

Annual Report and Plan of Work
for the
Nebraska State Water Planning and Review Process

Submitted to the Governor
and Legislature by the
Director of Natural Resources

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I. INTRODUCTION

The Nebraska State Water Planning and Review Process was initiated in 1978 to redirect and accelerate Nebraska's water planning efforts. This Annual Report and Plan of Work summarizes work completed as part of that process in FY09 and presents a work program and budget for future fiscal years. This is a report of the Director of the Department of Natural Resources and is submitted in compliance with Nebraska Revised Statutes Sec. 2-15,106. Section 2-1599 of the statutes directs that the process shall be designed to 1) provide the Legislature and the citizens of Nebraska with information and alternative methods of addressing important water policy issues and area-wide or statewide water resources problems; 2) provide coordinated interagency reviews of proposed local, state, and federal water resources programs and projects; 3) develop and maintain the data, information, and analysis capabilities necessary to provide state agencies and other water interests with a support base for water planning and management activities; 4) provide the state with the capacity to plan and design water resources projects; and 5) conduct any other planning activities necessary to protect and promote the interests of the state and its citizens in the water resources of Nebraska.

The most important and high profile water planning activity that took place in FY09, as in the last few fiscal years, was work towards implementation of the provisions of the Ground Water Management and Protection Act (the Act). Nebraska Department of Natural Resources (Department) staff engaged in the State Water Planning and Review Process activity, provided support, information and substantial work on implementation. Major Department staff support was provided through the agency's Director, Assistant to the Director, legal staff, and the Integrated Water Management Division. Implementation of the integrated water management provisions of the Act will be a major activity for both the Department staff and natural resources districts' (NRD) staff in future years. Two primary aspects of that activity are annual reports evaluating hydrologically connected water supplies and compilation of joint integrated management plans. On April 8, 2009, the Department issued the "2009 Annual Evaluation of Availability of Hydrologically Connected Water Supplies" in response to statutory requirements. It was the fourth annual evaluation.

Other Departmental planning related efforts have included Platte River Recovery Implementation Program work and work on Republican River settlement implementation.

Another focus of the State Water Planning and Review Process has been on natural resources information management. Geographic Information Systems (GIS) and computer assisted data manipulation and modeling continue to be an integral part of the long range planning and management of the state's water and soil resources. The work items in this report continue to reflect that emphasis.

The State Water Planning and Review Process work items related to information management are found primarily in Section B. Some of the information management products and activities found in this report are co-products of the Department's Information Technology Section and the Planning and Assistance Division. This is a report of planning activities and includes no programmatic information about Information Technology Section initiatives. However, the

Information Technology Section does have a major role in most of the information management/basic planning activities listed. Other divisions of the Department also participate in planning activities. For instance, the Floodplain Management and Dam Safety Division conducts floodplain planning activities and the agency's legal staff has a high level of participation in a variety of planning activities.

Planning and review process activities are organized into the major statutory planning categories listed on page 1 of this report. Within these categories, activities are listed roughly in the order of the quantity of staff time and other non-financial support required.

II. STATUS REPORT ON COMPLETED AND ONGOING WORK

A. PROVIDE INFORMATION AND ALTERNATIVE METHODS OF ADDRESSING WATER POLICY ISSUES AND AREA-WIDE OR STATEWIDE WATER RESOURCES PROBLEMS

1) Interrelated Water Management (Implementation of LB 962)

General

In FY 09 the Department reorganized existing staff to create an Integrated Water Management Division to help better address its responsibilities under LB 962. Division duties include both joint integrated management plans and reports evaluating hydrologically connected water supplies. This has included assignments of staff members to individual basins and activities. LB 962 as passed in the 2004 session of the Unicameral gave the Department new responsibilities in several categories – water rights transfers, identification of overappropriated or fully appropriated basins, reports evaluating hydrologically connected water supplies, and joint planning with the natural resources districts for integrated management of surface water and ground water. The Department's responsibilities on Integrated Management Plans and reports evaluating hydrologically connected water supplies are largely carried out through the Integrated Water Management Division. In addition the Department has initiated longer term studies to provide information needed for both fully appropriated determinations and integrated management planning efforts. In 2006 the Unicameral created an Interrelated Water Management Plan Program to facilitate the duties of natural resources districts arising under the Nebraska Groundwater Management and Protection Act.

Funding and Research

FY09 expenditures for LB 962 implementation activities, were nearly \$1.4 million. The expenditures included about \$1.16 million for LB 962 study contracts and activities by the Department and about \$225,000 for state assistance to local governments for LB 962 implementation activities. It should be noted that these amounts were strictly for LB 962 funding sources, not for the wider planning activities noted in the final table in this report. The budgeted funds were/are to be used for a number of purposes, including incentives for water use reduction in fully and overappropriated areas, additional staff and supplies for Department

management and planning, contract funds for needed studies, and assistance to natural resources districts in the area subject to the cooperative agreement. In addition to the above mentioned funding, general fund grants to the Interrelated Water Management Plan Program for FY 09-10 exceeded \$2.3 million.

Since 2005, funding has been used to hire six new staff members. As of this report the Department also has committed or expended for contract studies or related data collection a total of \$2,773,919 for the combined periods of FYs 05-06, 06-07, 07-08, 08-09 and 09-10. This does not include the separate Natural Resources Commission commitment through the Interrelated Water Management Plan Program. Table 1 identifies that research and related completion dates. In addition to the activities with specific budget figures provided in Table 1, funds have been set aside but not yet committed for a conservation study and Platte Water Action Plan contracts. Because they are not yet contracted, no amounts are included.

