

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

September 15, 1997

TABLE OF CONTENTS

I. INTRODUCTION 1

II. STATUS REPORT ON COMPLETED AND ONGOING WORK 1

 A. POLICY ISSUE ANALYSIS 1

 B. PROBLEM ANALYSIS AND AREA PLANNING 1

 C. PROJECT AND PROGRAM REVIEW ACTIVITY 7

 D. BASIC PLANNING ACTIVITY 10

 E. STATE PROJECT PLANNING AND DESIGN 16

 F. COORDINATION, ADMINISTRATION AND MANAGEMENT 16

III. BUDGETARY TABLES 17

 Table 1. PLANNING AND REVIEW PROCESS
 EXPENDITURES - FY 97 18

 Table 2. PLANNING AND REVIEW PROCESS
 BUDGET - FY 98 18

 Table 3. PLANNING AND REVIEW PROCESS
 BUDGET - FY 99 19

 Table 4. PLANNING AND REVIEW PROCESS
 BUDGET - FY 2000 19

 Table 5. PLANNING AND REVIEW PROCESS
 EXPENDITURES FY 97 AND BUDGET
 FYs 1998-2002 20

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 FY 97 and presents a work program and budget for future fiscal years. This is a report of the Director of Natural Resources and is submitted in compliance with Nebraska Revised Statutes Sec. 2-15106.

In recent years the major focus of the state water planning and review process has been on natural resources information management. Work of the Natural Resources Commission's (NRC) planning section is now closely coordinated with the work of the Commission's Data Bank to produce a variety of maps and other information useful in addressing the state's natural resources problems. Geographic information systems and computer assisted data manipulation and modeling continue to be an integral part of the long range planning and management of the state's soil and water resources. The work items in this report reflect that emphasis.

The State Water Planning and Review Process work items related to information management are found primarily in Section "D. Basic Planning Activity". Many of the information management products and activities found in this report are in fact co-products of the Commission's Data Bank and the Planning Section. This is a report of planning activities and includes no budgetary material or programmatic information about Data Bank initiatives. However, the Data Bank does have a major role in almost all of the information management activities listed.

II. STATUS REPORT ON COMPLETED AND ONGOING WORK

A. POLICY ISSUE ANALYSIS

The Policy Issue Analysis Activity is intended to provide the Governor, the Legislature, and other decision makers with policy alternatives on Nebraska water problems and issues. By 1986 ten studies comprising a total of 18 volumes had been completed as part of this activity. Since that time no policy issue studies have been initiated and none are planned at this time.

B. PROBLEM ANALYSIS AND AREA PLANNING

The Problem Analysis and Area Planning Activity is designed to allow study of specific Nebraska water problems in a flexible format tailored to the particular problem or problem area. Various agencies may be involved in these studies. In some cases this activity involves state participation in studies led by the federal government.

1) Southeast Nebraska Streambed Degradation Studies

a) General

This study was intended to examine the causes and extent of accelerated streambed degradation in southeast Nebraska, as well as physical solutions. In FY 96 the U.S. Army Corps

of Engineers completed a report on the problem as well as a manual relevant to physical solutions. They were assisted by both the U.S Geological Survey and the Natural Resources Commission.

b) Work Completed in FY 96

After flooding in three of the six southeast Nebraska counties just prior to July 4, 1996 there was a major multi-agency meeting to discuss the disaster relief system. Subsequently NRC staff met with the Federal Emergency Management Agency several times, got copies of the damage survey reports, and inspected some of the sites. Staff met with the Otoe County Highway Superintendent, obtained a map of damage survey report sites, and developed a demonstration geographic information system application for managing the damage survey report process. However, that system has not been used by the Federal Emergency Management Agency or the Nebraska Emergency Management Agency. There are no longer any plans for the Commission to produce its own separate report on streambed degradation policy, alternatives, and coordination.

2) 23 County Streambed Degradation Study

The U.S. Geological Survey is scheduled to produce a report on streambed degradation in an expanded 23 county area in a cooperative effort partially funded by the NRC and other units of government. The study is entitled "The Effects of Channel Instabilities on Bridge Structures and Floodplain Resources in the Loess Area of Eastern Nebraska". The objective of the study is to evaluate and quantify past, present, and future instabilities in the 23 county loess area of eastern Nebraska. Other cooperators include the Nebraska Department of Roads, the Papio-Missouri River Natural Resources District, the Lower Platte South Natural Resources District, the U.S. Army Corps of Engineers, the University of Nebraska-Lincoln, and the Agricultural Research Service.

Under an agreement signed in April 1996 the Natural Resources Commission is committed to providing funding of \$25,000 over a four year period for U.S. Geological Survey work on the study. Work on the U.S. Geological Survey study is scheduled for completion by September 2000. In FY 97 Commission staff plotted multi-year profiles of Southeast Nebraska streams and maps of cross-sections for the study. Commission staff also searched their files for data they generated for the Southeast Nebraska Streambed Degradation Study and provided that to the U.S. Geological Survey with a variety of data. Commission efforts also included attending quarterly meetings on the 23 county study and attending meetings of the Hungry Canyons Alliance in Iowa.

