



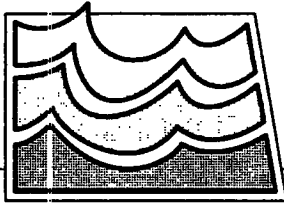
NORTH DAKOTA
State Water Commission
and
Office of the State Engineer



BIENNIAL REPORT
for the period July 1, 1999 to June 30, 2001

Governor John Hoeven
Chairman

Dale L. Frink, P.E.
Secretary and State Engineer



North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850 • 701-328-2750
TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: <http://www.swc.state.nd.us/>

December 1, 2001

The Honorable John Hoeven
Governor of North Dakota
State Capitol
Bismarck, ND 58505

RE: 1999-2001 Biennial Report

Dear Governor Hoeven:

It is with great pride in the State Water Commission and the Office of the State Engineer that we present our Biennial Report for July 1, 1999, through June 30, 2001. This report highlights the events and activities of the State Water Commission and the State Engineer.

Over the course of the biennium, we continued to face several challenging obstacles with regard to managing our water resources. However, in the face of those challenges - including two of our greatest challenges, flood protection and water supply - we also saw many successes. We made significant advances in our efforts to provide clean, reliable sources of drinking water to thousands of North Dakotans all over the state; and we made substantial advances in flood protection to safeguard many of our communities from the threat of future flooding.

Though we have accomplished a great deal and seen many successes over the past two years, much remains to be done. With your continued support, the State Water Commission and the Office of the State Engineer will continue to successfully manage and develop North Dakota's water resources for the benefit of current and future generations.

Respectfully submitted,

Dale L. Frink
Secretary and State Engineer

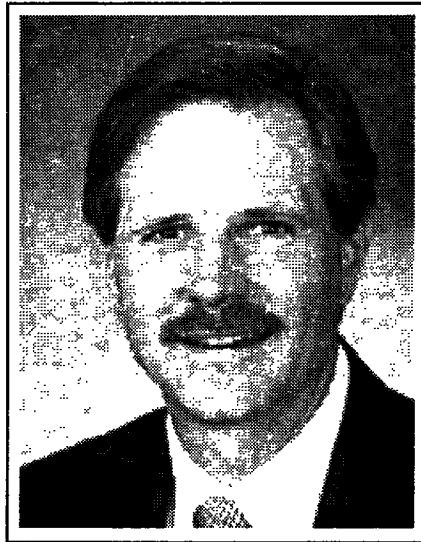
DLF:pf
Enclosure

Table of Contents

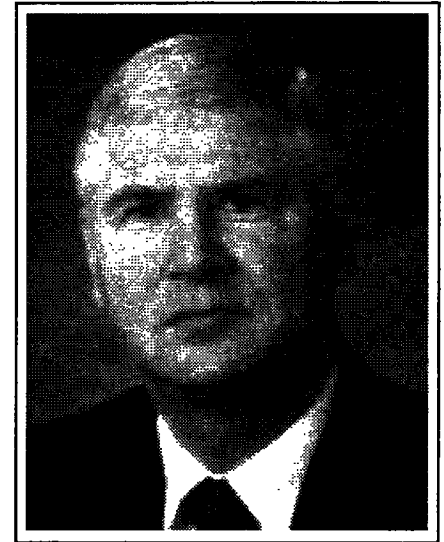
Mission.....	1
Agency Goals	1
Organization	1
History and Mandates	1
Agency Policies.....	1
Principal Agency Activities	2
2001 Water Resources Legislation	3
Water Commission Members	4
Water Commission Meetings	4
Organizational Chart	5
State Water Commission Employees	6
Administrative Services Division	7
Atmospheric Resource Board	8
Planning and Education Division	12
Water Appropriation Division	15
Water Development Division	19
Expenditures by Fund	25
Expenditures by Line Item.....	25
Trust Fund Revenue	25
Funding Authority	26
1999-2001 Grants Summary	26
Program Budget Expenditures	27
Grants Programs/Projects Authorized	28
Object Expenditures	30
Water Development Revenue Bonds	31
Resources Available from the Agency	31



NORTH DAKOTA STATE WATER COMMISSION



GOVERNOR JOHN HOEVEN
Chairman



DALE L. FRINK, P.E.
Secretary & State Engineer

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.

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 arranged such 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 its 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 a field office in 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 engineer 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.
- 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's purpose.

The Contract Fund is the primary source of funds for assistance to local sponsors and is controlled by the Commission.

Principal Agency Activities

- Develop Missouri River water in ways that will secure North Dakota's share of Missouri River flows for our current and future needs, as reflected in comprehensive water management planning documents and the Pick Sloan Plan.

- Implement plans for the distribution of Missouri River water through regional water supply systems such as the Southwest Pipeline project, the Northwest Area Water Supply project, and potential Eastern Dakota Water Supply.

- Manage and develop North Dakota's water resources to facilitate economic development and improve quality of life for current and future generations.

- Promote and provide water supplies needed for the expansion and diversification of North Dakota's agricultural industry.

- Work to implement all aspects of the Dakota Water Resources Act of 2000 to provide a reliable source of good-quality water throughout North Dakota in return for the sacrifices made under the Pick Sloan Plan.

- Complete detailed studies and research that more precisely define the nature and occurrence of water to optimize its conservation and development throughout the state.

- Maintain a water project inventory and water management plan to promote efficiency in meeting North Dakota's future water development and funding needs.

- Refine legislation and policies for administering the Water Development Trust Fund and the Resources Trust Fund through which critical water facilities can be constructed.

- Work with the federal government to implement the state's three pronged approach (including an outlet to the Sheyenne River, infrastructure protection, and upper-basin management) to solving the Devils Lake area flooding problems.

- Develop policies and initiatives that will stimulate progress toward developing flood control measures along the Sheyenne, Pembina, and Red Rivers, and Devils Lake.

- Pursue cooperative efforts with neighboring states and provinces to plan for beneficial water management of shared water resources.

- Cooperate with agencies that have regulatory authority over North Dakota's waters to protect and enhance the quality of North Dakota's water resources and related ecosystems.

- Enforce weather modification standards, conduct research, and supervise operational cloud seeding programs for hail suppression and rainfall enhancement.

- Provide water education for North Dakota's teachers, youth, and general public.

- Promote expanded development of North Dakota's water-based recreation resources, especially the Missouri River, Lake Oahe, Lake Sakakawea, and Devils Lake.

- Collect water resource data for the purpose of identifying the location, condition, and temporal changes of the water resources of the state.

- Disseminate water resource information to the general public, businesses, and government agencies.

- Manage the water resource database so that it is available and accessible to interested parties.

- Manage state water resources within the framework of the water laws of the ND Century Code.

2001 Water Resources Legislation

House Bill 1023 was the Commission's appropriation bill. It addressed several issues:

1. It appropriated the Water Development Trust and Resource Trust Fund money to the Commission. It also transferred \$9.7 million from the Water Development Trust Fund to the General Fund, and then appropriated \$9.7 million from the General Fund to the Commission for agency operations.

2. It extended by two years the authority to issue bonds for the Grand Forks, Wahpeton, and Grafton flood control projects, and Devils Lake and Dakota Water Resource Act projects.

3. It allows the Commission to sell its existing shop and land and use the revenue from the sale to acquire land and construct a new maintenance facility.

4. It recognized the priorities developed by the Commission for the statewide water development program for the 2001-03 biennium and authorizes the Commission to fund these projects with Resources Trust Fund money and Water Development Trust Fund money by issuing bonds up to \$20 million, or by using a combination of these sources.

5. House Bill 1171 and House Bill 1396 failed, but their provisions were incorporated into House Bill 1023. House Bill 1171 directed the Commission to develop a plan and estimate of costs to supplement the water resources of eastern North Dakota. House Bill 1396 was the bill authorizing the Commission to cost-share on water quality projects to control nonpoint source pollution. House Bill 1023 authorizes the Commission to spend up to \$200,000 for this purpose.

6. It authorizes the Commission to use up to \$5.5 million to cost-share on a flood control channel and levy project for Fargo. The cost-share cannot exceed 50 percent of the city's share of the project. Before the Commission may provide funds or issue bonds for the Fargo project, all applicable permits must be issued, the Southeast Cass County Water Resource District must approve the project, and a public hearing must be held.

House Bill 1151 allows the State to construct a Devils Lake outlet without federal funding. It also authorizes the Commission to use quick take authority to acquire land needed to construct a Devils Lake outlet to either the Sheyenne River or to Stump Lake. Additionally, the bill authorizes the Commission to use a design-build process instead of the traditional design-bid-build process if the Commission determines the design-build process is advantageous to the State.

House Bill 1158 increased the bond limit for financing Southwest Pipeline Project construction from \$15 million to \$25 million.

House Bill 1284 amended N.D.C.C. § 61-05-13, 61-06-01, and 61-10-31 relating to organization, government, and boundaries of irrigation districts.

Senate Bill 2128 provides that members of the Commission who have a personal interest in a matter before the Commission will not violate state law, provided they disclose the interest to the Commission and do not participate or vote on the particular matter.

Senate Bill 2182 amended N.D.C.C. § 61-04-22 relating to prescriptive water rights. It reinstates the opportunity for a person who has used or attempted to appropriate water from any source for a beneficial purpose for 20 years before July 1, 1963, to apply to the State Engineer for a water permit. The user must file an application with the State Engineer by December 31, 2001. If the State Engineer finds that the application substantiates the claim and it is approved, a perfected permit will be issued with a priority date relating back to the date when the first step was taken to appropriate the water in the quantity stated in the application.

Senate Bill 2256 extended the Water Commission's authority to issue bonds as provided in chapter 61-02.1 for construction of an outlet from Devils Lake effective through June 30, 2003.

Senate Bill 2264 extended the Water Commission's authority to issue bonds as provided in chapter 61-02.1 for construction of a flood control or reduction project in Grand Forks effective through June 30, 2003.

Senate Bill 2285 provides an \$800,000 appropriation from the Water Development Trust Fund to the Commission to assume jurisdiction over and administer the Section 404 program of the Clean Water Act. The appropriation will be available when the State Engineer certifies to the Governor that the State Engineer has designed a program to effectively assume the 404 program and the Commission is ready to assume those responsibilities.

Senate Concurrent Resolution 4046 directs the Legislative Council to study issues related to the Missouri River in North Dakota.

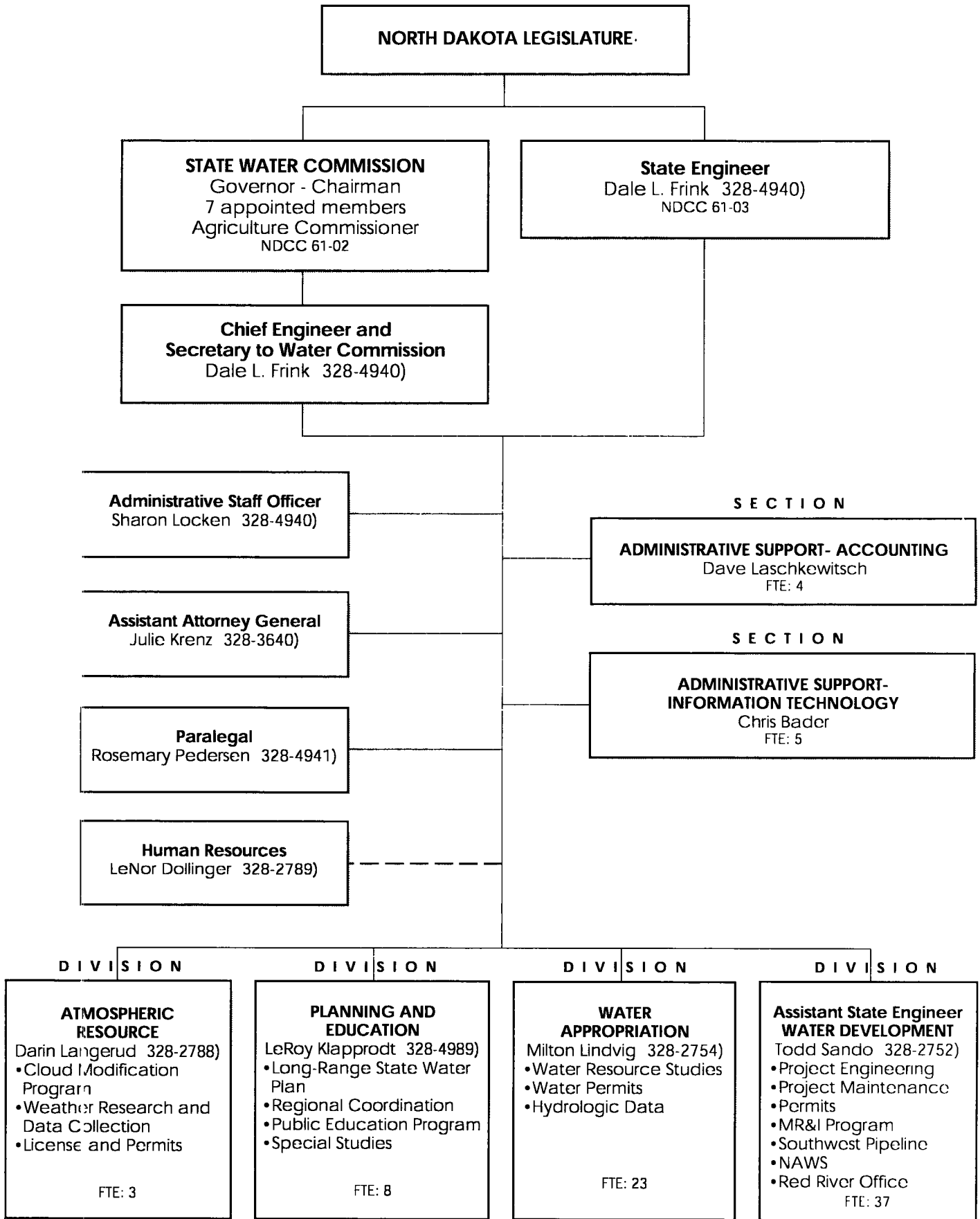
Water Commission Members as of June 30, 2001

