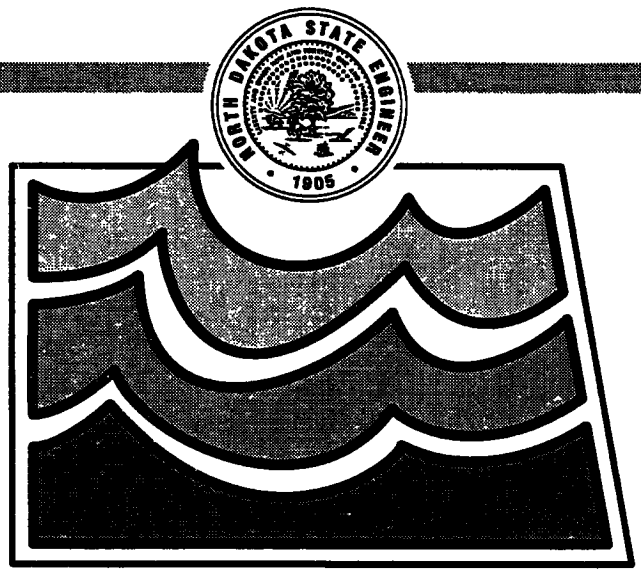

NORTH DAKOTA
State Water Commission
and
Office of the State Engineer

BIENNIAL REPORT
for the period July 1, 1997 to June 30, 1999

Governor Edward T. Schafer
Chairman

David A. Sprynczynatyk, P.E.
Secretary and State Engineer

North Dakota State Water Commission

900 EAST BOULEVARD • BISMARCK, ND 58505-0850 • 701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696

December 1, 1999

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

RE: 1997-1999 Biennial Report

Dear Governor Schafer:

It is with great pride in the State Water Commission and the Office of the State Engineer that we present the Biennial Report for July 1, 1997, through June 30, 1999. This report highlights the events and activities of the State Water Commission and the State Engineer.

The challenges presented to the State Water Commission over the biennium were many. They ranged from the flooding at Devils Lake, to the development of the Dakota Water Resources Act, to the completion of the 1999 State Water Management Plan, and on, to the creation of the Water Development Trust Fund for future funding of water management projects.

The biennium was certainly a success for water management. The many accomplishments can be attributed to the involvement of the water community across our great state and the dedication of the employees of the State Water Commission.

Thank you for your continued support. As always, the State Water Commission and the State Engineer are prepared to move forward and further manage and develop our most valuable natural resource, water.

Respectfully submitted,

David A. Sprynczynatyk
Secretary and State Engineer

DAS:rp
Enclosure

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NORTH DAKOTA STATE WATER COMMISSION

GOVERNOR EDWARD T. SCHAFER
Chairman

DAVID A. SPRYNCZYNATYK, 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 so arranged that two terms and not more than three terms shall expire on the first day of July of each odd numbered year. The Commission appoints a Secretary-State Engineer as 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 field offices in Dickinson and West Fargo.

History and Mandates

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

The Office of State Engineer was created in 1905 to regulate and administer matters concerning allocation of the state's water and related land resources in compliance with article XI, § 3 of the North Dakota Constitution which declares all waters to be property of the state for public use. In 1937, additional duties were added to this office when the State Engineer was designated chief 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 and its interest in federal and international waters.
- Prepare and maintain a comprehensive plan for future growth and development, and to direct project development in accordance with that plan.
- Conduct studies to determine availability and occurrence of the

ground and surface waters of the state for the purposes of allocation and management.

• Assist local entities of government in the development and construction of water resource projects.

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

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

• Prepare and maintain a statewide 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

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

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

• Working on Dakota Water Resources Act to provide for water distribution throughout North Dakota in return for the land given up for early development of the Pick-Sloan Plan.

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

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

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

• Periodic discussions with Native American representation regarding tribal reserved water rights in North Dakota. The intent being to negotiate water rights to avoid litigation.

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

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

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

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

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

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

1999 Water Resources Legislation

House Bill 1040 authorized a study of a hail suppression program for all or a portion of the state. The bill also clarified that a weather modification program could be carried out in a portion of a county or counties.

House Bill 1045 repealed chapter 61-24.4, which contained the statutory scheme for bonding for the Southwest Pipeline Project that the North Dakota Supreme Court held was unconstitutional.

House Bill 1139 allows any party who has filed a complaint with a water resource board concerning noncomplying dams, dikes, or other devices to appeal the board's decision to the State Engineer. It also requires the water

resource board to make a decision on a complaint of a noncomplying dam, dike, or other device within a reasonable time, not exceeding 120 days. If the board fails to act within 120 days, the person may file the complaint with the State Engineer.

House Bill 1140 amended N.D.C.C. §§ 61-35-04 and 61-35-07 to require a water supply district to pay for the costs of publishing notices required to create the water supply district. It also amended N.D.C.C. § 61-35-08 to allow the water supply district to select its initial board of directors within 30 days after the State Engineer issues the order forming the district rather than 30 days after the hearing to establish the district is held. Additionally, the bill amended N.D.C.C. § 61-35-25(1) to require the notice of dissolution or merger of a rural water cooperative or corporation to be filed with the Secretary of State or Attorney General when a cooperative or corporation petitions to become a water supply district.

House Bill 1166 allows the State Water Commission to establish water rates for the Northwest Area Water Supply (NAWS) project and establishes dedicated funds for operation and maintenance, replacement, and capital repayment. It also defines the NAWS project area to include Bottineau, Burke, Divide, McHenry, McLean, Mountrail, Pierce, Renville, Ward, and Williams Counties. The bill also provides quick take authority for the NAWS project. These changes are patterned after the current law for the Southwest Pipeline Project (SWPP). In addition, the bill validates water service contracts entered into between cities and the State Water Commission for water from the SWPP.