3) Platte River Area Planning Studies

A variety of studies generally intended to improve understanding of the Platte River System have been initiated by various agencies. In many cases in recent years this has involved state level participation in federally led studies. Inclusion of work in this category is a matter of classification since there is no "Platte River Area Planning Study" per se. Contributions to these studies have accounted for only a minor portion of Commission staff time. Commission staff work on the Lower Platte River and Tributaries Feasibility Study may increase that amount of time in future fiscal years.

In addition to the studies mention below, at least two additional studies which have had past NRC participation are technically still on the books. Work has been suspended on both the Platte River Management Joint Study (U.S. Department of the Interior) and An Evaluation of

Existing Projects on the Platte River to Affect Threatened or Endangered Species (U.S. Bureau of Reclamation). These studies could potentially resume at some date depending upon the outcome of negotiation on the Platte River Memorandum of Agreement. Efforts on the Platte currently underway include:

- a) Studies for Federal Energy Regulatory Commission Relicensing of Platte River Facilities and Memorandum of Agreement Negotiations
- b) Lower Platte and Tributaries Feasibility Study (U.S. Army Corps of Engineers)
- c) Lower Platte River Corridor Alliance
- d) Middle Platte Eco-Risk Assessment

a) Studies for Federal Energy Regulatory Commission Relicensing of Platte River Facilities and Memorandum of Agreement Negotiations

In early 1992 the Federal Energy Regulatory Commission (FERC) issued a draft environmental impact statement on a plan for relicensing of Platte River facilities. The Governor's Office suggested that a compromise acceptable to all parties be developed and the Commission's legal staff has played a major role in that work with some assistance from the planning staff.

There has also been closely related work underway on a memorandum of agreement between the Department of Interior, the states, and possibly other parties on water use in the Platte River Basin. The Commission legal staff has provided extensive support and leadership in that process.

In FY 97 NRC planning staff support to the FERC relicensing and Memorandum of Agreement processes included:

- downloading consultant data and running the "OPSTUDY" model of the Platte River for the 3-state memorandum of agreement negotiations
- modifying the "OPSTUDY" of the Platte River and running it for the consultant
- participation in meetings of the technical committee advising memorandum of agreement negotiators
- Assisting Nebraska Public Power District with a website and FTP site for communications on the memorandum of agreement.

b) Lower Platte and Tributaries Feasibility Study

In April 1996 the U.S. Army Corps of Engineers issued "Lower Platte River and Tributaries, Nebraska - Flood Control Reconnaissance Report". The Corps has completed most work on the study design for a feasibility level study of the same area. The Commission participated extensively in the reconnaissance level study and is expected to play a larger role in

the feasibility level study. One purpose of the reconnaissance level study was to determine the cause and extent of flood damages in the basins and formulate and evaluate solutions. Its accomplishments included formulation of feasible flood control plans for several reaches, hydrologic analysis, inventoried projects and buildings, delineated the floodplain, and developed a GIS database.

The feasibility study is slated to begin in October 1997. Its objectives include identification of flood control solutions, providing environmental protection solutions, maximizing net contributions to national economic development, minimizing future flood damage potential, minimizing environmental impacts, mitigating environmental adverse impacts, and preserving resources of the area.

Commission staff have participated in formulation of the study design and budget. In FY 97 work included:

- participation in meetings on the Lower Platte Reconnaissance/Feasibility Studies
- assembling and distributing data on potential study elements
- preparing a proposal involving ice jam modeling and improving coordination in ice jam floods for the Section 503 portion of the study
- assisting the NRC floodplain section and Corps in developing the non-structural plan element of the study
- preparation of a map of the Lower Platte Corridor
- preparation of budget material for natural resources district and state participation

In FY 98 NRC is to make major in-kind staff contributions in the form of flood plain surveying and participation in non-structural elements of the study. Matching funding and in-kind services for the study will be provided through the NRC and natural resources districts in the area. The study will involve both feasibility level analysis of structural alternatives identified in the reconnaissance level of the study and a separate report on potential non-structural items. These will include measures such as detailed evaluation for buyouts of floodway buildings, community flood preparedness and response planning, and limited analysis of the floodway fringe.

In addition to the NRC and local NRDs several other agencies may provide assistance for the study. The Lower Platte River Alliance will help coordinate activities of its members. It is expected that the effort will also address a variety of measures found in Section 503 of Public Law 104-303 including: water quality management/restoration, watershed/waterbody restoration and technology demonstration for non-structural flooding measures. The Section 503 work is being incorporated into the overall Lower Platte Feasibility Study. The Commission has been appropriated \$125,000 a year for FYs 98 and 99 as a cash contribution to the Lower Platte Feasibility Study and related Section 503 studies. The legislation appropriating those funds also anticipated funding in the following two fiscal years.

c) Lower Platte River Corridor Alliance

The Lower Platte River Corridor Alliance is a group that promotes planning and management of the Lower Platte River through coordination of the related activities of involved agencies. The Alliance includes the Lower Platte North, Lower Platte South and Papio-Missouri River natural resources districts and five state agencies. The NRC provided \$5,000 in funding for the Alliance in FY 97 plus in-kind services and anticipates similar monetary contributions in the immediate future. The Alliance has hired a coordinator and is providing major assistance in the initiation of the Lower Platte Feasibility Study.

d) Middle Platte Eco-Risk Assessment

The Middle Platte Eco-Risk Assessment is intended to provide decision-makers with information on the ecological risks associated with potential land and water management options in the basin. The effort is being directed by the U.S. Environmental Protection Agency and a variety of federal, state and local agencies are contributing. In FY 97 the Commission role was limited to reviews and a meeting with the project coordinator. However, the Environmental Protection Agency has indicated that it wants local or state entities to take the lead in this effort.