NAME	POSITION	APPOINTED	TERM ENDS
John Hoeven	Governor-Chairman		
Roger Johnson	Department of Agriculture		
Elmer Hillesland	Member from Grand Forks	July 1, 1995	June 30, 2001
Robert Thompson	Member from Page	July 1, 1995	June 30, 2001
Jack Olin	Member from Dickinson	July 1, 1997	June 30, 2003
Harley Swenson	Member from Bismarck	July 1, 1997	June 30, 2003
Larry Hanson	Member from Williston	July 1, 1999	June 30, 2005
Judith DeWitz	Member from Tappen	July 1, 1999	June 30, 2005
Charles "Mac" Halcrow	Member from Drayton	May 1, 2001	June 30, 2005

Water Commission Meetings July 1, 1999 through June 30, 2001

DATE	LOCATION	DATE	LOCATION
July 1, 1999	(Conference Call) Bismarck	July 14, 2000	Bismarck
September 13, 1999	Bismarck	September 11, 2000	Bismarck
October 27, 1999	(Conference Call) Bismarck	December 8, 2000	Bismarck
December 10, 1999	Bismarck	January 17, 2001	(Conference Call) Bismarck
February 9, 2000	(Conference Call) Bismarck	March 6, 2001	(Conference Call) Bismarck
March 8, 2000	(Conference Call) Bismarck	May 22, 2001	Bismarck
April 10, 2000	Bismarck	May 30, 2001	(Conference Call) Bismarck
May 24, 2000	(Conference Call) Bismarck		

North Dakota State Water Commission Organizational Chart



TOTAL FULL TIME EQUIVALENTS OF 82 PERSONNEL

June 30, 2001

**State Water Commission Employees
as of June 30, 2001**

ADMINISTRATIVE SERVICES DIVISION

State Engineer: Dale L. Frink
Administrative Assistant: Sharon Locken
Accounting Manager: David Laschkewitsch
Accounting Budget Specialists: Kay Koch,
Lorna Wohnoutka
Legal Assistant: Rosemary Pedersen
Records Center Technician: Karen Heinert
IT Manager: Christopher Bader
IT Coordinators: Michael I love, Paul Moen
GIS Specialist: Joseph Martinetti

ATMOSPHERIC RESOURCE BOARD

Division Director: Darin Langerud
Business Manager: LeNor Dollinger
Environmental Scientist: Aaron Gilstad
Temporary: Dawn Feist, Jason Anderson, Andrew Clausen, Steven Fleegele, Eric Holthaus, Christopher Schulz, Gary Tuttle

WATER APPROPRIATION DIVISION

Division Director: Milton Lindvig
Administrative Secretary: Marlene Backman
Hydrologist Managers: Royce Cline, David Ripley, William Schuh, Robert Shaver
Hydrologists: Rex Honeyman, Kevin Krogstad, Scott Parkin, Jon Patch, Steve Pusc, Alan Wanek
Water Resource Engineer: Robert White, Karen Goff
Water Resource Program Manager: James MacArthur
Engineering Technicians: Kelvin Kunz, Albert Lachenmeier, Merlyn Skaley, Perry Weiner
Chemist: Garvin Muri
Laboratory Technician: Mary Beth Osborn
Rotary Drill Operator: Gary Calheim
Equipment Operator: James Leuwer
Temporary: Robert King, Lloyd Waddingham

PLANNING AND EDUCATION DIVISION

Division Director: LeRoy Klapprodt
Information Processing Specialist: Dawn Dukart
Water Resource Education Program Manager: Bill Sharff
Water Resource Planners: Patrick Fridgen, Linda Weispfenning
Natural Resources Economist: Brett Hovde
Research Analyst: Larry Knudtson
Graphic Artist: Brenda Hove

WATER DEVELOPMENT DIVISION

Division Director/Assistant State Engineer: Todd Sando
Administrative Secretary: Cindy Graff
Water Resource Engineer Managers: Bradley Benson, Bruce Engelhardt, J. Tim Fay, Randy Gjestvang, Jeffery Mattern, Craig Odenbach, John Paczkowski, Ronald Swanson
Water Resource Engineers: Jason Boyle, Dwight Comfort, Timothy Freije, James Landenberger, James Lindseth, Julie Prescott
Engineering Technicians: Marty Babel, Daniel Bahm, Robert Bucholz, Theodore DeWall, Tom Engberg, Edward Gall, Leland Krein, Kurt Kunz, Raymond Oliger, John Edwards
Water Resource Project Managers: Thomas Palanuk, Daniel Sauter
Planners: Jeffrey Klein, Bruce Lange
Account Technician: Winston Enyart
Temporary: Jean Moch, Derrik Sonsalla
Southwest Pipeline Project & Northwest Area Water Supply
Water Resource Engineer Manager: James Lennington, Daniel Farrell
Realty Officer: Roger Kolling
Engineering Technician: Allen Balliet

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, information technology, 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 River Basin Association, executive council member of the Western States Water Council, 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, member of the Association of Western State Engineers, and state representative to the Red River Basin Board.

The State is involved in several legal actions that impact the State Water Commission and the State Engineer.

The State Engineer issued a decision recommending approval of a water permit from ground water for municipal and domestic rural uses to the City of Rugby. In order to issue a water permit, the State Engineer must find that the proposed appropriation is in the public interest. The point of diversion for the recommended water permit was located on a tract of land upon which the United States Fish and Wildlife Service has an easement for waterfowl management purposes. Under the terms of the easement, the landowner agrees to cooperate in the maintenance of the lands as waterfowl production areas by not draining, through the transfer of appurtenant water rights or otherwise, any surface water; and by not filling, leveling, or burning the area.

The Service objected to the permit because the appropriation of ground water will cause a drawdown of the water table in the vicinity of the point of diversion, which will reduce or eliminate wetlands covered by the waterfowl production easements. The Service claimed that the reduction in the areal extent or the elimination of the wetlands would affect a property right of the United States and would impact the National Wildlife Refuge System, of which the easements are a part. Because of these impacts, the Service alleged that the appropriation is not in the public interest.

According to the State Engineer's office, if the wetland easements were interpreted to carry a right to a certain water level in a wetland, future development of unconfined aquifers for water supply to support municipal, rural water, irrigation, industrial, and other beneficial uses will be prevented and current water uses could be substantially curtailed. This would result in preventing the use of large volumes of water, which could otherwise be put to beneficial use, for the purpose of preventing the decline of the water level in a wetland and would have a substantial negative impact on the health and welfare of the citizens of the state.

Because the city requested a change in the point of diversion, the easement issue was not decided.

Between 1969 and 1974, several landowners along the Pembina River built dikes on their land to control flooding from the Pembina River. The landowners did not seek nor obtain permits or approval to construct the dikes. In years of high run-off, the dikes caused flooding of downstream land. In 1996, downstream landowners filed complaints with the local water resource district alleging the landowners' dikes were illegal and should be removed. The district determined the dikes were illegal and ordered them removed. The landowners appealed and both the District Court and the North Dakota Supreme Court affirmed the water resource district's decision. The Supreme Court held that the dikes were unauthorized and subject to removal because the dikes were constructed without the proper authorization required by the statute in effect when the dikes were constructed.

In 1999, approximately 90 landowners in the Devils Lake area brought a lawsuit against the state and several water resource districts claiming damages from the high lake level. The landowners assert that the state and local water resource districts are responsible for the flooding as a result of their participation in various drainage and water control projects. The state successfully resisted the plaintiffs' efforts to certify the case as a class action. The case is in the discovery phase.

The State Engineer continued to be involved in an action concerning the nature of easements and the validity of water rights related to a Bowman County dam built in the 1930s by the Works Progress Administration. The Bowman County District Court held that the 1935 easements conveyed to the public free right of access to the dam and Spring Lake for fishing, wildlife, and recreational purposes. The Court's decision was consistent with the State Engineer's determination of the rights granted under the easement.

The Eighth Circuit Court of Appeals held that the Spirit Lake Tribe's claim to the bed of Devils Lake was time barred by the 12-year statute of limitations. The Tribe contended that an 1867 treaty gave it title to the lakebed, to be held in trust by the federal government. The Court held that the Tribe knew or should have known of the government's claim to the bed by at least July 7, 1971, when North Dakota conveyed 62,000 acres of the lake bed to the United States to assist the United States in building the Garrison Diversion Project.

In additional actions, the State Engineer issued administrative orders regarding removal of a houseboat located on an island in the Missouri River, drainage issues, illegal water wells and water use, and orders canceling water permits for nonuse.

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. ARB staff are co-located with the SWC, and function as a division of the Commission. The primary function of the ARB is to ensure the safety of the public concerning the effects of planned weather modification operations (cloud seeding). This is accomplished in part through the licensing, permitting, and record keeping of all such operations. Research to assess and improve cloud seeding technology is also mandated by law. The Board's rules and regulations governing cloud seeding are periodically reviewed and updated to ensure environmental and public safety, and to ensure that the operational techniques 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 others are ex-officio and include the State Engineer, the Director of the State Aeronautics Commission, and a representative of the Environmental Section of the Department of Health.

North Dakota Cloud Modification Program

The North Dakota Cloud Modification Program (NDCMP) served six western counties during the 1999-2001 biennium. These were Bowman, McKenzie, Mountrail, part of Slope, Ward, and Williams. Williams County voters, after a four year trial program, created a ten year weather modifi-

cation authority by an 80 to 20 percent margin in the November 2000 general election. Additionally, nine townships in Slope County rejoined the program in 2000. At the conclusion of the biennium, the project target area covered 6.7 million acres of western North Dakota.

The NDCMP has two goals: to suppress damaging hail, and to increase rainfall. However, hail suppression continues to be the primary motivation of the sponsoring counties.

Suitable clouds over two multi-county operational districts were treated during June, July, and August of each summer of the biennium. Eight twin-engine aircraft operated by Weather Modification, Inc., of Fargo, were deployed under contract to the Board and participating counties. Operations were directed by project meteorologists from radar operations centers based within each district.

The most recent evaluations of the program indicate a 45 percent reduction in crop-hail losses, a 6 percent increase in wheat yields, a 10 percent increase in rainfall, and a total economic benefit to cost ratio of 45 to 1 in the target counties.

Environmental Study for Montana Buffer Zone

During the last biennium, the ARB decided, after requests from sponsor counties, to begin the process through which permits for seeding clouds over Montana, upwind of North Dakota target counties, could be obtained. According to Montana law, an Environmental Impact Statement (EIS) is required as part of the permit application. The EIS would be conducted by the Montana

Department of Natural Resources and Conservation, with the costs billed back to the applicant. Montana DNRC estimated costs for the EIS to be approximately \$140,000. At the end of the biennium, a funding agreement including the sponsor counties, ARB, and SWC was in place to pay the expected costs. This process is expected to be completed during the 2001-03 biennium.

Weather Radars Continue Operations, Savings

Surplus National Weather Service WSR-74C radars, obtained and deployed by ARB, continued to operate at a savings to the project during the last biennium. Radars were deployed in facilities built at the Bowman and Stanley airports. Prior to 1997, radar facilities were leased from a contractor at an annual cost of approximately \$35,000 per radar. During the 2000 and 2001 projects, ARB-owned radars operated at about one-quarter the cost of the leased systems.

In addition to the two operating radars, ARB also obtained another complete system to be used

for spare parts. The federal government's surplus parts inventory will be available to ARB at some point in the future when the National Weather Service retires the two remaining WSR-74C radars it still operates. Retirement dates, however, are yet to be determined.

During the last biennium, preventative maintenance and system calibrations were conducted on a weekly basis, keeping unscheduled maintenance to a minimum. Including down time for scheduled and unscheduled maintenance, radars operated better than 98 percent of the time.

The Stanley radar is located roughly midway between the National Weather Service (NWS) radar at Williston and the Minot Air Force Base radar near Deering, which makes it a good backup if either of the NWS sets should fail. The Bowman radar is located at the coverage limits of the NWS radars at Bismarck, Billings, Glasgow, Rapid City, and Williston, and thus provides low atmosphere coverage of southwestern North Dakota, southeastern Montana, and northwestern South Dakota not available from NWS radars.

TITAN Radar Data Acquisition, Archival

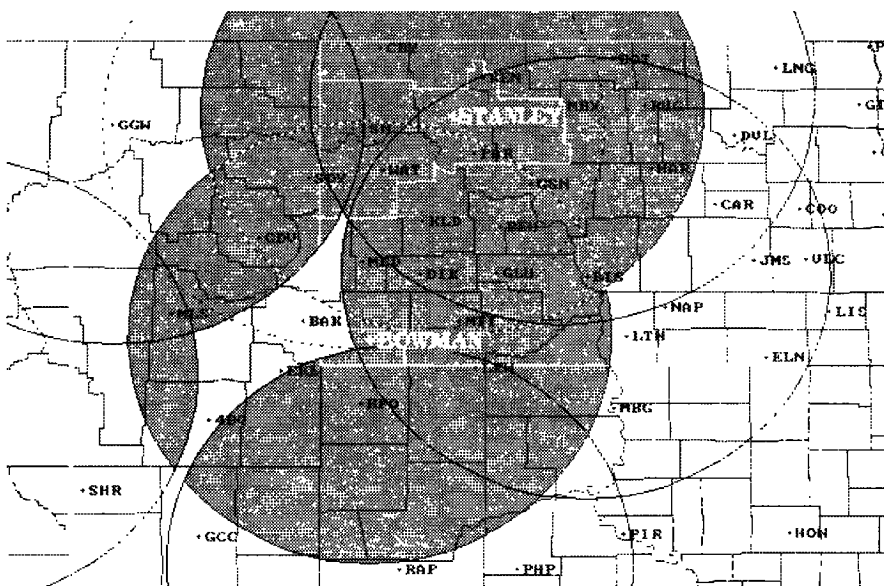
Both radars were equipped with computer hardware and software for data acquisition, analysis, and display. This system, dubbed TITAN (Thunderstorm Identification, Tracking, Analysis, and Nowcasting), provides three dimensional storm structure, recording, and archival.

Real-time data from the radars were posted on the Internet for public access starting in 1998 and continued during the last biennium. The Internet site was frequently accessed by the public and news media, especially radio and television. In addition, the National Weather Service offices also frequently referred to the site to get a closer look at storms within their respective county warning areas.