House Bill 1167 modifies the laws governing floodplain management. It authorizes cities, townships, and counties to provide, in their comprehensive plans, for emergency management that specifically addresses natural and man made hazards. The bill requires county subdivision plats to show identified 100-year floodplain boundaries in cases where the 100-year floodplain has been mapped. It defines "community" as any political subdivision that has the authority to zone and requires all communities that have residential, commercial, or industrial structures in areas subject to excessive flooding to participate in the National Flood Insurance Program. Cities, townships, and counties qualify as communities under the flood insurance program. The bill clarifies that the State Engineer can establish floodplains around lakes in addition to watercourses such as rivers and streams. The bill gives communities one year to adopt standards regarding permissible uses in the flood fringe. Community standards may not be less than current law allows. Current law requires structures to be constructed at or flood proofed to at least the base flood elevation. Structures in a community that does not adopt standards by August 1, 2000, will have to be constructed or flood proofed to at least one foot above the base flood elevation. Finally, the bill requires the State Engineer to review all uses proposed in mapped floodways to determine whether the use will impact the elevation of the flood water. Uses in communities that have the technical hydraulic expertise to determine if the proposed use complies with the law may be exempted.

House Bill 1281 authorizes the State Water Commission to provide credit enhancement for irrigation district bonds, or to issue bonds and loan the proceeds to irrigation districts. The bill also authorizes the Commission to establish an interim financing program for rural water systems.

House Bill 1310 provides that roads are to be constructed in accordance with the stream-crossing standards prepared by the Department of Transportation and the State Engineer. Road entities are not liable for any damage if the road has been constructed in accordance with those standards.

House Bill 1417 shortened the waiting period for water resource district enforcement actions from 30 days to 15 days.

House Bill 1475 provides that 45 percent of the tobacco settlement trust fund be transfered to the water development trust fund for water development and management needs.

House Concurrent Resolution 3013 directs the Legislative Council to study basinwide water management of the Red River Basin.

Senate Bill 2106 authorizes the State Water Commission to participate in the state drinking water treatment revolving loan fund administered by the State Department of Health utilizing the North Dakota Municipal Bond Bank.

Senate Bill 2107 made two changes to the procedures for obtaining water permits. Under current law, whenever a water permit is required to appropriate water the State Engineer must hold a hearing on the proposed appropriation. The first change requires the State Engineer to hold hearings only when a request to do so is made. The second change allows the hydrologist or water resource engineer who evaluates the water permit application to make the recommendation on whether the permit should be granted, denied, or held in abeyance unless a hearing is requested.

Senate Bill 2188, a comprehensive statewide water development plan, provides $84.8 million in bonding for water projects. The bill includes bonding authority in the amount of $20 million for a Devils Lake outlet to Stump Lake or the Sheyenne River, $52 million for Grand Forks, $4.8 million for Grafton, $3.5 million for Wahpeton, and $4.5 million for the Southwest Pipeline during the next biennium.

Senate Concurrent Resolution 4026 urges Congress to enact the Dakota Water Resources Act.

Senate Concurrent Resolution 4027 directs the Legislative Council to study issues related to the Missouri River in North Dakota.

Senate Concurrent Resolution 4028 urges the U.S. Army Corps of Engineers to include provisions for the protection of recreation, municipal, industrial, irrigation, and other interests on the Missouri River in North Dakota in developing a revised master manual for the future operation of the Pick-Sloan Project.

Water Commission Members as of June 30, 1999

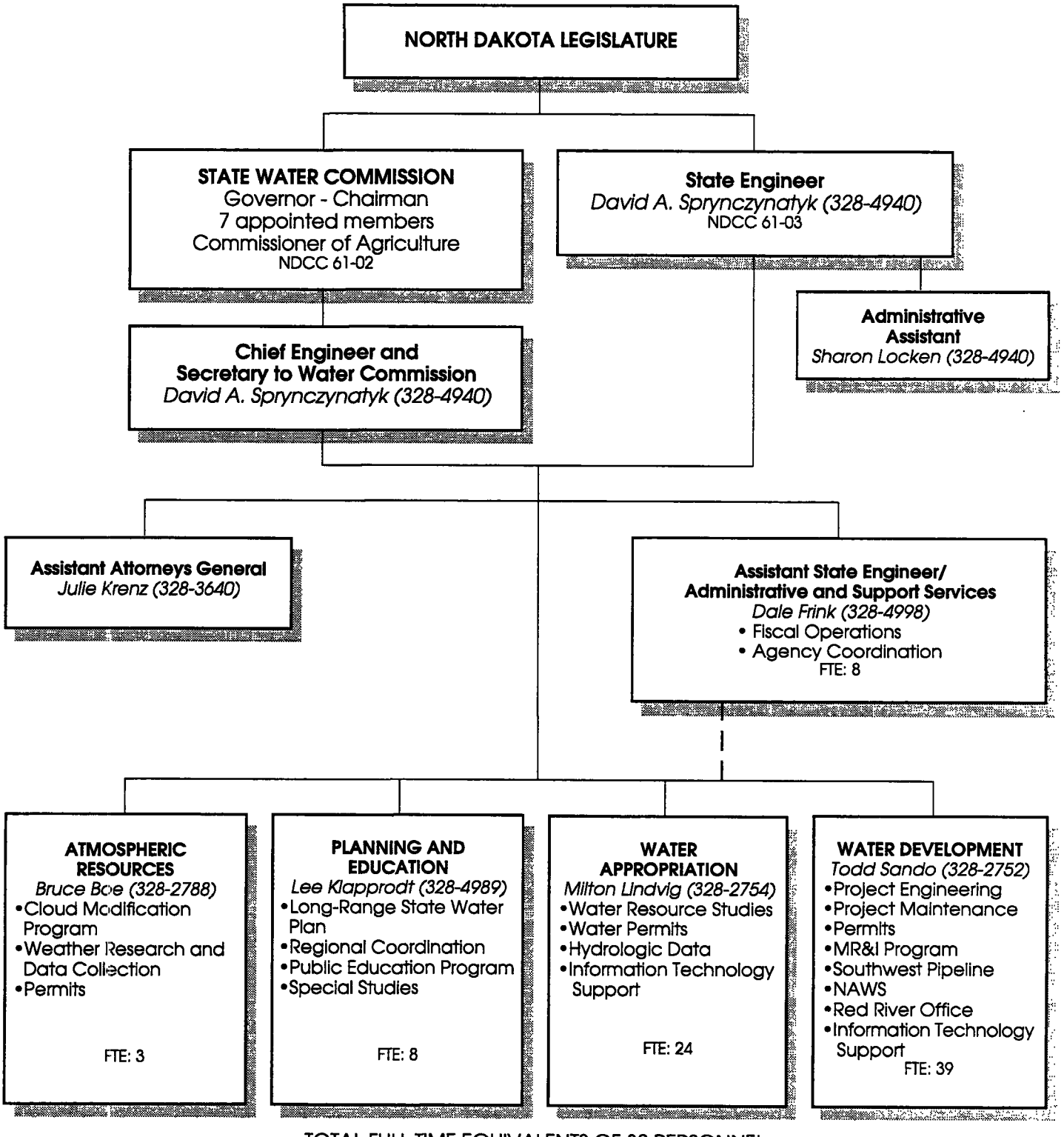
NAME	POSITION	APPOINTED	TERM ENDS
Edward T. Schafer	Governor-Chairman		
Roger Johnson	Department of Agriculture		
Mike Ames	Member from Williston	July 1, 1993	June 30, 1999
Florenz Bjornson	Member from West Fargo	July 1, 1993	June 30, 1999
Judith DeWitz	Member from Tappen	July 1, 1993	June 30, 1999
		RE-APPOINTED	TERM ENDS
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

