UPDATE TO
ANNUAL REPORT OF THE DEPARTMENT OF NATURAL RESOURCES
TO MEET THE REQUIREMENTS OF THE NORTH PLATTE, SOUTH PLATTE, TWIN PLATTE, CENTRAL PLATTE AND TRI-BASIN NATURAL RESOURCES DISTRICTS' INTEGRATED MANAGEMENT PLANS
FOR THE 2011 BASIN-WIDE MEETING

Updates have been made to the report originally issued on July 21, 2011. Changes were made to:

- Section III.C, U.S. Census Bureau Population Data
- Table 5: Change in Consumptive Use Resulting from Changes in Cattle Population between 2005 and 2010
- Table 6: Estimated Increases in Human Population (using U.S. Census Bureau Population data) and Consumptive Use for Those Served by Municipal and Domestic Wells.

Details on these changes can be found in footnotes throughout this updated report.

I. INTRODUCTION

This report is intended to satisfy the Department of Natural Resources (Department) tracking and reporting requirements as described in the Monitoring and Studies section of the North Platte, South Platte, Central Platte, Twin Platte, and Tri-Basin Natural Resources Districts (Platte Basin NRDs) integrated management plans (IMPs). Each of the five (5) Platte Basin IMPs require that the Department track and report on the following items on an annual basis: 1) any surface water permits issued; 2) any dam safety permits issued; 3) any groundwater permits issued; and 4) the associated offsets for any new permits issued. The Department is also required to report these items every five (5) years: 1) National Agricultural Statistics Service livestock data; 2) U.S. Census Bureau population data; 3) inventory of sandpits; 4) inventory of reservoirs of less than fifteen (15) acre-feet; 5) any retirements of irrigated acres or other activities by the Department for the purpose of returning to a fully appropriated condition; and 6) offsets provided for depletions resulting from increased consumptive use related to the items listed above.

The items tracked and reported will be used by the Platte Basin NRDs and the Department to measure the success of the controls, incentive measures, and other action items in meeting the goals and objectives of the IMPs. Two evaluation processes for measuring success are described in the IMPs. The first is an annual evaluation that will forecast the balance of depletions and accretions from the report year through 2048. The second evaluation process occurs periodically (every five years) and will be more robust, including updating and running groundwater models. These evaluation processes will be carried out by the Platte Basin NRDs and the Department following the reporting at the

annual basin-wide meeting. The tracking, reporting, and evaluation processes are described in more detail in the Monitoring and Studies section of the IMPs. In addition to the evaluation processes, the information that is tracked and reported will also be used by the State to help meet requirements of the Platte River Recovery Implementation Program (Program).

The 2011 report is the second report to be filed following adoption of the IMPs in September 2009. Therefore, this report need only contain information on the above listed items from January 1, 2010, to December 31, 2010.

II. ACTIVITIES TO BE REPORTED ANNUALLY

A. Summary

Items reported annually include permits that are issued by the Department. When a surface water or groundwater permit is reviewed, the Department assesses the potential for the permitted action to increase, decrease, or not affect water use. Depending on the circumstances, the applicant may be required to take action that would mitigate the effect of any increase in water use. Described in each section below are the permits issued by the Department and the associated review of potential changes in the water use. The Department issued no new surface water permits, one (1) dam safety permit, and two (2) groundwater permits. Supporting data and information can be found in Appendix I.

B. Surface Water Permits Issued – Table 1

No new surface water permits were issued in calendar year 2010.

C. Dam Safety Permits Issued – Table 2

One dam safety permit was issued in calendar year 2010. No evaluation of consumptive use was performed on the reservoir. Any consumptive use from the reservoir is due to the activities of the livestock, which is covered in two other places in the IMP process, 1) under industrial permitting activities of the NRDs and 2) by the livestock accounting completed by the Department every five (5) years. Copies of the application and order for the permit can be found in Appendix I.