Global Positioning System Archival, Display

Beginning in 1998, the cloud top aircraft in both operational districts were equipped with flight data computers that recorded aircraft location, altitude, speed, and seeding events and relayed the data in real time to the radar facility. These data supplemented those manually recorded, and provided more detailed records of the seeding activities. The test was broadened the following year, as a lower-flying cloud base seeding airplane was outfitted with the equipment.

During the last biennium, application of GPS flight tracking expanded to all six aircraft in the District II target area and extended to District I aircraft the latter part of the 2001 project. In addition to assisting direction of aircraft by project meteorologists and improving project safety, the data will prove valuable in identifying seeded and non-seeded clouds enabling better assessment of



NDCMP radar coverage over western North Dakota, eastern Montana, and northwestern South Dakota. The diamond-shaped area indicates where National Weather Service doppler radars have inferior coverage.

project efficacy. Flight tracks were also shown on imagery posted on the Internet, so anyone accessing the radar data on the Internet also saw where the project aircraft were flying.

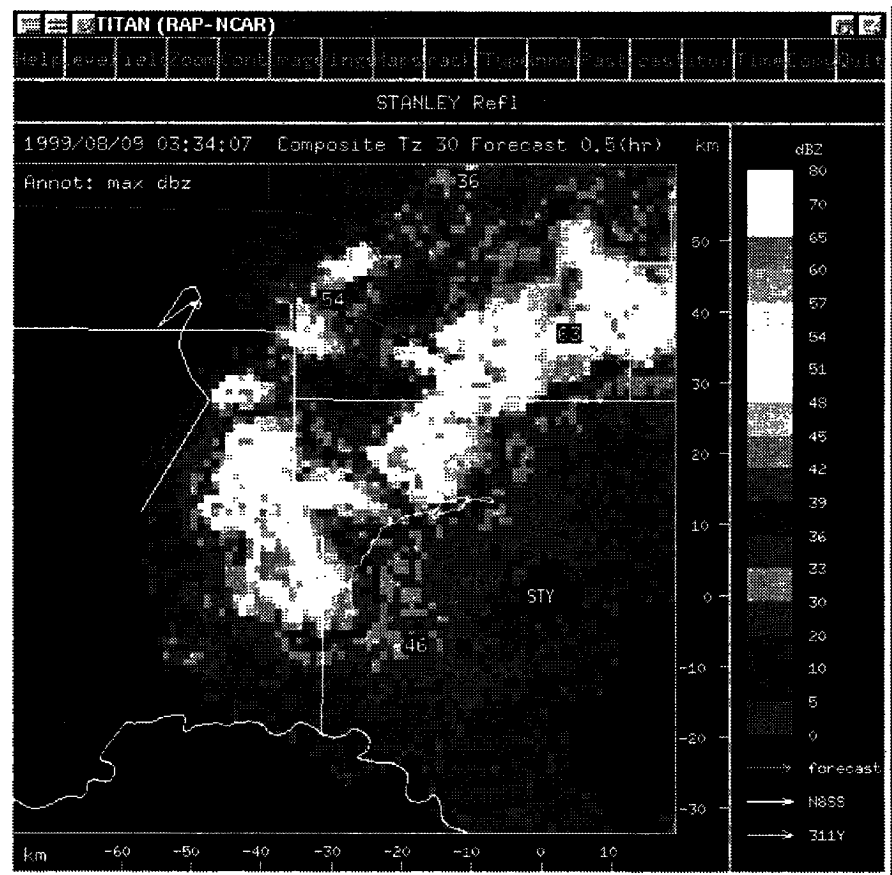
Though the aircraft were not always displayed at long range from the radar, the tracking was considered very useful and its use will be continued as long as it can be afforded.

Student Intern Programs Continue

ARB continued funding the field presence of intern copilots from the University of North Dakota's John D. Odegaard School of Aerospace Sciences during the last biennium. Since the board's inception in 1975, nearly 300 intern pilots have logged approximately 20,000 hours of flight time in the conduct of cloud seeding operations in North Dakota's skies. In addition to recording the time, location, duration, and meteorological conditions during all seeding and reconnaissance missions, the pilots are fully qualified to fly the aircraft, providing an additional safety margin.

A total of 17 pilot interns were engaged in NDCMP operations during the biennium. All were trained at UND for a full academic year prior to their participation. After completion of a season as an intern pilot, the interns meet the board's requirements for project pilots-in-command (PIC), and are eligible for such positions the following season. The relationship between ARB and UND is the only one of its kind in the United States and provides a significant percentage of qualified cloud seeding pilots for projects elsewhere in the U.S. and around the world.

Since the summer of 1996, the



TITAN radar image with airplane flight track.

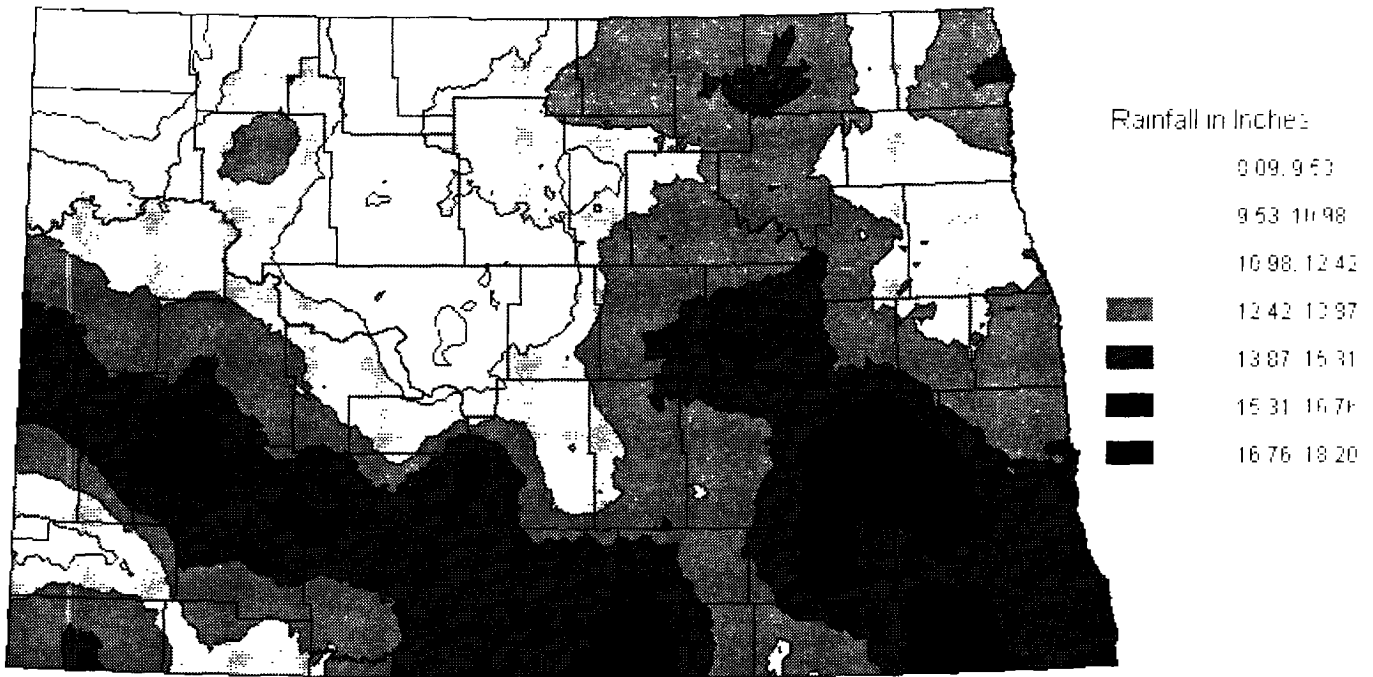
board has also retained undergraduate students from regional universities majoring in atmospheric science as intern meteorologists. These students assisted project field meteorologists at radar-equipped operations centers. This biennium, four additional students excelled in this capacity. Like the intern pilots, intern meteorologists continue to demonstrate the adequacy of their pre-project university training and provide a pool of better qualified persons to serve projects as radar meteorologists.

Statewide Growing Season Precipitation Observations

Again during the last biennium, the ARB operated a statewide growing season (April through September) cooperative observer network (ARBCON)

numbering about 800 volunteer observers, building on a database going back to 1977. Every morning each observer recorded the rainfall received in the preceding 24 hours. In the event more than one inch of rain was received in any 24-hour period, observers immediately called in their rainfall report directly to the National Weather Service offices, where the data were used by hydrologists for short-term forecasting, and if necessary, in the issuance of flood watches and warnings. Since the gauge type employed by the network is not suitable for measuring snow, snowfall measurements are not attempted.

If hail is observed, the starting and ending times are reported, along with maximum size and an estimate of damage. To date, there



Total reported rainfall from ARBCON observers for the 2001 growing season.

are over 9,200 hail reports in the statewide database.

Rain and hail data, as well as monthly and annual precipitation maps can be accessed by the public directly through the ARB website. Users of ARBCON 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. The data have proven to be very helpful in the assessment of heavy spring and summer precipitation events, and also the excess water problems being experienced by Devils Lake and other areas in eastern parts of the state.

Late in 2000, the ARB entered into a subcontract research agreement with the University of Iowa to complete a baseline comparison study of ARBCON versus the National Weather Service network. ARBCON was chosen by University of Iowa researchers as one of five precipitation networks world

wide to be used as ground truth verification for satellite-based precipitation measurement systems. Provided ARBCON does not show any significant bias versus the NWS standard network, the potential for it to be used in other important precipitation research will be greatly enhanced; a feather in the cap of our dedicated volunteers!

Interaction with State and National Organizations

The ARB is an active member of many state, national, and international organizations with mutual interests. During the last biennium, ARB staff worked with these groups to forward the goals and objectives of the board.

In North Dakota, ARB has worked toward water supply and weather damage mitigation goals with the ND Water Coalition, ND Weather Modification Association, and the ND Water Education Foundation.

Nationally, the ARB has been active in the Weather Modification Association and the North American Interstate Weather Modification Council. Through the Council, a significant effort to reestablish a federal weather modification research program was started in 1998 and continued through the last biennium. Success was achieved when Congress passed \$2 million for a Bureau of Reclamation Weather Damage Modification Program for FFY 2002. This means research will again be conducted in North Dakota toward advancing the scientific knowledge of weather modification and improving its operational application.

Planning and Education Division

The primary responsibility of the Planning and Education Division is maintaining an updated water management plan for the State of North Dakota. Division staff also participate in numerous regional, state, and local water resource planning activities; manage the agency's water education programs; and coordinate the Environmental Protection Agency's Wetlands Protection Project Grant for the State of North Dakota. Specific staff responsibilities include:

- Maintaining a water project inventory and water management plan to promote efficiency in meeting North Dakota's future water development and funding needs;
- Leading or participating in special studies that result in water resource and related land management plans;
- Monitoring water resource issues and determining possible impacts on North Dakota's water management objectives;
- Representing the State Engineer and State Water Commission on regional, national, and international natural resource planning bodies such as the Red River Water Resources Council, the International Coalition, Pembina River Basin Advisory Board, the Red River Basin Institute, Red River Basin Board, and the Lewis and Clark Advisory Committee to name a few;
- Providing opportunities for adults and students to increase their understanding about North Dakota's water resources and how these resources are managed; and
- Coordinating statewide efforts by various agencies, organizations, or special interests to conserve and enhance North Dakota's wetland resources.

Water Development 2001 Biennial Report

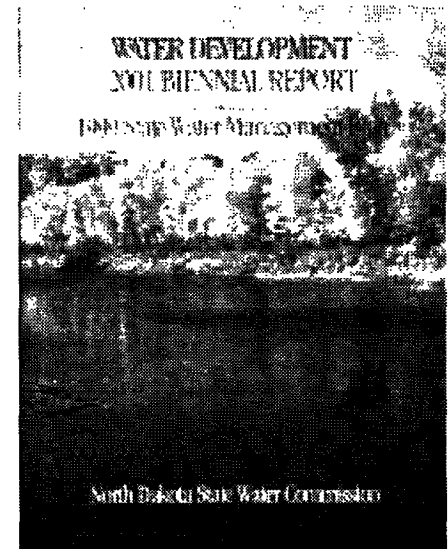
In 2001, the Planning and Education Division completed a Water Development Biennial Report (WDBR) to serve as a supplement to the 1999 State Water Management Plan (SWMP). The purpose of the Water Development Biennial Report was threefold. First, the SWC has an ongoing directive to keep abreast of North Dakota's water development needs. Periodic updates of the state's water management plan, as defined in North Dakota Century Code Sections 61-01-26 and 61-02-14, are a key component of that effort.

In accordance with that directive, the Planning and Education Division has maintained a potential project database since the development of the 1983 State Water Management Plan. Much of the work encompassed by the WDBR focussed on the updating of that database.

The second purpose of the WDBR was to meet the requirements of NDCC 57-51.1-07.1, to request funds from the Resources Trust Fund. The third purpose was to meet the requirements of Senate Bill 2188, including the development of a new and comprehensive statewide water development program. The new water development program proposed to expand the role of the SWMP by incorporating a prioritization process that would assist the SWC with ranking, and ultimately matching, water development projects and programs with available funding.

To highlight the need for adequate funding of water development projects and programs, the Water Development 2001 Biennial Report outlines projected funding needs through 2050. In addition, a

compilation of completed, and currently active water development efforts are included in the report.



Water Development 2001 Biennial Report.

Devils Lake Basin Water Management Planning Efforts

Planning and Education Division staff have played an active role in assisting the Devils Lake Basin Joint Board in their efforts to review and update the Devils Lake Basin Water Management Plan initially completed in 1995. This conceptual plan is a critical component of the state's three pronged approach to solving flooding problems throughout the entire Devils Lake basin. When the update is completed, the plan will serve as a working document to assist water managers with implementing effective upper-basin water management efforts.

In 2000, the Available Storage Acreage Program (ASAP) was modified to become a long term easement program - now called the Extended Storage Acreage Program (ESAP). Under ESAP, contracts are arranged for ten-year periods.

There are currently eight landowners participating in the ESAP program in the Devils Lake basin. Just under 400 acres are under contract, with available storage of 800 acre-feet annually.