In addition to the contract studies, the new staff members have enabled the Department to address a number of needs associated with the implementation of interrelated water management legislation. The two ground water modeling positions have provided needed Departmental expertise on ground water models which have uses for both interstate compacts and agreements, and for other internal modeling uses in support of Interrelated Water Management plans. The geologist/interrelated water management specialist has helped provide expertise to direct research activities into needed areas and apply results to Departmental needs. The position has also directed efforts on the Annual Evaluation of Availability of Hydrologically Connected Water Supplies.

In addition to the above activities, the Department has received Environmental Trust grants for three separate projects. Each of those projects addresses research or educational needs closely related to the Department's integrated water management activities. In each instance the Department has signed agreements with the University of Nebraska to complete the work. The grants include a \$215,000 award for "Enhancing the Value of Water through Management Education": a joint effort between Nebraska's center pivot manufacturers and the University to provide education on optimal water use. A project entitled "Riparian Vegetation Impacts on Water Quantity, Quality, and Stream Ecology" received a grant of \$224,490 for FY09 with another \$199,479 in FY10. Also funded was a project entitled "Quantifying Evaporation, Crop Evapotranspiration, and the Water Balance for Tilled and Untilled Fields". It is to receive \$313,986 in FY09 with another \$179,906 in FY10 with intent indicated for \$180,268 in FY11.

2008 Annual Evaluation of Hydrologically Connected Water Supplies

On April 8 2009, the Department published the fourth annual evaluation of the expected long term availability of hydrologically connected water supplies titled "*2009 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*". Statute requires that the report be completed on an annual basis by January 1 of each year. The Integrated Water Management Division staff compiled the report utilizing a variety of hydrologic, water use and water rights information as well as other related data.

The report was required to reach a preliminary conclusion on whether any additional basins were fully appropriated beyond those previously identified by the Department. As a general concept, in a fully appropriated basin, uses of both surface water and hydrologically connected ground water supplies are equal to but do not exceed the available supplies over the long term.

The preliminary conclusion of the report was that the Lower Platte River Basin is fully appropriated. The fully appropriated determination resulted in a temporary stay on new high capacity well development, new surface water appropriations, and new irrigated acreage and required the Department to hold public hearings on the matter. The Department held four public hearings on the matter where upon evidence was presented indicating that the preliminary conclusions were reached due to erroneous methods used to estimate the future impact of current levels of ground water development on hydrologically connected streams. The Department independently reviewed this and all testimony and reached the final conclusion that the Lower Platte River Basin is not fully appropriated at this time.

The next annual evaluation will be completed no later than the end of December 2009.

Integrated Management Plan Activity

Currently, 14 natural resources districts across the state are in some stage of the integrated management planning process. The state's Integrated Management Plans (IMPs) are dynamic, since they must adapt to changes in water uses and supplies over time. They are also specific to individual areas, in order to address the diverse needs of different areas of the state.

Republican River Basin

The Republican natural resources districts (Upper Republican, Middle Republican, and Lower Republican) were declared fully appropriated after the passage of LB962 in 2004. These natural resources districts, in cooperation with the Department, implemented integrated management plans for the period 2005-2007. They were recently revised to account for variations in water supply (as determined under the Republican River Compact). The current Republican integrated management plans will be in effect until 2012.

Platte River Basin

Areas of the North Platte, South Platte, Twin Platte, Central Platte, and Tri-Basin natural resources districts were designated fully and/or overappropriated after the passage of LB 962 in 2004. In addition to an overappropriated basin-wide plan, each NRD is also required to have an individual integrated management plan which addresses both the overappropriated and fully appropriated areas. These Platte Basin integrated management plans (including the plans of the North Platte Natural Resources District, the overappropriated basin portion of the South Platte

Natural Resources District, the Twin Platte Natural Resources District, Central Platte Natural Resources District, and Tri-Basin Natural Resources District), as well as the overappropriated basinwide integrated management plan, are on schedule to be adopted and implemented by September 15, 2009. The boards of directors and the Department have worked very hard to develop the surface water and ground water controls within the integrated management plans, which were finalized in April and May. Hearings took place in June and July, and in August 2009, the natural resources districts and the Department took action to adopt and implement the controls and other programs. The South Platte Natural Resources District adopted an integrated management plan on June 20, 2008, which will be modified this year to conform with the overappropriated basin-wide plan. The hydrologically connected waters of the Platte Basin also extend into the Upper Big Blue Natural Resources District. The Department and Upper Big Blue Natural Resources District will be working to complete an integrated management plan for this area over the next year or two.

Niobrara River Basin

Portions of the Upper Niobrara White Natural Resources District, including the Hat Creek Basin, the White River Basin, the portion of the Niobrara River Basin above the Mirage Flats Diversion Dam, the Box Butte Creek Sub-Basin, and the Snake Creek Sub-Basin, were declared fully appropriated in 2004. Then, the Niobrara River above Spencer Dam was determined fully appropriated in January 2008, including areas of Dawes, Sheridan, and Box Butte counties hydrologically connected to the Lower Niobrara River below the Mirage Flats diversion. The final hearing on the Upper Niobrara White Natural Resources District's proposed integrated management plan and surface water and ground water controls was held on March 18, 2009, and the Upper Niobrara White integrated management plan was adopted on May 14, 2009.