Water Commission Meetings
July 1, 1997 through June 30, 1999

DATE	LOCATION
July 22, 1997	Bismarck
September 11, 1997	Bismarck
October 29, 1997	Bismarck
December 1, 1997	Dickinson
December 22, 1997	(Conference Call) Bismarck
February 13, 1998	Bismarck
April 30, 1998	Bismarck
May 18, 1998	(Conference Call) Bismarck
August 13, 1998	Grand Forks
September 4, 1998	(Conference Call) Bismarck
October 19, 1998	Bismarck
November 25, 1998	(Conference Call) Bismarck
December 10, 1998	(Conference Call) Bismarck
December 21, 1998	Bismarck
January 27, 1999	Bismarck
March 24, 1999	Bismarck
June 9, 1999	Bismarck

North Dakota
State Water Commission

Organizational Chart



TOTAL FULL TIME EQUIVALENTS OF 82 PERSONNEL

June 30, 1999

State Water Commission Employees
as of June 30, 1999

ADMINISTRATIVE SERVICES DIVISION

State Engineer: David A. Sprynczynatyk
Assistant State Engineer: Dale Frink
Administrative Assistant: Sharon Locken
Accounting Manager: Sharon Heap
Accounting Budget Specialists: Kay Koch, Lorna Wohnoutka
Legal Assistant: Rosemary Pedersen
Records Center Technician: Karen Heinert

ATMOSPHERIC RESOURCE BOARD

Division Director: Bruce Boe
Business Manager: LeNor Dollinger
Environmental Scientist: Darin Langerud
Temporary: Dawn Feist, Bryan Davis, Chad Grondahl, Ben Lemke, Paul Moen, Renae Onstad, Jeffrey Schild

WATER APPROPRIATION DIVISION

Division Director: Milton Lindvig
Administrative Secretary: Marlene Backman
Hydrologist Managers: Royce Cline, David Ripley, William Schuh, Robert Shaver
Hydrologists: Christopher Bader, Rex Honeyman, Kevin Krogstad, Scott Parkin, Jon Patch, Steve Pusc, Alan Wanek
Water Resource Engineer: Robert White
Water Resource Program Manager: James MacArthur
Engineering Technicians: Kelvin Kunz, Albert Lachenmeier, Merlyn Skaley, Perry Weiner
Chemist: Garvin Muri
Laboratory Technician: MaryBeth Osborn
Rotary Drill Operator: Gary Calheim
Equipment Operator: Brian Hlibichuk
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 Planner: Linda Weispfenning
Environmental Scientist: Brett Hovde
Research Analyst: Larry Knudtson
Graphic Artist: Brenda Hove

WATER DEVELOPMENT DIVISION

Division Director: 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: Dwight Comfort, Michael Grafsgaard, Leslie Horgan, James Landenberger, James Lindseth
Engineering Technicians: Marty Babel, Daniel Bahm, Robert Bucholz, Theodore DeWall, Tom Engberg, Edward Gall, Leland Krein, Kurt Kunz, Raymond Oliger, Thomas Palanuk
Water Resource Project Managers: Gary McDowall, Daniel Sauter
Planners: Jeffrey Klein, Bruce Lange
Account Technician: Winston Enyart
Data Processing Coordinator: Michael Hove

Southwest Pipeline Project & Northwest Area Water Supply
Water Resource Engineer Manager: James Lennington, Jason Boyle
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, records, and support services for all agency programs.