D. Groundwater Permits Issued – Table 3

A total of two (2) groundwater permits were issued by the Department for separate applicants. Both of the groundwater permits issued by the Department were for municipal construction purposes transporting groundwater to an adjoining state. No significant increase in the consumptive use of water is expected due to the issuance of these permits. Pursuant to *Neb. Rev. Stat.* § 46-613.01, the Department consulted with the South Platte NRD during the process of permit issuance. Additionally, as described in the IMPs, increases and decreases in the consumptive use of water by

municipalities will be tracked by the Platte Basin NRDs and any net increases in depletions to the stream will be compensated for by the municipalities and/or NRDs. Copies of the applications and orders for each permit can be found in Appendix I.

E. Offsets for Issued Permits

The three permits issued in 2010 do not require an offset be provided by the applicant. These uses fall to the responsibility of DNR and the NRDs to provide an offset. The integrated management plans explain how offsets will be provided for each type of use. When the five-year robust review is completed, theses uses will be incorporated into the overall estimation of depletions since 1997.

F. Additional Reporting of Cancelled Permits – Table 4

To facilitate the exchange of information between the Department and the NRDs, the Department is also reporting on the cancellation of surface water permits. Twelve (12) surface water permits were cancelled during the reporting period. Some of these permits may have been permanently retired by activities of the Platte Basin NRDs in order to mitigate for depletions to streamflow caused by new permitting activity or for post-1997 uses. Descriptions of those activities will be reported by the NRDs.

III. ACTIVITIES TO BE REPORTED ON A FIVE (5) YEAR BASIS

A. Summary

For purposes of the Platte River Recovery and Implementation Program, the Department collected and analyzed a dataset for these items (listed below) in calendar years 1997 and 2005 and reported those values in last year's annual report. The IMPs describe that the data will be compiled every five (5) years. Therefore, the next report period is for the year 2010. For the five (5) year tracking requirements, the Department estimates the population of cattle and people and performs an inventory of sandpits and reservoirs in the reporting year. The information for the 2010 reporting year is given below. Supporting data and information can be found in Appendix I.

B. National Agricultural Statistics Service Livestock Data – Table 5

Livestock changes between 2005 and 2010 were estimated based on the number of cattle reported by the Nebraska Agricultural Statistics Service. Between 2005 and 2010, the annual consumptive use of water due to changes in the livestock population decreased approximately eleven (11) acre-feet. There will be some overlap of industrial and livestock uses between the Department and NRD reports. This will be adjusted for in the five-year robust review.

C. U.S. Census Bureau Population Data – Table 6[1]

Using U.S. Census Bureau population data, the human population was estimated at 250,371 in 2005 and 259,121 in 2010. The consumptive use per person for the human population served by municipal and rural domestic wells was estimated to be 100 gallons per day. Based on these values, the annual consumptive use of water for human use in the five Platte Basin NRDs increased from 2005 to 2010 by approximately 981 acre-feet due to an increase in human population (table 6). Through the Integrated Management Plans (IMPs) the NRDs are gathering data on municipal uses of water, and this data will be used to revise the per capita consumptive use value if appropriate.

D. Inventory of Sandpits and Reservoirs Less Than Fifteen (15) Acre-Feet in Volume

The inventory of sandpits and reservoirs less that fifteen (15) acre-feet in volume has been underway for the past several months. Currently, 75% of the work has been completed for the 2010 coverage. The work is currently a semi-automated approach, involving significant work hours to visually discern a water body on aerial imagery. Additionally, as 2010 was a fairly wet year, there are a large number of peripheral water bodies that appear on remote sensing data that require careful manual screening to verify sand pits and reservoirs. Once the 2010 inventory is completed, DNR will test the feasibility of a fully automated approach for future evaluations of water body change. An update to this report will be provided when the inventory is finalized.

IV. Retirements of Irrigated Acres or Other Activities for the Purpose of Returning to a Fully Appropriated Condition and Offsets Provided for Depletions Resulting from Increased Consumptive Use Related to Items B–D Above.