The Middle Niobrara Natural Resources District and portions of the Lower Niobrara, Upper Elkhorn, and Upper Loup natural resources districts were also included in the fully appropriated designation of the Niobrara River above Spencer in January 2008, and are currently in the initial stages of integrated management plan development. The Middle Niobrara and Lower Niobrara natural resources districts have begun holding meetings for stakeholders. Since the passage of LB 962 almost five years ago, the Department and the natural resources districts have made significant progress in the integrated planning process. Stakeholder involvement has been critical to the successful development and implementation of the integrated management plans.

2) Platte River Recovery and Implementation Program

On July 1, 1997, the governors of Nebraska, Colorado and Wyoming, and the U.S. Secretary of Interior signed a cooperative agreement outlining a proposed basin-wide recovery implementation program for endangered species in the Central and Lower Platte River Basins. In October 2006, Nebraska Governor Heineman signed the formal document agreeing to the Platte River Recovery and Implementation Program (PRRIP). Since October 2008, the Integrated Water Management Division has provided major assistance to the Director in coordinating and conducting agency Platte River Recovery and Implementation Program efforts. Personnel from both the Nebraska Game and Parks Commission and the Nebraska Department of Environmental Quality are also carrying out some of the work related to this project when their respective areas of expertise are

relevant to the specific work tasks.

All activities of the Platte River Recovery and Implementation Program are overseen by a Governance Committee with representatives from nine groups: Bureau of Reclamation, US Fish and Wildlife Service, State of Colorado, State of Nebraska, State of Wyoming, Downstream Water Users, South Platte Water Users, Upper North Platte Water Users and Environmental Groups. Nebraska is represented by Jennifer J. Schellpeper of the Department, with Kirk Nelson of the Nebraska Game and Parks Commission serving as the State's alternate representative.

The Platte River Recovery and Implementation Program's mission is to reduce shortages to U.S. Fish and Wildlife Service "target flows" and provide additional land habitat for endangered species in the Lexington to Chapman reach of the river. Portions of the shortages to target flows will be obtained through water conservation and water supply projects identified by the Governance Committee in the Water Action Plan. Feasibility studies, including an assessment of each project's water supply benefits, have begun through contracts between the Governance Committee and Boyle Engineering.

The Platte River Recovery and Implementation Program has a target to acquire 10,000 acres of land habitat in its first thirteen-year increment. With congressional approval of funding, the purchasing of land has occurred over the past year. As of June 22, 2009, approximately 5,000 acres of habitat lands has been acquired.

The anticipated cash demand for the first increment of the Platte River Recovery and Implementation Program is \$187 million. The federal administration has agreed that the federal share of that cost should equal \$157 million. Congress authorized the program and has appropriated funds for the next fiscal year. Colorado and Wyoming have also been making cash contributions as they have been needed to carry out the work of the Governance Committee. Nebraska will receive enough credit for the water and land contributions being made by Central Nebraska Public Power and Irrigation District and Nebraska Public Power District such that no cash will be required from Nebraska for any portion of the \$187 million. However, Nebraska will have substantial costs in offsetting depletions caused by new uses begun after July 1, 1997.

An additional responsibility under the Platte River Recovery and Implementation Program is for each state to mitigate, offset, or prevent any new depletion to the river's target flows as part of the proposed program. This responsibility is defined in Nebraska's New Depletions Plan and is shared between the State of Nebraska and the natural resources districts. Essentially, this plan requires that all increases in consumptive use of streamflow after July 1, 1997, be offset. Nebraska's success toward complying with its New Depletion Plan is being coordinated with the integrated management plan (LB 962) activities described previously.

The amount, timing, and location of depletions caused by new irrigation uses of hydrologically connected groundwater that were begun between July 1, 1997, and December 31, 2005, have been determined by the Cooperative Hydrology Study (COHYST) models, discussed elsewhere in this document, and were reported to the Governance Committee in the spring of 2007. The state is still determining the depletions caused by other new uses. Previously, the Nebraska New Depletion Plan specified that all offsets be in place by the end of calendar year 2008; however, with a recently

approved amendment to the plan, the offsets are now required to be in place by December 31, 2010.

In future fiscal years, Department staff members are expected to participate in the activities of the Governance Committee and its various advisory committees. Under the Nebraska New Depletion Plan, the State of Nebraska has committed to offset sand and gravel pits and other surface water bodies smaller than 15 acre-feet in size, that are not currently permitted by the Department. This is a new task that must be managed by Department staff. Staff members are also expected to contribute to the implementation of the New Depletion Plan by tracking water use data in the river basin, using that data to run modeling scenarios to estimate the impacts of water uses on the streamflow of the river, reporting all permitted water activities to the Governance Committee, contributing to the advancement of water action plan projects, assisting in land use delineation, and helping with land use mapping. These activities could take up major portions of time for numerous Departmental staff. The extent of this work will depend upon funding and direction from the governor and the legislature.

3) Republican River Basin Cooperative Activities

The Department and the Republican River natural resources districts have continued to implement the Comprehensive Settlement of the Kansas v. Nebraska and Colorado lawsuit. The Department and the Lower, Middle and Upper Republican natural resources districts have completed and adopted updated integrated management plans. The plans will be effective from 2008 through 2012.