4) Lower Loup Area Groundwater Resource Assessment

The scheduled Commission work on this Natural Resources Conservation Service study was completed in FY 96 and no further Commission work is now expected. This study will not be mentioned in future annual reports.

5) U.S. Bureau of Reclamation Assessment of Small Community Water Supply Problems, Needs and Alternatives

The Bureau of Reclamation's "Assessment of Nebraska's Rural Domestic and Small Communities Water Supply Problems, Needs and Alternatives" is a three year study intended to provide an analysis of the extent of possible water supply and quality problems within Nebraska due to groundwater contamination with nitrate, pesticides and other constituents. In May 1996 the Commission and the Bureau of Reclamation signed a memorandum of understanding which requires 50% matching state staff time for the study. The final report is due September 30, 1998.

A Study Team and a Public Involvement Working Group will assist in compilation of the report. Study steps include: detailed study area selection, evaluation of detailed study area conditions, detailed study area alternatives, statewide extrapolation of evaluation results, and reports.

Commission staff work in FY 97 included:

- plotting a map of public water systems with high nitrate occurrences for the study
- providing suggestions on plan of study revision and meeting with Bureau on the Plan of Study
- arranging and conducting a meeting with state technical advisory agencies

- arranging and providing extensive input for a meeting with the Public Involvement Working Group
- information gathering meetings with a number of agencies, including the Nebraska Department of Health and Human Services, the Department of Environmental Quality, and the Upper Big Blue and the Central Platte NRDs
- an extensive literature search which included copying and transmitting abstracts of theses, and gathering and assembling articles reports, and books for mailing to the Bureau.
- preparation of detailed study area and other study maps
- searching of Health and Human Service System files for data on public water systems response to nitrate problems and associated costs and organization/assembling of data
- collection of NRD fertilizer data
- assistance in selection of a detailed study area
- initial work on the legal-institutional portion of the study

In FY 98 a higher level of Commission staff activity on the Rural Domestic and Small Communities Water Supply Study is planned. Scheduled Commission work includes: evaluating the social, economic and environmental settings, summarizing problems and conditions in the study area, identifying water supply options, identifying alternatives and scenarios, determining potential future water use rates and coordinating with the Public Advisory Group.

6) Republican River Basin Cooperative Activities

The Commission has participated in a wide variety of activities/studies dealing with the Republican Basin. In FY 97 these included:

- assisting the Commission legal counsel with preparing for a Republican Basin meeting
- preparing an aquifer saturated thickness map of the Upper Republican NRD for processing their critical township data
- analyzing data provided by the Upper Republican NRD and calculating critical townships for them.
- meeting with representatives of the Middle Republican NRD and state and federal agencies to discuss organization of a groundwater modeling effort
- assistance to the Republican Basin Coalition in preparing a proposal to the Environmental Trust to have the entire basin modelled.

- helping prepare a time and cost estimate for updating the groundwater model in the Upper Republican NRD
- participating in Republican Basin Resource Management Assessment meetings, including a meeting concerning selenium found in samples. Also reviewing a Republican Basin Resource Management Assessment water quality sampling plan

A similar Commission staff activity level on Republican Basin activities is expected in FY 98. There was no activity on the Harlan County Lake Study of Future Operations. However, the Commission is the official state representative to that activity if work should resume. Commission planning staff has not been involved in negotiations on the Republican River Compact, although the Commission legal staff has been involved. In February 1997 the Kansas team informed the Nebraska team they were terminating the negotiations and no planning activity is expected in that regard in the foreseeable future.

7) Nebraska Interagency Stream Management Strategy

The Interagency Stream Management Strategy is a multi-agency effort to coordinate stream management efforts. This includes coordination of research efforts and use of funds as well as improvement of information transfer and facilitating consultation. The effort is led by the Nebraska Game and Parks Commission and the Nebraska Department of Environmental Quality.

In FY 97 Commission staff made a major contribution to the effort through compilation of a 37-page directory entitled "Selected Nebraska Stream Management and Riparian Zone Related Databases". Work on that document included a survey of state and federal agencies and compilation and correction of the document. The document is the major scheduled NRC contribution to the effort. NRC staff also attended coordinating meetings for the strategy. Some work on the strategy is expected in future fiscal years. The final schedule will depend upon the lead agencies.