The Department in coordination with the Platte Basin NRDs is pursuing multiple efforts to create projects that contribute streamflow accretions within the basin. These efforts include the Platte Basin Habitat Enhancement Project (PBHEP) and those irrigated acres that have been temporarily or permanently retired under the Conservation Reserve Enhancement Program (CREP), the Environmental Quality Improvement Program (EQIP) and Agricultural Water Enhancement Program (AWEP).

A. PBHEP

The Platte Basin IMPs call for the Department and the NRDs to participate in incentive programs and other non-regulatory action items to meet the goals and

[1] May 24, 2013: This paragraph was not included in the original 2011 Annual Basin-wide IMP Report because the population data had not been finalized at the time of publication. The data included in this paragraph corresponds to the data contained in table 6 of this Update.

objectives of the IMPs, including returning to a fully appropriated condition. To facilitate the ability of the NRDs and the Department to implement an incentive program, PBHEP was created. This group was formed in 2009 and has approved protocols for the assessment and purchase of conservation easements on irrigated lands. As of July 1, 2011, the NRDs have submitted just under 2,500 acres of irrigated land retirements to the group for approval.

B. Federal Programs for the Retirement of Irrigation Use

The Department and the Platte Basin NRDs have participated in federal programs such as CREP, EQIP and AWEP, which have retired irrigated lands on a permanent or temporary basis. Under CREP approximately 10,000 acres of irrigated land have been converted to non-irrigated grasslands in the Platte River Basin and approximately 39,000 in the Republican River Basin. The Department has contributed approximately $1,800,000 in cash to the retirement of the CREP lands. Under the Pumpkin Creek EQIP program, approximately 2,350 acres have been retired and under the Tri-Basin EQIP program, approximately 150 acres have been enrolled. Under AWEP nearly 300 acres have been permanently converted to non-irrigated lands and approximately 470 acres have been temporarily retired with federal contributions totaling approximately $650,000.

C. Excess Flow Analysis (Unappropriated Surface Water)

The Platte Basin IMPs call for an analysis to determine if there is unappropriated surface water available for use in retiming projects that would put the available water back to the river at times when depletions need to be balanced. The first analysis has been completed and shows that excess flows are available at certain times and locations in the basin. The analysis provides the Department with a spreadsheet tool to run various analyses with differing inputs and demands on the system. The following river reaches were analyzed: Julesburg to North Platte, Keystone to North Plate, North Platte to Brady, Brady to Cozad, Cozad to Overton, Overton to Odessa, Odessa to Grand Island, and Grand Island to Duncan. In addition to these reaches, the analysis takes into account the instream flow demands downstream of Duncan to the Louisville gage. This analysis has been completed and is available on the DNR website:
http://dnr.ne.gov/IWM/Reports/PlatteRiverStreamflow_1210.pdf

DNR and the five (5) Platte Basin NRDs are now scoping a project to expand the initial analysis. The new scope will examine the operational constraints of the available excess flows and will develop criteria to evaluate potential new projects.

D. Conjunctive Management Conceptual Design

The Department and the Twin Platte NRD (TPNRD) have been working with HDR Engineering, Inc. (HDR) to develop a hypothetical conjunctive use project. The

focus of the conjunctive use project is to examine the necessary components of a conjunctive management project to be used as a model for developing future projects. The hypothetical evaluation focuses on data available for the Western Irrigation District, but the components of the evaluation are intended to be conceptually applicable to a wider range of conjunctive management locations. A final draft of the report for this project has been circulated and will be available on the DNR website after today's meeting.

E. Cooperative Hydrology Study (COHYST) 2010

In February 2010, the COHYST and Conjunctive Water Management (CWM) sponsors agreed in concept on a framework to contribute to a single coordinated modeling effort to further develop tools that will meet the needs of their respective management objectives. On May 4, 2010, the COHYST sponsors and CWM sponsors met and approved an agreement to have COHYST develop the modeling tools for an area beginning near Lake McConaughy at the western edge, and stretching to the confluence of the Loup River with the Platte River in the east. The proposed process includes three phases, which outline the development of an independently derived water budget and a project work plan in Phase I, work plan implementation and tool development in Phase II, and tool use and refinement in Phase III. The tools include three components, which are ultimately linked to provide a closed water budget and meet the needs of the management objectives. These components include: groundwater, which refines previously conducted work and adapts to the inclusion of the other modeling components; watershed, which partitions precipitation within the study area into various water budget terms to be used in the other components; and surface water, which will share budget terms with the other components and route the flow of water through the system. Since the 2010 annual report, COHYST has completed Phase I and realized significant progress in Phase II. The Department has contributed more than $200,000 of in-kind service to COHYST under Phases I and II to date.