Wetlands Protection Grant Administration

The U.S. Environmental Protection Agency funded Wetlands Protection Project Grant program continues to be administered by Planning and Education Division staff for all state and local governmental recipients in North Dakota. The wetlands grant program funds a broad spectrum of projects related to developing, protecting, managing, and enhancing North Dakota's wetland resources.

The most recent SWC projects completed under the FY 1999 wetlands grant include the development of a statewide *Wetlands Conservation Strategy for Future EPA Wetlands Grants*, and a GIS-related cumulative impacts assessment model. The impetus behind the development of the wetlands conservation strategy was to develop a plan that identifies wetland conservation obstacles and opportunities and describe how the wetlands grant may be best used to overcome those obstacles or improve knowledge associated with wetland conservation in North Dakota. Areas addressed include: research needs, education and outreach needs, program needs, information needs, and potential projects. The strategy was developed to guide the North Dakota wetlands grant coordinator and those applying for grants.

The purpose of the FY 1999 Cumulative Impacts Assessment Model project was to improve upon the results of the FY 1997 grant to provide a more detailed understanding of the flow systems of the Devils Lake Basin. One of the primary goals of the project was to

identify and develop the necessary methodology for automating the delineation of Devils Lake watersheds that could then be used as the underlying drainage network for use in the hydrologic modeling process. This model was then to be used as the basis for developing more advanced modeling capabilities for purposes of identifying runoff and the role that wetlands play in that hydrologic system.

Red River Basin Planning Efforts

Throughout the 1999-2001 biennium, Planning and Education Division staff members actively contributed to the Red River Basin Board's planning and education advancements through involvement on several committees. In recent years, planning staff members have served on the RRBB's Plan Management and Communications Committees, as well as the Guiding Principles Review and Red River Basin Inventory Report teams.

The RRBB is regarded as the primary facilitator in advocating and resolving water and land management issues from a basin-wide perspective. The Board supports efforts that promote basin-wide goals and objectives that result in cooperation and coordination among varied water management organizations and interests.

Red River Valley Water Supply Studies

As directed by the Dakota Water Resources Act, the State Water Commission is assisting with the completion of a Red River Valley water supply study. The Red River Valley study and environmental analysis will include a comprehensive analysis of all reasonable alternatives for determining the best way to meet the water supply needs of the Red

River Valley. All proposed alternatives will be examined equally. As part of this effort, Planning and Education Division staff provide technical assistance as members of the study technical team. The technical team is responsible for day-to-day operations of the studies or tasks and for the evaluation, analysis, and detailed review of technical material and data developed during the course of the various tasks.

Red River Resources Council

The Red River Resources Council was a quasi-governmental, nonprofit corporation formed to facilitate cooperation and coordination on water management issues in the Red River basin. The Council involved North Dakota, Minnesota, Manitoba, and several federal agencies. Division staff continued to provide administrative support as part of the agency's involvement during the 1999-2001 biennium.

Interagency Project Reviews

Planning and Education Division staff continue to conduct and coordinate interagency environmental reviews involving projects associated with Community Development Block Grants and Loans, highway improvements, airport improvements, diking projects, and water storage impoundments. On average, 30 intra-agency environmental reviews were conducted monthly during the last biennium.

Environmental review comments address compliance requirements involving State Engineer and State Water Commission regulatory responsibilities in issuing permits pertaining to water appropriation, floodplain management, sovereign lands, and the construction of dikes, levees, dams, drains, and water holding ponds. Staff members also provide information concerning the location of wells and benchmarks.

Cannonball River Basin Water Management Study

A cooperative study between the U.S. Bureau of Reclamation, Standing Rock Sioux Tribe, and the State Water Commission was started in 1994, and continued on throughout the 1999-2001 biennium. The study was initiated to determine the water resource needs and desires of the residents of the Cannonball River and tributary Cedar Creek watersheds. This study includes the analysis of available water resources and the ability to meet anticipated needs. Special attention was given to developing planning tools and working relationships that would be valuable in more detailed future studies. Technical tools include the creation of an extensive geographic information system database and user-friendly hydrologic planning model. The study has been completed and the final report is under review by the study partners.

Missouri River Management

Continued support was provided by the Division in the ongoing revision of the Missouri River Master Water Control Manual.

Pembina River Basin Water Management Plan

Division staff has participated on the Pembina River Basin Advisory Board (PRBAB) since it was established in late 1996. Recently the PRBAB finalized their "Framework for a Pembina River Basin Management Plan." The framework was distributed to stakeholders in the basin, as well as agencies and interested parties throughout the Red River Basin.

In the spring of 2001, the PRBAB began a Watershed Restoration Action Strategy (WRAS) study. The study examines the results of water quality and quantity data collected, including land



Explore Your Watershed Summer Institute participants, July 2000

use and riparian condition information within five subwatersheds of the Pembina River basin. This information will help the PRBAB, basin stakeholders, and natural resource managers focus technical and financial resources on critical areas that are in need of best management practice implementation.

Project WET

The North Dakota Project WET (Water Education for Teachers) program began in 1984 and became the pattern for a National WET program that now involves 49 states and several foreign countries. Growth of the national program has provided important new education tools that have enhanced student learning experiences. Division staff have been active in building the national program, and in addition, have expanded North Dakota's program with the innovative *Explore Your Watershed* extension of WET.

National WET program materials and new materials developed by Division staff for North Dakota are aimed toward preschool, daycare, grades K-12

students and formal educators, pre-service teachers, youth group leaders (i.e. Boy Scouts and 4H), natural resources education specialists, and other non-formal K-12 educators.

The *Explore Your Watershed* program promotes an interdisciplinary approach requiring significant staff coordination with specialists from several facets of public school education and natural resource management. *Explore Your Watershed* has expanded the traditional teacher workshop offerings with water festivals, intensive teacher institutes, and special youth and community programs.

Graduate credit and non-credit offerings were made available throughout the biennium. Training during the biennium reached 428 K-12 teachers, 11,448 K-12 students, 138 pre-service teachers, 1,692 community members, and 80 non-formal teachers and natural resource managers.

North Dakota Water Magazine

Since 1993, various water interests in North Dakota have pooled resources to produce a

magazine titled *North Dakota Water*. This magazine provides a broad spectrum of high quality information about the state's water resources to the widest possible audience. In 2001, distribution of the magazine reached over 17,000 readers during one month, with an average for the year of just over 11,000 per month. Readers include the general public, local, state, and federal agencies, and elected officials.

The North Dakota Water Education Foundation publishes the magazine with support provided by several private, federal, state and local organizations and agencies. The Planning and Education Division develops the State Water Commission's contribution-- a two-page section called the *Oxbow* and a feature page titled the *Water Primer*. The former is designed to inform readers about the State Water Commission's projects and programs as well as local, state, and national water management issues. The latter highlights interesting or little known facts about water and related land resources.

Other Governmental and Non-governmental Organization Involvement

The Planning and Education Division also participated to varying degrees on several other governmental and non-governmental organizations, providing input from the State Engineer's and State Water Commission's perspectives. During the previous biennium, staff were involved with the Army Corps sponsored Red River Reconnaissance Study, Grand Forks/East Grand Forks Greenway Alliance, Little Missouri State Recreation River Committee, Devils Lake Outlet Advisory Committee, the North Dakota Wetland Policy Task Force, and the Lewis and Clark Advisory Committee.

Water Appropriation Division

The Water Appropriation Division is responsible for the appropriation and management of the state's water resources in accordance with the Doctrine of Prior Appropriation to serve the needs of present and succeeding generations of North Dakota citizens. The following principal activities fulfill these responsibilities:

- Identify the availability and chemical quality of the state's water resources;
- Assist municipalities and other public entities in developing solutions to particular water supply problems;
- Assess the impacts of existing water supply development on ground-water levels, streamflow, and chemical quality of the water, for purposes of future allocation and management;
- Collect, store, and disseminate data on streamflow, ground-water and lake levels, water quality, and water use;
- Carry out the administrative procedures required for water permit applications, water permits, and water rights;
- Conduct analyses and provide recommended decisions to the State Engineer on water permit applications;
- Develop and maintain a system for the storage and retrieval of water permit records;
- Monitor through annual water use reports the utilization of each conditional and perfected water permit, and maintain a permanent record of those permits; and
- Participate in committees and task forces pertaining to water quantity and/or quality issues as required.

Major Activities 1999-2001)

The program for collecting water resource data involves several aspects of the water resource spectrum. The major components of the program are the collection of samples for water quality analyses from surface and ground waters, the collection of water-level data from surface and ground waters, water use data from surface and ground waters, and flows from surface waters.

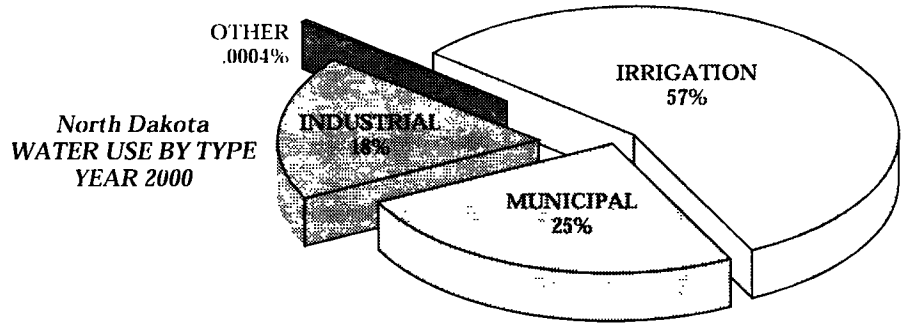
During the biennium, 2,855 water samples were analyzed for chemical constituents. These samples were collected from streams at gage stations, selected observation wells and production wells, and selected surface water bodies. These data are used to determine the suitability of the surface water, based on its chemical quality, for beneficial use, to interpret areal hydrology, and to assess changes in the quality resulting from the stresses of both man induced and natural processes.

Over 3,500 observation wells and surface water bodies are measured for water levels. These are predominantly observation wells, but some lakes, sloughs, and production wells are measured. These data reflect the changes in the surface and ground waters resulting from natural variations and pumping for beneficial use. These data are essential for making decisions on water permit applications and overall water management, present and future.

The agency supports the operation of 44 streamflow gages as a part of the cooperative program with the U. S. Geological Survey (USGS). The cost of these gages is shared equally by the State Water Commission and the USGS. Additionally, at about 20 sites

distributed around the state, stream or spring flows are measured for specific studies.

Water use information is submitted annually by holders of more than 3,400 water permits. The information is essential for evaluating the impacts of withdrawals authorized by water permits on ground-water levels and stream flow, and for making decisions on water permit applications. The pie chart at right shows the relative volume of use by the three major categories in the year 2000.



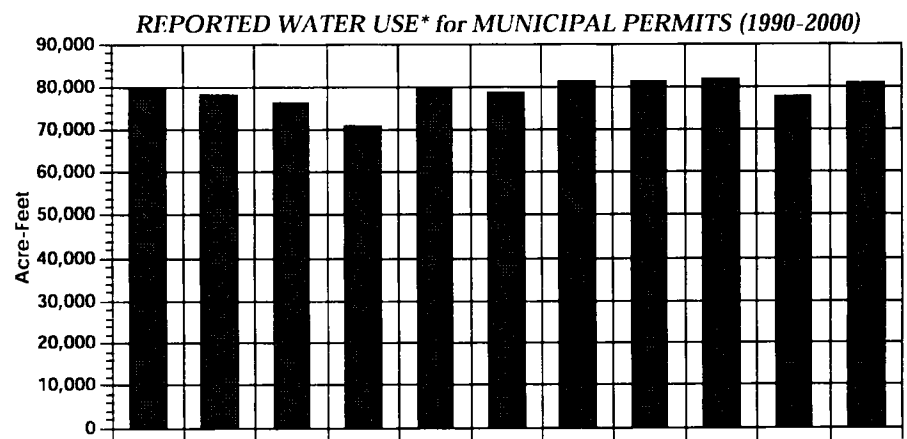
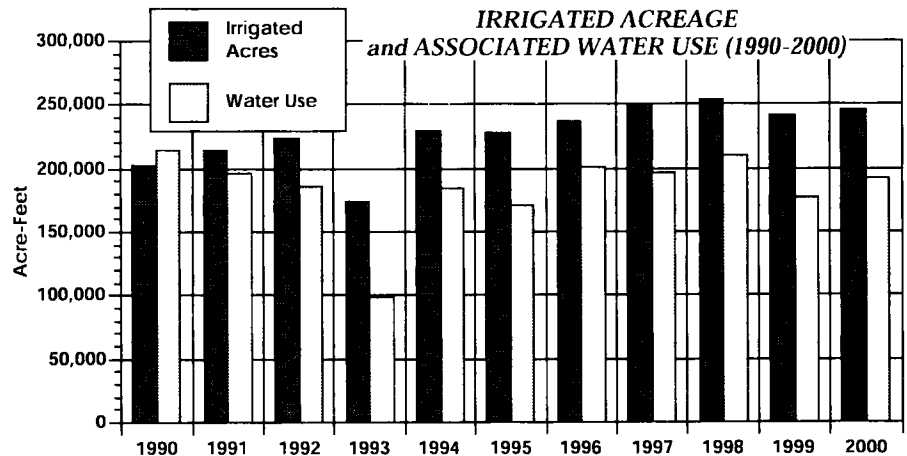
The graphs at right show the trend for the last ten years for each of the three major categories of use (irrigation, municipal, and industrial).

Water permit applications for the 1999-2001 biennium and a summary of the actions taken on them are listed in the table on page 17.

