



**NORTH DAKOTA**  
**State Water Commission**

**BIENNIAL REPORT**  
**FOR THE PERIOD**  
**July 1, 1995 to June 30, 1997**



Office of the State Engineer

December 1, 1997

The Honorable Edward T. Schafer  
Governor of North Dakota  
State Capitol  
Bismarck, ND 58505

RE: 1995-1997 Biennial Report

Dear Governor Schafer:

The Biennial Report of the State Engineer and State Water Commission for the period July 1, 1995, to June 30, 1997, is transmitted for your information and consideration.

Respectfully submitted,

David A. Sprynczynatyk  
Secretary and State Engineer

DAS:rp  
Enclosure

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## NORTH DAKOTA STATE WATER COMMISSION

### Mission

*The mission of the State Water Commission and the State Engineer is to improve the quality of life and strengthen the economy of North Dakota by managing the water resources of the state for the benefit of its people.*

### Agency Goals

- To regulate the use of water resources for the future welfare and prosperity of the people of North Dakota.
- To develop the use of water resources for the future welfare and prosperity of the people of North Dakota.
- To educate the public regarding the nature and occurrence of North Dakota's water resources.

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### Organization

The State Water Commission consists of the Governor as chairman, the Commissioner of Agriculture as an ex-officio member, and seven members who are appointed by the Governor to serve terms of six years each. The terms of office for appointees are so arranged that two terms and not more than three terms shall expire on the first day of July of each odd numbered year. The Commission appoints a Secretary-State Engineer as their executive officer, who employs a staff as needed to carry out the aims of the Commission.

The State Water Commission is located primarily in the State Office Building near the State Capitol in Bismarck, North Dakota. In addition, the Commission has field offices in Dickinson, Devils Lake, and West Fargo.

### History and Mandates

The State Water Commission was created by legislative action in 1937, as a result of the drought of the 1930s, for the specific purpose of fostering and promoting water resources development throughout the state.

The Office of State Engineer was created in 1905 to regulate and administer matters concerning allocation of the state's water and related land resources in compliance with article XI, § 3 of the North Dakota Constitution which declares all waters to be property of the state for public use. In 1937, additional duties were added to this office when the State Engineer was designated chief technical advisor to the Commission. Subsequently, in the years following, the State Engineer was assigned responsibilities for regulation of drainage, control of dikes and dams, and management of development in floodplains.

### Agency Policies

The State Water Commission and the State Engineer have developed procedures and policies based upon the comprehensive legislation contained in Title 61 of the ND Century Code to:

- Administer the water laws of the state and its interest in federal and international waters.
- Prepare and maintain a comprehensive plan for future growth and development, and to direct project development in accordance with that plan.
- Conduct studies to determine availability and occurrence of the ground and surface waters of the state for the purposes of allocation and management.
- Assist local entities of government in the development and construction of water resource projects.

- Assist local entities of government in management and maintenance of water resource projects.

- Assist in the organization of various legal entities through which water resource projects can be sponsored and operated.

- Prepare and maintain a state-wide communications plan which identifies communication deficiencies with regard to water resources management and to assist in water information/education programs to overcome these deficiencies.

- Coordinate activities of federal, state, and local entities in water resources development.

- Represent the interests of the state in water resources matters in national, state, and international forums.

Many of the policies in effect have evolved as a result of the agency's financial participation in project development along with local government sponsors. The amount of financial participation varies with the project purposes. The contract fund is the source of funds for assistance to local sponsors and is controlled by the Commission.

## Principal Agency Activities

- Implementing the procedures for claiming this state's share of the flows of the Missouri River for our future needs as reflected in comprehensive water management planning documents and the Pick-Sloan Plan.

- Managing and developing North Dakota's water resources to enhance the economic future of North Dakota and its quality of life.

- Continued efforts for funding of the Garrison Diversion Project to provide for water distribution throughout North Dakota in return for the land given up for early development of the Pick-Sloan Plan.

- Implementing plans for the distribution of Missouri River water through regional water supply systems such as the Southwest Pipeline Project and the Northwest Area Water Supply Project.

- Working with the U.S. Army Corps of Engineers in planning for a Devils Lake outlet.

- Refining legislation and policies for administering the constitutional Resources Trust Fund through which needed water facilities can be constructed.

- Periodic discussions with Indian representation regarding tribal reserved water rights in North Dakota. The intent being to

negotiate water rights to avoid litigation.

- Developing policies and initiatives that will stimulate progress in solving flooding problems along the Sheyenne, Pembina, Souris, and Red Rivers.

- Joint administration with the Garrison Conservancy District of the federally authorized municipal, rural and industrial (MR&I) water supply program of the 1986 Garrison Diversion Reformulation Act.

- Continued funding by the legislature for advanced water resource studies. Completion of detailed studies that more precisely define the nature and occurrence of the resource is essential in order to optimize its development.

- Pursuing cooperative efforts with neighboring states and provinces for planning for mutual beneficial water management on shared water resources.

- Enforcing weather modification standards, conducting research, and supervising operational cloud seeding programs for hail suppression and rainfall enhancement.

- Continued efforts to enhance the Water Education for Teachers (WET) and the North Dakota Watercourse programs.

## 1997 Water Resources Legislation

### House Bill No. 1025:

1. Makes the 20 percent allocation from the oil extraction tax development fund into the resources trust fund permanent. It was to return to 10 percent on July 1, 1997.

2. Authorizes the Water Commission to make payments in lieu of real estate taxes to the

counties in which it acquires land for the Devils Lake project.

3. Directs the Water Commission to develop and implement a comprehensive statewide water development program to serve the long-term water resource needs of the state and its people and to protect the state's claim to its proper share of Missouri River water.

4. Requires the State Engineer to quantify potential damage to downstream landowners caused by construction of an outlet to Devils Lake.

5. Requires all income derived from the lease and management of lands acquired by the Water Commission for the Southwest Pipeline project to be deposited in the resources trust fund.

House Bill No. 1056 repeals the statutes creating the wetlands mediation advisory board of which the State Engineer was a member.

House Bill No. 1057 repeals the statute which created the outdoor recreation interagency council of which the State Engineer was a member.

House Bill No. 1058 requires the state water pollution control board, of which the State Engineer is a member, to consider and make recommendations on any rules and standards adopted by the Health Department relating to water quality or pollution, ground water protection, and safe drinking water.

House Bill No. 1073 establishes as a critical priority the supply and delivery of water to eastern North Dakota and directs the Water Commission to continue to cooperate with the Garrison Diversion Conservancy District in addressing this priority.

House Bill No. 1102 requires a person to obtain a drainage permit before draining sheetwater which has a watershed of 80 acres or more. The bill also authorizes the State Engineer to issue temporary permits for emergency drainage.

House Bill No. 1170 authorizes the Water Commission to issue up to \$15 million in bonds to finance the cost of the Southwest Pipeline project.

House Bill No. 1482 authorizes the Water Commission to issue bonds up to \$20 million until July 1, 1999, to finance construction of an outlet to Devils Lake, if Congress authorizes construction of an outlet, and to finance a statewide water development program if Congress authorizes completion of the Garrison Diversion Unit.

Senate Bill No. 2079 authorizes rural water systems to hold water permits for water the system may reasonably need in the future without that water being subject to cancellation for nonuse.



*Devils Lake.*

Senate Bill No. 2080 gives the State Engineer authority to issue temporary permits for dikes, dams, and other devices in cases of emergency.

Senate Bill No. 2104 deletes the requirement that written notice must be given to each Water Commission member three days before a Water Commission meeting.

Senate Bill No. 2105 clarifies that contractual obligations for supplies, materials, and equipment other than office supplies, material, and equipment can be paid for out of the contract fund.

Senate Bill No. 2239 establishes a Devils Lake outlet management advisory committee to develop an annual operating plan for the operation of the outlet.

Senate Bill No. 2260 authorizes the State Engineer to order the removal, modification, or destruction of dangers in, on the bed of, or adjacent to navigable lakes.

Senate Bill No. 2362 requires the Water Commission to approve the disbursement of funds from the drinking water treatment revolving loan fund.

House Concurrent Resolution No. 3043 directs the Legislative Council to study the feasibility and desirability of implementing hail suppression programs for the reduction of property damage in urban and rural areas and funding

the programs through property and casualty line insurance premium taxes.

Senate Concurrent Resolution No. 4033 urges Congress and the Corps of Engineers to assume responsibility for Missouri River bank erosion downstream from all Pick-Sloan project dams, including the Garrison Dam to Oahe Reservoir reach in North Dakota, and to continue a program of annually appropriating funds for the maintenance and construction of bank protection projects.

Senate Concurrent Resolution No. 4034 urges the Corps of Engineers to include provisions for the protection of recreation, municipal, industrial, irrigation, and other interests on the Missouri River in North Dakota in developing a revised master manual for the future operation of the Pick-Sloan project.

Senate Concurrent Resolution No. 4041 directs the Legislative Council to study the establishment of watershed districts to manage water based on watershed boundaries.

Senate Concurrent Resolution No. 4057 urges Congress to complete the Garrison Diversion project to meet the water needs of the state.

Senate Concurrent Resolution No. 4058 expresses the consensus of the Legislative Assembly and urges the Corps of Engineers to design and construct an emergency outlet for Devils Lake.

## Water Commission Members as of June 30, 1997

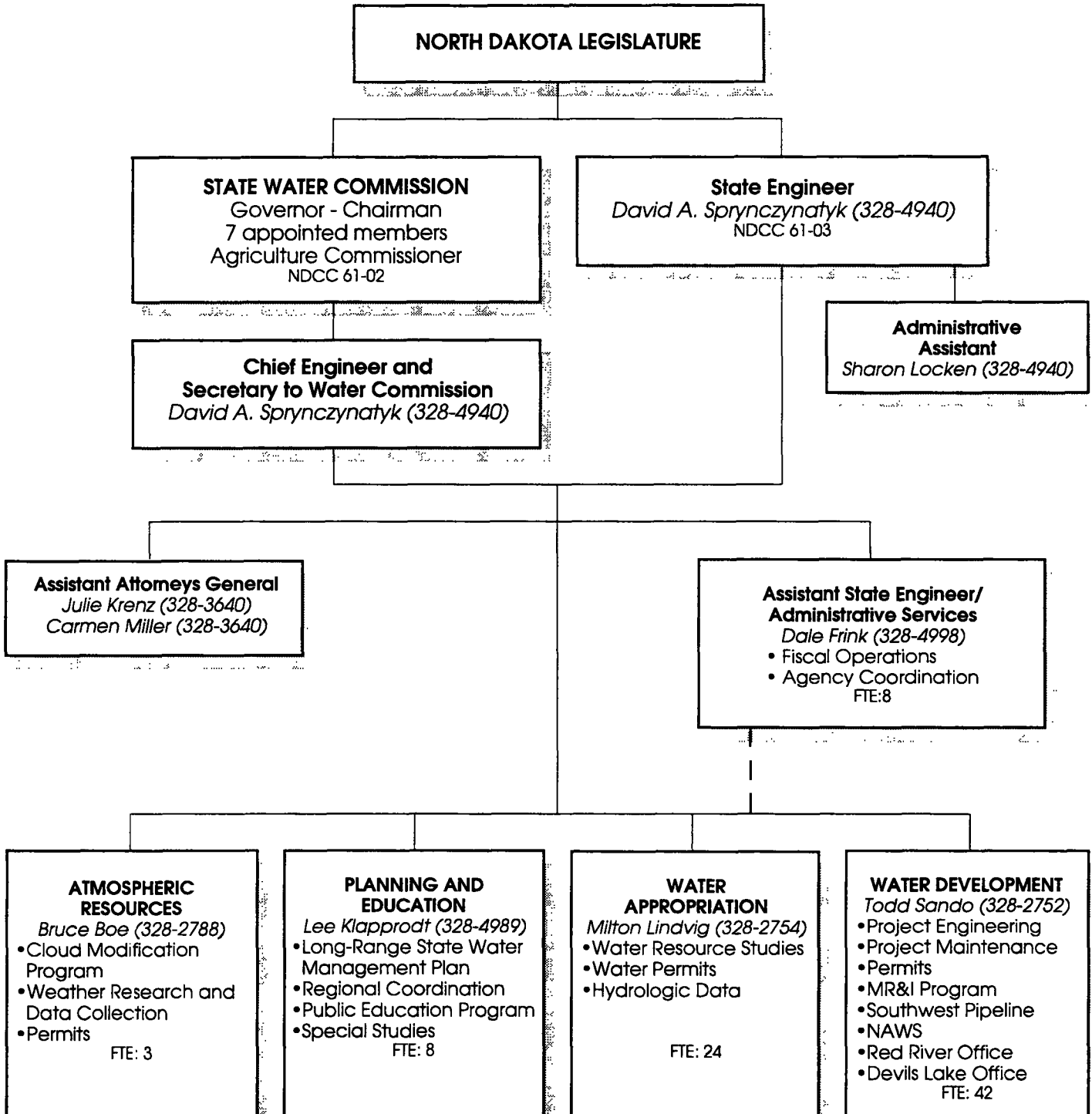
| NAME                    | POSITION                      | APPOINTED          | TERM ENDS    |
|-------------------------|-------------------------------|--------------------|--------------|
| Edward T. Schafer ..... | Governor-Chairman             |                    |              |
| Roger Johnson .....     | Department of Agriculture     |                    |              |
| Jack Olin .....         | Member from Dickinson .....   | July 1, 1993 ..... | July 1, 1997 |
| Harley Swenson .....    | Member from Bismarck .....    | July 1, 1993 ..... | July 1, 1997 |
| Mike Ames .....         | Member from Williston .....   | July 1, 1993 ..... | July 1, 1999 |
| Florenz Bjornson .....  | Member from West Fargo .....  | July 1, 1993 ..... | July 1, 1999 |
| Judith DeWitz .....     | Member from Tappen .....      | July 1, 1993 ..... | July 1, 1999 |
|                         |                               | RE-APPOINTED       | TERM ENDS    |
| Elmer Hillesland .....  | Member from Grand Forks ..... | July 1, 1995 ..... | July 1, 2001 |
| Robert Thompson .....   | Member from Page .....        | July 1, 1995 ..... | July 1, 2001 |