F. Western Water Use Project

The Department, the North Platte NRD (NPNRD), and the South Platte NRD (SPNRD) are working to redevelop the Western Unit of the COHYST model so that it will be more focused on evaluating the effectiveness of management actions (allocations) at achieving the goals of the IMPs. This group is also developing a surface water operations model for the North Platte River and Lodgepole Creek to be integrated with the groundwater model and used to identify management actions that will achieve the goals of the IMPs.

G. Lodgepole Creek

SPNRD received Interrelated Water Management Plan Program Fund (IWMPPF) funding to investigate and study the impacts to the South Platte River due to

depletions to Lodgepole Creek. The project has four tasks, including: 1) historical review, 2) streamflow analysis, 3) depletions analysis and 4) augmentation feasibility. To date, a draft historical review document has been completed, and stream flow and depletion analyses have been preliminarily conducted. Limitations were identified in the depletion analyses relating to calibration of flows in the SPNRD, the routing of calibrated flows, and replication of wet and dry reaches; therefore, the stream flow and depletion analyses will be re-calculated when refinements to modeling tools for the basin area are adapted to more closely represent the hydrologic conditions in the Lodgepole Creek Basin. The augmentation feasibility task will be executed at such time as the updated analyses become available.

H. Developing Uniform Methods for Calculating Depletions and Accretions

The Department is working to develop methods for calculating depletions and accretions and began discussions of the draft methods with the Platte Basin NRDs in July 2010.The Department and NRDs have contributed significant time and resources to this task, with significant progress on methodology development. Development of a guidance document which will describe these methods is the focus of continued activity.

I. Develop the Methodology to Identify the Overall Difference between the Current and Fully Appropriated Levels of Development

The Department and the CPNRD published a request for proposals in December 2009 to solicit assistance in refining the current procedures for determining fully appropriated. A consultant was selected in 2010 and IWMPPF funding was approved to begin July 1, 2010. This refinement of the fully appropriated procedures is a first step in identifying the overall difference between the current and fully appropriated levels of development in the Platte Basin upstream of Elm Creek. The Department and CPNRD held a stakeholder meeting in May 2011 at which the preliminary findings of the study were presented. An interim report on the project is expected to be available by August 1, 2011.

Definitions

AF/Acre-Feet	A unit of volume, commonly used to measure quantities of water used or stored equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters.
Application/Appropriation Number	App Number (Docket and Application Numbers): Appropriations having docket numbers (D-) refer to claims covering rights which existed prior to April 4, 1895, or those rights that existed on the Missouri River that were covered by the law passed in 1980.Those appropriations having applications numbers (A-) were filed after April 4, 1895.
Begin Acres	The amount of acres included in an original appropriation, prior to any acres being cancelled.
Cancelled Acres	The amount of acres remaining in an appropriation after any acres may have been cancelled.
CFS/Cubic Feet per Second	The USGS defines cubic foot per second (cfs) as "the flow rate or discharge equal to one cubic foot of water per second or about7.5 gallons per second."
Date of Action	The date the water appropriation was approved.
Water Division	The State of Nebraska is divided in two water divisions by statute, denoted Water Division No. 1 and Water Division No. 2, respectively. Water Division No. 1 consists of all the lands of the state drained by the Platte Rivers and their tributaries lying west of the mouth of the Loup River; and also all other lands lying south of the Platte and South Platte rivers that may be watered from other superficial or subterranean streams not tributary to the Platte River. Water Division No. 2 consists of all lands that may be watered from the Loup, White, Niobrara, and Elkhorn rivers, and Hat Creek and their tributaries, and those lands drained by the Platte River and its tributaries lying east of the mouth of the Loup River. For convenience in the administration of the surface water laws and the distribution of water, the two water divisions have been subdivided into12 water divisions, denoted Water Division (River Basin) 1A Platte River basin, 1B Republican River basin,