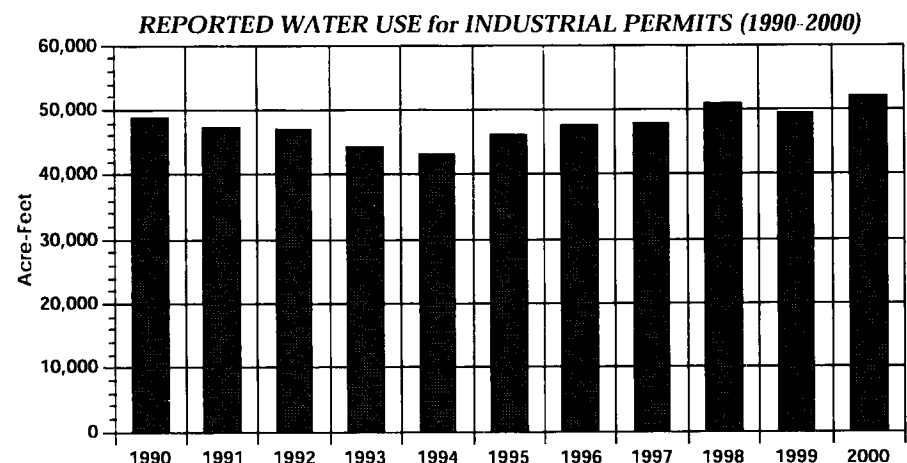
There were 202 conditional water permits perfected during the biennium. These water permits had been approved earlier, and had been fully developed. After being inspected, reports on these inspections were written and the permits were perfected.

The Eastern Dakota Irrigation District (EDID) was created in early 2000. It is located in Cass, Steele, and Barnes counties. The area covered by this district is about 16,000 acres. Almost all of the acreage covered by the EDID is currently developed with wells tapping the Page and Spiritwood aquifers.

There are several groups at various stages of developing irrigation districts. They are the Horsehead Flats area in Emmons County, which has completed a feasibility study; the Northeast irrigation area, incorporating portions of the Inkster and Elk Valley aquifers, and possibly other sources of water; and the Big Bend area in Mercer and Oliver counties, which has completed a feasibility study.



*Includes water use from Minnesota points of diversion, which supply water to Grand Forks.



Water Permit Summary July 1, 1999-June 30, 2001

WATER USE	ACRE-FEET
-----------	-----------

Irrigation

Applications filed:	73
Acres requested:	15,059
Acres granted*:	6,408
Water granted*	9,167
Ground water	5,520
(4,006 acres)	
Surface water	3,647
(2,402 acres)	

Flood Control

Applications filed:	5
Water granted*	9

Industrial

Applications filed:	26
Water granted*	2,274

Livestock

Applications filed:	3
Water granted*	40

Municipal

Applications filed:	4
Water granted*	260

Recreation, Fish, and Wildlife

Applications filed:	43
Storage granted*	3,879
Annual use granted*	1,145

Rural Domestic

Applications filed:	5
Water granted*	260

TOTAL Applications Filed:	159
TOTAL Water Granted	13,156

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

During the 1999-2001 biennium the division was involved in the following studies that are in progress:

- A surface water and ground-water sampling plan was designed for Camp Grafton South, Eddy

County. This plan calls for major sampling of surface water bodies and the Cherry Lake aquifer. The samples will be analyzed for pesticides, inorganic contaminants, munitions and explosives, and diesel and fuel oil contaminants. The sampling and the report are to be completed in the next biennium. The latest sampling is part of an ongoing monitoring and sampling process, which began in 1991, and is reevaluated and repeated approximately every five years.

- The final report on the Cannonball River Water Management Study is being prepared. This study is a cooperative effort in water resources management by the State Water Commission, the Standing Rock Sioux Tribe, and the U. S. Bureau of Reclamation. The mission of the Cannonball study is to collect existing data and cooperatively develop tools to assist in the management of water and related natural resources of the Cannonball River Basin.

- Several agencies in Minnesota and North Dakota are cooperating with the University of North Dakota in a joint project investigating the sources of sulfate in the Elk Valley aquifer, Grand Forks County. Those agencies are the State Water Commission, the University of Leeds (United Kingdom), and the Energy & Environmental Research Center. Naturally occurring sulfur isotopes are being used to help identify source material for the sulfur found in the Elk Valley aquifer. The study has been ongoing since 1997, and sampling of till and Carlisle Formation wells began in May, 2001. The anticipated completion schedule for the project is in 2002.

- Several agencies in Minnesota and North Dakota are investigating denitrification in seven aquifers located in the two states. The three aquifers in North Dakota are the Elk Valley aquifer (Grand Forks County), the Kidder County

complex (Kidder County), and the Warwick aquifer (Benson, Eddy, Nelson, and Ramsey counties). This project is funded by Section 319 money and by state matching funds. Site selection and some preliminary drilling has been done. Two out of three years of sampling has been done for some sites.

- A ground-water study of denitrification in the Karlsruhe aquifer in McHenry County has been in progress since December, 2000. This is a 5-year study with extensive instrumentation involving multi-port samplers. The study also incorporates a UND student majoring in geology, and the Department of Health. The study is scheduled to be completed by December 31, 2005.

- A ground-water study of the southern half of Richland County is in progress. The study is in a preliminary phase involving the acquisition of basic hydrogeologic data for the study area.

- The International Souris River Board (ISRB) assigned the Natural Flow Methods Committee (NFMC) to examine methods to determine the diversion of natural flow at the Sherwood Crossing by Rafferty and Alameda Reservoirs and to recommend a preferred method to ISRB. This division has participated on the NFMC, and the work is ongoing.

- In 2000, the Co-Chairs of the ISRB formed a task force to review the 1999 flooding in the portion of the Souris River Basin downstream of the Saskatchewan/North Dakota border, and report their findings to the Co-Chairs. The task force was also to review the operations of the Rafferty and Alameda reservoirs, and the refuge reservoirs in North Dakota according to the flood operation plan established under the 1989 Canada-United States Agreement for Water Supply and Flood Control in the Souris Basin. This division has participated on the task force, and the review is ongoing.

- In 1994, the International Souris River Board of Control (Board) was unable to reach an agreement on the interpretation of Paragraph 1(a)(i) of Annex B of the 1989 Canada/United States Agreement. As a result, the Board requested the International Joint Commission (IJC) recommend a course of action by September 30, 1994. The IJC asked the governments for direction. Representatives of the governments met in 1995 to begin discussions for interpreting the agreement. The representatives reached an agreement to establish terms of reference, and agreed to establish steering and technical committees. The State of North Dakota was represented on the committees and has been active in the negotiations regarding the new language. In 2001 the Board received notice from the IJC that indicated the Interim Measures as modified in 1992 have been accepted.

- A ground-water study of the Streeter aquifer is in the report writing phase. The Streeter aquifer is located in Logan and Kidder counties. The study incorporates a digital ground water model analysis of the Streeter aquifer to provide a basis for actions taken on pending water permit applications in the study area.

- A cooperative study with the Minnesota Department of Natural Resources to describe the extent of the Wahpeton Buried Valley aquifer system (WBVAS) is in the report writing phase. The WBVAS is located in Richland County, North Dakota, and Wilkin County, Minnesota. The aquifer is the source of water that serves the needs of Wahpeton, ND and Breckenridge, MN, as well as many farms and rural households in both states. It is also the water supply for the Min-Dak Farmers Cooperative sugar beet and yeast processing plants and the backup supply

for the corn wet milling plant operated by Cargill, Inc. The results of the study will serve as a basis for the future management of the aquifer.

The following reports were published during the 1999-2001 biennium:

- The report, *Assessment of Potentially Irrigable Land in the Area of the Warwick Aquifer in Benson, Eddy, and Nelson Counties, ND*, was published in 1999. This report was designed to help identify potential tracts for irrigation development in the study area.

- An investigation of the viability of a portion of the Pleasant Lake aquifer as a potential water supply for the City of Rugby was written up in a memo associated with Water Permit Application #5467.

- An extensive memo reporting on the Milnor Channel aquifer (Ransom and Sargent counties) was written in conjunction with a water permit evaluation. This report includes a ground water digital model that was used to provide the basis for the Recommended Decision to the State Engineer. The report is associated with the study and subsequent Recommended Decision for Water Permit Application #4538. This was completed in 1999.

- The Water Resource Characteristics of the West Fargo Aquifer System (WFAS) was published in 2000. ND Ground water Studies #106, Part II, is a comprehensive analysis of the WFAS, covering nine subaquifers that are part of the WFAS. The report presents detailed depictions of the aquifer boundaries, and relates historical ground-water levels to varying water use. There is a water budget section explaining long-term ground water level trends, and a management section briefly explaining future options with respect to water supplies.

- A Water Supply Investigation for the City of Fortuna, Divide County, was published in 2001. ND Ground-water Studies #108 describes the problems that the City of Fortuna was having with their water supply, and the activities that were undertaken to solve the water supply problem.

- An extensive memo reporting on the Pleasant Lake aquifer (Pierce and Benson counties) was written in conjunction with a water permit evaluation. This report includes a ground water digital model that was used to provide the basis for the Recommended Decision to the State Engineer. The report is associated with the study and subsequent Recommended Decision for Water Permit #5467. This was completed in 2001.

With the large volume of water resource data collected by the agency, management of that data is essential for its efficient use. These management efforts involve processes related to the collection, storage, analysis, and dissemination of a wide range of data which include well inventory information, water levels, water chemistry analyses, water permits, water use, dams, drains, and precipitation. Because of the unique nature of much of the data, the Water Commission has developed the necessary data management tools internally.

The data management capabilities have evolved into a distributed client-server system. These systems have been expanded to provide relatively seamless access to the available data through the agency's web site at <http://www.swc.state.nd.us/>. The activity at this site continues to increase. The database had been experiencing about 70 external hits per day in the last biennium. By the end of the 1999-2001 the database was experiencing over 200 external hits per day.

The Water Appropriation Division represents the State Engineer and the State Water Commission on state, regional and national natural resource organizations. Members of the division have provided soils or ground or surface water assistance in meetings or reviews pertaining to: Section 319 Task Force; Working Committee of the State Pesticide in Ground Water Protection Plan; Technical Committee of the State Pesticide in Ground Water Protection Plan; Energy & Environmental Research Center Red River Water Management Consortium; ND Board of Water Well Contractors; Midwest Ground-water Conference; ND State University Remote Sensing Project for Quantifying Crop and Other Vegetative Cover; ND Water Resources Research Institute; ND Dept. of Health Water Quality Rules Changes; and ND Public Service Commission Mining Plans.

Economic development is a major state initiative. In most instances, water is needed to serve new enterprises. Information is provided to the Department of Economic Development and Finance (Department of Commerce, August 2001) and local economic development organizations regarding the availability and chemical quality of the water to serve a proposed enterprise. The agency also provided information to Department of Commerce clients on immediate and long term regulatory issues, which assisted in defining capital requirements.

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 practicing floodplain management through 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
- Managing the design and construction of the Northwest Water Supply Project (NAWS).

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

Regulatory

The Regulatory Section processed 212 applications for permits to construct or modify dams, dikes, or diversion ditches. In the previous

biennium, the Section processed 282 applications.

The Regulatory Section processed 42 applications to drain. Last biennium the Section processed 85 applications to drain.

The Regulatory Section also processed 1,233 wetland restorations, 130 applications to create wetlands, and 48 sovereign land permit applications. The Section reviewed 11 revisions to existing mining permits. They also provided comments to the Corps of Engineers on 15 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. Two programs from the Federal Emergency Management Agency (FEMA) and the Flood Mitigation Assistance Program help fund staff activity.

Through the Community Assistance Program, the floodplain management staff assists 290 communities with the administration of their floodplain management responsibilities. Each community designates an individual as an administrator to oversee floodplain development. The State Water Commission staff works closely with those individuals to provide technical assistance. The SWC staff visits the communities directly, and also conducts periodic training workshops. The Floodplain Mitigation Assistance Program provides federal and state cost-share for community flood mitigation planning and subsequent acquisition projects.

In August 1999, state flood plain management standards changed, affecting review of proposed development in regulatory floodways.

Investigations

The Investigations Section concentrated on the flooding problems at Devils Lake, on Missouri River issues, and on cost share agreements for irrigation development.

Devils Lake - Significant flooding has occurred throughout the Devils Lake Basin since 1993. The level of Devils Lake rose over 24 feet from an elevation of 1423.24 feet msl on July 1, 1993, to 1448.04 feet msl on August 9, 2001. The lake ended 2001 at an elevation of 1447.03 feet msl. The volume of water in the lake had more than quadrupled since 1993 from 590,000 acre feet to 2,428,000 acre feet; and the surface area of the lake has more than tripled from 46,800 acres to 124,000 acres. State Water Commission staff spent a large amount of time providing technical assistance to local officials, working with the Corps of Engineers to develop a permanent outlet, and developing a State emergency outlet during the 1999-2001 biennium.

Commission staff worked extensively with the U.S. Army Corps of Engineers on many aspects of an emergency outlet to Devils Lake. The staff reviewed and commented on design documents, assisted in development of the ongoing draft Environmental Impact Statement (EIS), and provided technical support to the Corps as requested.

The Investigations Section provided technical assistance to the Devils Lake Basin Joint Water Resource District. The Section also represented the SWC at various flood related meetings, including meetings regarding the Corps of Engineers' levee project for the City of Devils Lake, the emergency outlet project, and State Flood Coordination meetings.

Missouri River Operation

The Investigations Section provided technical review of the Corps



Devils Lake.

of Engineers' Master Manual revision. The revised draft Environmental Impact Statement for the Master Manual was released at the end of August. The section also reviewed and commented on the Corps' annual operating plan for the Missouri River.

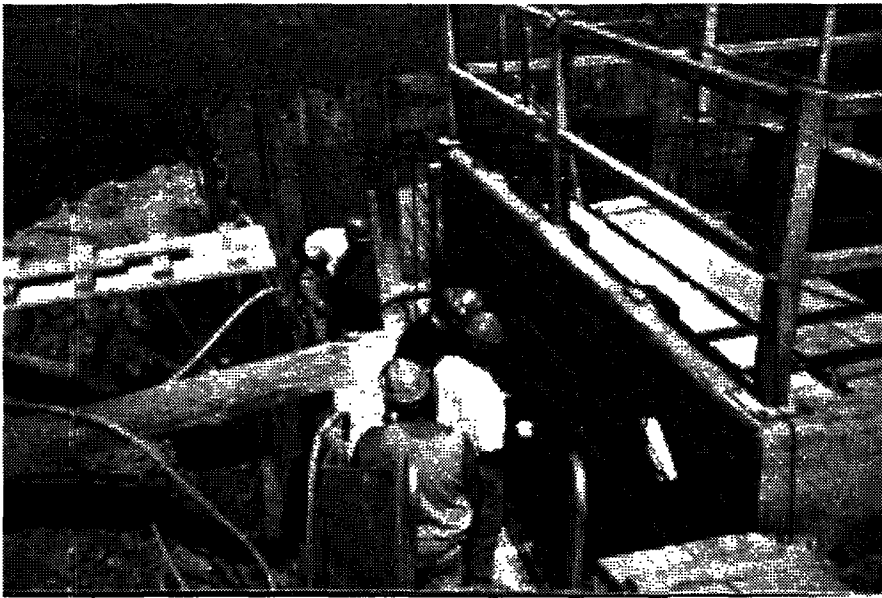
In the past couple of years, the staff has worked in coordination with local interests on Missouri River Bank Stabilization issues. Efforts are currently underway to assist in the development of a bank stabilization pilot project that will utilize an alternative technique to the current standard of rock revetments. This method will likely use a combination of rock, soil, trees, and other brushy plantings. This project will be studied to determine its long term effects.