The Republican River Compact Administration (RRCA) failed to complete accounting for 2007 due to disputes regarding accounting procedures. Based on the disputed accounting procedures, Nebraska consumed approximately 30,000 acre-feet of water less than was allowed (including Imported Water Supply) during 2007. Nebraska consumption was more than 80,000 acre-feet less than allowable for 2008, and consumption was also less than allowable for the 2004 – 2008 five year average. Nebraska was in full Compact compliance for 2008 (using the current disputed accounting procedures).

Rainfall was higher than normal in 2008. All areas of the basin reported above average annual rainfall. During 2006 – 2008 the state and the major Republican Basin natural resources districts purchased surface water rights to assist with Compact compliance. Because Nebraska is currently in compliance, the state has not purchased surface water rights for 2009.

During the latter half of 2008 the three states agreed to enter into non-binding arbitration that was completed on June 30, 2009. The issues raised by Kansas include Nebraska damages and future compliance, and the issues raised by Nebraska include a number of accounting issues. The arbitrator ruled that Nebraska owed Kansas \$10,000.00 for damages due to Nebraska overuse of irrigation water from the Republican River during 2005 and 2006. The amount assessed for damages was significantly less than the amount requested by Kansas. The arbitrator found that Nebraska did not need to institute the irrigation reductions proposed by Kansas; however, he suggested that Nebraska may need to take additional steps to stay in compliance

during extended drought. The arbitrator ruled that Nebraska did have valid concerns regarding accounting issues, and recommended that the primary issue be returned the RRCA for further study.

4) Platte River Conjunctive Management Study

The Platte River Conjunctive Management Study is an effort to optimize the availability of water to users through identifying and defining water use efficiency improvements and other environmentally innovative activities for use in managing water resources of the Platte River Basin. It is being conducted through an interlocal agreement between the Department, the Central Platte Natural Resources District, the Twin Platte Natural Resources District, the Nebraska Public Power District, and the Central Nebraska Public Power and Irrigation District. The Department has contributed financially to consultant efforts which include development of the following tool sets: 1) a surface water model capable of being integrated with the Cooperative Hydrology Study ground water model, 2) an economic analysis tool for the Central Platte, and 3) a water quality analysis tool for the Central Platte. Consultant work is also to involve utilizing the tool set to evaluate management strategies and options for conjunctive management in the Central Platte study area. Integrated Management Division staff also contribute to study management. The study is expected to assist in both integrated management activity and in meeting the requirements of the Platte River Recovery and Implementation program.

5) Platte River Cooperative Hydrology Study

The Platte River Cooperative Hydrology Study (COHYST) is an effort to develop an understanding of the hydrological, geological and climatological conditions in the Platte Basin in Nebraska upstream of Columbus, Nebraska. This study supports the integrated management planning process. The project involves the Department along with five natural resources districts, two power districts and the Nebraska Game & Parks Commission. The costs for the project come from the involved parties and in-kind services.

The Department expanded its efforts related to the Cooperative Hydrology Study at the Sponsor level through an active and dedicated involvement supporting the development of a formal Operating Plan for the Study containing clear goals and objectives to be attained by the Sponsors. Additionally, the Department currently has two active members of the technical committee responsible for evaluating and recommending objective-level workplans to accomplish the Sponsors' goals. That committee advises the sponsors on technical matters. Department staff examine the technical accuracy of modeling work as well as providing in-kind services to the study. Modelers from the Department have provided database design and maintenance, model building support, technical reviews, software evaluation, data collection and development, and educational seminars in support of the COHYST study.

Other Department staff members continue to contribute to this project. These staff are programmers, modelers, and geographic information systems specialists responsible for developing routines for projecting crop and irrigation distribution back in time and historical

pumping relating to irrigation. Other Department staff members' time has been committed to fulfill the geographic information systems, database, web development and programming needs of the study in support of projected crop and irrigation distribution through time.

The Cooperative Hydrology Study data and models have been used to assist in determining the hydrologically connected area to the overappropriated basin in support of LB 962. The models have also been helpful in calculating necessary offsets for proposed new uses in the Platte Basin. The Cooperative Hydrology Study data collection and development efforts have been critically important to the development and implementation of local studies in support of management decisions. These efforts will continue in the FY 2010 period.

6) Hazard Mitigation Planning / Flood Mitigation Planning

As reported last year, the driver of mitigation in Nebraska was the New Years Ice Storm which took place in December 2006/January 2007. From that one event, the State of Nebraska received over \$22 million with the expressed usage for hazard mitigation. A portion of these funds can be used for mitigation planning, so Nebraska had adequate funding to take on completing plans for counties, emergency management districts, and natural resources districts. Nebraska's first tribal mitigation plan has also been started. When all of the plans currently in-process are completed, only four counties in the Panhandle will be without mitigation plans. The Department has transitioned from completing mitigation plans internally to assisting private consultants who are working on plans. When the Bloomfield City Council adopts their city plan, Department staff will have no more plans under their direct guidance.

Along with this transition, Department staff are able to offer technical assistance for flood mitigation project application development to any interested applicants. Help is available with project application development in communities that have a flood mitigation plan project included in an approved or in-process mitigation plan.

7) Lower Blue River Basins Flow Augmentation Study

The purpose of this study is to examine water availability and needs related to the Kansas-Nebraska Big Blue River Compact, analyze the value of augmentation water for junior rights in Nebraska and other uses, and to provide a preliminary analysis of potential options to address augmentation needs. The Department has been assisted by the U.S. Bureau of Reclamation, the Little Blue Natural Resources District, and the Lower Big Blue Natural Resources District. The study has been a lower priority and has experienced major delays.