## Water Commission Meetings July 1, 1995 through June 30, 1997

| DATE                    | LOCATION                         | DATE                    | LOCATION                         |
|-------------------------|----------------------------------|-------------------------|----------------------------------|
| July 19, 1995 .....     | Bismarck                         | June 19, 1996 .....     | Williston                        |
| October 16, 1995 .....  | Richardton                       | August 22, 1996 .....   | (Conference Call) ..... Bismarck |
| October 27, 1995 .....  | Bismarck                         | September 4, 1996 ..... | Bismarck                         |
| November 29, 1995 ..... | Bismarck                         | October 16, 1996 .....  | Bismarck                         |
| January 12, 1996 .....  | (Conference Call) ..... Bismarck | December 4, 1996 .....  | Bismarck                         |
| February 15, 1996 ..... | (Conference Call) ..... Bismarck | January 16, 1997 .....  | (Conference Call) ..... Bismarck |
| February 23, 1996 ..... | Devils Lake                      | January 27, 1997 .....  | Bismarck                         |
| April 18, 1996 .....    | (Conference Call) ..... Bismarck | March 26, 1997 .....    | Bismarck                         |
| April 29, 1996 .....    | Bismarck                         | May 7, 1997 .....       | (Conference Call) ..... Bismarck |
| May 24, 1996 .....      | (Conference Call) ..... Bismarck | June 11, 1997 .....     | (Conference Call) ..... Bismarck |

**North Dakota  
State Water Commission**

**Organizational Chart**



TOTAL FULL TIME EQUIVALENTS OF 85 PERSONNEL

June 30, 1997



## State Water Commission Employees as of June 30, 1997

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### ADMINISTRATIVE SERVICES DIVISION

State Engineer: David A. Sprynczynatyk  
Assistant State Engineer: Dale Frink  
Administrative Assistant: Sharon Locken  
Accounting Budget Specialist: Kay Koch  
Accounting Budget Specialist: Krislyn Thompson  
Legal Assistant: Rosemary Pedersen  
Administrative Clerk: Karen Heinert  
Temporary: Allison Wetzel

### ATMOSPHERIC RESOURCE BOARD

Division Director: Bruce Boe  
Business Manager: LeNor Dollinger  
Environmental Scientist: Darin Langerud  
Temporary: Dawn Feist, Paul Moen, Aaron Gilstad,  
Mike Fransen, Jeffery Lutz, James Krzeminski,  
Rebecca Resler

### PLANNING AND EDUCATION DIVISION

Division Director: LeRoy Klapprodt  
Word Processing Operator: Dawn Dukart  
Water Resource Planners: Linda Weispfenning,  
Bill Sharff, Jeremy Williams  
Environmental Scientist: Brett Hovde  
Research Analyst: Larry Knudtson  
Graphic Artist: Brenda Bosworth

### WATER APPROPRIATION DIVISION

Division Director: Milton Lindvig  
Administrative Secretary: Marlene Backman  
Hydrologist Managers: Royce Cline, David Ripley,  
William Schuh, Robert Shaver  
Hydrologists: Christopher Bader, John Paczkowski,  
Scott Parkin, Jon Patch, Steve Pusc, Alan Wanek  
Water Resource Engineers: Craig Odenbach,  
Robert White

Water Resource Program Manager: James MacArthur  
Engineering Technicians: Kelvin Kunz, Perry Weiner,  
Merlyn Skaley, Albert Lachenmeier  
Chemist: Garvin Muri  
Laboratory Technician: Mary Osborn  
Rotary Drill Operator: Gary Calheim  
Temporary: Robert King, Lloyd Waddingham

### WATER DEVELOPMENT DIVISION

Division Director: Todd Sando  
Administrative Secretary: Cindy Graff  
Water Resource Engineer Managers: Cary  
Backstrand, Randy Gjestvang, Bradley Benson, Jeffrey  
Mattern, Bruce Engelhardt, Ronald Swanson  
Water Resource Engineers: Dwight Comfort, Bruce  
Engelhardt, Stan Hanson, James Lindseth, Edgar  
Schmidt, Gregg Thielman, Mark Gehringer, Leslie  
Horgan  
Engineering Technicians: Marty Babel, Robert  
Bucholz, Edward Gall, Kurt Kunz, Leland Krein,  
Raymond Oliger, Thomas Palanuk, Tom Engberg,  
Daniel Bahm, Theodore DeWall  
Hydrologist: Jeffery Olson  
Water Resource Project Managers:  
Gary McDowall, Daniel Sauter  
Planners: Jeffrey Klein, Bruce Lange  
Account Technician: Winston Enyart  
Data Processing Coordinator: Michael Hove

#### *Southwest Pipeline Project*

Water Resource Engineer Manager: James Fay  
Realty Officer: Frank Johnson  
Engineering Technician: Allen Balliet

#### *Northwest Area Water Supply Project*

Water Resource Engineer Manager: James Lennington

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## Administrative Services Division

The Administrative Services Division provides the overall direction of agency powers and duties as described in the state water laws. The activities include both the State Engineer's and the Water Commission's operations, as well as accounting, records, and support services for all agency programs.

Budget and fiscal control work is accomplished within the provisions of statutory law and principles or rules of that law. Agency accounting consists of keeping adequate financial records, preparation of financial statements and reports, project or program cost accounting, preparation of budgets, and proper control of various funds appropriated by the state legislature.

A considerable portion of time is spent in coordination of water resource programs with federal agencies and other state and local entities. The division works with contracts and agreements necessary to carry out investigations, planning, and cooperation with various other agencies in water resources development. A close liaison is maintained with irrigation districts, water resource districts, and the Garrison Diversion Conservancy District.

The State Engineer serves as North Dakota's representative on various boards and associations. Presently the State Engineer is the United States co-chairman of the International Souris River Board of Control, board of directors member of the Missouri Basin Association, executive council member of the Western States Water Council, board of directors member of the National Water Resource Association, board of directors ex officio member of the North Dakota Water Users Association, board of directors member of the North Dakota

Water Education Foundation, member of the Red River Water Resource Council, vice-president of the Association of Western State Engineers, and member of the National Project WET Advisory Committee.

During the past two bienniums the activities of the Missouri Basin Association increased considerably over previous bienniums because of water resource issues in the Missouri River Basin. The Association continued its involvement in the annual preparation for the Corps of Engineers operating plans for the Missouri River, and the Association worked closely with the Corps on the revision of the Missouri River Master Water Control Manual.

The state was also involved in several lawsuits that impact the State Water Commission and State Engineer.

The State of North Dakota, joined by South Dakota and Montana, filed an *amici curiae* brief in a case the State of Missouri and MO-ARK Association brought against the Corps of Engineers with regard to the Corps' annual plan for operation of the Missouri River mainstem dams. Missouri and MO-ARK alleged that the change in the annual operating plan that calls for a shortening of the navigation season in drought conditions was a major federal action significantly affecting the environment for which the Corps should have done an environmental assessment under the National Environmental Protection Act (NEPA). The federal district court ruled against Missouri and MO-ARK, and agreed with the upper basin states and the Corps that the change in the annual operating plan was not a major federal action triggering a NEPA analysis.

American Crystal Sugar brought a lawsuit against the State Water Commission and the State Engineer to determine whether American Crystal Sugar has a right to water stored behind Baldhill Dam in Lake Ashtabula. American Crystal Sugar alleges that when Baldhill Dam was built in the 1940s, American Crystal Sugar had a contract with the State Water Commission whereby it agreed to contribute a portion of the funds needed to build Baldhill Dam in exchange for a right to water stored in Lake Ashtabula. American Crystal Sugar is asserting that the State Engineer has breached the agreement between the State and American Crystal Sugar by not recognizing American Crystal Sugar's right to its allocation of stored water.

The State was sued by a landowner to force the State Engineer to compel another landowner to carry and deliver water across that landowner's property to his property. The landowner also alleged that the State Water Commission could create an irrigation project consisting of that individual's irrigation project and use its power of eminent domain to condemn an easement across the other landowner's property in order to give the landowner with the irrigation project access to the water associated with the landowner's water right. The State was dismissed from the lawsuit because the plaintiff failed to exhaust his administrative remedies.

Four members of the Spirit Lake Nation Tribe sued the State Water Commission and the city of Devils Lake alleging that the Tribe has a reserved water right to water from the Warwick aquifer underlying the boundaries of the reservation and that that right is exclusive.

The complaint alleges that the removal of water from the reservation by the city of Devils Lake from four wells located on non-Indian property within the boundaries of the reservation is illegal. The State was sued because it authorized the removal of water by issuing water permits to the city of Devils Lake to appropriate water.

The Eighth Circuit Court of Appeals clarified the scope of wetland easements purchased in North Dakota by the United States Fish and Wildlife Service pursuant to federal law. The State filed an amicus brief in support of the landowners who were sued by the federal government. The federal government argued that the wetland easements encompassed all wetlands on the encumbered parcel at any given time. The Eighth Circuit Court disagreed indicating that this interpretation was inconsistent with representations made by other federal officials and would raise serious questions with respect to limitations imposed by the easement program's enabling statute. The court held that the federal wetland easements were limited to the acreage provided in the easement summaries when the easements were obtained.

The State is involved in a case concerning the Spirit Lake Nation's claim to the bed of Devils Lake. The Tribe claims that the 1867 treaty creating the reservation included all of Devils Lake. The State, as well as the United States, which is also a defendant, contend that the treaty did not include the lake within the reservation's boundary. Settlement negotiations are underway.

The State was involved in a quiet title action regarding a tract of land adjoining the Missouri River in south Bismarck. The private landowner claimed titled

down to the low watermark while the State claimed that its title to the bed of the Missouri River extends up to the high watermark. The North Dakota Supreme Court ruled that the State owns up to the high watermark, but that in the area between low and high watermark private riparian landowners have

some kinds of property interests. The case is back before the trial court to decide where the high watermark is located on the tract.

The State Engineer also issued several administrative orders canceling water permits for nonuse and to landowners to remove debris from or near Devils Lake.

## Atmospheric Resource Board

The Atmospheric Resource Board (ARB) is a quasi-judicial, quasi-legislative advisory and rule-making board under the supervision of the State Water Commission. Since being co-located with the Water Commission in 1991, ARB staff has functioned essentially as a division of the Commission.

The primary function of the ARB is to protect the rights of the public concerning the effects of planned weather modification (cloud seeding) programs. The board is also responsible for the licensing, permitting, and record keeping for all such operations. Research to assess and improve cloud seeding technology is also mandated by law. The Board's rules and regulations governing weather modification are periodically reviewed and updated to ensure environmental and public safety, and that the operational program and research efforts remain at the forefront of the technology. Rules and regulations promulgated by the Board define the qualifications, procedures, and conditions required for the issuance of licenses and permits.