Irrigation Development The following cost share agreements were developed to assist in development of irrigation: Horsehead Flats Reconnaissance Study, Emmons County; Horsehead Flats Feasibility Study, Emmons County; Mountrail County Reconnaissance Study; Mountrail County Feasibility Study; Nesson Valley Construction cost share, Williams County; Mercer Oliver Counties Reconnaissance Study; and Mercer Oliver Counties Feasibility Study.

Design and Construction

The following section is a summary of projects completed during the July 1, 1999 - June 30, 2001 biennium. The Water Commission did not bid any projects during this past biennium. Therefore, the summary includes the work completed by the Commission's construction crew. The work performed by the Commission's construction crew included maintenance and repair of water resource structures throughout the state, and work on gauging stations for the USGS. The summary also includes a list of dams inspected by the Dam Safety section of the Water Commission.

Morrison Lake Outlet - SWC #1746 The Water Commission's construction crew performed modifications and improvements to the Morrison Lake Control Structure. The purpose of the project was to increase the storage of Sweetwater Morrison Lake by raising the maximum control elevation six inches, from an elevation of 1459.0 feet msl up to an elevation of 1459.5 feet msl, and to modify the structure to improve the drawdown capability of Sweetwater Morrison to an elevation of 1458 feet msl.



Pheasant Lake Dam repair work, Summer of 2000.

The project is located north of Devils Lake in Section 11, Township 155 North, Range 64 West, Ramsey County, North Dakota. The modification and improvements consisted of driving the existing sheet piling down and placing a reinforced concrete slab across the entire width of the channel and incorporate the existing piling. A number of vertical beams were placed in the concrete slab to be used as stop log guides. A walkway with necessary safety railings was constructed to aid in the removal of stop logs.

Froelich Dam - SWC #627 - Froelich Dam is located in Section 18, Township 131 North, Range 82 West Sioux County. The construction crew built a subsurface drainage system in the downstream toe and downstream right abutment. Erosion was also repaired near the spillway outlet. Straw mats were placed on the repaired area near the outlet in order to get good grass growth, thereby reducing the likelihood of future erosion. The North Dakota Game and Fish Department and the State Water Commission funded the work.

Cedar Lake Dam - SWC #353 - The Water Commission's construction crew made repairs to Cedar Lake Dam during the 1999 construction season. The dam is located in Section 35, Township 133 North, Range 98 West, in Slope County.

The work included gunniting the downstream face of the concrete ogee weir spillway and the reconstruction of the low level outlet. Water control for the project was provided by the construction of a large earthen cofferdam. The loose and deteriorating concrete was removed by sandblasting the structure. The Slope County WRD, the Game and Fish Department, and the State Water Commission shared in the cost of construction.

Cottonwood Creek Dam - SWC Project #1515 - The Water Commission worked with the LaMoure County Water Resource District and the North Dakota Game and Fish Department to install a new low-level drawdown system at Cottonwood Creek Dam during the 2000 construction season. The dam is located in Section 30, Township 133 North, Range 60 West, near the City of LaMoure.

The work consisted of installing a stop log structure and ductile iron fittings to the concrete drop inlet (inlet to the principal spillway). A 300-foot section of 16-inch diameter, high density polyethylene pipe was floated into the reservoir, and positioned over the deepest portion of the reservoir. After the pipe was in place, it was filled with water and allowed to sink to the bottom of the reservoir. Divers from the Game and Fish Department inspected the entire length of the pipe after it was on the bottom. The project also included filling the existing low level drawdown with grout.

Pheasant Lake Dam - SWC Project #501 - In the 2000 construction season, the State Water Commission entered into an agreement with the Dickey County Water Resource District, and the Game and Fish Department to make emergency repairs to the concrete inlet to the spillway at Pheasant Lake Dam. Sections of the concrete wall were damaged due to ice action.

The damage to the inlet was submitted by the District as a potential project under the federal disaster declaration in 1999. The Federal Emergency Management Agency (FEMA) approved the project in the Fall of 1999, allocating approximately \$24,000 of the total estimated cost of \$45,000, to make the necessary repairs. The remaining non-federal share of the project was shared equally among the Water Commission, Water Resource District, and the Game and Fish Department.

The damaged concrete in the headwall to the inlet section was removed and replaced with reinforced concrete, designed to withstand anticipated structural and loading stresses. The work at the dam started in July 2000 and was completed at the end of September 2000.

DAM SAFETY SITE VISITS

Name	County	Hazard
Dead Colt Creek Dam	Ransom	Medium
Cottonwood Creek Dam	LaMoure	Medium
LaMoure City Dam	LaMoure	Low
Lisbon Dam	Ransom	Medium
Marvin Iverson Dam	Williams	Medium
Tioga Drain	Williams	Low
Smishek Lake Dam	Burke	Low
Baukol-Noonan Dam #1	Divide	Low
Epping Dam	Williams	Medium
Raleigh Dam	Grant	Medium
Glen Ullin RR Dam #1	Morton	Medium
Glen Ullin RR Dam #2	Morton	Medium
North Lemmon Lake Dam	Adams	Medium
Indian Creek Dam	Hettinger	Medium
Charles Lake NWR	Hettinger	Low
Larson Lake Dam	Hettinger	Low
Squaw Creek Dam	Hettinger	Medium
Garrison Dam	McLean	High
Brown Dam	Barnes	Low
Kathryn Dam	Barnes	Low
Valley City Mill Dam	Barnes	Medium
Valley City Park Dam	Barnes	Medium
Wilson Dam	Dickey	Low
Cottonwood Creek Dam	LaMoure	Medium
Casselton Reservoir	Cass	Low
Maple River Dam (T-180)	Cass	High
Grand Forks Riverside Park Dam	Grand Forks	Medium
Hillsboro Dam	Trail	Low
Vigness Dam	Walsh	Low
Up. Turtle R. Flood Ret. #9	Grand Forks	High
McVile Railroad Dam	Nelson	Medium
Myron Edsrud Dam	Nelson	Medium
Silver Creek Dam	Nelson	Low
Tolna Dam #1	Nelson	Medium
Homme Reservoir	Walsh	High
Middle Branch Park R. #5	Walsh	High
Neideffer Flood Cont. Dam	Burleigh	Low
Balta Dam	Pierce	Low
Delry Schwalbe Dam	Dunn	Low
Beach Dam	Golden Valley	High
Camel Butte Dam	Golden Valley	Medium
Odland Dam	Golden Valley	Low
Arnegard Dam	McKenzie	Low
Sather Dam	McKenzie	Medium
Belfield RR Dam	Stark	Low
Big Coulee Dam	Towner	Medium
Mirror Lake Dam	Adams	Medium
Williston Levees	Williams	High
Spring Lake (Twin Lakes)	Williams	Low
Richard Mack Dam	Bowman	Low
David Dvorak Dam	Dunn	Low
Justin Jacobs Dam	Burleigh	Medium
Wakopa Dam	Rolette	Low
Warsing Dam	Eddy	Low
Lake Upsilon	Rolette	Low
Jamestown Dam	Stutsman	High

DAM SAFETY FORMAL INSPECTIONS

Name of Dam	County	Hazard
Colt Dam	Mercer	Low
Erie Dam	Cass	Medium
Matecjek Dam	Walsh	High
Renwick Dam	Pembina	High
Bylin Dam	Walsh	High
Daub Dam	Oliver	Medium
Tioga Dam	Williams	High
McGregor Dam	Williams	High
Blacktail Dam	Williams	Medium
Short Creek Dam #1	Burke	Medium
Nelson Lake Dam	Oliver	High
Sweetbriar Creek Dam	Morton	Medium
Crown Butte Dam	Morton	Medium
Sheep Creek Dam	Grant	Low
Mott Watershed Dam	Hettinger	High
Burlington Dam #1	Ward	Low
Burlington Dam #2	Ward	Low
Clausen Springs Dam	Barnes	High
Pheasant Lake Dam	Dickey	Medium
Hunter Dam	Cass	High
Minto Dam	Walsh	Low
Drayton Dam	Pembina	Medium
Grafton RR Dam	Walsh	Low
Olson Dam	Pembina	High
Senator Young Dam	Cavalier	High
Mount Carmel Dam	Cavalier	Medium
Neche Dam	Pembina	Medium
Harvey Dam	Wells	Medium
Big Coulee Dam	Towner	Medium
Camel Butte Dam	Golden Valley	Medium
Davis Fish Dam	Slope	Low
Indian Creek Dam	Hettinger	Medium
North Lemmon Lake Dam	Adams	Medium
Dead Colt Creek Dam	Ransom	Medium

Tolna Dam - SWC Project #266 Tolna Dam is located in Section 18, Township 150 North, Range 60 West, near the city of Tolna in Nelson County. Seepage from the downstream right groin was discharging out of the embankment and into the downstream apron. The concern was that the seepage had increased, indicating the removal of embankment fines. The removal of fines may lead to a piping failure, resulting in a possible embankment failure.

The project involved the construction of a subsurface drain along the south side of the structure, allowing the seepage, but preventing the migration of embankment material. The valve for the low level drawdown could not be fully closed, and was passing flow. Therefore, the work also included replacement of the valve. The work was performed during the month of June 2000.

Indian Creek Dam - SWC

Project #1556 - The Water Commission entered into an agreement with the Hettinger County Water Resource District and the North Dakota Game and Fish Department to construct repairs and improvements to Indian Creek Dam. The dam is located in Section 9, Township 133 North, Range 95 West, in Hettinger County.

The work consisted of removing rocks from the inlet structure, installing a trash rack, and repairing damaged concrete at the spillway outlet. The work was completed in May 2001.

Wakopa Dam - SWC Project

#319 - Wakopa Dam is located in Section 32, Township 164 North, Range 71 West in Rolette County. The dam was overtopped during the spring runoff of 2001, causing damage to the downstream face of the dam. The Water Commission entered into an agreement with the Game and Fish Department to make the necessary repairs at the dam. The project was eligible for a federal cost-share under the federal disaster declaration of 2001, with the Department receiving federal funds from the Federal Emergency Management Agency to help defray the repair costs.

The principal spillway was plugged with debris, and the resulting loss of hydraulic capacity caused water to overtop the embankment during the 2001 spring runoff. The crest of the embankment is used as a county road. The flows over the embankment resulted in the loss of gravel on the road surface, and erosion of approximately 600 cubic yards of material from the downstream face of the embankment. The Rolette County road crew excavated a notch in the left (west) abutment to pass flood flows. The work by the County likely prevented the loss of the embankment.

The Water Commission's work involved two phases. The first phase consisted of lowering the reservoir in order to remove the debris from the spillway inlet. The second phase of the project involved the construction of an emergency spillway in the right abutment, and repairing the erosion on the downstream face of the embankment. The emergency spillway allows the passage of flood flows, lowering the likelihood the embankment will be overtopped. Phase One was finished in June 2001, with the work associated with Phase Two completed in September 2001.

USGS Gauging Stations

- The Water Commission works with the U.S. Geological Survey to maintain the system of USGS gauging stations located throughout the state.

In addition to the normal work done by the Water Commission on the gauging network, work was done upgrading many sites located throughout the state under a Hazard Mitigation Grant Program (HMGP) administered by the Water Commission. The monies for the program were provided by FEMA in order to provide the gauging sites with real-time data reporting.

Municipal, Rural & Industrial Water Supply

In federal fiscal years 2000 and 2001, the Garrison Diversion Municipal, Rural, and Industrial (MR&I) water supply program received \$20.2 million in federal grant funds for the development of water supply facilities in the state. Projects that were allocated funds included the Northwest Area Water Supply, Ransom-Sargent Water Users, All Seasons Water Users, Ramsey Rural Water, McKenzie County Rural Water, McLean-Sheridan Rural Water, and Williams Rural Water. This

brought the total received from the federal government to \$175.3 million since the program was authorized in 1986.

A total of 137 applicants have requested assistance through the MR&I program. Of these, 42 projects have been approved for MR&I funding by the Garrison Diversion Conservancy District and the State Water Commission.

Thirty-eight projects have been completed, including: Abercrombie, Agassiz Water Users, Cavalier, Crown Butte, Englevale, Fargo, Garrison Rural Water, Grandin, Glenfield, Gwinner, Hankinson, Kindred, Langdon, Langdon Rural Water, McLean Sheridan Rural Water, Minto, Missouri West Water Phases I and II, New Town, North Valley Water Association, Ramsey Rural Water, Riverview Heights, Riverside Park Dam, Rugby Phase I, Stanley, Tolna, Tri-County Water Users, Burleigh Water Users, Dickey Rural Water, Dunn Center, Edgely, Gackle, Grand Forks Water Treatment, Grand Prairie Estates, Hebron, Marion, Neche, Walhalla, All Seasons Rural Water Phase I, and Fingal.

Three more projects were in design and/or construction phases at the end of the biennium; including Northwest Area Water Supply, Ransom Sargent Rural Water, and All Seasons Water System IV and V.

The total estimated cost of the 137 projects is \$783 million. This cost includes \$145 million for the Northwest Area Water Project and \$150 million for the Southwest Pipeline Project.