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

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

The State Engineer serves as North Dakota's representative on various boards and associations. Presently the State Engineer is the United States co-chairman of the International Souris River Board of Control, board of directors member of the Missouri Basin Association, executive council member of the Western States Water Council, board of directors member of the National Water Resource Association, board of directors ex officio member of the North Dakota Water Users Association, board of directors member of the North Dakota Water Education Foundation, member of the Red River Water Resource Council, member of the Association of Western State Engineers, member of the National Project WET Advisory Committee, 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 of North Dakota joined by South Dakota and Montana, filed an amici curiae brief in a case the State of Missouri and MO-ARK Association brought against the Corps of Engineers with regard to the Corps' annual plan for operation of the Missouri River mainstem dams. Missouri and MO-ARK alleged that the change in the annual operating plan that calls for a shortening of the navigation season in drought conditions was a major federal action significantly affecting the environment for which the Corps should have done an environmental assessment under the National Environmental Protection Act (NEPA). The federal district court ruled against Missouri and MO-ARK, and agreed with the upper basin states and the Corps that the change in the annual operating plan was not a major federal action triggering a NEPA analysis. The case was appealed and the Eighth Circuit Court of Appeals dismissed the case.

Four members of the Spirit Lake Nation Tribe sued the Governor, the Commissioner of Agriculture, and the city of Devils Lake alleging that the Tribe has a reserved water right to water from the Warwick aquifer underlying the boundaries of the reservation and that that right is exclusive. The complaint alleged that the removal of water from the reservation by the city of Devils Lake from four wells located on non-Native American property within the boundaries of the reservation is illegal. The State officials were sued because the State authorized the removal of water by issuing water permits to the city of Devils Lake to appropriate water. The State's motion to dismiss the action was granted by the tribal court.

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

The State was involved in a quiet title action regarding a tract of land adjoining the Missouri River in south Bismarck. The North Dakota Supreme Court ruled that the ordinary high watermark is to be determined based upon the current condition of the river, as affected by the construction of a dam. The State owns up to the high watermark, but in the area between the low and high watermarks, private riparian landowners have some kinds of property interests.

The State Water Commission and the county water resource districts in the Devils Lake basin were sued in a class action lawsuit brought in 1999 by landowners around Devils Lake. The landowners claim to have been damaged by Devils Lake's high water and that the state and local water resource districts are responsible for the flooding.

The State Engineer is 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. Additionally, the State Engineer issued administrative orders regarding debris removal in the Devils Lake area, drainage issues, illegal water wells and water use, and orders cancelling 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. The 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 in part accomplished 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 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 1997-1999 biennium. These were Bowman, McKenzie, Mountrail, Slope, Ward, and Williams. Slope County discontinued the program in 1999, while Williams County joined the program on a four-year trial-basis in 1997. At the conclusion of the biennium, the project target area covered 6.5 million acres of western North Dakota.

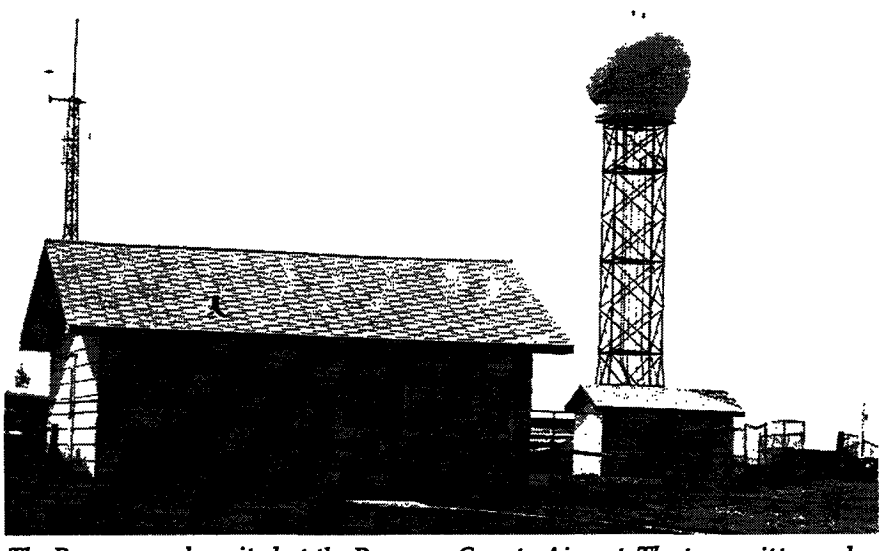
The NDCMP has two goals: the suppression of damaging hail, and the increase of rainfall. However, hail suppression continues to be the primary motivation of the sponsoring counties.

Suitable clouds over two multi-county operational districts were treated during June, July, and August of each summer of the biennium. Eight (1999) or nine (1998) 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 operations centers based within each district.

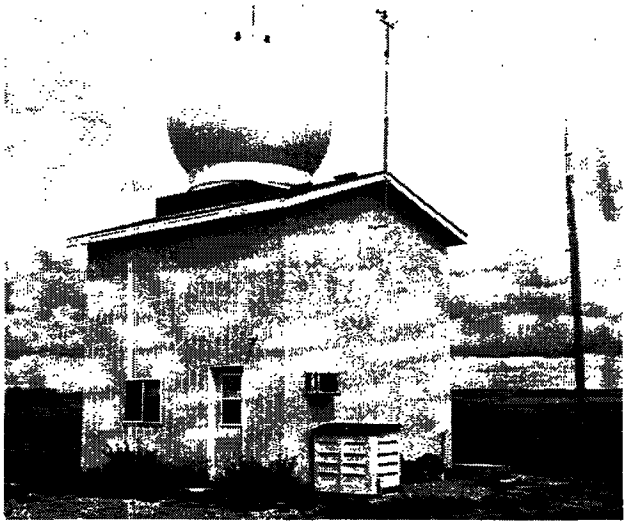
Weather Radars Obtained, Deployed

Late in 1996, The ARB obtained from the National Weather Service a surplus weather radar, which was subsequently deployed in Bowman. This radar was operated in support of the NDCMP in Bowman and Slope Counties for the first time during the summer of 1997, and again during the summers of 1998 and 1999 (see the photo below).