The Atmospheric Resource Board is comprised of ten members. Seven are appointed by the Governor; the other three are ex-officio and include the State

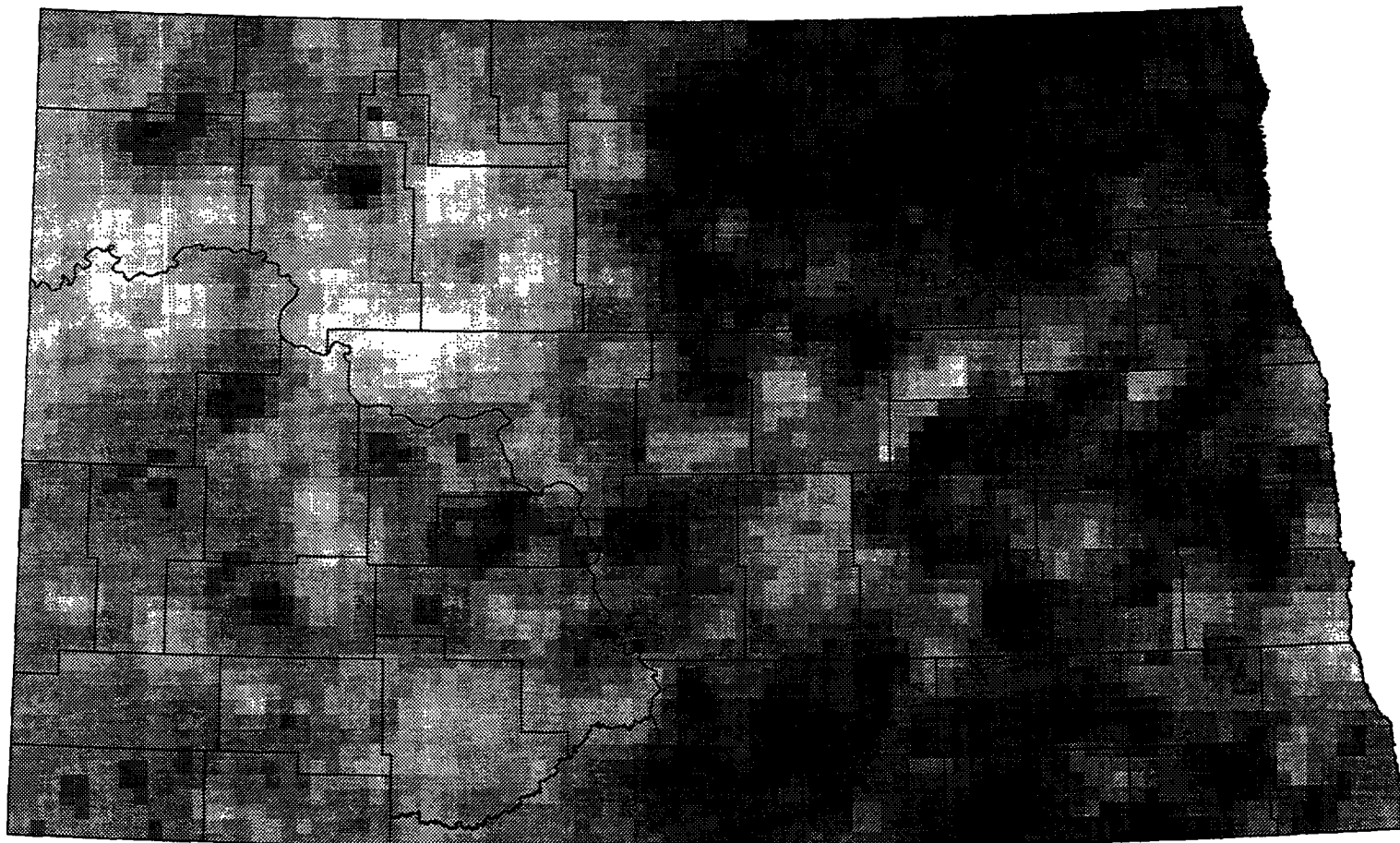
Engineer, the Director of the Aeronautics Commission, and a representative from the Environmental Section of the Department of Health.

### *North Dakota Cloud Modification Program*

The North Dakota Cloud Modification Program (NDCMP), served five western counties through the summer of 1996. A sixth county, Williams, joined the program for the 1997 growing season.

The program has two goals: hail suppression and rainfall augmentation. However, hail suppression continues to be the primary concern of the sponsoring counties.

The project seeded suitable clouds in two multi-county operations districts during each summer of the biennium. Eight (1996) or nine (1997) twin-engine aircraft, operated by Weather Modification, Inc. (WMI), of Fargo, were deployed under contract to the Board and participating counties during the program. In addition, two WMI radars were deployed, one in each district, to provide the needed radar surveillance and help guide operations.



- 23.8 to 24.8
- 22.7 to 23.8
- 21.6 to 22.7
- 20.5 to 21.6
- 19.4 to 20.5
- 18.3 to 19.4
- 17.2 to 18.3
- 16.1 to 17.2
- 15.0 to 16.1
- 13.9 to 15.0
- 12.8 to 13.9
- 11.7 to 12.8
- 10.6 to 11.7
- 9.5 to 10.6
- 8.4 to 9.5
- 7.3 to 8.4

*Total Rainfall (in inches), April-September 1996,  
ND Atmospheric Resource Board Cooperative Rain Gauge Network*

A new evaluation of the program, published in the May 1997 issue of the American Meteorological Society's *Journal of Applied Meteorology*, shows strong evidence of a 45 percent reduction in crop-hail damage in the project target areas. Previous evaluations show a 6 percent increase in wheat yields (South Dakota School of Mines and Technology), with an associated economic impact of \$24 million annually—from increased wheat production alone (NDSU).

In addition to the efforts to reduce hail and increase rainfall, project personnel interact closely with the National Weather Service (NWS) meteorologists in Bismarck and Williston, providing immediate reports of severe weather events in and near operations areas. Lightning-caused range fires are also reported.

### *Cooperative Rain Gauge Network*

Each growing season (April through September) the Board operates a statewide network of about 825 volunteer observers. Each observer records each morning the rainfall (and hail, if any) observed during the previous 24-hour period. These data are very helpful in evaluating the effects of cloud seeding, but are also of great interest to other state and federal agencies. Such agencies include the North Dakota Division of Emergency Management, the National Weather Service, the U.S. Geological Survey, the North Dakota Geological Survey, the Army Corps of Engineers, and the other divisions of the Water Commission.

An example of the network cooperation with other users is the real-time reporting by ARB observers directly to National Weather Service offices in Bismarck or Grand Forks whenever they receive rain totaling an inch or more within a 24-hour period. The totals are used by NWS hydrologists in assessing short-term flood potential and longer-term soil moisture conditions.

The data have been especially useful in the assessment of spring and summer precipitation events relevant to the ongoing excess water problems within the Devils Lake Basin.

The network affords the most detailed growing season rainfall information within the state, including the data collected by NWS observers. The rain gauge database is now available on the Internet, at the Water Commission Home Page.

### *Bowman Radar*

In the summer of 1996, the Board acquired its own weather radar, a WSR-74C set surplus by the NWS. The set was moved to Bowman and set up there on a permanent basis, with assistance from the Bowman County Airport Authority and the Bowman and Slope County Weather Modification Authorities. The radar fills a "hole" in the Weather Service radar coverage in extreme southwestern North Dakota, southeastern Montana, and northeast Wyoming.

In the summer of 1997, sophisticated new software was installed on the unit, providing estimates of rainfall, storm motion and development, and hail potential. All of this information is shared with the Weather Service, with frequent interaction between NDCMP meteorologists and the Weather Service offices in Bismarck and Billings, Montana. The unit was moved, set-up, and operated for

the first season for about the cost of leasing a similar set for three months, so significant savings are anticipated in future years.

Interest has been expressed by the Bowman Emergency Management Office in operating the radar year-around, as dictated by weather conditions. This is a possibility, but the details and training of potential operators have yet to be arranged.

### *Thunderstorm Research*

Analysis of thunderstorm data collected during the very successful North Dakota Tracer Experiment (Bismarck, 1993) continued to be analyzed. By the conclusion of the biennium, the bibliography of technical papers and formal publications from this research effort numbered about 100. A complete and current listing of the project bibliography is available upon request. Though federal funding for the analysis effort has now ended, analysis with other (more limited) resources continues. Efforts are being made to obtain future funding through the National Oceanic and Atmospheric Administration's U.S. Weather Research Program.

### *Insurance Interest in Hail Suppression*

The North Dakota Cloud Modification Program's hail suppression efforts have attracted the interest of the insurance industry. Some property and casualty insurance companies and reinsurance companies have expressed interest in the North Dakota program, and have engaged the Board's director for a number of speaking engagements to learn more.

Hail suppression was also of the subject of a concurrent resolution during the 1997 Legislative Assembly. The resolution, which directs study of hail suppression technology and the feasibility of funding it through insurance policy charges, is presently underway.

### *Student Intern Programs*

To ensure accurate NDCMP record keeping and the availability of qualified, experienced cloud seeding pilots for future field programs, the ARB funds the field presence of intern copilots on the project. To qualify for NDCMP duty, the prospective intern must have successfully completed two semesters of course work at the University of North Dakota, and must have earned their multi-engine and instrument flight ratings. Then, they may be eligible for duty as a copilot trainee on the summertime cloud modification project.

The copilots fly along with the pilots-in-command of each seeding aircraft, gaining valuable experience in seeding clouds, while recording the times, locations, and nature of all seeding activities. This intern pilot program continued this biennium, documenting seeding activities and storm conditions, while providing the nineteen student interns flight experience in and around thunderstorms.

Another student intern program was initiated by the ARB this biennium. Beginning with the 1996 NDCMP, students majoring in meteorology were given the opportunity to serve as interns in the district operations centers or as forecasting assistant. These five students gained field experience, assisting with radar operation, data recording, and forecasting. All of the interns performed very well in the field, attesting to the high quality of their North Dakota undergraduate educations to date.

## Planning and Education Division

The Planning and Education Division performs many functions, including the development and maintenance of a State Water Management Plan. The division staff is responsible for:

- Participation in and/or coordination of special studies leading to completion of local, state, regional, and national water resource and related land management plans;
- Monitoring of water resource issues to determine possible impacts on North Dakota's water resources;
- Representing the State Water Commission on regional and national planning bodies such as the Missouri River Basin Association, Red River Water Resources Council and The International Coalition; and
- Providing opportunities for adults and students to learn about North Dakota's water resources through a program that involves workshops, displays, and a variety of publications.

### *State Water Management Plan*

NDCC §61-01-26 (4) provides that it is North Dakota's policy to attain benefits from the use of the state's water resources "...through the development, execution, and periodic updating of comprehensive, coordinated, and well-balanced short-term and long-term plans and programs. . ." Specific power and authority to plan for the development of the state's water resources is provided for under the general powers and duties vested with the State Water Commission under NDCC §61-02-14.

In fulfilling its objective to wisely develop the state's water resources, the State Water Commission has periodically developed comprehensive state water management plans addressing both surface and ground-water management needs across the state. Plans were published in 1937, 1962, 1968, 1983, and 1992. At the State Engineer's direction, the state water management plan is to be updated on a 5- to 7-year cycle depending on need and availability of necessary resources

### *Special Studies*

The Planning and Education Division is involved in a variety of special studies pertaining to managing North Dakota's water resources. One such study completed during the past biennium was the review of the **Missouri River Master Water Control Manual Study**. The Division provided research and graphic presentation support during the agency's review of the Draft Environmental Impact Statement published in July 1994.

**Cannonball River Basin Water Management Study.** The Study is a cooperative effort of the U.S. Bureau of Reclamation (BOR), Standing Rock Sioux Tribe, and the State Water Commission. Several state agencies also contributed expertise to the study. The study began in the previous biennium and continued through the 1995-1997 biennium. The BOR has led the study to determine the water resource related needs and desires of the residents of the Cannonball River and tributary Cedar Creek watersheds. Part of the Division's responsibility involves surveying the attitudes of basin residents to assess their feelings on water management, conservation, and

development. A hydrologic model of the Cannonball River Basin was developed using a program called Hydross. This model made it possible to simulate the effects of past, present, and future water development and demands on the quantity and timing of the natural streamflows in the basin. The Division arranged for agency staff to be trained in the use of the Hydross model to facilitate its use in future planning efforts. In addition to the model, a Geographic Information System database was developed to map the natural and cultural resources significant to water management in the basin.

The Planning and Education Division is participating in a new study of the Grand River Basin. This study is very similar to the Cannonball River Basin study in that it involves most of the same major participants and the study goals are similar.

**Devils Lake Basin Water Management Studies.** The Planning and Education Division was involved in numerous study efforts addressing the flooding situation plaguing the Devils Lake area since 1993. These efforts included implementation of certain recommendations in the 1995 Devils Lake Water Management Plan. Most significant was the design and implementation of a program to store floodwater in the upper basin. The Available Storage Acreage Program (ASAP) caused 30,000 acre-feet of water to be retained in the upper basin during 1996 and 1997. This is a voluntary program involving 200 farm operators at 150 sites in the basin. The Division participated by providing support in other studies including the Federal Emergency Management Agency's Interagency Task Force

and the U.S. Army Corps of Engineers Emergency Outlet Plan. Other Devils Lake related activities included providing support to and working with the Devils Lake Basin Joint Board and the various committees established to address water problems in the basin.