8) Lower Platte River Corridor Alliance

The Lower Platte River Corridor Alliance is an umbrella organization of state and local agencies working to foster the development and implementation of locally drawn strategies, actions and practices to protect, enhance, or restore the vitality of the river's resources between Columbus and Plattsmouth. The organization meets on a quarterly basis and through FY 08 received limited funding support from the Department. In FY 09 the agency continued participation in Alliance activities, but on a non-dues paying basis.

9) Environmental Education Activities

Limited agency environmental education activities included: 1) participation in planning and staging the Nebraska Envirothon, and 2) participation in the Earth Wellness Festival, annually held at Southeast Community College in Lincoln.

10) Frenchman Valley Appraisal Study

The Frenchman Valley Appraisal Study is a cooperative effort with the U.S. Bureau of Reclamation to develop and evaluate alternative water management scenarios in the study area with a view toward optimizing the economic and environmental benefits of the water resources of the area. A draft study report has been completed and is awaiting approval at the federal level. Participants in the study process have included: the U.S. Bureau of Reclamation, the Department, Frenchman Valley and H&RW irrigation districts, the Upper Republican Natural Resources District, the Middle Republican Natural Resources District, and the Nebraska Game and Parks Commission. Study objectives were:

- Optimize economic benefits of irrigation to the study area, including surface and ground water irrigation
- Optimize economic benefits of Enders Reservoir for recreation, fish and wildlife
- Evaluate environmental benefits/values of recreation, fish and wildlife and water quality to the study area
- Evaluate economic benefit of flood control provided by Enders Dam
- Provide alternative water management scenarios to aid partners/stakeholders in future planning
- Minimize adverse environmental impacts

This study has involved extensive work by the Department's ground- water modeling staff.

B. DEVELOP AND MAINTAIN THE DATA, INFORMATION AND ANALYSIS CAPABILITIES TO PROVIDE A SUPPORT BASE FOR WATER PLANNING AND MANAGEMENT

Basic Planning Activities provide the data base and management information necessary to plan natural resource related activities. In addition to providing information to other agencies and interests, work in this activity is used to support general planning activities. Data base management and mapping activities are expected to remain an important part of the Department's planning program.

The long-term goal of the information base is to develop the capability to analyze the relationships of a wide variety of information in a geographic information systems environment. The Department actively supports the development and use of statewide databases available free for the use by a host of government agencies. The Department's geographic information systems efforts will continue to support the priorities of the GIS Steering Committee. The general database efforts of the agency should be distinguished from the separate case specific modeling efforts being carried out by the Department in support of its integrated water management activities.

Planning Information Base – Work Completed and Planned

1) Water Rights Digitizing

Water rights digitizing is providing a useful agency database. The activity is carried out through the Floodplain/Dam Safety/Survey Division.

2) Flood Prone Area Mapping

This important mapping activity/dataset is coordinated and primarily carried out through the Floodplain/Dam Safety/Survey Division with significant assistance provided through the Planning and Assistance Division. As of June 30, 2009, the Department and the Federal Emergency Management Agency's contractors have produced 41 county-wide digital effective Flood Insurance Rate Maps (FIRMs), 8 of them became effective during July 1, 2008 to June 30, 2009. The mapping process was underway in another 16 counties: 8-preliminary; 5-draft and 3-workmaps.

3) National Hydrography Dataset

National Hydrography Dataset (NHD) is a dataset model developed jointly by the US Geological Survey and the Environmental Protection Agency with a goal of providing a common reference digital hydrographic dataset for a wide cross-section of applications using data related to surface water features. It will enable spatial comparison of hydrographic data with a wide range of other data. More importantly it will provide the basis for, or enhance the efficiency of, a wide range of potential water analysis activities. The National Hydrography Dataset data is available now for the entire state of Nebraska.

The Department is coordinating stewardship of the National Hydrography Dataset in Nebraska. Department staff have attended a National conference designed to promote standardization of this dataset throughout the nation. A statewide user group has been assembled to promote adoption of the dataset and to guide future dataset enhancements. The National Hydrography Dataset will be continuously maintained so that it remains a current dataset and is improved as Nebraska's requirements dictate. The Department is currently engaged in a major maintenance

effort to add additional functionality to the dataset. This effort is funded in part by a grant from US Geological Survey. The dataset has been used as major input to a Stream Hydrology Project to determine and publish hydrologic statistics for streams of interest in Nebraska. This project helps address requests for flood-related information, including discharge, stage, and flood elevation information. The dataset is currently being used as a framework to manage a variety of department datasets including: water rights, dams, gages, and other water-related data.

4) Soil Survey Maintenance

The Nebraska Department of Natural Resources, University of Nebraska Conservation and Survey Division, and the US Department of Agriculture - Natural Resources Conservation Service worked cooperatively to accelerate soils activities and produce a digital soil survey in the state that meets Soil Survey Geographic Database (SSURGO) national standards.

The SSURGO Digital Soil Survey for Nebraska was completed in 2004 and work of the partners then turned to making that survey seamless. That work continued into 2008. Funding to a Soil Survey Fund administered by the Department ran through FY08. However, the activity of the Department on soil survey activities is now very limited. That activity does include annual coordination meetings with the cooperative partners to discuss soil survey activities and needs.