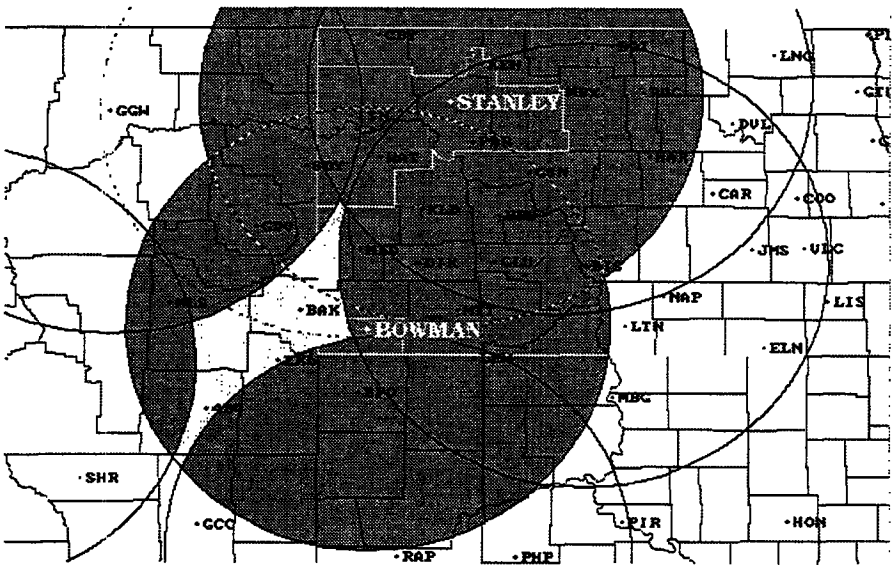
Two additional surplus Weather Service radars were subsequently obtained. One of these was deployed in 1998 at Stanley, in Mountrail County, to support operations in the northern NDCMP target area (see the photo at right). The third radar was obtained for spare parts. The combined acquisition, recovery, and deployment costs of the three radars was on the order of $60,000. However, base lease cost of a similar radar had been running between $35,000 and $40,000 per radar each season, so a significant cost savings has already been realized. Radar maintenance services are provided under contract, at an annual cost per radar of about $6,000. At the



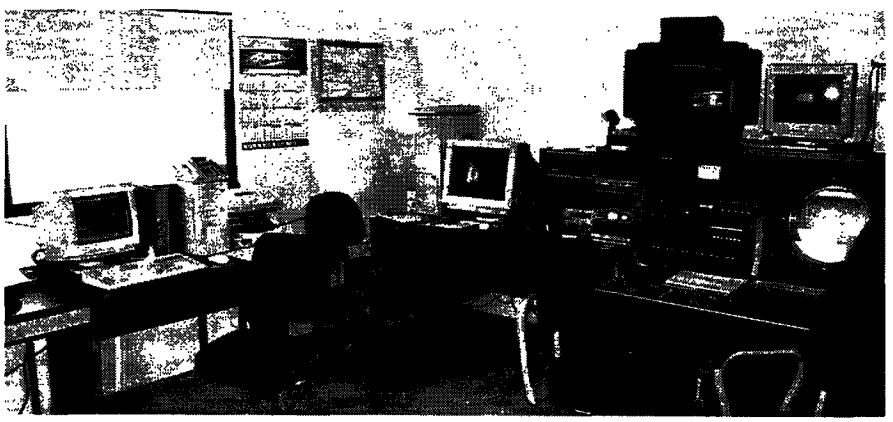
The Bowman radar, sited at the Bowman County Airport. The transmitter and receiver are housed in the building at the base of the tower (right), and the console and operations computers within the office building (left). Both buildings are provided by the Bowman County Airport Authority. (Photograph by Bruce Boe)



The Stanley radar operations center, located at the Stanley Airport. Transmitter and receiver are housed on the second floor; radar console and support equipment are at ground level. (Photograph by Darin Langerud)



Radar coverage at 125 nautical mile ranges for ARB radars sited at Stanley and Bowman (shaded dark gray), and nearby National Weather Service (NWS) radars (light gray). The diamond-shaped area west of Bowman (within the Bowman coverage area) is an area without NWS radar coverage at elevations below 14,000 feet (above mean sea level).



The operations area in the Stanley Radar, as it appeared at the close of the 1997-1999 biennium. From left to right are: computer for Internet access and word processing, TITAN radar data acquisition system, two-way radios and weather station display, and main radar console. Atop the console at far right is the Radar Data Acquisition System (RDAS) computer and display. (Photograph by Darin Langerud)

conclusion of the 1997-1999 biennium, the Bowman radar was operating for its third season, and the Stanley radar for its second.

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

To date, the two radars have been operated at their present locations for a combined five seasons without any significant maintenance problems or downtime.