Red River Office

Located in West Fargo, the Red River office consists of one full time and one part-time position. During the 1999 2001 biennium, the personnel coordinated State Water Commission activities in eastern North Dakota and provided:

- 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 to individual water resource boards on 21 drainage problems and 11 other water related issues;

- Inspections on 13 projects that the State Water Commission had approved for cost sharing;

- Investigations of flood conditions during the 2001 flood, and provided this information to local, state, and federal agencies; and

- Technical assistance on various committees that have been formed as a result of the persistent flood problems. These committees include the Flood Damage Reduction and Drainage teams for the Red River Basin Board, the Umbrella Coordination Team for Corps of Engineer's Reconnaissance Study, International Red River Basin Board, and various other groups. Personnel have also represented the SWC at meetings of the Pembina River Basin Advisory Board, Red River Basin Riparian Advisory Board, and the Sheyenne River Joint Water Resource Board.

Southwest Pipeline Project

At the beginning of the biennium the Southwest Pipeline Project served as the water supply for Belfield, Dickinson, Dodge, Dunn Center, Gladstone, Glen Ullin, Golden Valley, Halliday, Hebron, Hettinger, Manning, Mott, New England, New Hradec, Reeder, Regent, Richardton, South Heart, and Taylor, as well as approximately 1,500 rural water customers in six service areas. Construction on the project continued to expand it as a regional water supply system during the biennium.

In November 2000, service began to Elgin, New Leipzig, and Carson. During the biennium an additional 260 rural customers were connected to the project. The total population served by the project at the end of the biennium was approximately 29,272 persons.

Capital repayments from the Southwest Pipeline Project totaled \$2,291,318.52 for the biennium. Of this amount, \$1,398,132.61 was paid to bondholders and the balance, \$893,185.91, was deposited in the Resources Trust Fund.

Northwest Area Water Supply

Final design and environmental compliance work on the Northwest Area Water Supply (NAWS) project continued during the biennium. The primary issue for environmental compliance remains the potential for interbasin biota transfer which has been raised by Environment Canada and the Province of Manitoba. By the end of the 1997-1999 biennium, a proposed Final Environmental Assessment and a Draft Finding of No Significant Impact had been published by the Bureau of Reclamation, the lead federal agency on NAWS. Consultations with Canadian federal and provincial officials had concluded with a realization that further consultations were not going to resolve differences.

A Comparative Risk Analysis was conducted by the Bureau in late 1999 and 2000 to develop supporting information on the comparative risks of biota transfer

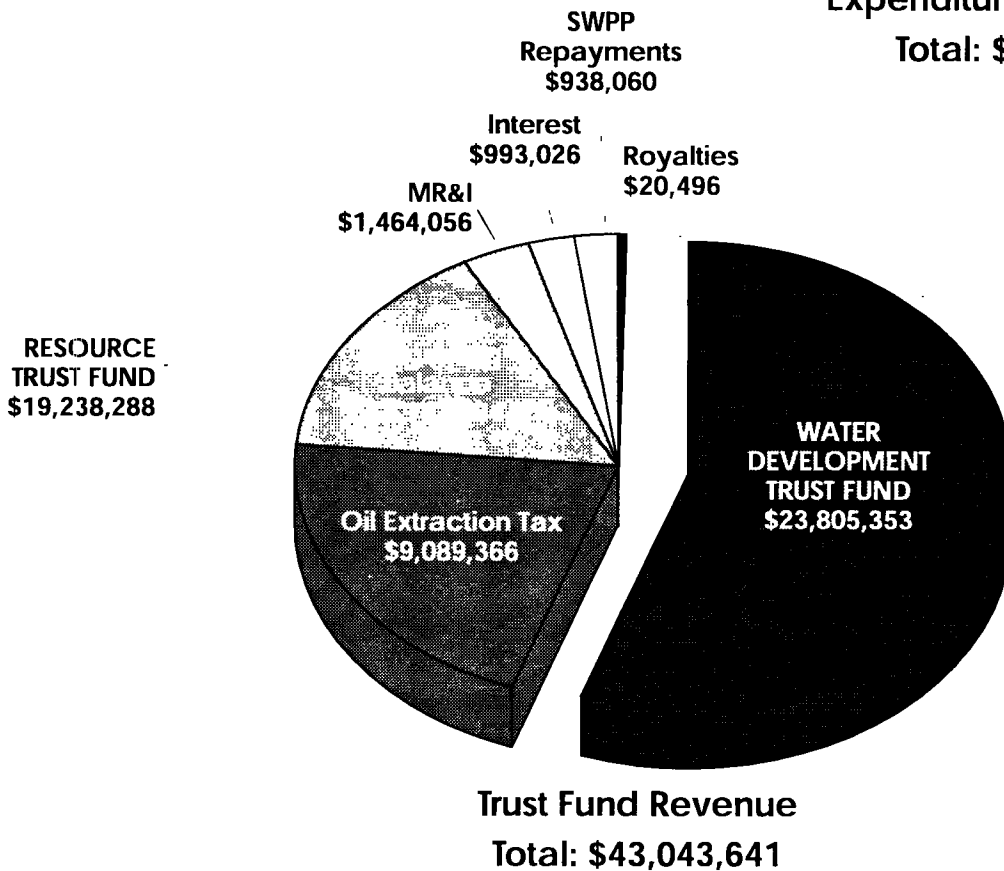
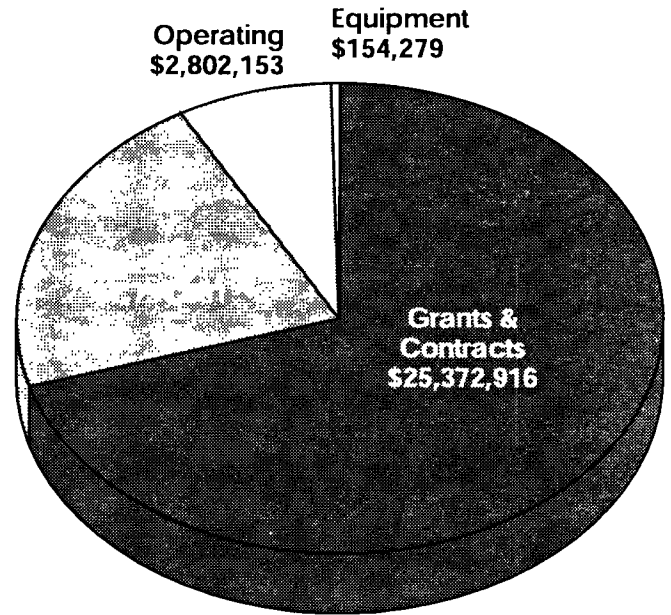
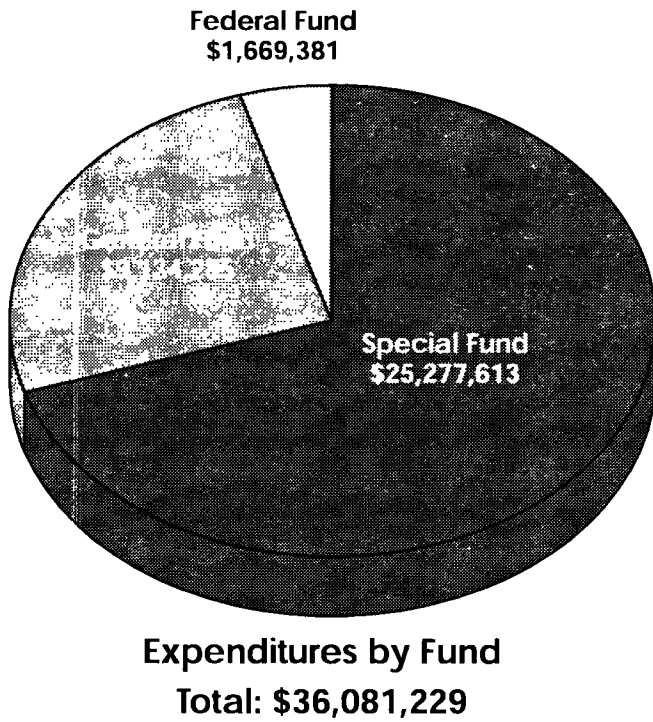


Southwest Pipeline Project.

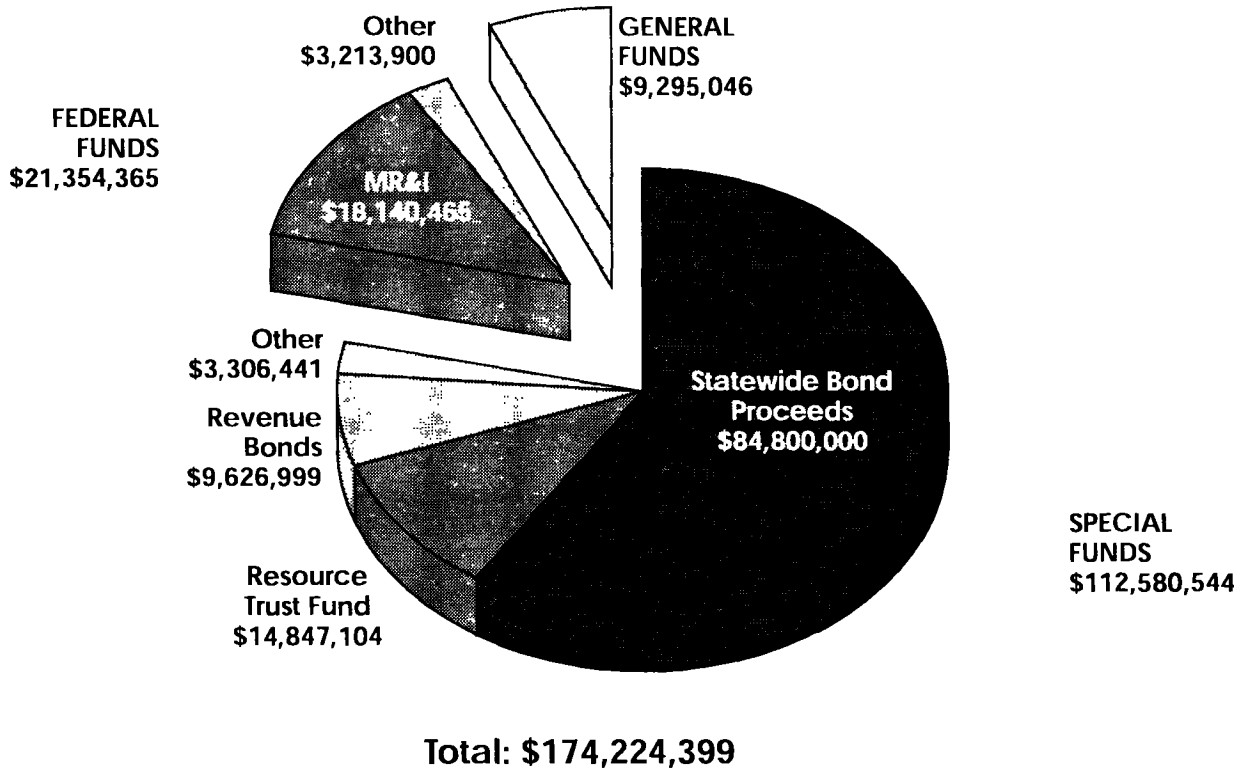
by the various man made and naturally occurring pathways in the region. On the final day of the Clinton administration, January 19, 2001, Secretary of Interior, Bruce Babbitt, signed a determination document stating that the Northwest Area Water Supply Project met the requirements of the Boundary Waters Treaty of 1909. This determination satisfies the requirements within the 1986 Garrison Diversion Reformulation Act for MR&I projects transferring water from the Missouri River basin into the Hudson Bay basin.

A Finding of No Significant Impact (FONSI) for the NAWS Project was signed by Dakotas Area Manager, Dennis Breitzman, on May 18, 2001. On June 4, 2001, the U.S. State Department formally presented the NAWS project to the Government of Canada and allowed 30 days for comments. On June 18, the Canadian government requested a copy of the Comparative Risk Analysis report which had been completed as supporting documentation to federal officials.

**State Water Commission Appropriations
1999-2001 Biennium**



**State Water Commission
Total Funding Authority
1999-2001 Biennium**



**State Water Commission
1999-2001 Grants Summary**

PROGRAM/ PROJECT	RESOURCES TRUST FUND	GENERAL FUNDS	OTHER FUNDS	TOTALS
Atmospheric Resources	\$125,000			\$125,000
Hydrologic Investigations	\$567,823	\$156,498	\$55,000	\$779,321
Devils Lake	\$2,398,011	\$235,145	\$60,000	\$2,693,156
Maple River Flood Control	\$3,570,731			\$3,570,731
Nesson Valley Irrigation	\$1,491,600	\$2,000		\$1,493,600
Elk/Charbon Irrigation District	\$1,000,000			\$1,000,000
Northwest Area Water Supply	\$100,000			\$100,000
Southwest Pipeline	\$1,096,168			\$1,096,168
Flood Mitigation Assistance Program	\$70,090	\$2,010		\$72,100
General Projects	\$3,825,885	\$485,320		\$4,311,205
TOTALS	\$14,245,308	\$880,973	\$115,000	\$15,241,281