5) Watershed Boundary Delineation

This project to delineate the watersheds of Nebraska was actually started in the late 1980s and completed in the mid 1990s. Since that time, there have been three updates to improve the quality based on new technology. The latest update started in 2003 with the initial phase finished in 2005. This latest update brings the database into compliance with national standards.

The final phase of edgematching with the surrounding states is complete for the lower 48 states and the database has been nationally certified for this area. The only future work on this project will be update maintenance if any problems are noted by users.

6) Nebraska Rainfall Assessment and Information Network (NeRAIN)

This program was initiated by the Department in cooperation with the natural resources districts in early 2004. It was patterned after the Community Collaborative Rain and Hail Study (CoCoRaHS) developed through Colorado State University and funded in part through a grant from the Nebraska Environmental Trust. However, most of the participating natural resources districts have added it to their budget so NeRAIN would be maintained into the future. One goal of the project is to have one volunteer in every township in the rural areas of Nebraska and one per every square mile in the urban areas. It is all internet driven with the website housed on the Department website at <http://dnrdata.dnr.ne.gov/NeRAIN/index.asp>.

The NeRAIN network of volunteers spans all of Nebraska with about 1000 volunteers and about 500 to over 700 entering data nearly every day while the others enter their data sporadically.

In addition to maintaining the database and website on a daily basis, efforts are now being made to upgrade the server that distributes maps and reports of the data. This will require a re-write of several of the web pages to support new technologies that are available.

C. PROJECT AND PROGRAM REVIEW ACTIVITY

This activity includes both individual reviews and service on a wide variety of review and program planning committees. It includes both smaller one-time reviews of some projects and programs as well as larger longer-term types of review activity. Some of the major longer-term work activities in this category are:

- Water Policy Task Force Activity
- Nebraska Resources Development Fund Reviews
- **Interrelated Water Management Fund Reviews**
- Climate Assessment and Response Committee
- Environmental Trust Technical Advisory Committee
- Geographic Information System Steering Committee and Subcommittees

1) Water Policy Task Force Activity

In 2002 Nebraska created a Water Policy Task Force to evaluate the effectiveness of and make recommendations on any needed changes to the law governing the integrated management of surface water and hydrologically connected ground water. In December 2003 the Task Force issued a report titled; “Report of the Nebraska Water Policy Task Force to the 2003 Nebraska Legislature”. The report helped result in the introduction of LB 962 which made provision for implementing many of the recommendations of the Task Force. The bill was subsequently passed and enacted into law.

The Water Policy Task Force met three times in FY 08-09 with continued implementation of LB 962, consideration of legislation/proposed legislation, identification of needed funding mechanisms, and potential future needs for the Task Force or a means of stakeholder input receiving discussion.

The Task Force has 50 members and the Department provides administrative assistance. In FY09 Department staff scheduled and coordinated meetings, developed briefing materials, maintained a task force website, and provided overall administrative support and guidance to the task force. The Task Force is scheduled to sunset in December 2009.

2) Nebraska Resources Development Fund Reviews

The Nebraska Resources Development Act of 1974 created this fund to assist with development and wise use of Nebraska’s water and land resources. The Nebraska Resources Development Fund (NRDF) can be used to provide grants or loans to political subdivisions of the state or an agency of the state.

During FY 2009 the Nebraska Natural Resources Commission (the Commission) met six times.

The Lower Turkey Creek Project received a Nation Wide Exemption from the Corps of Engineers for one dam site, and the local natural resources district board voted to discontinue another based upon escalating costs associated with obtaining a 404 permit from the Corps of Engineers. The sponsors of the Maple Creek Recreation Area (Leigh Dam) Project were also given the green light from the Corp of Engineers and began construction immediately. Although Corps of Engineers 404 permits continue to be difficult to obtain, the primary concern within the Commission this year dealt with the Nebraska Resources Development Fund's lack of money to meet the needs of project sponsors construction schedules. As a result, projects are or will be operating on borrowed capital until the Nebraska Resources Development Fund can catch up.

Three projects, Lower Turkey Creek, Western Sarpy/Clear Creek, and the Sand Creek Environmental Restoration (Lake Wanahoo) Project requested and received allocation increases during FY09 to cover increased expenses for land and construction related activities. Four requests for FY10 obligations totaling \$13.7 million were received. The general fund FY10 appropriation of \$3.373 million was insufficient to meet that demand. After staff conducted project review meetings and hosted a project sponsor review and input meeting, staff submitted a recommendation for funding which the Commission later affirmed.

3) Interrelated Water Management Plan Program Reviews

The Interrelated Water Management Plan Program (IWMPP) was created in 2006 with the passage of LB 1226, Section 20. This grant program is intended to facilitate the duties of natural resources districts arising under the Nebraska Ground Water Management and Protection Act, and to help offset costs incurred in performing those duties. Guidelines were adopted on July 13, 2006, and revised in November 2006; in both July and November 2007; and January 2009.

For FY09-10, sixteen (16) applications totaling more than \$2.5 million were filed. Of these, three were continuations of projects from last year and thirteen were requests for new projects. General fund grants for FY09-10 exceed \$2.3 million as of July 1, 2010. Guidelines state that multi- year projects previously funded by the program shall have priority in the allocation of each year's available funds. Therefore, after technical reviews and a scoring process, the Commission awarded grants to the 3 applications requesting continued funding for projects in progress and to twelve of the thirteen new projects proposed, totaling \$2,219,544.