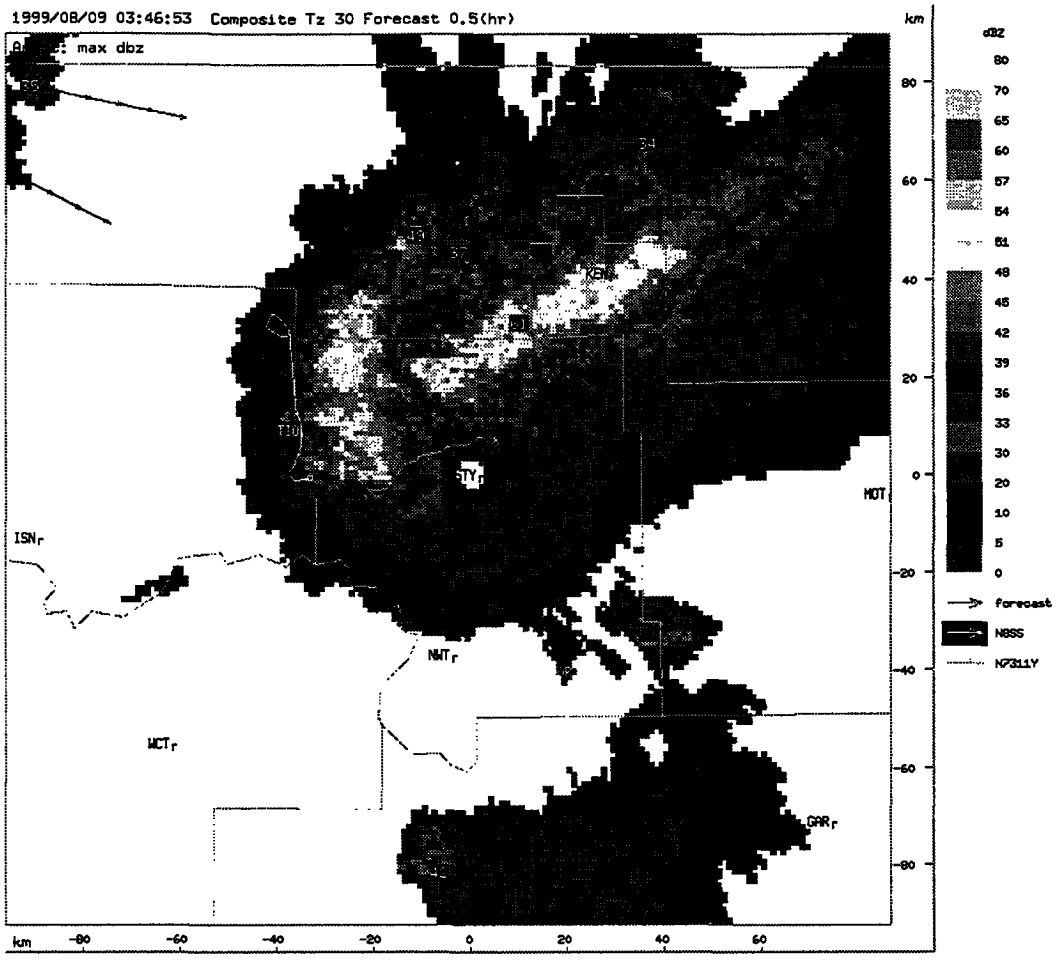
TITAN Radar Data Acquisition, Archival

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 during the 1998 and 1999 projects (see the Stanley Radar TITAN image on p. 10). 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.

Aircraft flight tracks recorded by computer, displayed in real-time

Aircraft that seed clouds by directly releasing the seeding agents into cloud top are called "cloud top" aircraft, to differentiate them from their lower-altitude cousins which release seeding agents only in the updrafts found below cloud base. Beginning in 1998, the cloud top aircraft in both operational districts were equipped with flight data computers which recorded aircraft position and times when seeding equipment was turned on. These data supplement those manually recorded, and provide more detailed records of the seeding activities.



Composite radar reflectivity at 03:36 GMT (10:36 p.m. CDT) on August 8, 1999, as recorded by the ARB radar located at Stanley (in white "hole", center). The flight tracks for the preceding ten minutes of the two cloud seeding aircraft so equipped are also integrated. The curving white line near Tioga (TIO) shows the path of the cloud top seeding aircraft, and a similar line just north of the radar depicts the path of one of the five cloud base seeding aircraft. The other four cloud base aircraft were not equipped with flight track telemetry equipment. The light gray areas between Tioga and Kenmare (KEN) mark the most intense portion of the storm. This image (complete with flight tracks) is but one of thousands ported to the Internet for public access in real-time during the 1999 project.

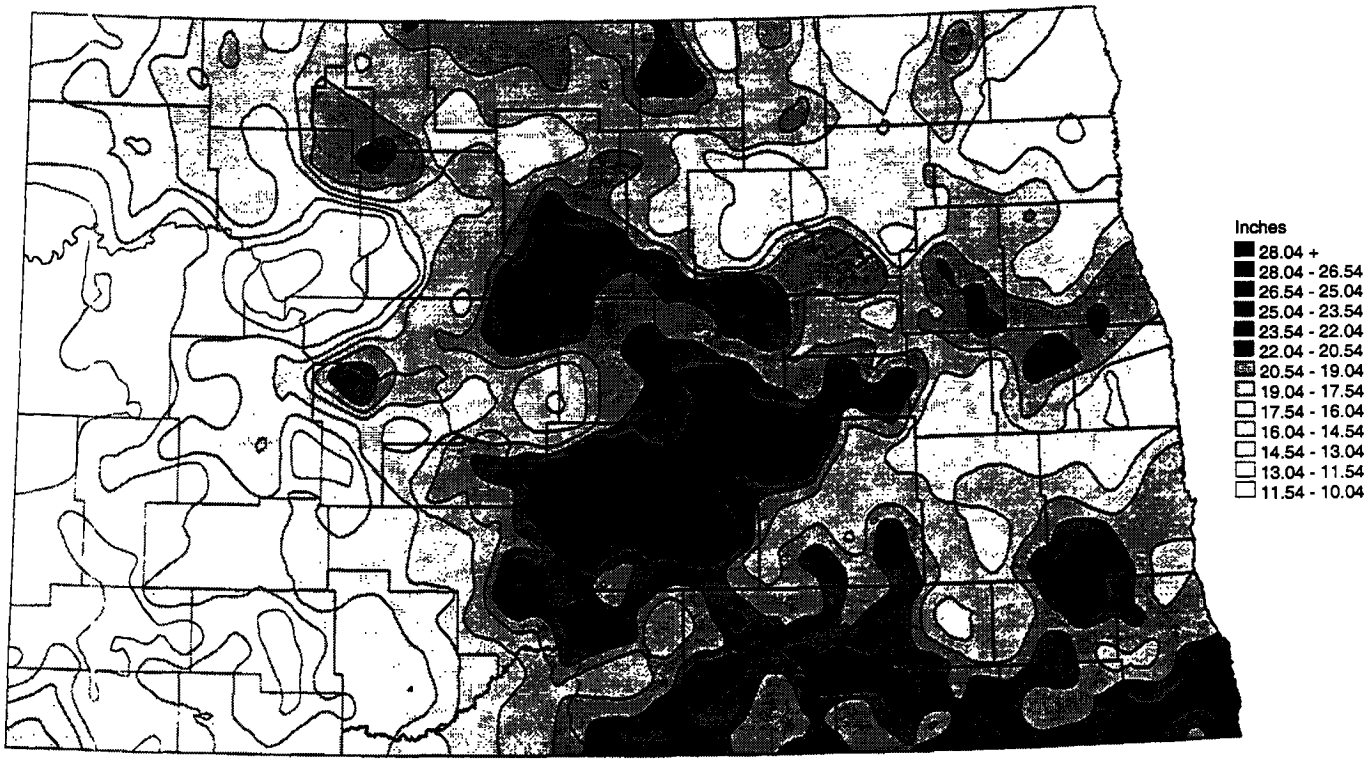
In 1999, an additional aircraft positioning test was conducted in District II, the northern operational district (comprised of McKenzie, Mountrail, Ward, and Williams counties). For about the last two months of the project, the cloud-top seeding aircraft and one cloud-base seeding aircraft, were equipped with GPS equipment and the DataRadios™, which relayed aircraft position data to the radar in real-time, where it was integrated with the TITAN data and displayed right along with the storm echo data.