State Water Commission

Program Budget Expenditures for Biennial Period Ending June 30, 2001

AGENCY PROGRAM	SALARIES & WAGES	OPERATING EXPENSES	EQUIPMENT	GRANTS & CONTRACTS	PROGRAM TOTALS
ADMINISTRATION					
Budget	\$1,051,966	\$469,816	\$20,000	\$0	\$1,541,782
Expended	\$977,337	\$515,617	\$32,892	\$0	\$1,525,846
Percentage	93%	110%	164%	0%	99%
PLANNING AND EDUCATION					
Budget	\$727,301	\$215,101	\$8,000	\$82,500	\$1,032,902
Expended	\$720,177	\$180,501	\$9,190	\$104,373	\$1,014,241
Percentage	99%	84%	115%	127%	98%
WATER APPROPRIATION					
Budget	\$2,358,940	\$356,174	\$36,000	\$779,321	\$3,530,435
Expended	\$2,348,178	\$353,127	\$36,055	\$631,749	\$3,369,109
Percentage	100%	99%	100%	81%	95%
WATER DEVELOPMENT					
Budget	\$2,885,336	\$400,169	\$52,000	\$14,832,256	\$18,169,761
Expended	\$2,855,418	\$391,789	\$52,557	\$4,207,410	\$7,507,174
Percentage	99%	98%	101%	28%	41%
ATMOSPHERIC RESOURCE					
Budget	\$516,552	\$395,800	\$30,250	\$4,435,000	\$5,377,602
Expended	\$462,242	\$343,993	\$22,786	\$707,811	\$1,536,832
Percentage	89%	87%	75%	16%	29%
SOUTHWEST PIPELINE					
Budget	\$345,490	\$388,291	\$14,406	\$551,168	\$1,299,355
Expended	\$332,681	\$687,557	\$799	\$625,252	\$1,646,289
Percentage	96%	177%	6%	113%	127%
NORTHWEST AREA WATER SUPPLY					
Budget	\$218,758	\$3,785,336	\$10,000	\$23,464,024	\$27,478,118
Expended	\$55,847	\$329,570	\$0	\$0	\$385,417
Percentage	26%	9%	0%	0%	1%
STATEWIDE WATER BONDS					
Budget				\$84,800,000	\$84,800,000
Expended				\$19,096,321	\$19,096,321
Percentage				23%	23%
AGENCY TOTALS					
Budget	\$8,104,343	\$6,010,687	\$170,656	\$128,944,269	\$143,229,955
Expended	\$7,751,881	\$2,802,153	\$154,279	\$25,372,915	\$36,081,229
Percentage	96%	47%	90%	20%	25%

**State Water Commission - Grants Programs/Projects Authorized
July 1, 1999 - June 30, 2001**

SWC PROJ. NO.	NAME	DATE APPROVED	AMOUNT APPROVED	PAYMENTS	BALANCE
ATMOSPHERIC RESOURCES					
	Atmospheric Resources		<u>\$125,000</u>	<u>\$125,000</u>	<u>\$0</u>
	ATMOSPHERIC RESOURCES TOTALS		\$125,000	\$125,000	\$0
WATER APPROPRIATION DIVISION					
	Hydrologic Investigations		<u>\$779,321</u>	<u>\$585,035</u>	<u>\$194,286</u>
	WATER APPROPRIATION DIVISION TOTALS		\$779,321	\$585,035	\$194,286
WATER DEVELOPMENT DIVISION					
DEVILS LAKE					
416-1	Devils Lake Basin Joint WRB Manager	12-21-98	\$9,529	\$9,529	\$0
416-1	Devils Lake Basin Joint WRB Manager	12-10-99	19,492	19,492	0
416-1	Devils Lake Basin Joint WRB Manager	12-8-00	23,000	11,683	11,317
416-1	Devils Lake Long Term Studies	2-4-92	69,484	69,484	0
416-1	Devils Lake LEMC	5-21-97	429	0	429
416-1	Starkweather Coulee Basin Analysis	7-22-97	30,485	29,485	1,000
416-1	Vyzralek - Research Services	5-14-01	1,125	1,125	0
416-2	Devils Lake Levee Raise (Phase II)	3-26-97	66,921	0	66,921
416-2	Dike Realignment Feasibility Study	7-1-97	4,466	0	4,466
1882-01	Available Storage Acreage Program	12-21-98	911,659	906,690	4,969
1882-02	Devils Lake Emergency Response Plan	11-29-95	7,986	0	7,986
1882-02	Devils Lake Right-of-Way Consultant	10-18-99	10,000	777	9,223
1882-02	Devils Lake to Stump Lake Pumping	7-10-98	8,400	8,400	0
1882-02	Devils Lake to Stump Lake Pumping	6-16-99	3,250	3,250	0
1882-03	Devils Lake Prairie Wetland Restoration	2-23-96	40,000	10,000	30,000
1882	Hammer-Sullivan	7-2-93	2,897	0	2,897
416-1	Devils Lake - USGS 1997 Satellite Imagery	8-20-98	1,040	1,000	40
416-1	Devils Lake - USGS 1997 Satellite Imagery	9-14-99	1,380	1,380	0
416-6	Devils Lake Historian (contract with AG)	10-19-98	20,000	3,027	16,973
416-05	Devils Lake Outlet Awareness Manager	12-21-98	6,402	6,402	0
416-05	Devils Lake Outlet Awareness Manager	12-21-98	14,906	14,906	0
416-05	Devils Lake Outlet Awareness Manager	12-10-99	13,264	13,264	0
416-05	Devils Lake Outlet Awareness Manager	12-12-00	15,000	7,490	7,510
416-06	Devils Lake Lawsuit Consultant	6-25-99	8,750	7,705	1,045
416-01	Devils Lake Dams, Twin Lakes Embankment Soils	10-1-99	5,794	5,794	0
416	DL./Stump Lake Outlet Project UND Archeological	10-29-99	11,000	11,000	0
416-01	Devils Lake Dams, Twin Lakes Channel Soils	1-21-2000	16,683	14,695	1,988
416-01	Devils Lake, USGS Fact Sheet Agreement	4-17-2000	12,000	12,000	0
416-01	Devils Lake/Twin Lakes Outlet Project	5-23-00	11,451	11,451	0
416-01	Devils Lake/Twin Lakes Temp Emergency Outlet	9-11-00	75,000	0	75,000
416-01	Archeological Pedestrian Survey Project with UND	8-24-00	6,600	1,356	5,244
416-01	USGS Climatology, Hydrology and Simulation Emerg.	8-1-00	775	775	0
416-01	Devils Lake Twin Lake Wetland Delineation Report	7-6-00	5,602	5,588	14
416-01	Devils Lake/Twin Lakes Outlet Environmental Review	12-8-00	<u>500,000</u>	<u>0</u>	<u>500,000</u>
	DEVILS LAKE TOTAL		\$1,934,770	\$1,187,748	\$747,022
SPECIAL PROJECTS					
1344	Maple River Flood Control	2-4-92	\$570,731	\$359,981	\$210,750
1858	Nesson Valley Irrigation	9-11-96	1,493,600	4,560	1,489,040
1857	Elk/Charbon Irrigation District	12-10-99	1,000,000	0	1,000,000
237-4	Northwest Area Water Supply	9-13-99	100,000	63,295	36,705
1736	Southwest Pipeline Project	9-13-99	1,096,168	1,396,707	(300,539)
1896	Flood Mitigation Assistance Program		<u>50,152</u>	<u>2,010</u>	<u>48,142</u>
	SPECIAL PROJECTS TOTALS		\$4,310,651	\$1,826,553	\$2,484,098

SWC PROJ. NO.	NAME	DATE APPROVED	AMOUNT APPROVED	PAYMENTS	BALANCE
WATER DEVELOPMENT DIVISION (continued)					
GENERAL PROJECTS					
1803	Belfield Flood Control (Stark)	12-20-91	\$38,800	\$0	\$38,800
828	Homme Dam (Walsh)	11-29-95	28,000	15,000	13,000
1401	International Drainage	4-23-96	1,725	0	1,725
1486	Cooperstown Area Drain Project (Griggs)	7-11-96	5,200	0	5,200
1315	Twelve Mile & Truax Township Pipeline (Williams)	1-27-97	87,800	0	87,800
1813	Cass County Joint Water Resource District	2-13-98	95,300	78,153	17,147
300	Baldhill Dam (Sheyenne River Joint WRD)	4-30-98	33,048	27,527	5,516
1312	Phase I, Rural Ring Dike Project (Walsh Co WRD)	8-13-98	175,000	19,532	155,468
1054	Meadow Lake Flood Control (Barnes)	9-2-99	4,825	0	4,825
576	Missouri River Coordinated Resources Mgmt. Program	10-19-98	19,797	18,041	1,756
1271	Ring Dike Cost-Share (North Cass WRD)	12-21-98	162,500	0	162,500
222	Buford-Trenton Irrigation (Williams)	1-27-99	19,115	12,195	6,920
1293	Mountrail County Irrigation Project Feasibility Study	6-9-99	28,750	26,069	2,681
1751	Digital Aerial Survey - Laser Terrain Mapping (Cass)	6-9-99	45,150	0	45,150
1905	Walhalla Township Drain #2 (Cavalier/Pembina)	6-9-99	95,311	0	95,311
1904	Walhalla Township Drain #3 (Cavalier/Pembina)	6-9-99	52,490	0	52,490
1280	Rural Ring Dikes Project (Grand Forks Co WRD)	9-13-99	37,500	6,000	31,500
828	Homme Dam (Walsh)	9-13-99	26,500	15,000	11,500
841	Upper Maple Retention Dam Feas. Study	11-5-99	20,000	0	20,000
1280	Grand Forks Ring Dikes #2	12-10-99	25,000	284	24,716
1588-01	Red River Basin Board Needs Assessment	3-6-01	20,000	0	20,000
576	BOMM Missouri River Coordinated Resources Mgmt.	3-6-01	60,000	0	60,000
1904/05	Cavalier/Pembina Drains 2 & 3	3-6-01	178,525	0	178,525
1069	Cass County Drain No 13	4-10-00	136,000	113,012	22,988
1070	Cass County Drain No 14	4-10-00	136,000	120,366	15,634
1751	Floodplain Mapping for Red River Area So.	4-10-00	49,350	0	49,350
????	Montana EIS for County-Sponsored Cloud Mod. Prog.	4-10-00	70,000	0	70,000
1075	Cass County Drain No 21	7-14-00	136,000	124,121	11,879
1081	Cass County Drain No 29A	7-14-00	136,000	0	136,000
847	Swan Creek Diversion (Cass)	7-14-00	70,000	0	70,000
1911	Steele County Drain No 4	7-14-00	136,000	0	136,000
1751-10	City of Minot Flood Study	9-11-00	55,400	0	55,400
1280	Upper Turtle River Watershed (Grand Forks)	9-11-00	43,125	0	43,125
300	Baldhill Dam Flood Pool Raise	9-11-00	99,500	48,000	51,500
1080	Cass County Drain No 27	11-23-71	26,260	13,046	13,214
1909	Red River Wetlands/Watersheds Study (USGS)	11-28-00	8,125	0	8,125
1631	Cass County Drain #52 Channel Cleanout & Improv.	12-4-00	17,320	17,029	291
1300	Mouse River Park Slope Stabilization (Renville)	12-8-00	39,038	33,724	5,314
1086	Cass County Drain #35 Backflow Prevention Structure	12-8-00	33,075	0	33,075
1803	City of Belfield Watershed Project Phase 1	5-22-01	93,200	0	93,200
1293	Northwestern Dairy (Mountrail)	5-22-01	91,240	0	91,240
1267	High Water Mark, Long Lake	6-5-01	1,110	0	1,110
1667	Goose River Snagging and Clearing (Trail Co WRD)	6-13-01	14,547	0	14,547
591	12th Ave North Dam Safety & Fishway Improv., Fargo	8-23-01	<u>13,862</u>	<u>0</u>	<u>13,862</u>
	Subtotal General Projects		\$2,665,483	\$687,099	\$1,978,384
	Completed General Projects		<u>1,648,788</u>	<u>1,648,788</u>	<u>0</u>
	APPROVED GENERAL PROJECTS TOTALS		4,314,271	2,335,887	1,978,384
	UNALLOCATED BALANCE		<u>502,631</u>	<u>0</u>	<u>502,631</u>
	WATER DEVELOPMENT DIVISION TOTALS		\$11,062,323	\$5,350,188	\$5,712,135
	ALL FUNDS TOTALS		\$11,966,644	\$6,060,223	\$5,906,421

State Water Commission

Object Expenditures for Biennial Period Ending June 30, 2001

Permanent Salaries	\$ 5,835,935
Temporary Salaries and Overtime Salaries	227,047
Fringe Benefits	1,688,899
Data Processing Service	54,600
Information Technology - Software/Supplies	117,478
Information Technology - Contractual Services	43,948
Telephone	93,724
State Motor Pool	327,693
State Employee Travel	287,233
Non Employee Travel	53,405
Utilities	17,413
Postage	31,209
Lease/Rental	62,895
Professional Development	145,402
Operating Fees and Services	129,905
Repairs	47,550
Professional Services	1,579,650
Insurance	6,964
Office Supplies	19,482
Printing	40,979
Professional Supplies and Materials	212,253
Food and Clothing	1,784
Medical, Dental, and Optical	5,317
Bldg, Brnds, Vehicle Maintenance Supplies	107,008
Miscellaneous Supplies	62,424
Office Equipment and Furniture	6,013
Information Technology - Equipment	129,501
Other Equipment	18,765
Land and Buildings	135,707
Other Capital Payments (Includes Southwest Pipeline Project)	4,349,817
Water Resources Grants	20,194,477
Cooperative Research	<u>46,752</u>
TOTAL	\$36,081,229

State Water Commission

LONG-TERM DEBT

The State Water Commission issued water development revenue bonds in 1997 and 1998 for the Southwest Pipeline Project and the Northwest Area Water Supply Project. The following table shows the State Water Commission's long-term debt as of June 30, 2001:

Water Development Revenue Bonds

PROJECT	SERIES	AMOUNT
Southwest Pipeline Project	1997 Series A	\$6,575,000
Southwest Pipeline Project	1997 Series B	3,367,990
Southwest Pipeline Project	1998 Series A	100,000
Southwest Pipeline Project	1999 Series A	1,000,000
Southwest Pipeline Project	2000 Series A	1,500,000
Southwest Pipeline Project	2000 Series B	400,000
Southwest Pipeline Project	2001 Series A	269,755
Northwest Area Water Supply (Rugby)	1998 Series A	1,195,000
Statewide Water Development Projects	2000 Series A	32,095,000

Resources Available from the Agency

Minutes of meetings held may be obtained by writing to:

ND State Water Commission
State Office Building Dept 770
900 East Boulevard Avenue
Bismarck, ND 58505-0850

Data available for public use:

- Government Land Office Plats
- Survey Horizontal and Vertical Control
- Various Ground-Water Studies
- Well and Site Location Data
- Lithologic Data
- Water Chemistry Data
- Water Level Data
- Growing Season Rainfall Data
- Water Permit Data
- Drainage Permit Data
- Stream Flow Data
- Construction Permit Data
- Retention Structure Data
- Digital Map Data

State Water Commission Home Page on the Internet: <http://www.swc.state.nd.us/>
Additional information about the State Water Commission is available on our home page.