C. PROJECT AND PROGRAM REVIEW ACTIVITY

This activity includes both individual reviews and service on a wide variety of review and program planning committees. In past years time devoted to this category accounted for about 10% to 15% of the planning process budget. 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:

- 1) Nebraska Resources Development Fund Reviews
- 2) LB 1085 Reports on Natural Resource District Operation and Organization
- 3) Review of NRD Groundwater Management Plans
- 4) Non-Point Source Pollution Grants Review Committees
- 5) Waste Reduction and Recycling Grants Review Board
- 6) Environmental Trust Advisory Committees
- 7) Geographic Information System Steering Committee and Subcommittees
- 8) Forestry Stewardship Committee
- 9) FIFRA Advisory Responsibilities

- 10) Niobrara Scenic River Advisory Commission
- 11) Review of 404 Permit Applications to the U.S. Army Corps of Engineers
- 12) Nebraska Mandates Management Initiative
- 13) UNL Agronomy Board
- 14) Climate Assessment and Response Committee

1) Nebraska Resources Development Fund Reviews

In FY 97 planning staff support of Nebraska Resources Development Fund activities included: 1) review of the application and feasibility report for the Enders Dam project, 2) review of the Wakefield Levee project proposal, and 3) initial work on revision of the Natural Resources Development Fund Guidelines. Staff activity levels in FYs 97 and 98 are expected to increase due to the review of more project proposals and applications.

2) LB 1085 Reports on Natural Resources District Operation and Organization

In 1996 the Unicameral directed the Natural Resources Commission to study the state's natural resources districts and make two reports to the Legislature. The first report "An Analysis of Natural Resources District Revenue Base, Board Sizes, and Potential for Boundary Changes or Consolidation" was forwarded to the Unicameral on September 1, 1997. The second report is due September 1, 1998. It is to include an analysis of district cost effectiveness, program effectiveness, duplication of responsibilities and authorities, and other services or areas that could facilitate property tax relief.

The Natural Resources Commission members provided recommendations for the initial report and appointed a committee that provided guidance on content. The second report will be compiled in a similar manner. The Commission's planning staff was responsible for report writing and some of the research on the first report and is likely to play a similar role in the second report.

3) Review of Natural Resources District Groundwater Management Plans

The bulk of this work was completed in previous fiscal years. There has been some continuing work as NRDs revise and implement their plans.

4) Non-Point Source Pollution Grants Review Committees

In FY 97 Commission staff members continued to serve as members of the Department of Environmental Quality's Section 319 Non-Point Source Pollution Grants Review Committees. Commission service was very limited.

5) Waste Reduction and Recycling Grants Review Board

One Commission staff member serves on the Department of Environmental Quality's Waste Reduction and Recycling Grants Review Board. The Board's review is used to assist the Director of the Department of Environmental Quality in making grant funding decisions. In March 1997 the Board reviewed 48 separate grant applications. Applications are given points in different funding categories according to a program priority system. Since 1992 there have been 206 grant recipients receiving a total of over \$13.2 million.

6) Environmental Trust Advisory Committees

The Environmental Trust Board, of which the Director of Natural Resources and two Natural Resources Commissioners are members, has formed technical advisory committees to help review grant applications. Commission staff assist in project application reviews. Activity levels are expected to remain fairly level in upcoming fiscal years.

7) Geographic Information System Steering Committee and Subcommittees

The Geographic Information System Steering Committee has adopted a number of priority initiatives for GIS applicaiton in the State of Nebraska. The development of digital orthophoto quadrangles (DOQs), vectorized soils databases and a hydrologic units database were identified as the top areas of interest. The NRC has embarked on the development of DOQs to the U.S. Geological Survey standards and developing a digital soils database to USDA NRCS Soil Survey Group (SSURGO) standards. Refinement of the NRC's hydrologic units/statewide basemap continue in cooperation with the Department of Environmental Quality and the NRCS.

8) Forestry Stewardship Committee

A Commission staff member serves on the Forestry Stewardship Committee. That committee advises the State Forester on policy and directions relevant to the Forestry Stewardship Incentive Program. The program distributes about \$75,000 annually to landowners for tree planting. Funds are distributed on the basis of priorities that include: field windbreaks, riparian areas, natural forests, and conservation plantings. The Walnut Council, the Woodland Owners Association and the Tree Farm Association are complimentary activities.

9) FIFRA Advisory Committees

The Nebraska Department of Agriculture is responsible for administering the Federal Insecticide, Fungicide and Rodenticide Act in Nebraska under the provisions of the Nebraska Pesticide Act. The Commission has limited statutory and other advisory responsibilities related to the Act. In FY 97 these involved limited program review and update activities. In addition the Commission acts as the repository for the pesticides and groundwater database.

10) Niobrara Scenic River Advisory Commission

The Director of Natural Resources represents the Governor on the Niobrara Scenic River Advisory Commission. The Commission met three times during the fiscal year. It discussed the management plan that has been developed for the scenic river reach and was briefed on the establishment of the Niobrara Council that would manage the designated reach. Commission involvement will continue in future years.

11) Review of 404 Permit Applications to U.S. Army Corps of Engineers

Landowner planning development in wetland areas must generally apply to the U.S. Army Corps of Engineers for a Section 404 permit for their project. The NRC is one of the state agencies that reviews those applications and provides advice to the Corps. Those activities continued in FY 97.