Thus, the positions of two of the six aircraft based in District II were displayed in real-time. This proved helpful to the radar meteorologists directing the operations, for the aircraft positions were known precisely, relative to the storm, eliminating some uncertainty, and reducing the amount of two-way radio traffic needed to keep track of all the aircraft. Furthermore, the flight tracks were also shown on the imagery ported to the Internet, so anyone accessing the radar data on the Internet also saw where two of 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 will be continued and expanded to additional aircraft in subsequent seasons, if it can be afforded.

Statewide Growing Season Precipitation Observations

Each growing season (April through September) the Board operates a statewide network numbering about 850 volunteer observers, building on a database that contains data back to 1977. Every morning each observer records the rainfall received in the preceding 24 hours. In the event more than one inch of rain is received in any 24-hour period, observers immediately call in their rainfall report directly to the National Weather Service offices,



The 1999 growing season precipitation recorded by the ARB Cooperative Observer Network during the months of May through September. Data are also collected during April, but are not included here because of the significant amount of snowfall, which is not measured adequately by the type gauge deployed in the network. The entire state is above average; ranging from about half an inch in the far west to nearly double the normal amount in many parts of the central portion of the state.

where the data are used by hydrologists for short-term forecasting, and if necessary, in the issuance of watches and warnings. (See map above, May-September rainfall totals.) 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 are now over 9,000 hail reports in the statewide database.

During the 1997-1999 biennium, the complete rainfall database was made accessible to Internet users. Data can now be downloaded by the public directly, without contacting ARB offices. Users of the database 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 (see map on p. 12).

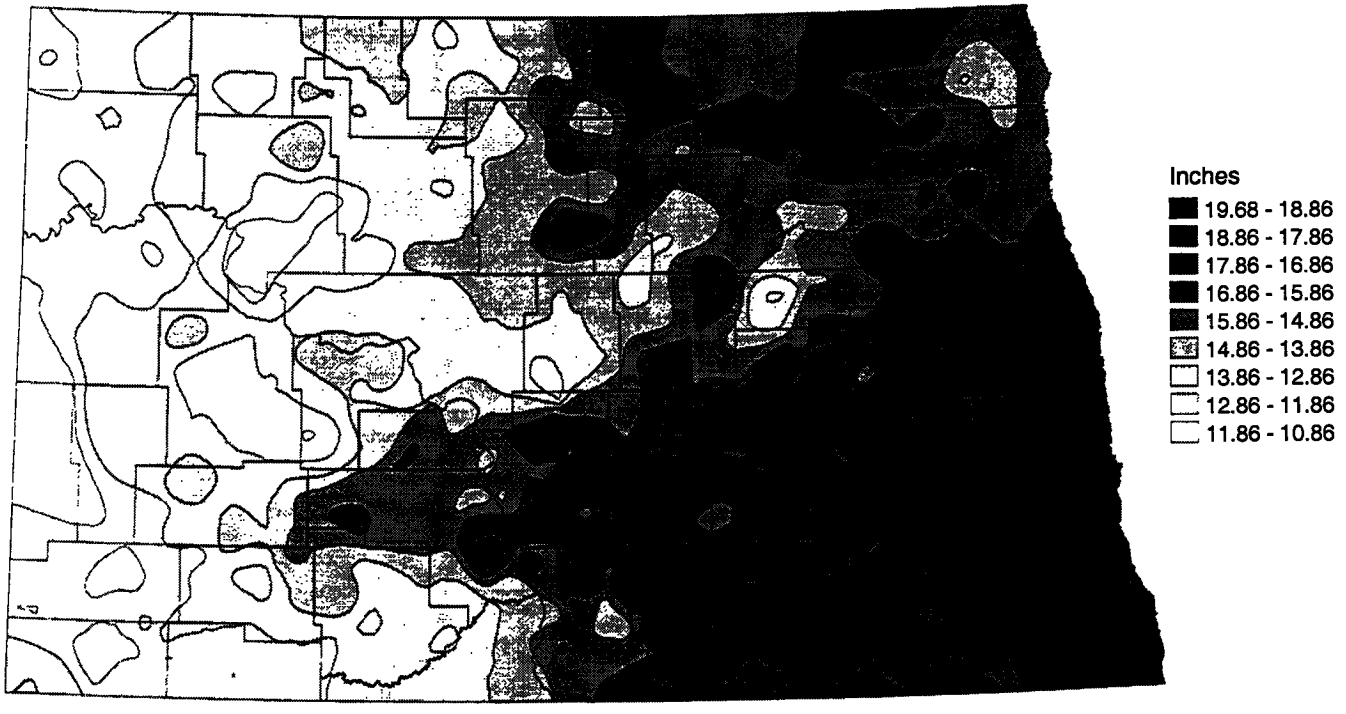
The network affords by far the most detailed precipitation data available within the state.