**Wetlands Conservation Plan.** A draft Wetlands Conservation Plan was jointly developed by the State Water Commission and the North Dakota Wetland Institute with financial support in the form of a grant from the U.S. Environmental Protection Agency (EPA). The Division has been responsible for preparation of annual grant proposals and administering grant funded projects. Participation in the EPA grant program has made it possible to develop a wetland management plan that facilitates the protection, development, management and enhancement of North Dakota's wetland resources in a cooperative and reasonable manner, in partnership with private landowners and local governments. In addition to development of the plan, the agency's Geographic Information System has been expanded to produce overlapping layers depicting information such as wetlands, watersheds, drainage systems, public land surveys, and transportation facilities in the Devils Lake Basin. A related study estimated the available wetlands storage potential throughout the Devils Lake basin. Grant funds have been used to enhance public awareness of wetlands and their values, implement the Grand Harbor Watershed Demonstration Project, facilitate CRP tract prioritization, expand the Game and Fish Department's Private Lands Initiative program, destroy dangerous, unusable farm chemicals, and to establish water quality guidelines for wetlands management.

**Other Governmental/Non-governmental Organization involvement.** The Planning and Education Division participates on a number of governmental and non-governmental organizations to provide agency review and input as necessary. In the 1995-1997 biennium these included the State Forest Stewardship Coordinating Committee, State Instream Flow Task Force Group, North Dakota Wetlands Policy Task Force, Little Missouri River Designated Wild and Scenic River Study group, and the development of the Forest Best Management Practices Guidelines.

The Red River Resources Council is a quasi-governmental, nonprofit corporation formed under North Dakota Law to facilitate cooperation and coordination on water management issues in the Red River Basin involving Minnesota, Manitoba, and numerous federal agencies. The states of North Dakota and Minnesota and the Province of Manitoba are the council's formal members, while a board of directors, consisting of three from each state and a member from Manitoba, directs council activities. Administration of the council is accomplished under a chairmanship that rotates every two years between the members. The Division provides support for the agency's involvement.

The Planning and Education Division has participated in and supported The International Coalition for several years. This has led to involvement in an interstate/international, Interim Planning Group that spawned a new Red River Basin Board. The 22-member Board includes representatives from the states of Minnesota, South Dakota, and North Dakota, the Province of Manitoba, and Native American tribes. A comprehensive water management plan for the entire Red River Basin is the

Board's primary goal. The Planning and Education Division provided agency support to the establishment of this Board.

During the 1995-1997 biennium, the Division coordinated the review of almost 500 project proposals associated with the Community Development Grant and Loan Program's various highway improvement projects and flood hazard mitigation projects.

Following the severe flooding in the spring of 1997, the Division developed and published a special report documenting the flood damages across the state and events that contributed to the flood. Nearly 5,000 copies were distributed to elected officials; local, state and federal agencies; the public; and to agencies and other organizations in Manitoba.

### *Explore Your Watershed Information and Education Program*

First developed and implemented in North Dakota in 1984 as Project WET (Water Education for Teachers), *Explore Your Watershed* (includes Project WET) now incorporates a national water education program for preschool, daycare, grades K-12 and preservice teachers, youth leaders, natural resource specialists, and science center personnel.

*Explore Your Watershed* is an interdisciplinary and supplemental water education program which facilitates and promotes the learning, exploration, and stewardship of North Dakota's water resources. It demonstrates how water interacts with both the human and natural environments within the watersheds of North Dakota.

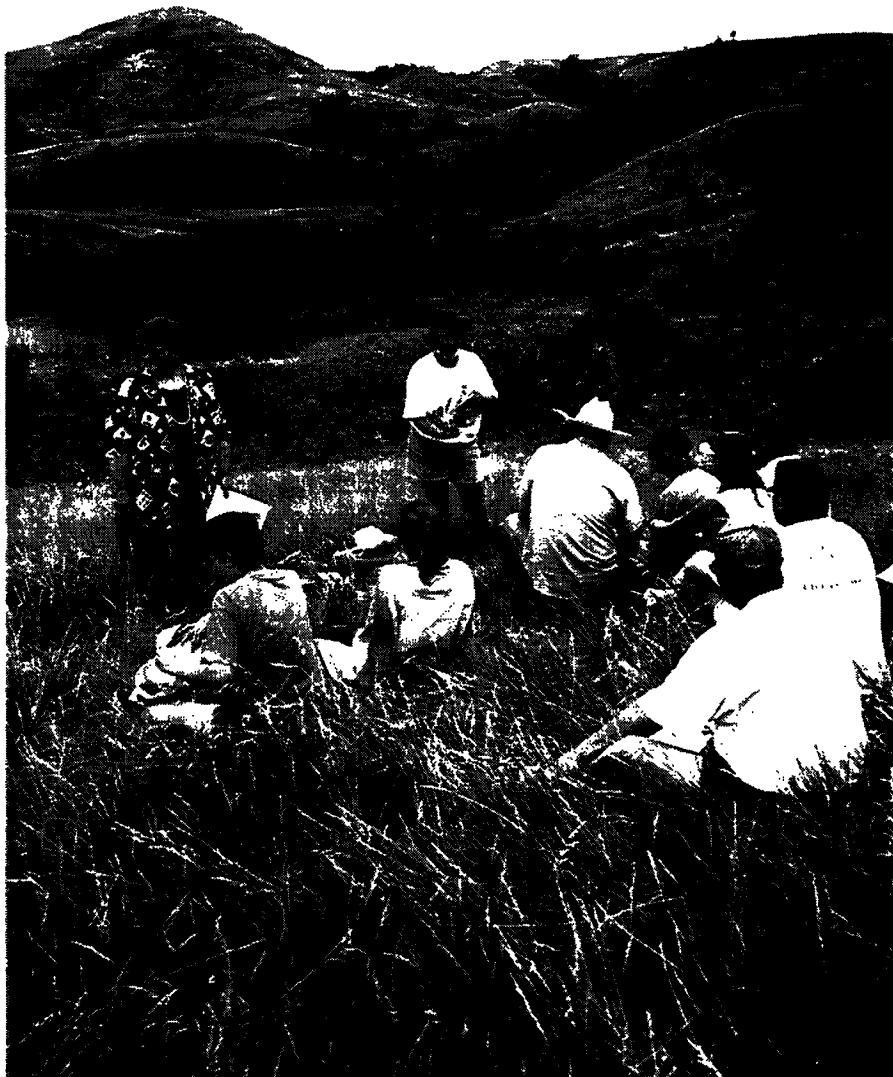
The WET K-12 Curriculum and Activity Guide is a collection of innovative water activities that incorporate a variety of formats. The guide is divided into seven thematic areas: water's chemical and physical properties, quantity and quality issues, aquatic wildlife, ecosystems, and management strategies. The activities promote critical thinking and problem solving skills.

More detailed information is available through curriculum "modules" for ground-water, watersheds, wetlands, and water conservation. In addition, water resource trunk programs on groundwater, wetlands, water pollution, water history and hazardous wastes are available.

*Explore Your Watershed* also sponsors water festivals and celebrations, an institute for teachers, youth camps and graduate credit and noncredit courses, workshops and seminars. Environmental and investigation materials, resource and reference materials, and water education posters are also available.

During the 1995-1997 biennium, 524 educators and 192 other interested individuals received *Explore Your Watershed* Project WET teaching materials through scheduled program offerings. Thousands of K-12 students were introduced to program teaching materials through school classrooms, youth camps, water festivals and celebrations, and through other agencies, organizations and individuals.

In support of the water education program, the Division updated and republished four "waterguides" including *Water Words*, *Managing a Vital Resource*, *Water Resource Districts*, and *Water Permitting Process*.



*Explore Your Watershed Summer Institute participants.*

### *North Dakota Water Magazine*

In 1993, several organizations involved in water management pooled their resources to produce a magazine titled *North Dakota Water*. The magazine replaces several independent newsletters and significantly improves the distribution and quality of information about the many facets of water

resources and water issues. This information now reaches a broad audience including the public, government agencies, and elected officials. Up to 7,000 copies are distributed in most printings. *North Dakota Water* is published 10 times a year by the North Dakota Water Education Foundation with support from several private, federal, state and local organizations and



agencies. The Planning and Education Division develops the State Water Commission's contribution to the magazine. A two-page section called *the Oxbow*, replaces the agency's monthly *Oxbow* newsletter and annual *Oxbow* magazine. *The Oxbow* section is designed to inform and educate the public about State Water Commission projects and programs as well as local, state, and national water management issues. In addition to *the Oxbow*, the Division produces a feature page titled *The Water Primer*. This feature page highlights interesting or little known facts about water and related land resources.

### *Agency World Wide Web Site*

The Division began developing a world wide web site to provide a broad range of information on the agency and North Dakota's water resources to people using the Internet. At the close of the biennium, the site included access to the North Dakota Century Code pertaining to water management; databases including the agency's well inventory, dam inventory, water permits, drainage permits and the statewide rain gauging network. Agency organization information was provided with the ability to contact staff via e-mail. A listing of all Water Management District members was made available to make it easier for the public to identify local water managers. Information was provide on the various permitting processes regulated by the agency such as water use permits and dam construction permits. Application forms were made available on-line. Special features include real-time stream data and flood information during the 1997 flooding and the ongoing water management problems facing Devils Lake Basin residents. The web address is <http://water.swc.state.nd.us>

## Water Appropriation Division

The responsibilities of the Water Appropriation Division focus on the appropriation and management of the state's water resources to serve the needs of present and succeeding generations of North Dakota citizens. The following activities are carried on to fulfill these responsibilities:

- Identify the availability and quality of the state's water resources.
- Assist municipalities and other public entities in developing solutions to particular water supply problems.
- Assess impacts of existing water-supply development on ground-water levels, streamflow, and water quality for purposes of allocation and management.
- Collect, store, and disseminate data on streamflow, ground-water levels, water quality, and water use.
- Carry out the administrative procedures for water permit applications, water permits, and water rights.
- Provide recommendations to the State Engineer on water permit applications.
- Provide for the storage and retrieval of water permit records.
- Maintain a record of the utilization of each conditional water permit and water right.

### *Major Activities for 1995-1997*

The program for collecting water resource data continued at a relatively constant level. This program consists of four components: streamflow, ground-water levels, chemical quality, and water use. The agency supports the

operation of approximately 60 streamflow gages, many of which are a part of the cooperative program with the U.S. Geological Survey. Due to a funding shortfall, two joint water resource boards, several county water resource districts, and a city provided 25 percent of the cost of operating stream gages in their area.

Ground-water levels were measured periodically in more than 2,500 observation wells completed in the major aquifers throughout the state. Approximately 1,000 water samples for chemical analyses were collected annually at streamflow gage stations, and from selected observation wells and production wells. The water use data is submitted annually by the holders of more than 3,100 water permits.

In 1996 a cooperative study was undertaken with the Minnesota Department of Natural Resources to further define the location and hydrogeology of the Wahpeton buried valley aquifer in Richland County, North Dakota and Wilkin County, Minnesota. The aquifer is the source of water supply for the cities of Wahpeton and Breckenridge as well as many farms and other rural households. The Minn-Dak Farmers Cooperative sugar beet plant obtains its water supply from the aquifer and it is also the backup source of water for the ProGold LLC corn wet milling plant. The results of the study, which is expected to take three years, will provide information needed for the long-term management of the aquifer.

Even though precipitation continued above normal throughout much of the state during the biennium, the number of acres under irrigation grew due to



*The SWC maintains a network of observation wells and continuous recording rain gauges.*

continued interest in high-value crops, particularly potatoes. The use of irrigation in the production of high-value crops increases the yield and provides a high quality product by assuring sufficient moisture during periods of inadequate precipitation. Much of the new development occurred in the eastern one-half of the state. It is estimated that during the biennium irrigated acreage increased in the state by approximately 8,000 acres to a total of approximately 237,000.

Two new irrigation districts were created. The Central Dakota Irrigation District was established in Kidder County for the irrigation of more than 5,000 acres. This district is unique in that many of the land tracts are not contiguous and the water source is the Kidder aquifer system. Potatoes will be grown in a rotation with other crops on much of the acreage to supply plants producing frozen french fries.

In southeastern Williams County the Nesson Valley Irrigation District was created for the development of approximately 7,400 acres. The source of water is Lake Sakakawea. Along with conventional crops, it is expected that sugar beets will be the principal high value crop in the rotation. Potatoes may also be an important crop in the future. Construction plans are in preparation.