12) Nebraska Mandates Management Initiative

The Nebraska Mandates Management Initiative is a partnership process to help Nebraska communities more effectively manage federal and state mandates. The focus area for the initiative is water quality and environmental issues. The process involves a number of agencies and provides technical and planning assistance to selected communities that wish to participate. The Natural Resources Commission continued to participate in this activity in FY 97 although total staff time devoted to the process was low. It is anticipated that staff will continue to participate in future fiscal years although their total time devoted to the process is likely to remain low.

13) UNL Agronomy Board

A Commission planning staff member attends semi-annual meetings of the UNL Agronomy Board to provide advice to the UNL Agronomy Department about its program of instruction, research, and extension.

14) Climate Assessment and Response Committee

The Director of Natural Resources is a member of this committee that meets periodically throughout the year 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; drought conditions; or problems caused by excess moisture or flooding conditions.

One Commission staff member also serves on a subcommittee of this group; the Moisture Availability and Outlook Committee that 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.

D. BASIC PLANNING ACTIVITY

Basic Planning Activities provide the data base and management information necessary to plan natural resource related activities. In recent years this activity has been the focus of much of the Natural Resources Commission's water planning effort. It is closely coordinated with the work of the Commission's Data Bank. In addition to providing information to other agencies and interests, work in this activity is also used to support general planning activities, administer the planning process and review projects and plans.

1) Planning Information Base

a) General

The planning information base has been the primary focus of Natural Resources Planning efforts for a number of years. 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 system (GIS) environment. This includes data on soil characteristics, land use, surface and groundwater data, geologic characteristics, climate, socio-economic characteristics, forestry

characteristics, hydrology and water use. The development of statewide databases for use by state, federal, NRD and local units of government will continue to have a high priority.

Natural resources needs can be better met by increased efficiency and effective use of natural resources data. Better techniques of information acquisition, processing, storage and use are required to accomplish that task. To that end GIS processing offers a tool for decision makers that combines multiple layers of information with the interactive capability of a relational database.

The products that will be and in some cases are being produced are as varied as the agencies that will use them. These include land use maps, soils maps, aerial photography with interpretations, satellite imagery with enhanced color, floodplain management information, water rights, well registrations, hydrologic information, and resources planning and environmental protection data. Applications of this information base will enhance state, federal and natural resources district management as well as city and county services and tax assessment. In the larger context the most important product is the better use of human expertise and experience to solve problems and coordinate complementary efforts between various levels of government.

ARC/INFO and ERDAS/Imagine softwares are the leading GIS applications softwares used by state and federal agencies for GIS processing, information exchange, modeling, and decision making. The system architecture developed by the NRC will readily fit with federal counterparts, including the Corps of Engineers, EPA, Fish and Wildlife Service, U.S. Forest Service, Consolidated Farm Services Agency, Natural Resources Conservation Service, National Park Service, U.S. Geological Survey, Bureau of Land Management and Bureau of Reclamation.

The NRC's GIS network is on the leading edge of GIS applications, interagency coordination and interagency data acquisition and sharing. These efforts will continue and support the priorities of the GIS Steering Committee. Additional initiatives will include global positioning system (GPS) satellite locational information and operations to better develop flood plain information, and statewide Digital Ortho-Quarter Quadrangle (DOQQ) maps. The production of digital orthophoto quadrangles (DOQs) and digital elevation models (DEMs) on a statewide basis is a major agency priority. Among other uses these DOQs and DEMs are being used by NRC staff to help digitize soil survey maps recompiled by the Natural Resources Conservation Service and bring them up to SSURGO (Soil Survey Geographic Data Base) national standards. In addition the NRC addressed and solved problems related to the year 2000 date change and agency computers. The date change has continued to cause considerable problems and expense to other agencies.

The Commission is currently using state of the art global positioning system (GPS) equipment to enhance the accuracy and efficiency of its survey work. However, most of that work is conducted primarily as part of the Commission's Operations Division and in secondary support of the planning process. A global positioning system is a satellite-based positioning system that provides horizontal and vertical location information as well as velocity and time information to GPS receivers. By knowing the exact location of the satellites at a specific time and measuring the travel time of radio messages from the satellite to the GPS receiver on earth, it is possible to calculate the position of that GPS receiver very accurately. GPS surveys allow work to be completed in a fraction of the time with accuracies not achievable by traditional methods.

The Commission has four global positioning receivers. GPS technology has been used to support Commission activities such as Digital Orthophoto Quadrangle (DOQ) production and the

Southeast Nebraska Streambed Degradation study. NRC staff has also worked with staff from the Game and Parks Commission, the Department of Aeronautics, the Nebraska Department of Health and the Central Platte Natural Resources District on projects that have incorporated GPS.

The acquisition, processing and sharing of statewide databases has a multifold purpose. First, a multi-user database cuts costs by avoiding duplication and enhances coordination as the basic data set is the same for all uses. Secondly, a statewide database provides a consistent departure point for future enhancements. Satellite imagery, digitized aerial photography with rectification as well as actual ground surveying using global positioning technology can produce maps and map products with varying degrees of high resolution, accuracy and coverage. The NRC actively supports the development and use of statewide databases freely available for the use of a host of government agencies. To that end, the NRC has aggressively populated its world wide web server accessible through the Internet with easily available up-to-date information in both graphic and tabular forms. For those not having Internet connections a modem connection using SLIP/PPP technology can provide the same access to the information. The NRC's homepage address is <http://www.nrc.state.ne.us>.

