses affecting this reach of the river do not currently require offsets; therefore, table 1 excludes these permits and only shows those permits which affect streamflows upstream from Chapman, NE. Table 2 includes everything in table 1 and the permits affecting the reach of the river downstream of Chapman, Nebraska.

The depletion and accretion analysis was performed following the guidance document developed by the technical committee for the Platte Basin Habitat Enhancement Project. 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 conversions typical of the area (i.e. irrigated corn to dryland corn or vice versa). 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)<sup>1</sup> equation and average hydraulic characteristics taken from COHYST data as developed by the technical committee. The complete 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: <http://dnr.ne.gov/IWM/Reports/Guidance20120814.pdf>.

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

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Table 1. Depletions and Mitigations from NRD 2012 permits (in acre-feet) (excluding new use permits in CPNRD which affect only the river reach below Chapman, NE).<sup>2</sup>

Year	CPNRD (180 permits, excludes permits affecting only the stream reach below Chapman, NE)			NPNRD (2 permits)			SPNRD (3 permits)			TBNRD (13 permits)			TPNRD (41 permits)			All NRDs
	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	Depletion	Mitigation	Net Effect	
2012	-14.5	14.2	-0.2	-0.1	0.1	0.0	0.0	0.0	0.0	-3.2	8.5	5.2	-41.5	139.1	97.6	102.6
2013	-37.4	35.8	-1.6	-0.7	0.7	0.0	0.0	0.0	0.0	-8.3	14.6	6.3	-73.4	204.6	131.2	135.8
2014	-61.8	55.5	-6.3	-1.4	1.3	-0.1	0.0	0.0	0.0	-12.6	18.9	6.3	-101.9	250.0	148.1	148.0
2015	-84.1	72.2	-11.9	-2.0	1.9	-0.1	0.0	0.0	0.0	-15.9	22.0	6.1	-126.5	284.9	158.3	152.5
2016	-104.2	86.3	-17.9	-2.6	2.5	-0.1	0.0	0.1	0.1	-18.4	24.4	5.9	-147.7	312.9	165.2	153.2
2017	-122.4	98.4	-24.1	-3.3	3.2	-0.2	0.0	0.2	0.2	-20.5	26.2	5.7	-166.1	336.2	170.2	151.8
2018	-139.6	109.1	-30.4	-4.1	4.0	-0.2	0.0	0.4	0.3	-22.2	27.7	5.5	-182.2	356.1	173.9	149.2
2019	-155.4	118.6	-36.7	-5.0	4.8	-0.2	0.0	0.6	0.6	-23.7	29.0	5.4	-196.5	373.3	176.8	145.8

<sup>2</sup> The CPNRD IMP as revised in May of 2012, allows new wells to be permitted in the areas influencing the Platte River downstream of Chapman, Nebraska, as long as the permits contain a provision that offsets may be required in the future and as long as the estimate of annual depletions from all new permits does not exceed 500 AF per year. A copy of the IMP can be found here: [http://dnr.ne.gov/IWM/NRD/CentralPlatte/CentralPlatteNRD\\_IMP2012.pdf](http://dnr.ne.gov/IWM/NRD/CentralPlatte/CentralPlatteNRD_IMP2012.pdf)

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Table 2. Depletions and Mitigations from CPNRD 2012 permits (in acre-feet) including 101 new use permits which affect only the river reach below Chapman, NE and do not require mitigation at this time, and total net effect of all NRD permits.

Year	CPNRD (281 permits)			All NRDs
	Depletion	Mitigation	Net Effect	Total Net Effect
2012	-36.7	14.2	-22.5	80.4
2013	-93.4	35.8	-57.6	79.8
2014	-147.3	55.5	-91.8	62.6
2015	-194.7	72.2	-122.5	41.9
2016	-236.7	86.3	-150.4	20.7
2017	-274.7	98.4	-176.2	-0.3
2018	-309.4	109.1	-200.3	-20.7
2019	-341.4	118.6	-222.7	-40.2