

VIA ELECTRONIC MAIL ONLY

Date: December 28, 2012

TO: Governance Committee (GC) of the Platte River Recovery Implementation Program (PRRIP)

FROM: Jim Schneider, State of Nebraska's Representative to the GC  
Deputy Director, Nebraska Department of Natural Resources

SUBJECT: Nebraska Update on Continued Implementation of the Nebraska New Depletion Plan (NNDP)

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Nebraska continues to meet the terms of the Nebraska New Depletions Plan (NNDP). Based upon current estimates, the amount of accretions due to mitigation measures exceeds the amount of depletions from new or expanded uses. Details on the estimates and Nebraska's continued efforts to implement the NNDP are discussed in this memo. This memo also contains a general description of Nebraska's ongoing work to develop and utilize comprehensive tools to continue updating its assessment of all post-July 1, 1997, activities.

This update is being provided to the Governance Committee (GC) to outline Nebraska's depletive activities and mitigation measures through September 15, 2012, resulting from new and expanded uses of water as defined in the NNDP. This update utilizes information from previous memos and annual reports as well as additional information developed by Nebraska to summarize the net effect (difference between depletive activities and mitigation measures) through the end of the first increment (2019). The four sections in this update are described in detail below. If there are questions on the contents of this document please contact Jesse Bradley at 402-471-0586 or [jesse.bradley@nebraska.gov](mailto:jesse.bradley@nebraska.gov).

#### **MEMO ORGANIZATION**

The memo is organized similarly to the January 6, 2012, update provided by Nebraska to the GC. Section 1 includes updates on new or expanded permitted uses post-2005 and other new or expanded uses since July 1, 1997. Section 2 reviews the mitigation measures currently in place to offset the depletions from the activities described in Section 1. Section 3 summarizes the net effect of the combined depletions and mitigation measures from Sections 1 and 2 and the resulting effect of these activities on streamflows of the Platte River in Nebraska. Section 4 describes the continued efforts currently in process to refine assessment methodologies.

## 1.0 UPDATE ON NEW OR EXPANDED ACTIVITIES

### Post-2005 Permitted Activities

Summarized in Table 1 are the net effects of new or expanded permitted post-2005 activities. Details on the sources of the data can be found in Nebraska's 2012 annual report to the GC<sup>1</sup> and the 2012 update memo provided to the GC<sup>2</sup>. Table 1 shows the total estimated depletions, mitigations, and net effects through the first 10-year increment (2019) by stream reach for permitted new and expanded groundwater and surface water uses issued between January 1, 2006, and December 31, 2011. The table also shows the total impacts of the permits and their associated mitigations through 2019. A negative value in the table represents depletion and positive represents an accretion to streamflow. The total net effects are positive, resulting in accretions to streamflow.

**Table 1:** 2006-2011 permitted new and expanded groundwater and surface water use depletions and mitigations and the impacts through 2019 in acre-feet. A negative value represents depletion and a positive value represents accretion.

| Year | Upstream of Critical Habitat Reach |             |            | Within Critical Habitat Reach |             |            | Total       |
|------|------------------------------------|-------------|------------|-------------------------------|-------------|------------|-------------|
|      | Depletions                         | Mitigations | Net Effect | Depletions                    | Mitigations | Net Effect |             |
| 2006 | -9                                 | 25          | 15         | -209                          | 4           | -202       | <b>-187</b> |
| 2007 | -25                                | 66          | 41         | -11                           | 15          | 4          | <b>45</b>   |
| 2008 | -84                                | 180         | 95         | -31                           | 38          | 7          | <b>102</b>  |
| 2009 | -190                               | 377         | 187        | -60                           | 55          | -5         | <b>182</b>  |
| 2010 | -285                               | 522         | 237        | -94                           | 124         | 30         | <b>268</b>  |
| 2011 | -386                               | 733         | 347        | -131                          | 159         | 28         | <b>375</b>  |
| 2012 | -466                               | 852         | 386        | -168                          | 188         | 20         | <b>406</b>  |
| 2013 | -524                               | 935         | 411        | -199                          | 211         | 12         | <b>423</b>  |
| 2014 | -574                               | 999         | 425        | -227                          | 230         | 3          | <b>429</b>  |
| 2015 | -617                               | 1052        | 435        | -250                          | 246         | -5         | <b>430</b>  |
| 2016 | -654                               | 1095        | 441        | -272                          | 259         | -13        | <b>428</b>  |
| 2017 | -687                               | 1133        | 445        | -291                          | 271         | -20        | <b>425</b>  |
| 2018 | -717                               | 1165        | 449        | -309                          | 281         | -28        | <b>421</b>  |
| 2019 | -743                               | 1194        | 451        | -325                          | 290         | -35        | <b>415</b>  |

### Other New or Expanded Use Activities since July 1, 1997

Nebraska reported on changes in human and livestock population post-1997 to 2010 in the previous update. For the 2010 5-year review, Nebraska is still compiling data on industrial uses,

<sup>1</sup> Schneider, J., 2012. *Nebraska's Annual Report Under Bullet #3 Section IV of the Platte River Recovery Implementation Program Nebraska New Depletion Plan January 1, 2010 to December 31, 2010, Memo to the Governance Committee (GC) of the Platte River Recovery Implementation Program (PRRIP)*, January 6, 2012.