General Base Development

b) Work Completed and Planned

The NRC, under a workshare agreement with the U.S. Geological Survey is in the process of producing complete Digital Orthophoto Quadrangle (DOQ) and Digital Elevation Model (DEM) coverage for the state. This will be the largest single planning process work item in the next fiscal year and in combination with digitization of soil survey information will be the major work item over the next two (and for soils three) fiscal years. The DOQs are being produced to support many of the Commission's and other Nebraska agencies applications including the development of statewide natural and cultural resources coverages. The Nebraska GIS Steering Committee has determined that statewide coverage of 5 layers consisting of DOQ, soils, transportation, hydrography, and land parcels, is essential for Nebraska. The DOQs are important as a base map and will support the development of the other 4 layers. This includes use as a base map to bring soil mapping up to SSURGO national standards.

The workshare agreement provides for development of the DOQs at a faster pace by utilizing the Commission's resources in partnership with USGS. By systematically producing the DOQs for the state, certain efficiencies can be realized in the collection of ground control, and the administration of the project. The workshare agreement was based on a successful pilot project during which NRC developed 25 DEMs and 64 DOQs for Lancaster County in Nebraska.

In FY 97, the NRC made substantial progress in its efforts to complete statewide coverage of DOQs and DEMs for Nebraska. The Lancaster County coverage was achieved early in the fiscal year and by June 30, 1997 DOQs were completed for about 33% of the state and DEMs were completed for about 40% of the state. The DOQ/DEM project has a timeline of about 3 years.

The DEMs and DOQs being produced by the NRC are in turn being used in another Commission activity, the digitization of soil survey information. As the DOQs and DEMs are completed, Natural Resources Conservation Service staff will recompile soil survey information

on the DOQ base map. The Natural Resources Commission staff will then digitize the information to bring it up to national SSURGO standards and allow electronic use. In that regard, the NRC and the Natural Resources Conservation Service jointly fund a liaison position to assist in the work flow by and between the two agencies.

Work on digitizing floodplain delineation maps continued in FY 97 and will be an agency priority in future fiscal years. That information can have a variety of applications, including use on individual disaster or flood event case studies. The NRC Planning Division has completed considerable work and cooperated closely with the Operations Division in this effort.

Refinements to the hydrologic base will allow hydrologic data to be mapped and compared with the array of other data being gathered for GIS processing. The primary work and files for the hydrologic unit data base were completed in FY 93 and conversion of the information to a ARC/INFO based geographic information system was completed in FY 94. A draft report on the hydrologic unit data base was completed in late FY 95. In FY 96 that report was used to compile metadata which was placed on-line with the hydrologic information.

In FY 97, the Natural Resources Commission staff refined the NRC's world wide web homepage. This was a joint effort between the Comprehensive Planning Section and the Data Bank staff. The Commission redesigned the homepage to create user friendly access to the information and services it is providing to users. This includes graphic and tabular data as well as program information. This is an ongoing process that has seen recent improvements and additions to searchable databases and increasing availability of information on the programs and program funds administered by the Commission.

Commission staff are also continuing work on the long term development of a GIS based analytical modeling system to estimate water availability, evaluate the hydrologic impact of project and program proposals, and enhance traditional soil and water conservation, forestry and land use planning.

A need currently exists for better and more consistent land use data. In that regard Landsat TM terrain corrected data for landuse/landcover was acquired from the EROS Data Center. The Commission has become an Affiliated User with the U.S. Geological Survey, EROS Data Center and now has complete statewide coverage that includes Landsat TM scenes from 1991-1993. The NRC has examples of this information on its world wide web homepage and has made this information available to other state and local interests. We have provided Landsat TM coverage's to NRDs for base planning activities and the Department of Water Resources for use in planning and for resource inventory projects.

The Natural Resources Commission supports the DAS information technology and data sharing initiatives and has offered full service GIS connectivity. The DAS information technology questionnaire completed by the Natural Resources Commission is a source of further information on Commission data base activities.

Water Use Data Study

In 1992 the Commission entered into an agreement with the U.S. Geological Survey to cooperate in the USGS's nationwide program of data collection and estimation of water use. Data

is gathered for every fifth year. Work on the 1995 Water Use Report was nearly complete by the end of FY 97. Commission staff work included:

- collection, validation, and entering of reported data on public water suppliers' water use
- analysis of reported public water systems withdrawal data for patterns and averages
- collection and processing of High Plains Climate Center data and STORET files
- preparing and mailing a water use survey to industries and entering the data gathered
- processing water rights files to locate diversion points
- processing Upper Republican NRD pumpage and acreage data and preparing file reports on Upper Republican crop irrigation requirements, actual pumpage and efficiencies
- mapping surface water irrigation district's boundaries in Arc/Info
- processing population data
- finishing water use files, converting them to spreadsheets and sending them to U.S. Geological Survey
- extracting data and writing a draft report

Computer Operations/Support Staff

Commission Planning Division staff in conjunction with Data Bank staff also provided support to a number of other agencies. Although Data Bank staff also worked heavily on this activity, their work is not part of the statutory charge for this report and is not included in this report's budgetary material.