During the 1995-97 biennium the following investigations were commenced, continued or completed:

- Hydrologic investigation of the West Fargo aquifer system in Cass County.
- Hydrogeologic study of the Wahpeton buried valley aquifer in Richland County, ND and Wilkin County, MN in cooperation with the Minnesota Department of Natural Resources.
- A study of the water resources of the James River basin in cooperation with the U.S. Geological Survey.

## Water Permit Summary July 1, 1995-June 30, 1997

| WATER USE                             | ACRE-FEET |
|---------------------------------------|-----------|
| <b>Irrigation</b>                     |           |
| Applications filed:                   | 145       |
| Acres requested:                      | 41,626.2  |
| Acres granted*:                       | 23,702    |
| Water granted* .....                  | 33,226.4  |
| Ground water .....                    | 26,901.3  |
| Surface water .....                   | 6,325.1   |
| <b>Flood Control</b>                  |           |
| Applications filed:                   | 3         |
| Water granted* .....                  | 1,810     |
| <b>Industrial</b>                     |           |
| Applications filed:                   | 17        |
| Water granted* .....                  | 5,286.7   |
| <b>Livestock</b>                      |           |
| Applications filed:                   | 4         |
| Water granted* .....                  | 237.4     |
| <b>Municipal</b>                      |           |
| Applications filed:                   | 2         |
| Water granted* .....                  | 200       |
| <b>Recreation, Fish, and Wildlife</b> |           |
| Applications filed:                   | 32        |
| Storage granted* .....                | 2,415.7   |
| Annual use granted* .....             | 923.6     |
| <b>Rural Domestic</b>                 |           |
| Applications filed:                   | 7         |
| Water granted* .....                  | 1,610     |

**TOTAL Applications Filed: 210**

**TOTAL Water Granted ..... 44,786.2**

*\*Includes backlog—permits applied for in previous bienniums.*

The following reports were published during the biennium:

- Inventory of Potential Irrigation Development in Central North Dakota
- Analysis of Evidence Concerning the Risk of Contamination of the Elk Valley Aquifer from Elevated Sulfate Concentrations

## Water Development Division

The Water Development Division provides technical review and guidance in water management project design and in regulating project construction. The division staff has several responsibilities:

- Preparing engineering and feasibility reports and designs for the construction, maintenance, and major repair of water resource projects;
- Reviewing and making recommendations on permit applications for drains, dikes, dams, and sovereign lands;
- Providing technical assistance to water resource district boards;
- Inspecting and reporting on the safety of dams;
- Assisting communities in developing floodplain management capabilities pursuant to the National Flood Insurance Program;
- Providing joint coordination of the Municipal, Rural, and Industrial Water Supply Program;
- Managing the design, construction, and operation of the Southwest Pipeline Project; and
- Coordinating the development of the Northwest Area Water Supply program (NAWS) for distribution of water to cities and rural areas in northwestern and north central North Dakota.

The Water Development Division is divided into seven sections: 1) Regulatory, 2) Investigations, 3) Design and Construction, 4) Municipal, Rural, and Industrial water supply, 5) Red River Office (located in West Fargo), 6) Devils Lake office, 7) Southwest Pipeline Project/NAWS. The following is a summary of the biennial activities of each of these sections.

### *Regulatory*

The Regulatory Section processed 286 applications for construction or modification of dams and dikes. These applications consisted of 80 for fish and wildlife purposes, 130 for flood control, 46 for livestock watering, 10 for irrigation, 8 for recreation projects, 1 for wastewater storage, and 5 for mining operations. In the previous biennium, the Section processed 214 applications.

The Regulatory Section processed 93 applications to drain. Last biennium the Section processed 43 applications to drain.

The Regulatory Section also processed 25 applications to restore wetlands, 5 applications to create wetlands, and 57 sovereign land permit applications. The Section reviewed 20 revisions to existing mining permits. They also provided comments to the Corps of Engineers on 56 Clean Water Act (Section 404), permits.

The Regulatory Section is also responsible for floodplain management in the state and coordination of the National Flood Insurance Program.

The floodplain management staff assists 276 communities in the administration of its floodplain management responsibilities. Each community designates an individual as the floodplain administrator to oversee all development. The State Water Commission staff works closely with these individuals in providing technical assistance. The staff visits the communities on a predetermined basis of need.

During the 1995-97 biennium, over 80 communities were visited and assisted. Approximately 75 percent of the floodplain management costs are paid through the Community Assistance Program. This program is developed annually by the SWC and the Federal Emergency Management Agency.

### *Investigations*

The Investigation Section concentrated on the flooding problems at Devils Lake.

**Devils Lake** - Significant flooding has occurred throughout the Devils Lake basin during the last four years. The level of Devils Lake rose over 19 feet, from elevation 1423.24 feet msl on July 1, 1993, to 1442.28 on June 30, 1997. The volume of water in the lake has more than tripled in the last four years, from 590,000 acre-feet to 1,888,500 acre-feet, and the surface area of the lake has more than doubled from 46,800 acres to 96,800 acres. Record flows occurred on several tributaries to Devils Lake in 1997. State Water Commission staff spent a large amount of time providing technical assistance to local officials during this time period.

The Investigation Section worked on a number of emergency alternatives for the Devils Lake flood situation. These included water storage within the basin, an outlet to Stump Lake, construction of a dam across Ziebach's Pass, and outlet alternatives to the Sheyenne River.

The federal government and the Water Commission were involved in several other activities in the Devils Lake basin during the biennium. The U.S. Army Corps of Engineers developed the Emergency Outlet Plan, which would have moved 200 cfs through the Twin Lakes alignment to the Sheyenne River. Because this plan would have impacted Tribal Trust and Allotment land on the Spirit Lake Nation Reservation, the Peterson Coulee alignment has been selected as the preferred alternative since the end of the biennium.

**Upper Sheyenne River Channel Capacity Study** - As part of the Devils Lake Feasibility Study, the Sheyenne River from Highway 30 to the headwaters of Lake Ashtabula was studied to estimate the flow that could be added to the river without causing flood damages. The report, which was completed in June 1997, estimated the channel capacity to be 600 cfs.

**Survey Crew** - The survey crew spent 42 percent of its survey time on surveys relating to flooding in the Devils Lake basin, and an additional 3 percent on flood-related surveys elsewhere in the state, for a total of 45 percent flood-related. The remaining survey time was spent on proposed drains (25 percent), Southwest Pipeline Project (9 percent), observation wells (9 percent), flood studies (6 percent), construction surveys (5 percent), and miscellaneous (1 percent). The SWC obtained a Global Positioning System (GPS) survey system in December 1996. The system has decreased the time required for some surveys by at least half.

**Technicians** - The Investigation Section technicians, in addition to supporting the efforts of the section, spent considerable time plotting survey information for the Tri-County drain and Hay Creek surveys. These two projects are being conducted by other agencies with the Commission supplying the survey data.

**Williams County Irrigation Project (Nesson Valley)** - The feasibility study of the Nesson Valley Irrigation District was completed by a consultant and funding is being provided for construction. The Investigation Section provided support and review of the study.

**Missouri River Bank Stabilization** - SWC staff continued to work with the Corps of Engineers and local interests on Missouri River Bank Stabilization. The Corps of Engineers constructed one nontraditional bank protection structure in North Dakota during the biennium.

**1997 Flood Response** - The Investigation Section personnel contributed to the following efforts in response to the flood:

- Provided staff at the State Emergency Operation Center (EOC). SWC staff at the EOC coordinated SWC efforts throughout the state, monitored river stages and flows, provided gaging station information at daily EOC briefings, and arranged the supply of flood fighting equipment and supplies to local governmental agencies (city and county) including: bottled water, pumps, sandbags, and poly. The staff at the EOC provided a point of contact for other SWC personnel at various critical sites throughout the state, Fargo, Grand Forks, Iverson Dam, etc.

- Assisted the USGS with stream gaging in south central North Dakota for approximately three weeks during the flood.

- Obtained remote sensing data from FEMA and aerial photos from the Corps of Engineers. Using this information, maps showing inundated areas were developed.

- Developed maps showing roads and hydrology in the Red River Valley.

- Assisted with HEC-2 modeling of the Red River to predict areas that would be inundated. Using the results of the HEC-2 models, maps showing the potential flood areas were developed.

### *Devils Lake Office*

The one-person Devils Lake office coordinated SWC activities in the Devils Lake basin and provided the following specific services:

- Administered the Available Storage Acreage Program (ASAP), which is a SWC program designed to obtain short-term water storage sites within the Devils Lake basin to reduce flood damages around the lake. Through ASAP, the SWC obtained 8,000 acre-feet of storage on 47 sites, involving approximately 4,500 acres of land in 1996, and a total of 22,000 acre-feet of storage on 167 sites, involving approximately 13,500 acres of land in 1997. A total of \$1,578,000 has been spent on ASAP in 1996 and 1997.

- Monitored flood conditions within the Devils Lake basin and provided input to local, state, and federal agencies in flood forecasting and flood response efforts.

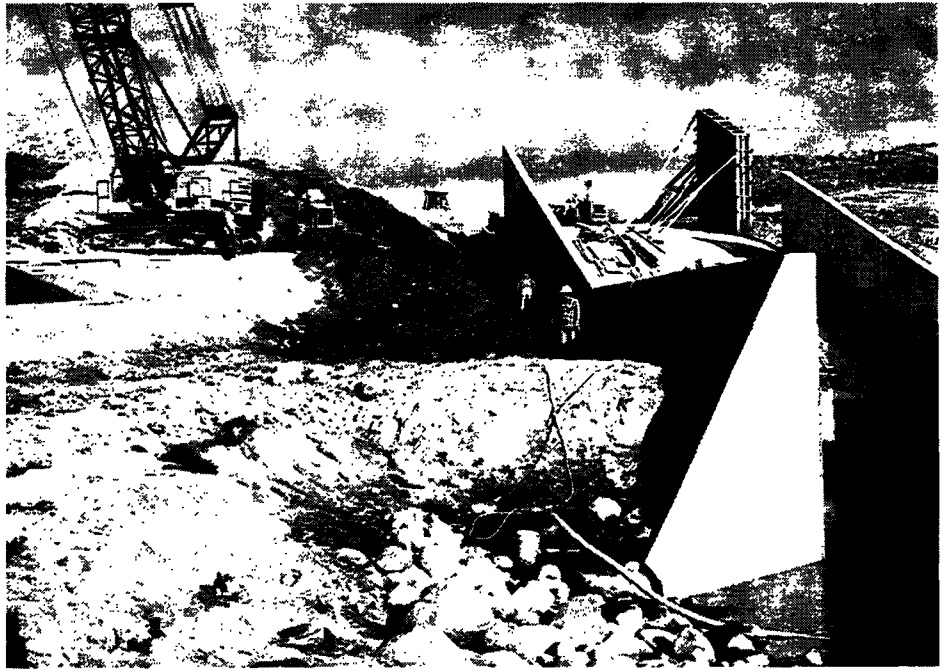
- Provided technical assistance to the Devils Lake Basin Joint Water Resource District and assisted in the organization of subbasin committees. The office also represented the SWC at various flood-related meetings within the Devils Lake basin. These included meetings regarding the U.S. Army Corps of Engineers levee project for the city of Devils Lake and the U.S. Army Corps of Engineers emergency outlet project. The office also participated in activities associated with the FEMA Devils Lake Basin Inter-agency Task Force and participated in State Flood Coordination meetings.

### *Design and Construction*

The following is a summary of projects completed during the 1995-1997 biennium. The summary includes contracted projects and work completed by the Commission's construction crew. Work performed by the construction crew includes maintenance and repair of water resource structures throughout the state, work on gaging stations for the U.S. Geological Survey, construction of storage sites within the Devils Lake Basin, and emergency work during the 1997 spring flood.

Following is a list of the contract projects:

**Sykeston Dam (Lake Hiawatha)** - The project involved the excavation of sediment from areas of the reservoir to improve the recreational opportunities. The total excavation was approximately 19,000 CY. The project cost was shared between the SWC, Wells County Water Resource District, ND Game and Fish Department, and ND Parks and Recreation Department.



*Mount Carmel Dam renovation, Cavalier County.*

**Mt. Carmel Dam** - Mt. Carmel Dam is an earthen embankment. The primary uses include water-based recreation for the area, water supply for the city of Langdon, and Langdon Rural Water Users.

The project involved enlarging the principal spillway and raising the control elevation of the principal spillway two feet, with the purposes of bringing the structure into compliance with current dam safety requirements and increasing the storage for water supply purposes. The existing reinforced concrete pipe spillway was replaced with a 30-foot concrete chute spillway. The emergency spillway was widened from 50-feet to 100-feet, and the embankment was raised approximately four feet. The Water Commission, Cavalier County Water Resource District, and Langdon Rural Water Cooperative shared in the project costs.