4) Climate Assessment and Response Committee

The Climate Assessment and Response Committee (CARC) was active again in FY08-09 even though drought conditions diminished throughout much of the state. Much of the state was no longer in a drought situation for the first time in almost nine years. The Director of the Department is a committee member and the committee meets periodically and reports to the Governor. Reports are made as warranted by climatic conditions including but not limited to problems caused by the lack of moisture; problems caused by excess moisture or flooding conditions; and other related activity like hail, wind storms, tornadoes, and snow storms.

One Planning and Assistance Division staff member also serves as a Co-Chair of two subcommittees of the Climate Assessment and Response Committee; the Agricultural, Natural

Resources, and Wildlife Subcommittee and the Risk Assessment Committee. A second Division staff member also serves on another subcommittee; the Moisture Availability and Outlook Committee. That subcommittee meets throughout the summer to assess conditions across the state and provide a summary of this information to the Chairman of the Climate Assessment and Response Committee.

5) Environmental Trust Technical Advisory Committee

The Nebraska Environmental Trust Board, of which the Director of the Department is a member, has a technical advisory committee to help review grant applications. Department staff provides limited assistance in project application reviews. Activity levels are expected to remain limited in upcoming fiscal years. Time commitments range from no involvement some years, to several days' effort other years, depending on the types of projects submitted to the Trust.

6) Geographic Information System Steering Committee and Subcommittees

The Geographic Information System Steering Committee is now the Nebraska GIS Council under the Nebraska Information Technology Commission. The Council has adopted a number of priority initiatives for geographic information systems applications in the State of Nebraska. The Department's geographic information systems coordinator serves on the Committee. The development of Light Detection and Ranging (LIDAR) topographic data, the Nebraska Map, the National Map Initiative and the merger of existing low-resolution Public Land Survey System (PLSS) Databases have been identified as top areas of interest for Nebraska.

D. PROVIDE THE STATE WITH THE CAPACITY TO PLAN AND DESIGN WATER PROJECTS

Although the activity has not been implemented, the State has participated in project planning activities through the Nebraska Resources Development Fund.

**TABLE 1 – INTERRELATED WATER MANAGEMENT RESEARCH DATA COLLECTION COMMITMENTS / COMPLETION DATES
(DOES NOT INCLUDE BUDGETED BUT UNCOMMITTED RESEARCH)**

WORK ITEMS	Contracted Amt or Final Expenditure FYs 05-06, 06-07, 07-08, FY08-09 and FY9-10 Projected	Due Date
UNL Platte Land Use Mapping (Non 962 Funds) Land Use Mapping- Rest of State Hydraulic Conductivity Research Box Butte County - Niobrara Hydrologic - Groundwater-Flow Model Aquifer-Stream Interaction Study - Upper Niobrara Basin Geologic Atlases / Hydraulic Conductivity/ Specific Yield and Transmissivity Mapping Consumptive Use Research for Use in Annual Evaluation of Availability of Hydrologically Connected Water Supplies Estimation of Evapotraspiration from Riparian and Invasive Species in Republican Basin	NA \$282,652 \$69,921 \$66,189 \$18,383 \$116,314 \$8,000 \$1,101,925	Complete Complete Complete Complete Complete Complete Complete 6/30/11
COHYST (Platte River Cooperative Hydrology Study) (Dollar Amounts are Estimates) Future COHYST Model Maintenance Future DNR COHYST Study	\$103,775	NA NA
USGS Eastern Nebraska Heliborne geophysical mapping to examine glacial areas and help determine extent of hydrologic connection to SW Loup-Elkhorn Groundwater Model to examine effects of GW withdrawal on availability of SW and long term effects on GW resource	\$251,000 \$349,000	Complete Complete
JOINT EFFORTS WITH BUREAU OF RECLAMATION Blue Basin Augmentation Study to examine opportunities for providing compact flows to Kansas and allowing additional Nebraska Use Frenchman Valley Appraisal Study to examine water use options related to Enders Reservoir & Frenchman Valley &H&RW Irrig Dists	0 0	
OTHER Conjunctive Use Contract - CNPPID/NPPD to Assist in management planning in Central Platte Basin Hydraulic conductivity mapping assistance in Central Platte area Contract for Senior Modeler to assist in examining Tri-County groundwater mound and provide outside comment on modeling efforts Environmental Trust In-Kind for Three Projects Niobrara Model Consultant Streambed Conductance Research in Elkhorn Basin to assist in quantifying water exchange between rivers and aquifers Conservation Study Platte Water Action Plans Automated Weather Data Network Support	\$47,800 \$2,585 \$100,000 \$25,000 \$139,375 \$42,000 Not yet contracted Not yet contracted \$50,000	Underway Complete 8/31/2008 6/30/2011 6/1/10 1/31/10 NA NA 6/30/2009
INTERNAL PROJECTS (not included)		
TOTAL	\$2,773,919	

*Does not include Nebraska Environmental Trust Funds for 3 research efforts subcontracted to the University of Nebraska. These include:

"Enhancing the Value of Water through Management Education" \$215,000 NET grant Project Due 6/30/11

"Riparian Vegetation Impacts on Stream Quantity, Quality and Stream Ecology" \$323,969 NET grant Project Due 6/30/10