In FY 97 Commission planning staff members in coordination with Data Bank staff helped with computer related installations and technical support in a variety of state, local and federal agencies. As a result a variety of agencies, not all of them directly natural resources related, are in a better position to utilize data and products from the Commission's geographic information systems efforts. Services provided by the Commission included promotion, installation and maintenance of Internet access for other agencies. Work with natural resources districts has included installation of hardware and software to let the districts run the ARC-INFO software package on the Commission's GIS network from their locations. Agencies assisted in some manner by NRC staff in FY 97 included those on the following list. That assistance varied from cooperative work to minor trouble shooting or advice to major installation efforts.

- North Platte Natural Resources District
- Central Platte Natural Resources District

- Lower Platte North Natural Resources District
- Lower Platte South Natural Resources District
- Pappio-Missouri River Natural Resources District
- Nebraska Game and Parks Commission
- Nebraska Environmental Trust
- Nebraska Forest Service
- Nebraska Department of Water Resources
- Nebraska Emergency Management Agency
- Nebraska Department of Economic Development
- Nebraska Department of Health
- Nebraska Department of Education
- Nebraska Crime Commission
- Nebraska Library Commission
- Nebraska Corn Board
- Nebraska Real Estate Appraiser Board
- Nebraska Grain Sorghum Board
- Nebraska Industrial Relations Commission
- Nebraska Ethanol Board
- Nebraska Department of Administrative Services
(Division of Communications and Central Data Processing)
- Federal Emergency Management Agency
- Natural Resources Conservation Service, USDA
- U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers
- U.S. Department of the Interior
- Nebraska Wheat Board
- Lancaster County Red Cross Chapter
- Pioneer Park Nature Center, Lincoln

2) Soil and Water Conservation Strategy

The Nebraska Soil and Water Conservation Strategy is a body of ideas, facts, agreements and recommendations for guiding the course of future conservation activities in the state. No work was completed on this activity in FY 97 and none is planned in the next two fiscal years.

3) Nebraska Wetlands Conservation Plan

The Nebraska Wetlands Conservation Plan is an effort to produce and implement a plan to conserve and enhance wetlands in Nebraska. It is led by the Nebraska Department of Environmental Quality. The Nebraska Game and Parks Commission and the Nebraska Natural Resources Commission are the other participating agencies. Early in FY 96, after very considerable work on the plan by all three agencies, the Department of Environmental Quality suspended all work on the plan. However, in the second half of FY 97 they reinitiated work on the effort. Some Natural Resources Commission review effort seems likely once the Department of Environmental Quality produces a draft report.

E. STATE PROJECT PLANNING AND DESIGN

This activity was included in the process in order to allow for planning of water projects, including feasibility investigations and development of designs for construction. No work is planned for this activity.

F. COORDINATION, ADMINISTRATION AND MANAGEMENT

Coordination, Administration and Management work is necessary for conduct of other activities of the State Water Planning and Review Process. Work in this category includes: compilation of this Annual Report and Plan of Work, routine planning staff administrative time, and printing and mailing requests. In addition staff involvement in environmental education activities has been included as a part of this activity.

Staff environmental education activities in FY 97 included continued distribution of "Stop, Look and Learn About Our Natural World, A Nebraska Natural Resources Elementary Education Guide". The volumes were first printed in 1988 and nearly 4000 three volume sets have now been distributed. No reprintings are planned and the supply is nearly depleted. Other FY 97 NRC environmental education activities included work on the National Envirothon held in Mahoney State Park, work on the Nebraska State Envirothon held at Halsey, work on the Childrens Groundwater Festival in Grand Island, and work on the fall symposium of the Groundwater Foundation. Continued staff involvement in environmental education activities at a similar level is expected in future fiscal years.

Printing and mailing expenses were minimal in FY 97. In FY 98 there will continue to be some administrative expense for mailing copies of "Stop, Look and Learn About Our Natural World". Printing and mailing of a water use data report is also expected in FY 98. Coordination, Administration and Management expenses are expected to account for a declining portion of Commission expenses in future fiscal years.

III. BUDGETARY TABLES

NOTE: Beginning with this year's Annual Report and Plan of Work budgetary tables will generally provide only summary and contracting budget information. Prior to FY 97 Commission planning staff kept records that noted the amount of work time they spent on each planning process activity item. Those records were used to apportion total staff expenses and obtain an estimate of approximately how much staff expense was devoted to any one area of the process. At the beginning of FY 97 the decision was made to no longer require staff to compile those breakdowns of their time. This means that the data needed to provide cost estimates by work activity/study is no longer available. Budgetary information on contracts, computer equipment expense and other budgetary categories will continue to be provided.

In FY 96, the last year for which data were available, general base development and computer system staff, hardware and software expenses accounted for almost 45% of the total planning process budget. It seems likely that the portion of staff effort and the total planning process budget devoted to those activities rose in this last fiscal year and will continue to do so in the future.