**North Lemmon Lake** - The primary use is water-based recreation. Work was conducted to stabilize the embankment. The project entailed the construction of a surface drain on the downstream embankment face and removal of trees from the downstream toe. The Water Commission, the ND Game and Fish Department, and the Adams County Water Resource District funded the project.

The Water Commission's construction crew was involved in several maintenance projects. A brief description of each of the major projects follows:

**Eggert Dam** - The work at Eggert Dam included removal of the existing spillway pipe and replacing it with a 30-inch CMP spillway pipe. Portions of the embankment experienced erosion. Part of the work included backfilling and compaction of the areas of erosion with a suitable fill. The Barnes County Water Resource District and the SWC shared in the cost of the project.

**Contract Projects  
1995-1997 Biennium**

| Project (Location)        | Date of Work | Project Cost          | SWC Costs           |
|---------------------------|--------------|-----------------------|---------------------|
| Sykeston Dam (Wells)      | Mar 1996     | \$76,250.00           | \$6,700.00          |
| Mt. Carmel Dam (Cavalier) | Jun/Jul 1996 | \$870,000.00          | \$130,000.00        |
| North Lemmon Lake (Adams) | Oct/Nov 1996 | \$150,900.00          | \$14,700.00         |
| <b>TOTAL</b>              |              | <b>\$1,097,150.00</b> | <b>\$151,400.00</b> |

**Maintenance Projects  
1995-1997 Biennium**

| Project (Location)  | Date of Work           | Project Cost       | SWC Cost                  |
|---|------------------------|--------------------|---------------------------|
| Eggert Dam (Barnes)   | Sept 1995              | \$38,600.00        | \$15,400.00               |
| Devils Lake/Stump Lake<br>Devils Lake—<br>Upper Basin Storage | Winter 1996<br>ongoing |                    | \$5,950.00<br>\$49,100.00 |
| Southwest Pipeline  | May-Aug 1996           |                    | \$4,600.00                |
| Drayton Dam (Pembina)   | Oct 1996               | \$6,200.00         | \$3,100.00                |
| Valley City Mill Dam (Barnes)                                 | Nov/Dec 1996           | \$25,050.00        | \$12,525.00               |
| Iverson Dam (Benson)  | Apr 1997               | \$16,000.00        |                           |
| Speck Davis Dam (Slope)                                       | Jun 1997               | \$8,103.00         | \$2,701.00                |
| <b>TOTAL</b>  |                        | <b>\$93,953.00</b> | <b>\$93,376.00</b>        |

**USGS Cooperative Projects  
1995-1997 Biennium**

| Project                        | Location          | Date of Work | SWC Cost           |
|--------------------------------|-------------------|--------------|--------------------|
| Gage Baldhill Ck. near Dazey   | Barnes            | Jul 1995     | \$3,580.00         |
| Gage Dazey and Devils Lake     | Barnes/Ramsey     | Jul 1995     | \$3,085.00         |
| Devils Lake and Amenia         | Ramsey/Cass       | Jul 1995     | \$3,261.00         |
| Gage Park River, Minto, Marvel | Walsh/Grand Forks | Aug 1995     | \$2,665.00         |
| Gage Pingree                   | Stutsman          | Aug 1995     | \$3,788.00         |
| Gage Devils Lake               | Ramsey            | May 1996     | \$295.00           |
| Gage Devils Lake               | Ramsey            | Jul 1996     | \$2,850.00         |
| Various Gages                  |                   | Jul 1996     | \$3,638.00         |
| Gage Apple Creek               | Burleigh          | Aug/Sep 1996 | \$3,942.00         |
| Gage Linton                    | Emmons            | Sep 1996     | \$1,370.00         |
| Gage Baldhill Dam              | Barnes            | Sep 1996     | \$2,032.00         |
| Gages Harwood and Horace       | Cass              | Oct 1996     | \$4,085.00         |
| Gages Amenia and Page          | Cass              | Oct 1996     | \$4,922.00         |
| Harwood                        | Cass              | Mar 1997     | \$2,428.00         |
| Haley                          | Bowman            | Jun 1997     | \$792.00           |
| Richardton                     | Stark             | Jun 1997     | \$2,222.00         |
| Various Gages                  | SW ND             | Jun 1997     | \$2,956.00         |
| <b>TOTAL</b>                   |                   |              | <b>\$47,911.00</b> |

**Devils Lake/Stump Lake** - This project looked at the feasibility of pumping floodwaters from Devils Lake to Stump Lake. The proposed work would involve the construction of a pumping site on the east side of Devils Lake, excavation of connecting channels, road raises, and replacing/enlarging road crossings. The work performed by the construction crew included excavation of test pits near the pumping site and clearing snow from a portion of a natural waterway east of Devils Lake.

**Devils Lake (Upper Basin Storage)** - This work involved the creation of storage within the upper basin of the Devils Lake watershed to prevent a portion of the runoff from entering Devils Lake. The work was performed during the early spring of 1996, extending through the early summer of 1997. The SWC crew constructed ditch blocks, installed gates on culverts, and breached dikes.

**Southwest Pipeline** - The construction crew assisted the Southwest Pipeline in seeding and minor maintenance of disturbed areas due to pipeline construction.

**Drayton Dam SWC** - The construction crew conducted repairs to the right downstream concrete apron of Drayton Dam in the fall of 1996. The dam provides water supply for the city and a sugar beet processing plant. The work consisted of placing concrete grout in a void beneath the concrete apron. The city of Drayton and the Water Commission shared in the cost of the project.

### DAM SAFETY INSPECTIONS

| Name of Dam            | County    | Hazard |
|------------------------|-----------|--------|
| Sweetbriar Creek Dam   | Morton    | Medium |
| Daub Dam               | Oliver    | Medium |
| Tolna Dam No.1         | Nelson    | Medium |
| New Rockford Dam       | Eddy      | Low    |
| Froelich Dam           | Sioux     | Low    |
| Erie Dam               | Cass      | Medium |
| Matejcek Dam           | Walsh     | High   |
| Bylin Dam              | Walsh     | High   |
| Renwick Dam            | Pembina   | High   |
| Speck Davis Dam        | Slope     | Low    |
| Crown Butte Dam        | Morton    | Medium |
| Indian Creek Dam       | Hettinger | Medium |
| Sheep Creek Dam        | Grant     | Low    |
| Queen City Dam         | Stark     | Medium |
| Burlington Dam No. 1   | Ward      | High   |
| Burlington Dam No. 2   | Ward      | High   |
| Harvey Dam             | Wells     | Medium |
| Wyard Dam              | Foster    | Low    |
| Cottonwood Creek Dam   | LaMoure   | Medium |
| Pheasant Lake Dam      | Dickey    | Medium |
| Jamestown Icehouse Dam | Stutsman  | Low    |
| Mount Carmel Dam       | Cavalier  | Medium |
| Senator Young Dam      | Cavalier  | High   |
| Olga Dam               | Cavalier  | Low    |
| Olson Dam (17-1)       | Pembina   | High   |
| Grafton RR Dam         | Walsh     | Low    |
| North Lemmon Lake Dam  | Adams     | Medium |
| Square Butte No. 4     | Oliver    | Medium |
| Square Butte No. 5     | Oliver    | High   |

### DAM SAFETY SITE VISITS

| Name                     | County    | Hazard |
|--------------------------|-----------|--------|
| Dead Colt Creek Dam      | Ransom    | Medium |
| Lisbon Dam               | Ransom    | Medium |
| Ft. Ransom Dam           | Ransom    | Low    |
| Mirito Dam               | Walsh     | Low    |
| Neché Dam                | Pembina   | Medium |
| Mt. Carmel Dam           | Cavalier  | Medium |
| Warsing Dam              | Eddy      | Low    |
| Appert Lake Dam          | Burleigh  | Low    |
| Kidder Power Plant Dam   | Richland  | Low    |
| Gunderson Dam            | Oliver    | Low    |
| Ypsilanti Dam            | Stutsman  | Low    |
| Long Creek Dam           | Divide    | Low    |
| Dobitz Dam, Fran 7       | Sioux     | Low    |
| Hamann Dam               | Slope     | Low    |
| Bowman-Haley Dam         | Bowman    | Medium |
| Hansen Dam               | Barnes    | Low    |
| Hyatt Slough Dam         | Dickey    | Low    |
| Hope Dam                 | Steele    | Low    |
| Dickinson Dam            | Stark     | High   |
| Nygren Dam               | Morton    | Low    |
| Becker Dam, Joe 1        | Sioux     | Low    |
| Becker Dam, Joe 2        | Sioux     | Low    |
| Stoney Slough NWR        | Barnes    | Low    |
| Construction Permit 1130 | Barnes    | Low    |
| Construction Permit 1131 | Barnes    | Low    |
| Construction Permit 1132 | Barnes    | Low    |
| Valley City Mill Dam     | Barnes    | Low    |
| Greenview Dam            | Steele    | Low    |
| Höglund Dam, Mike        | Griggs    | Low    |
| Squaw Creek Dam          | Hettinger | Low    |

**Valley City Mill Dam** - The construction crew performed repairs to the Valley City Mill Dam. The dam provides water supply for the city and irrigation supply for the municipal golf course. The dam is also used to supply water for the fishery located downstream of Baldhill Dam. The work included repair of the radial gate and the lifting mechanism. The work on the gate included replacement of the sheet metal and replacement of the main seals, and new cable was strung on the lifting mechanism. The project cost was shared equally between the city of Valley City and the Water Commission.

**Iverson Dam** - The construction crew performed an emergency breach of Iverson Dam. Runoff from record snowmelt almost caused instantaneous dam failure. The crew successfully lowered the reservoir level 17 feet with a controlled breach.

**Speck Davis Dam** - The construction crew made repairs to the principal spillway. The repairs consisted of excavating a portion of the corrugated metal spillway pipe in the area of the outlet, reconnecting the pipe, and backfilling with suitable material. The Water Commission, the ND Game and Fish Department, and the Slope County Water Resource District shared in the cost of the project.

**Snagging and Clearing** - The construction crew is involved with snagging and clearing projects in the state, primarily projects in southeastern North Dakota. The crew conducts channel inventories of snags and tree-falls requiring removal. Snagging and clearing work was conducted on the Sheyenne River in Barnes County and on the Wild Rice River in Cass County.

**USGS** - The Water Commission cooperates with the U.S. Geological Survey to maintain the system of USGS gaging stations located throughout the state. The work on the gaging stations is summarized in the table on page 19.

### **Dam Safety Inspections -**

Under the state's dam safety program, a total of 29 dams were inspected and reports prepared. Of the 29 dams, 8 were considered to be high hazard; 13 were medium hazard; and the remaining 8 dams were considered to be low hazard. The term 'hazard' refers to the potential for downstream damages, not the condition of the dam.

In addition, SWC personnel conducted site visits to 30 additional dams. File memos were prepared for each of the visits.

### *Municipal, Rural, & Industrial Water Supply*

In federal fiscal years 1996-97, the Garrison Diversion Municipal, Rural, and Industrial (MR&I) water supply program received \$20 million in federal grant funds for the development of water supply facilities in the state. This brought the total received from the federal government to \$134.1 million since the program was authorized in 1986.

A total of 133 applicants have requested assistance through the MR&I program. Of these, 37 projects have been approved for MR&I funding by the Garrison Diversion Conservancy District and the State Water Commission.

Twenty-six projects have been completed, including: Abercrombie, Agassiz Water Users, Cavalier, Crown Butte, Englevale, Fargo, Garrison Rural Water, Grandin, Grand Forks, Gwinner, Hankinson, Kindred, Langdon, Langdon Rural Water, McLean-Sheridan Rural Water, Minot, Missouri West Water Phase I, New Town, North Valley Water Association, Ramsey Rural Water, Riverview Heights, Riverside Park Dam, Rugby Phase I, Stanley, Tolna, and Tri-County Water Users.

Six more projects were in the design and/or construction phase at the end of the biennium, including Burleigh Water Users, Dickey Rural Water, Missouri West Phase II, North Valley Water, Rugby, and Southwest Pipeline Project.

The total estimated cost of the 133 projects is \$577 million. This cost includes \$120 million for the Northwest Area Water Supply Project and \$182 million for the Southwest Pipeline Project.