	1C Little Blue River basin, 1D Big Blue River basin, 1E Lodgepole Creek basin, 1F Nemaha River basin and Lower Missouri River and tributary basins, 2A Loup River basin, 2B Elkhorn River and Salt Creek basins, 2C Niobrara River basin, 2D White River and White Clay Creek basins, 2E Hat Creek basin, 2F Upper Missouri River and Tributary basins.
Flood Control	This refers to water withdrawn from the surface water source for the purpose of protecting health and well-being of society.
GPD/Gallons per Day	This refers to the number of gallons pumped per day.
Grant in AF	This refers to the approved amount of acres per foot of water legally allowed to be pumped.
Grant in CFS	This refers to the approved amount of cubic feet per second of water legally allowed to be pumped.
Instream Use	This refers to water that is used, but not withdrawn, from a surface water source.
Offset	A reduction in water use that corresponds with an increased use of water. An offset may be used as a management strategy to balance uses and supplies.
Offset Scheme	Any methods of means by which any new depletions from the permitted project will be offset.
Order Date	This is the date the water appropriation or project was legally approved, denied, cancelled or altered.
Permit Number	This refers to the number of a ground water permit, assigned by the DNR. The first letters in the permit number denotes type of permit.
Plan Number	This number is assigned by the Dam Safety Division and is a unique identifier.
Project Name	This name is provided by the applicant.
Section/Township/Range	This is the legal description of where a dam, well, or water appropriation is located.
Use	This is the legally accepted use of the dam, well, or water appropriation.

The complete document and appendix are available from the NDNR website: http://dnr.ne.gov/IWM/NRD/IWM_UpperPlattebasin.html or may be requested in paper or electronic format by contacting Jennifer Schellpeper at (402) 471-2899 or jennifer.schellpeper@nebraska.gov.

Listing of Document and Appendix
Annual Report of the Department of the Natural Resources to Meet the Requirements of the North Platte, South Platte, Twin Platte, Central Platte and Tri-Basin Natural Resources Districts' Integrated Management Plans for 2011 Basin-Wide Meeting.

Appendix I

- Surface Water Permits Issued (Table 1)
- Dam Safety Permits Issued (Table 2)
- Groundwater Permits Issued (Table 3)
- Additional Report of Cancelled Permits (Table 4)
- National Agricultural Statistics Service Livestock Data (Table 5)
- U.S. Census Bureau Population Data (Table 6)
- Inventory of Sandpits and Reservoirs Less than 15 Acre Feet in Volume

Table 1: Report of New Surface Water Permits Issued

Reporting Period January 1, 2010, to December 31, 2010

Water Division	Date of Action	Appropriation Number	Use	Acres	Grant in CFS	Grant in AF	More Consumption	Instream Use or Flood Control
No new Surface Water Permits issued in calendar year 2010								

Use:

FL - Flood Control

F&W - Fish & Wildlife

MF - Manufacturing

ST - Storage

Table 2: Report of Dam Safety Permits Issued

Reporting Period January 1, 2010, to December 31, 2010

Plan Number	Appropriation Number	Project Name	Section	Township	Range	Order Date	Water Division	Use
17647	N/A	Scholz HP3	11	16	29	4/28/2010	1-A	O - Livestock Waste Control (Open Lot Sys)