"Quantifying Evaporation, Crop Evapotranspiration, and Water Balance for Tilled and Untilled Fields Up to \$674,160 NET grant Due 6/30/11

**TABLE 2 - PLANNING & REVIEW PROCESS EXPENDITURES FY 09
AND BUDGET FYs 2010-2014* - Does Not Include Aid to Local Governments**

	FY2009 (est.)*	FY2010	FY2011	FY 2012	FY 2013	FY 2014
LB 962 Only- Operating Expense/Travel**	\$100,907	\$104,000	\$104,000	\$104,000	\$104,000	\$104,000
Contract LB 962 Studies, Data, Assistance and Uncommitted ***	\$538,105	\$1,463,627	\$0	\$0	\$0	\$0
Computer Equipment, Software**	\$26,108	\$35,000	\$30,000	\$30,000	\$30,000	\$30,000
Personal Services	\$1,477,069	\$1,642,069	\$1,642,069	\$1,642,069	\$1,642,069	\$1,642,069
Other Equipment**	\$18,937	\$0	\$0	\$0	\$0	\$0
TOTAL	\$2,161,036	\$3,244,696	\$1,776,069	\$1,776,069	\$1,776,069	\$1,776,069

* Budgetary figures are based upon a roughly estimated combination of costs from a variety of NDNR divisions that work on state water planning and review process activities including integrated water management activities. Beginning in FY 2009 all NDNR staff members of the Integrated Water Management Division and the Planning and Assistance Division (except for one streamgaging coordinator) are included in this table. By including additional though previously existing positions, this does increase the positions counted as "planning" oriented in FY 2009 and beyond. Given these new definitions, beginning in FY09 it includes 15 full time equivalent positions for the Integrated Water Management Division and the Planning and Assistance Division combined and about 1.5 full time equivalent positions from other divisions of NDNR. In addition appropriations were added in the last session of the Unicameral for several additional staff which would be hired in FY10. Related items not included in the Planning and Review Process budget include LB 962 monies to be used for Information Technology Division Expenses, and LB 962 Incentive and Implementation monies provided to outside entities (i.e. aid to local governments). Also not included are Interrelated Water Management Funds. Those funds are direct pass through to natural resources districts for research related to implementation of interrelated water management activities. Funds for the Republican River Settlement implementation, the North Platte Decree implementation, and the Platte River Recovery Implementation Program are not included in this budget; although funding for two of the staff positions in the Integrated Water Management Division engaged in these efforts is included.

** Beginning In FY 09 the other equipment expenses for planning related personnel are included from all sources, not just LB 962 monies, as in previous reports.

*** The FY 09 expenditures for contract studies are only for amounts billed and paid during the year. The amount of

work completed under existing contracts during the fiscal year and that will ultimately be charged may be higher than the amount noted. This category includes pay for interns and State Office Services Assistance as well as some funding for stream gages. Uncommitted funds in future years are also included in this category. The amounts for studies, data and assistance beyond FY 2009 are based upon carryover of existing funds, with all carryover funds being placed in FY10.

VI. GLOSSARY

Fully Appropriated – Defined in Nebraska Revised Statutes Section 46-713 “(3) A river basin, subbasin, or reach shall be deemed fully appropriated if the department determines that then-current uses of hydrologically connected surface water and ground water in the river basin, subbasin, or reach cause or will in the reasonably foreseeable future cause (a) the surface water supply to be insufficient to sustain over the long term the beneficial or useful purposes for which existing natural flow or storage appropriations were granted and the beneficial or useful purposes for which, at the time of approval, any existing instream appropriation was granted, (b) the streamflow to be insufficient to sustain over the long term the beneficial uses from wells constructed in aquifers dependent on recharge from the river or stream involved, or (c) reduction in the flow of a river or stream sufficient to cause noncompliance by Nebraska with an interstate compact or decree, other formal state contract or agreement, or applicable state or federal laws”.

Geographic Information System – Simply put, a GIS combines layers of spatial information about a place to give you a better understanding of that place. What layers of information you combine depends on your purpose—finding the best location for a new store, analyzing environmental damage, viewing similar crimes in a city to detect a pattern, and so on.

National Hydrography Dataset – The National Hydrography Dataset (NHD) is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order.

Overappropriated – Defined in Nebraska Revised Statutes Section 46-713 “(4)(a) A river basin, subbasin, or reach shall be deemed overappropriated if, on the operative date of this section, the river basin, subbasin, or reach is subject to an interstate cooperative agreement among three or more states and if, prior to such date, the department has declared a moratorium on the issuance of new surface water appropriations in such river basin, subbasin, or reach and has requested each natural resources district with jurisdiction in the affected area in such river basin, subbasin, or reach either (i) to close or to continue in effect a previously adopted closure of all or part of such river basin, subbasin, or reach to the issuance of additional water well permits in accordance with subdivision (1)(k) of section 46-656.25 as such section existed prior to the operative date of this section or (ii) to temporarily suspend or to continue in effect a temporary suspension, previously adopted pursuant to section 46-656.28 as such section existed prior to the operative date of this section, on the drilling of new water wells in all or part of such river basin, subbasin, or reach.”

SSURGO Soil Surveys - The Soil Survey Geographic Database (SSURGO) is a national dataset that puts all county soil surveys into an electronic GIS format. This allows soils information to be layered in conjunction with other electronic datasets as well as allow electronic access to county soil map information. The national SSURGO compilation process has been coordinated through the USDA Natural Resources Conservation Service.