### *Red River Office*

The one-person Red River office coordinated SWC activities in eastern North Dakota, and provided the following specific services:

- Technical assistance to the Red River Joint Water Resource District in pursuing flood control projects in the Red River watershed. Reconnaissance level studies of potential dams were completed. Assistance was also provided to individual water resource boards on various drainage problems and other water-related issues. Inspections were made on various projects that the SWC had approved for cost-sharing.
- Engineering for the construction of snagging and clearing projects. Contractors completed 5.3 river miles on the Sheyenne River in Barnes County and 2.0 river miles on the Wild Rice River in Richland County. The office also coordinated the reconstruction of Eggart Dam in Barnes County.
- Assistance to prevent flood damage during the floods that occurred during the spring of 1996 and 1997. The office has represented the SWC at various meetings dealing with flood recovery, the interstate technical committee dealing with the hydrology and hydraulics for the Red River, the technical committee overseeing the Corps of Engineers UNET analysis

of potential flood damage reduction projects consisting of a levee system along the Red River and tributaries extending downstream from Grand Forks, the interim committee for the Red River Basin Board, and the six-member committee created to review the issues concerning the crossings along the Canadian border.

### *Southwest Pipeline Project*

The Southwest Pipeline serves as the water supply for Dickinson, Dodge, Dunn Center, Gladstone, Golden Valley, Halliday, Mott, New England, Regent, Richardton, and Taylor, as well as approximately 120 rural customers around the city of Taylor. Construction on the project continues to expand this regional water supply system.

By December 1995, the project had extended service to Belfield, Manning, New Hradec, and South Heart. During the biennium an additional 1,100 rural customers in four service areas were connected to the project. The total population served by the project is approximately 24,200 persons.

Late in the biennium, groundwork was laid for a new funding mechanism for the project. Acting under legislative authority with an emergency provision, the SWC put in place a bonding program to fund Southwest Pipeline construction. In May 1997, Southwest Pipeline Project Series A bonds were issued for a total of \$6,800,000. Series B bonds, which embodied a USDA loan for \$3,400,000, were issued a few weeks later. These funds, coupled with a USDA grant of \$2,600,000, will be used to fund construction during the 1997-99 biennium.



By the end of the biennium, construction contracts were in place to extend service to the cities of Hettinger and Reeder as well as an additional 305 rural customers. Both Hettinger and Reeder are under orders from the U.S. Environmental Protection Agency to correct their water supply's excessive fluoride content. Achieving compliance with those orders was a major goal of the project's development plan.

Capital repayments into the Resources Trust Fund for the Southwest Pipeline Project totaled \$1,454,861.80 for the biennium.

On January 1, 1996, all operations and maintenance functions were transferred to the Southwest Water Authority. Seven operations staff personnel were also transferred from the SWC to the Southwest Water Authority. The 1995 and 1996 annual operating reports are available from the Southwest Authority. The State of North Dakota retains ownership of the project works.

### *Northwest Area Water Supply (NAWS) Project*

The Northwest Area Water Supply (NAWS) project prefinal design was completed. In December 1995, Houston Engineering of Fargo was selected as the consulting engineer for the final design and construction of the NAWS project. Final design of the project commenced in June 1996, and construction is scheduled to begin in late 1998 in both Rugby and on a pipeline to Minot from an intake on either Lake Audubon or Lake Sakakawea.

During the 1993-1995 biennium, a series of tests were commissioned to determine whether disinfection of raw Missouri River water from Lake Sakakawea or Lake Audubon, with either chloramination or ozonation, could meet the disinfection requirements of the Environmental Protection Agency's Surface Water Treatment Rule (SWTR). Samples from the two lakes were collected in November 1994 and January, March, and May of 1995 for testing.

Test results showed that disinfection with free chlorine followed by chloramine could inactivate 99.9 percent of Giardia cysts and 99.99 percent of virus, meeting the requirements of the SWTR. Test results also showed that ozone alone could achieve the same result with a shorter contact time.

Results of the testing program were presented in a report to the Garrison Joint Technical Committee in January 1996. In September 1996, the Garrison Joint Technical Committee wrote a letter to the Garrison Diversion Consultative Group accepting the findings of the report with the Canadian section recommending that North Dakota consider using ozone because of its greater effectiveness.

In the fall of 1996, work on the project's environmental assessment began, with a draft report published in June 1997. The major issue associated with the project continues to be the potential for biota transfer. The SWC and sponsors of the project recognize the importance of maintaining a barrier to transfer of biota from the Missouri River basin into the Hudson Bay basin and are committed to the consultative process with Canada.

### *The Floods of 1997*

The winter blizzards and spring floods of 1997 were among the worst in history. Snowfall records were broken across the state setting the foundation for flooding. Flooding began in the western portion of the state with most rivers peaking in late March. Severe flooding occurred along the Missouri River at Williston, the Cannonball River at Mott, the Knife River at Beulah and Hazen, and along the Heart River west of Mandan. Although the flooding caused significant damages in the southwest, the flood peaks were generally well below the historic flows recorded in 1950.

The most damaging flooding occurred along the mainstem of the Red River. Flooding along the southern portions of the Red River began in late March and by April 4, 1997, the Red River at Wahpeton and Fargo was at or near record stages. However, flooding in the east was inhibited by a late spring blizzard on April 5-6, 1997. This blizzard brought a severe drop in temperature, winds up to 70 miles per hour, and up to two feet of snow in many areas. In southeastern North Dakota, the blizzard was preceded by wind-driven rain and sleet. The result was record flooding at all locations on the mainstem of the Red River. Virtually all stream gages on the Red River had flows exceeding 100-year flood levels. Red River tributary flooding was, with a few exceptions, less than historic record peaks.

Major diking efforts occurred in all of the cities along the Red River. Except for Grand Forks, these efforts were largely successful, although significant damages occurred to certain areas in Wahpeton and Fargo. The failure of the dikes in Grand Forks, however, resulted in the greatest single disaster ever in North Dakota.



*The Grand Forks flood of April 1997.*

Approximately two-thirds of the city was flooded. The city was shut down for over three weeks. This resulted in major evacuation of all residents, hospitals, nursing homes, and the closure of schools, including the University of North Dakota.

At the end of the biennium, cleanup and recovery efforts were well underway in Grand Forks. The city was looking ahead toward a permanent solution to their flooding problems. The U.S. Army Corps of Engineers was asked to compare a permanent levee project along the Red River to an alternative that diverts the waters around the west side of Grand Forks and function similarly to the flood control project in Winnipeg, Manitoba.

Efforts were also underway with the National Weather Service to improve future flood forecasts along the Red River. The 1997 flood was particularly difficult to forecast on the Red River since the flows were significantly higher than historic data used to calibrate hydrology and hydraulic models.

Record-breaking flows also occurred in the Devils Lake basin. New records were set at four tributary stream gages. The level of Devils Lake was at 1442.3 msl on June 30, 1997, or four feet higher than the previously recorded peak in 1867. The volume of water flowing into Devils Lake was equally impressive. The 1997 runoff into Devils Lake (500,000 acre-feet) exceeds the previous record volume by nearly 40 percent.

Efforts continued regarding an outlet from Devils Lake to the Sheyenne River. The outlet has been studied since the 1980s. It resumed, however, with a renewed interest in 1993 through the cooperative efforts of the U.S. Army Corps of Engineers and the Water Commission. At the end of the biennium, the Corps of Engineers was investigating outlet alternatives from the west end of the lake. Water quality impacts to the Sheyenne and Red Rivers are under investigation, as are several other environmental issues.

The majority of the State Water Commission staff were totally involved in the statewide flood fight for over a month. The State's Division of Emergency Management established an Emergency Operation Center with 24-hour staffing by several agencies, including the State Water Commission. State Water Commission

engineers assisted in the location of the Washington Street emergency dike in Grand Forks. This secondary dike was built after the Riverside dikes failed. The dike saved several areas in the southwestern portion of Grand Forks.

Water Commission staff worked closely with the U.S. Army Corps of Engineers and the cities of Wahpeton, Grafton, Fargo, and Valley City regarding emergency dike alignments and permits. Water Commission staff also coordinated directly with county water resource districts and county commissions on a daily basis throughout the state. Staff also assisted the U.S. Geological Survey with stream gaging for approximately three weeks.

The Water Commission construction crew breached Iverson Dam near Leeds, North Dakota. The dam's pipe spillway failed on April 23, 1997, jeopardizing the Burlington Northern railroad and several homes in Leeds. Approximately four people were involved in the 24-hour five-day response effort.



*Emergency breach of Iverson Dam in Benson County.*

## State Water Commission

### Funding Sources for Biennial Period Ending June 30, 1997

| Funding Source | Appropriation       | Expenditures        | Balance             |
|----------------|---------------------|---------------------|---------------------|
| General Fund   | \$5,760,627         | \$5,536,492         | \$224,135           |
| Federal Fund   | 22,328,327*         | 13,232,111          | 9,096,216           |
| Special Fund   | 17,931,966**        | 13,053,689          | 4,878,277           |
| <b>Total</b>   | <b>\$46,020,920</b> | <b>\$31,822,292</b> | <b>\$14,198,628</b> |

\* Actual federal revenue was \$13,097,976

\*\* Actual special revenue was \$12,457,619

# State Water Commission

## Program Budget Expenditures for Biennial Period Ending June 30, 1997

| AGENCY<br>PROGRAM                  | SALARIES<br>& WAGES | OPERATING<br>EXPENSES | EQUIPMENT | GRANTS &<br>CONTRACTS | PROGRAM<br>TOTALS |
|------------------------------------|---------------------|-----------------------|-----------|-----------------------|-------------------|
| <b>ADMINISTRATION</b>              |                     |                       |           |                       |                   |
| Budget                             | \$639,441           | \$390,000             | \$14,000  | \$0                   | \$1,043,441       |
| Expended                           | \$637,310           | \$388,860             | \$12,741  | \$0                   | \$1,038,912       |
| Percentage                         | 100                 | 100                   | 91        | 0                     | 100               |
| <b>ATMOSPHERIC RESOURCES</b>       |                     |                       |           |                       |                   |
| Budget                             | \$425,031           | \$1,965,357           | \$8,373   | \$3,050,000           | \$5,448,761       |
| Expended                           | \$415,373           | \$1,025,799           | \$4,990   | \$449,018             | \$1,895,180       |
| Percentage                         | 98                  | 52                    | 60        | 15                    | 35                |
| <b>NORTHWEST AREA WATER SUPPLY</b> |                     |                       |           |                       |                   |
| Budget                             | \$2,418             | \$1,520,900           | \$0       | \$750,000             | \$2,273,318       |
| Expended                           | \$0                 | \$544,099             | \$0       | \$30,787              | \$574,886         |
| Percentage                         | 0                   | 36                    | 0         | 4                     | 25                |
| <b>SOUTHWEST PIPELINE</b>          |                     |                       |           |                       |                   |
| Budget                             | \$875,336           | \$3,258,378           | \$14,677  | \$15,550,732          | \$19,699,123      |
| Expended                           | \$464,372           | \$2,204,324           | \$14,677  | \$11,352,931          | \$14,036,306      |
| Percentage                         | 53                  | 68                    | 100       | 73                    | 71                |
| <b>WATER APPROPRIATION</b>         |                     |                       |           |                       |                   |
| Budget                             | \$2,204,413         | \$328,752             | \$28,000  | \$500,000             | \$3,061,165       |
| Expended                           | \$2,111,344         | \$327,267             | \$27,949  | \$476,334             | \$2,942,893       |
| Percentage                         | 96                  | 100                   | 100       | 95                    | 96                |
| <b>WATER DEVELOPMENT</b>           |                     |                       |           |                       |                   |
| Budget                             | \$2,620,466         | \$374,959             | \$325,000 | \$8,280,420           | \$11,600,845      |
| Expended                           | \$2,613,523         | \$361,436             | \$324,901 | \$7,240,068           | \$10,539,928      |
| Percentage                         | 100                 | 96                    | 100       | 87                    | 91                |
| <b>PLANNING AND EDUCATION</b>      |                     |                       |           |                       |                   |
| Budget                             | \$662,109           | \$221,658             | \$10,500  | \$0                   | \$894,267         |
| Expended                           | \$630,454           | \$153,310             | \$10,424  | \$0                   | \$794,188         |
| Percentage                         | 95                  | 69                    | 99        | 0                     | 89                |
| <b>DEVILS LAKE BOND PAYMENTS</b>   |                     |                       |           |                       |                   |
| Budget                             |                     |                       |           |                       |                   |
| Expended                           |                     |                       |           | \$2,000,000           | \$2,000,000       |
| Percentage                         |                     |                       |           | 0                     | 0                 |
| <b>AGENCY TOTALS</b>               |                     |                       |           |                       |                   |
| Budget                             | \$7,429,214         | \$8,060,004           | \$400,550 | \$30,131,152          | \$46,020,920      |
| Expended                           | \$6,872,376         | \$5,005,096           | \$395,683 | \$19,549,138          | \$31,822,292      |
| Percentage                         | 93                  | 62                    | 99        | 69                    | 69                |