Table 3: Groundwater Permits Issued

Reporting Period January 1, 2010, to December 31, 2010

Permit Number	Permittee	Section	Township	Range	Nature of Use	Average Daily Rate (gallons)	Maximum Daily Rate (gallons)	Total Annual Use (gallons)	CU Percent	CU Source	Offset Scheme
TA-46	Pine Bluffs Sand & Gravel	*	15	55	Construction	N/A	75,000	3,258,510	100	Construction Activities	Increase in municipal/industrial use to be offset per 46-740 & IMP; permit was not utilized in 2010 - may see use in 2011
		*	15	55							
		*	15	55							
TA-47	Blattner Energy, Inc.	*	15	55	Construction	N/A	80,000	10,000,000	100	Construction Activities	Increase in municipal/industrial use to be offset per 46-740 & IMP
		*	15	55							
		*	15	55							

* section has been removed for Public Water Supplies (PWS)

Table 4: Report of Cancelled Surface Water Permits

Reporting Period January 1, 2010, to December 31, 2010

Water Division	Date of Action	Appropriation Number	Use	Begin Acres	Cancelled Acres	Cancelled CFS
1-A	6/18/2010	A-1944	IR	91.6	91.6	1.31
1-A	8/26/2010	A-2099	IR	74	74	1.63
1-A	8/26/2010	A-3185	IR	123	123	1.12
1-A	12/14/2010	A-4321	IR	37	37	0.32
1-A	12/14/2010	A-4322	IR	70	70	0.6
1-A	12/14/2010	A-15573	IR	42.66	42.66	0.6
1-A	12/14/2010	A-15700	IR	100.7	100.7	1.44
1-A	8/30/2010	A-15748	IR	118.24	118.24	1.68
1-A	12/14/2010	A-16357	IR	41.8	41.8	0.6
1-A	8/26/2010	A-16479	IR	76	76	1.09
1-A	12/14/2010	A-16683	IR	72.3	72.3	1.03
1-A	6/18/2010	A-17040	IR	41.4	41.4	0.59

Table 5: Change in Consumptive Use Resulting from Changes in Cattle Population between 2005 and 2010[2]

	Population 2005	Population 2010	Difference	Total GPD	CFS	Acre-Feet per Year
Central Platte NRD	493,360	496,595	3,235	22,645	0.0350	25.37
North Platte NRD	411,450	405,560	-5,890	-41,230	-0.0638	-46.19
South Platte NRD	84,000	84,500	500	3,500	0.0054	3.92
Tri-Basin NRD	270,000	271,000	1,000	7,000	0.0108	7.84
Twin Platte NRD	268,200	268,010	-190	-1,330	-0.0021	-1.49
Total	1,527,010	1,525,665	-1,345	-9,415	-0.0146	-10.55

Daily Total Consumptive Use of 7.0 gallons per head of cattle

[2] May 24, 2013: The numbers in the column "Population 2005" are not the same as those reported for 2005 in the 2010 Basin-wide report, which were queried in the NASS database in 2008. This is because the query of NASS survey data for 2005 that was conducted in 2011 for the 2010 report returned numbers different from the results of the query in 2008, and this was due to NASS updates to their database. In addition, errors were found in the method for rounding the numbers obtained through the query done in 2008. As a result of these two factors, the population numbers reported for 2005 in table 5 are slightly higher than those reported in the Annual Report for the 2010 Platte Basin-Wide meeting and are considered to be more accurate than previously reported.

Table 6: Estimated Increases in Human Population (Using U.S. Census Bureau Population Data) and Consumptive Use for Those Served by Municipal and Domestic Wells[3]**

	Population 2005	Population 2010	Difference	Total gpd	cfs	**Acre-feet per year**
Central Platte	129,586	138,067	8,481	848,100	1.312	951
North Platte	44,928	45,072	144	14,400	0.022	16
South Platte	15,779	15,760	-19	-1,900	-0.003	-2
Tri-Basin	18,243	17,721	-522	-52,200	-0.081	-59
Twin Platte	41,835	42,501	666	66,600	0.103	75
Total	250,371	259,121	8,750	875,000	1.354	**981**

**Based on daily consumptive use of 100 gal per capita

[3] May 24, 2013: This table was not included in the 2011 Annual Basin-wide IMP Report because the population data had not been finalized at the time of publication. The data contained in this table corresponds to the discussion in this updated report found under section III, subsection C, U.S. Census Bureau Population Data.