<sup>2</sup> Schneider, J., 2012. *Nebraska Update on Continued Implementation of the Nebraska New Depletion Plan (NNDP), Memo to the Governance Committee (GC) of the Platte River Recovery Implementation Program (PRRIP)*, January 6, 2012.

sandpits, and small reservoirs and will present this data to the GC when it becomes available. In accordance with the NNDP, no other new or expanded use activities are required to be reported at this time. Updates to all of these uses are scheduled for the next 5-year review in 2015.

## **2.0 MITIGATION MEASURES FOR NEW OR EXPANDED WATER USE ACTIVITIES**

There are a number of mitigation projects implemented by Nebraska that are ongoing or that have effects to stream flow that continue throughout the first increment. These projects include:

- Retirement of water use both temporarily and permanently on irrigated land using several programs including the Platte Basin Habitat Enhancement Project (PBHEP) and Federal programs such as the Agricultural Water Enhancement Program (AWEP)<sup>3</sup>, Conservation Reserve Enhancement Program (CREP), and Environmental Quality Incentive Program (EQIP);
- Groundwater recharge demonstration projects which diverted excess Platte River flow into existing canals before and after the normal irrigation season allowing water to seep through the canals, laterals, and ponds into the groundwater and eventually return to the Platte River;
- Cozad Canal, Thirty-Mile Canal, and Southside (Orchard Alfalfa) Canal Conjunctive Management Projects;
- Diversions from the Platte River into Elwood Reservoir to increase groundwater recharge and provide accretions to the river;
- Reduced groundwater withdrawals in the North Platte Natural Resources District via regulatory measures that place an allocation on groundwater withdrawals within the COHYST 28/40 area to offset new irrigated acres since 1997;
- J-2 re-regulating reservoir;
- North Dry Creek Augmentation Project, since January 6, 2012, one well has been completed and was tested during the 2012 irrigation season;
- Elm Creek Reservoir in the Central Platte Natural Resources District is being studied to evaluate its usefulness for storing and releasing excess flows<sup>4</sup>;
- A surface water irrigation use transfer to instream use to augment streamflows via a lease between the Tri-Basin Natural Resources District and Central Nebraska Public Power and Irrigation District<sup>5</sup>.

## **3.0 SUMMARY OF DEPLETIVE ACTIVITIES AND MITIGATION MEASURES**

As shown in table 2, the accretive effect from mitigation measures exceeds the depletive effect of permitted and unpermitted activities according to the estimates from the analysis. Results of the

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<sup>3</sup> Effects from acres retired through AWEP are not included in the calculations for this update because the data had not been received at the time of analysis.

<sup>4</sup> The Elm Creek project has not been sufficiently developed to include any estimate of benefits in the summary of mitigation measures.

<sup>5</sup> The transfer permit has not been issued for this project; therefore, no estimate of benefits is included in the summary of mitigation measures.

preliminary assessment indicate current and projected accretive effects from mitigation measures exceed the calculated depletions by approximately 18,000 acre-feet per year at the end of the first increment.

**Table 2:** Net effect through 2019 of depletions and accretions (acre-feet). A negative value represents depletion and a positive value represents accretion.

| Year | Net effect of permitted activities <sup>6</sup> | Depletive effect from other activities <sup>7</sup> | Accretive effect from other mitigation measures <sup>8</sup> | Net effect of permitted and other activities |
|------|---|---|--|--|
| 2012 | 406   | -19,285   | 22,572   | <b>3,693</b>                                 |
| 2013 | 423   | -19,691   | 23,132   | <b>3,864</b>                                 |
| 2014 | 429   | -20,002   | 39,549   | <b>19,976</b>                                |
| 2015 | 430   | -20,206   | 39,682   | <b>19,906</b>                                |
| 2016 | 428   | -20,398   | 39,540   | <b>19,570</b>                                |
| 2017 | 425   | -20,801   | 39,489   | <b>19,113</b>                                |
| 2018 | 421   | -21,277   | 39,499   | <b>18,643</b>                                |
| 2019 | 415   | -21,554   | 39,538   | <b>18,399</b>                                |

#### 4.0 CONTINUED EFFORTS TO REFINE ASSESSMENT METHODOLOGIES

Since the 2012 update, Nebraska has finalized the guidance document (available at <http://dnr.ne.gov/IWM/Reports/Guidance20120814.pdf>) to outline the general process by which a more robust assessment of all water use activities and mitigation measures will be evaluated once datasets are finalized and model tools are completed. This process will provide a means to temporally and spatially refine Nebraska’s assessment of the combined effects of depletive activities and mitigation measures. This approach will utilize integrated groundwater, watershed, and operations models to assess the timing, amount, and location of depletive effects and mitigation measures.

The modeling tools being developed by Nebraska are currently in the final stages of calibration. Upon completion the modeling tools will be peer reviewed by independent experts. Once peer reviewed, Nebraska will incorporate all of its compiled data on all new or expanded uses and all mitigation measures since July 1, 1997, and a comprehensive assessment will be made of the impacts on the streamflow of the Platte River and its tributaries.

<sup>6</sup> Values from Table 1 above

<sup>7</sup> Values as reported Table 5 in the January 6, 2012, Update

<sup>8</sup> Includes values from NPNRD groundwater allocation regulations, Elwood Reservoir diversions, groundwater recharge demonstration projects, J-2 re-regulating reservoir, Cozad and Thirty-Mile Canal Conjunctive Management Projects, North Dry Creek Augmentation Project, and retirement of irrigated acres through CREP, EQIP, PBHEP and other programs.