## State Water Commission

### 1995-1997 Grants Summary

| PROGRAM/<br>PROJECT             | RESOURCES<br>TRUST FUND | GENERAL<br>FUNDS | FEDERAL<br>FUNDS | OTHER<br>FUNDS   | TOTALS              |
|---------------------------------|-------------------------|------------------|------------------|------------------|---------------------|
| Hydrologic Investigation        | \$500,000               |                  |                  |                  | \$500,000           |
| Devils Lake                     | \$3,032,688             | \$403,000        |                  |                  | \$3,435,688         |
| Devils Lake Bonding             | \$2,000,000             |                  |                  |                  | \$2,000,000         |
| Maple River Flood Control       | \$254,609               |                  |                  |                  | \$254,609           |
| Northwest Area Water Supply     | \$50,000                |                  |                  |                  | \$50,000            |
| ProGold Corn Milling            | \$2,000,000             |                  |                  |                  | \$2,000,000         |
| Southwest Pipeline Project (CI) | \$1,696,976             |                  |                  | \$250,000        | \$1,946,976         |
| EPA Wetlands Grant              |                         |                  | \$380,000        |                  | \$380,000           |
| General Projects                | \$2,050,921             |                  | \$17,000         | \$59,226         | \$2,127,147         |
| <b>SWC GRANTS TOTAL</b>         | <b>\$11,585,194</b>     | <b>\$403,000</b> | <b>\$397,000</b> | <b>\$309,226</b> | <b>\$12,694,420</b> |

## State Water Commission

### Grants Programs/Projects Authorized July 1, 1995 - June 30, 1997

| SWC<br>PROJ NO NAME                                  | DATE<br>APPROVED | AMOUNT<br>APPROVED | PAYMENTS         | BALANCE        |
|--|------------------|--------------------|------------------|----------------|
| <b>WATER APPROPRIATION DIVISION</b>                  |                  |                    |                  |                |
| 1395 Hydrologic Investigations                       | 7-19-95          | <u>500,000</u>     | <u>485,682</u>   | <u>14,318</u>  |
| WATER APPROPRIATION DIVISION TOTALS                  |                  | \$500,000          | \$485,682        | \$14,318       |
| <b>WATER DEVELOPMENT DIVISION</b>                    |                  |                    |                  |                |
| DEVILS LAKE  |                  |                    |                  |                |
| 416-1 Devils Lake Long Term Studies                  | 2-4-92           | \$423,488          | \$354,005        | \$69,483       |
| 416-1 Devils Lake Long Term Studies (Stage 2C)       | 3-26-97          | 594,000            | 594,000          | 0              |
| 1882-01 Available Storage Acreage Program (Ramsey)   | 10-27-95         | 650,000            | 650,000          | 0              |
| 1882-02 Devils Lake Emergency Response Plan (Ramsey) | 11-29-95         | 156,200            | 147,554          | 8,646          |
| 416-2 Devils Lake Levee Raise (Phase 1)              | 9-4-96           | 175,000            | 175,000          | 0              |
| 1882-01 Available Storage Acreage Program (Ramsey)   | 1-27-97          | 500,000            | 500,000          | 0              |
| 414 Devils Lake Levee Raise (Phase II)               | 3-26-97          | 409,000            | 342,079          | 66,921         |
| 1882-01 Available Storage Acreage Program (Ramsey)   | 3-26-97          | 100,000            | 100,000          | 0              |
| 1882-01 Available Storage Acreage Program (Ramsey)   | 5-7-97           | 200,000            | 113,696          | 86,304         |
| 1882-01 Available Storage Acreage Program (Ramsey)   | 6-11-97          | 100,000            | 0                | 100,000        |
| 1882-01 Available Sotrage Acreage Program (Ramsey)   | 6-11-97          | <u>128,000</u>     | <u>0</u>         | <u>128,000</u> |
| DEVILS LAKE SUBTOTAL                                 |                  | \$3,435,688        | \$2,976,334      | \$459,354      |
| <b>SPECIAL PROJECTS</b>                              |                  |                    |                  |                |
| Devils Lake Bonding                                  |                  | \$2,000,000        | \$0              | \$2,000,000    |
| 1344 Maple River Flood Control                       | 2-4-92           | 254,609            | 157,903          | 96,706         |
| 234-4 Northwest Area Water Supply                    | 9-4-96           | 50,000             | 30,784           | 19,216         |
| 1880 ProGold Corn Milling                            | 7-19-95          | 2,000,000          | 2,000,000        | 0              |
| 1736 Southwest Pipeline Project                      | 7-19-95          | <u>1,946,976</u>   | <u>1,946,976</u> | <u>0</u>       |
| SPECIAL PROJECTS SUBTOTAL                            |                  | \$6,251,585        | \$4,135,663      | \$2,115,922    |
| <b>EPA WETLANDS GRANT</b>                            |                  |                    |                  |                |
| 1489-7 Water Education Foundation                    |                  | \$3,035            | \$3,035          | \$0            |
| 1500 Devils Lake                                     |                  | 15,000             | 15,000           | 0              |
| Water Education Foundation                           |                  | 21,109             | 21,103           | 6              |
| Game & Fish  |                  | 47,000             | 47,000           | 0              |
| 1500-1 Water Education Foundation                    |                  | 56,000             | 55,997           | 3              |
| Game & Fish (CRP)                                    |                  | 45,500             | 25,774           | 19,726         |
| Health Department                                    |                  | 38,400             | 38,400           | 0              |
| Devils Lake  |                  | 45,000             | 45,000           | 0              |
| Grand Harbor   |                  | 8,801              | 8,801            | 0              |
| Agricultural Department                              |                  | 15,000             | 15,000           | 0              |
| 1500-2 EPA   |                  | <u>85,155</u>      | <u>80,917</u>    | <u>4,238</u>   |
| EPA WETLANDS GRANT SUBTOTAL                          |                  | \$380,000          | \$356,027        | \$23,973       |

| SWC<br>PROJ NO                                | NAME   | DATE<br>APPROVED | AMOUNT<br>APPROVED  | PAYMENTS           | BALANCE            |
|---|--|------------------|---------------------|--------------------|--------------------|
| <b>WATER DEVELOPMENT DIVISION (continued)</b> |  |                  |                     |                    |                    |
| <b>GENERAL PROJECTS</b>                       |  |                  |                     |                    |                    |
| 300   | Baldhill (Barnes)  | 1-27-95          | \$7,201             | \$2,109            | \$5,092            |
| 1182  | Richland County Drain #12 (Richland)                       | 7-19-95          | 185,704             | 138,905            | 46,799             |
| 1270  | Hay Creek Impact Evaluation Project (Burleigh)             | 10-11-95         | 5,400               | 2,757              | 2,643              |
| 1271  | Harwood Flood Control (Cass)                               | 7-19-95          | 94,375              | 55,449             | 38,926             |
| 1577-10                                       | Langdon Floodplain Management Study (Cavalier)             | 12-20-93         | 4,100               | 0                  | 4,100              |
| 1614  | Lower Mauvais Coulee (Benson & Ramsey)                     | 7-19-95          | 113,652             | 113,362            | 290                |
| 1737  | Stone Creek - White Spur Drain (Bottineau)                 | 7-19-95          | 227,229             | 169,499            | 57,730             |
| 1577  | Lower Forest River FP (Walsh)                              | 1-26-93          | 5,200               | 0                  | 5,200              |
| 1800  | Carrington Creek Project (Foster)                          | 7-19-95          | 11,880              | 10,000             | 1,880              |
| 1803  | Belfield Flood Control (Stark)                             | 12-20-91         | 38,800              | 0                  | 38,800             |
| 1804  | Grand Harbor #1 (Ramsey)                                   | 4-6-93           | 20,640              | 16,122             | 4,518              |
| 1832  | Hammer - Sullivan (Ramsey)                                 | 7-2-93           | 21,231              | 15,152             | 6,079              |
| 1840  | North Loma (Cavalier)                                      | 7-9-93           | 7,960               | 0                  | 7,960              |
| 828   | Homme Dam (Walsh)  | 11-29-95         | 28,000              | 0                  | 28,000             |
| AOC/W   | North Dakota Water Coalition                               | 2-23-96          | 1,000               | 0                  | 1,000              |
| 1401  | International Drainage                                     | 4-23-96          | 1,725               | 0                  | 1,725              |
| 1577-13                                       | Halliday NCRS Study (Dunn)                                 | 6-18-96          | 1,462               | 0                  | 1,462              |
| 1486  | Cooperstown Area Drain Project (Griggs)                    | 7-11-96          | 5,200               | 0                  | 5,200              |
| 1102  | Elliott Drain (Dickey)                                     | 9-4-9            | 32,720              | 29,198             | 3,522              |
| 416-1   | Devils Lake - LEMC (Ramsey)                                | 10-3-96          | 5,000               | 2,655              | 2,345              |
| 416-1   | Lake Emergency Committee                                   | 5-21-96          | 9,000               | 0                  | 9,000              |
| 1389  | High Value Irrigation                                      | 12-4-96          | 2,000               | 0                  | 2,000              |
| 1857  | Elk, Charbonneau, Timber Creek Irrigation Study (McKenzie) | 12-4-96          | 25,000              | 0                  | 25,000             |
| 1292  | Nygren Dam (Morton)  | 12-11-96         | 1,000               | 0                  | 1,000              |
| 1223  | Steele Count Drain #12 (Steele)                            | 1-27-97          | 33,626              | 0                  | 33,626             |
| 1315  | Twelve Mile & Traux Township Pipeline (Williams)           | 1-27-97          | 87,800              | 0                  | 87,800             |
| 1270  | Burnt Creek Floodplain Study (Burleigh)                    | 2-17-97          | 9,125               | 0                  | 9,125              |
| 480   | James River Snagging & Clearing (Stutsman)                 | 3-3-97           | 3,750               | 0                  | 3,750              |
| 1172  | Shenford & McLeod Flood Control Study (Ransom)             | 5-5-97           | 5,000               | 0                  | 5,000              |
|   | Completed Projects   |                  | \$1,311,326         | \$1,167,860        | \$143,466          |
|   | Approved General Projects Subtotal                         |                  | 2,306,106           | 1,723,068          | 583,038            |
|   | Turnback Funds from completed projects                     |                  | (143,466)           | 0                  | (143,466)          |
|   | Unallocated Balance  |                  | (35,493)            | 0                  | (35,493)           |
|   | <b>WATER DEVELOPMENT DIVISION TOTALS</b>                   |                  | <b>\$12,194,420</b> | <b>\$9,191,092</b> | <b>\$3,003,328</b> |
|   | <b>ALL FUNDS TOTAL</b>                                     |                  | <b>\$12,694,420</b> | <b>\$9,676,774</b> | <b>\$3,017,646</b> |



# State Water Commission

## Object Expenditures for Biennial Period Ending June 30, 1997

|   |                     |
|---|---------------------|
| Permanent Salaries .....                                  | \$ 5,162,781        |
| Temporary Salaries and Overtime Salaries .....            | 271,835             |
| Fringe Benefits .....                                     | 1,437,762           |
| Data Processing Service .....                             | 15,239              |
| Telecommunications - ISD .....                            | 76,721              |
| Travel .....  | 592,010             |
| Utilities .....   | 100,098             |
| Postage .....   | 38,757              |
| Leases/Rental .....                                       | 120,381             |
| Dues and Professional Development .....                   | 97,473              |
| Operating Fees and Services .....                         | 330,710             |
| Repair Services .....                                     | 33,221              |
| Professional Services (Includes Southwest Pipeline) ..... | 3,007,206           |
| Insurance .....   | 15,027              |
| Office Supplies .....                                     | 89,836              |
| Printing .....  | 49,141              |
| Professional Supplies & Materials .....                   | 249,009             |
| Food & Clothing .....                                     | 1,007               |
| Medical, Dental, and Optical .....                        | 2,738               |
| Building, Grounds, Vehicle Maintenance Supplies .....     | 132,633             |
| Miscellaneous Supplies .....                              | 53,889              |
| Office Equipment and Furniture .....                      | 395,683             |
| Land/Buildings/Other .....                                | 800,481             |
| Contract Payments (Includes Southwest Pipeline) .....     | 11,970,728          |
| Water Resources Grants .....                              | 6,359,165           |
| Cooperative Research .....                                | 418,762             |
| <b>TOTAL .....</b>  | <b>\$31,822,292</b> |

### Resources Available from the Agency

Minutes of meetings held may be obtained by writing to: ND State Water Commission  
State Office Building  
900 East Boulevard Avenue  
Bismarck, ND 58505-0850

Data available for public use includes:

- Government Land Office Plats
- Survey Horizontal and Vertical Control
- Growing Season Raintall Data
- Water Permit Data
- Drainage Permit Data
- Stream Flow Data

State Water Commission Home Page on the Internet: <http://water.swc.state.nd.us/>

Additional information about the State Water Commission is available on our home page.