Table 1
 PLANNING AND REVIEW PROCESS EXPENDITURES - FY 97

	310	334	Total
Problem Analysis and Area Planning - 23 County Streambank Erosion and Streambed Degradation Study	\$25,000	----	\$25,000
Problem Analysis and Area Planning - Platte River Alliance	5,000	----	5,000
Basic Planning Activity - Computer Hardware	51,465	90	51,555
Basic Planning Activity - Computer Software, Licensing, and Maintenance Contracts	20,660	4,540	25,200
Basic Planning Activity - Computer Training, Supplies, Other Maintenance, and Processing	1,023	5,701	6,724
Coordination, Administration & Management - Printing and Mailing	3,947	1,996	5,943
Basic Planning Activity - Intergovernmental Contract with NRCS	23,883	7,335	31,218
Staff and Other Support Including Travel	104,774	615,862	720,636
TOTAL	\$235,752	\$635,524	\$871,276

Table 2
 PLANNING AND REVIEW PROCESS BUDGET - FY 98

	310	334	Total
Problem Analysis and Area Planning - 23 County Streambank Erosion and Streambed Degradation Study	\$25,000	----	\$25,000
Problem Analysis and Area Planning - Lower Platte Feasibility Study and Related Section 503 Studies	----	125,000	125,000
Problem Analysis and Area Planning - Platte River Alliance	5,000	----	5,000
Basic Planning Activity - Computer Hardware	41,201	----	41,201
Basic Planning Activity - Computer Software, Licensing, Access Fees and Maintenance Contracts	15,333	4,770	20,103
Basic Planning Activity - Computer Training, Supplies, Other Maintenance, and Processing	4,767	5,875	10,642
Coordination, Administration & Management - Printing and Mailing	4,000	2,055	6,055
Basic Planning Activity - Intergovernmental Contract with NRCS	24,550	----	24,550
Staff and Other Support Including Travel	107,886	607,300	715,186
TOTAL	\$227,737	\$745,000	\$972,737

Table 3
 PLANNING AND REVIEW PROCESS BUDGET - FY 99

	310	334	Total
Problem Analysis and Area Planning - 23 County Streambank Erosion and Streambed Degradation Study	\$25,000	----	\$25,000
Problem Analysis and Area Planning - Lower Platte Feasibility Study and Related Section 503 Studies	----	125,000	125,000
Problem Analysis and Area Planning - Platte River Alliance	5,000	----	5,000
Basic Planning Activity - Computer Hardware	40,493	----	40,493
Basic Planning Activity - Computer Software, Licensing, Access Fees and Maintenance Contracts	13,933	4,910	18,843
Basic Planning Activity - Computer Training, Supplies, Other Maintenance, and Processing	5,267	6,055	11,322
Coordination, Administration & Management - Printing and Mailing	4,120	2,116	6,236
Basic Planning Activity - Intergovernmental Contract with NRCS	25,300	----	25,300
Staff and Other Support Including Travel	111,122	625,519	736,641
TOTAL	\$230,235	\$763,600	\$993,835

Table 4
 PLANNING AND REVIEW PROCESS BUDGET - FY 2000

	310	334	Total
Problem Analysis and Area Planning - Platte River Alliance	5,000	----	5,000
Problem Analysis and Area Planning - Lower Platte Feasibility Study and Related Section 503 Studies	----	125,000	125,000
Basic Planning Activity - Computer Hardware	67,622	----	67,622
Basic Planning Activity - Computer Software, Licensing, Access Fees and Maintenance Contracts	14,028	5,060	19,088
Basic Planning Activity - Computer Training, Supplies, Other Maintenance, and Processing	5,687	6,235	11,922
Coordination, Administration & Management - Printing and Mailing	4,250	2,180	6,430
Basic Planning Activity - Intergovernmental Contract with NRCS	26,100	----	26,100
Staff and Other Support Including Travel	114,455	644,285	758,740
TOTAL	\$237,142	\$782,760	\$1,019,902

Table 5

PLANNING & REVIEW PROCESS EXPENDITURES FY 97 AND BUDGET FYs 1998-2002

	FY 97 Expenditures			FY 98 Budget			FY 99 Budget			FY 2000 Budget			FY 2001 Budget			FY 2002 Budget		
	Staff & Support	Contracts & Computer	Total	Staff & Support	Contracts & Computer	Total	Staff & Support	Contracts & Computer	Total	Staff & Support	Contracts & Computer	Total	Staff & Support	Contracts & Computer	Total	Staff & Support	Contracts & Computer	Total
Program 310	104,774	130,978	235,752	107,886	119,851	227,737	111,122	119,113	230,235	114,455	122,687	237,142	117,888	126,367	244,255	121,425	130,158	251,583
Program 334	614,923	12,327	627,250	607,300	137,700	745,000	625,519	138,081	763,600	644,285	138,475	782,760	663,613	138,880	802,493	683,521	14,297	697,818
TOTAL	719,697	143,305	863,002	715,186	257,551	972,737	736,641	257,194	993,835	758,740	161,162	1,019,902	781,501	265,247	1,046,748	804,946	144,455	949,401