Storm Research, Evaluations

A new economic assessment of the cloud modification project was completed in December, 1998. The study, conducted by NDSU researchers, used actual prices, cropping practices, and reported hail damage to determine benefits to project counties, and estimate benefits for counties presently not participating.

For the six counties participating this biennium, benefits were placed at $25.7 million per year, while the project cost about $550,000. The benefits from a statewide project were projected at $267 million.

Analysis of data collected during the North Dakota Tracer Experiment (NDTE) research program in 1993 continued as resources allowed. References to the resulting formal publications, technical reports, and conference presentations are posted on the Board's website.



The average annual growing season (April-September) rainfall for the seven year period 1993-1999. Precipitation during this period normally ranges from less than 10.5 inches in the northwest to nearly sixteen inches in the extreme southeast. In many locations in the eastern half of the state, precipitation has averaged significantly above normal during the period. Over the seven-year period, this amounts to over three feet of additional rainfall in the wettest locations.

Legislative Interim Study of Statewide Hail Suppression Program

In 1997 and 1998, the interim Insurance and Heath Care Committee examined the North Dakota Cloud Modification Program in minute detail, and also looked at programs in other states and in Canada. The committee ultimately sent a bill draft for a statewide hail suppression program to the 56th Legislative Assembly, which convened in January 1999.

The Legislative Assembly supported the bill and passed it, but only after fiscal constraints forced amendments which removed the $3.2M appropriation. The result was a law that authorized further study and planning by ARB staff, but provided no funding for such efforts or expanded operations.

Student Intern Programs Continue

To provide accurate record keeping of NDCMP flight operations and seeding activities, the ARB funds the field presence of intern copilots for project cloud seeding aircraft. 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, and so provide an additional safety margin.

A total of nineteen pilot interns were engaged in NDCMP operations during the biennium. All were trained at the University of North Dakota 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. During this biennium all except two PICs received their initial weather modification training at UND and served as interns.

Since the summer of 1996, the board has also retained UND students majoring in meteorology 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, the intern meteorologists continue to demonstrate the adequacy of their pre-project university training.

Planning and Education Division

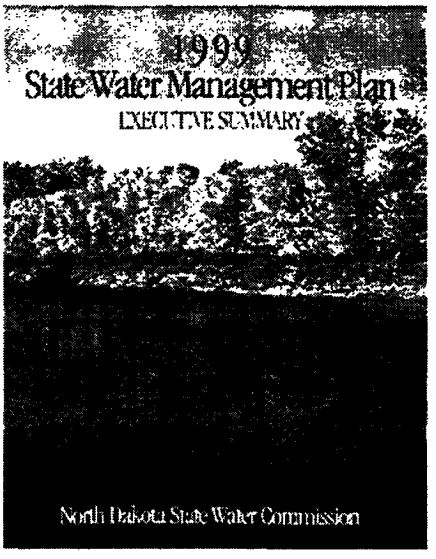
The primary responsibility of the Planning and Education Division is maintaining an updated Water Management Plan for the State of North Dakota. Division staff also participate in a number of regional, state, and local water resource planning activities and manage the agency's water education programs. Examples are:

- Leadership or participation in special studies resulting 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 and national natural resource planning bodies such as the Red River Water Resources Council, the International Coalition, Pembina River Basin Advisory Board, and the Red River Basin Board.
- Providing opportunities for adults and students to increase their understanding about North Dakota's water resources and how these resources are managed.

1999 State Water Management Plan

The State Water Commission, in recognition of the North Dakota Century Code, Sections 61-01-26 and 61-02-14, periodically completes an update of the State Water Management Plan. The 55th North Dakota Legislative Assembly Session Laws, Chapter 25, Section 9, explicitly stated the critical need to develop a comprehensive statewide water development program. The State Water Commission was directed to develop and implement such a program. Further, the State Water Commission was directed to design the program to serve the long-term water resource needs of the state and its people and to protect the state's current usage of, and the state's claim to, its proper share of Missouri River water.

In response, the Planning and Education Division undertook a major review and updating process that resulted in publishing the 1999 State Water Management Plan. The new plan was presented to the 56th Legislative Assembly in January 1999. This plan is the sixth such plan developed since 1937. As a general guideline, the State Engineer has requested the State Water Management Plan be updated every 5 to 7 years, depending on need and availability of necessary resources.



Two landmark pieces of legislation adopting the 1999 Water Management Plan were passed into law during the 56th Legislative Assembly. Senate Bill 2188 codified the 1999 State Water Management Plan and authorized bonding for $84.8 million to implement key plan elements in the 1999-2001 biennium. House Bill 1475 created a special Water Development Trust Fund to finance water project implementation. Revenue to the Trust Fund will come primarily from the Tobacco Settlement Trust Fund. Division staff are involved in bonding processes.

In addition to addressing water development needs, the 1999 State Water Management Plan also reviewed state and federal policies that affect water management in North Dakota. Recommendations to update policies to meet contemporary needs are included in the new plan. Internal changes in the cost-share policy for drainage projects and significant statutory changes in floodplain management regulations have resulted from the planning process.

Special Studies

The Planning and Education Division is continually involved in a variety of special studies associated with managing North Dakota's water resources. Several such studies were accomplished during the biennium.

Devils Lake Basin Water Management Studies. A comprehensive land and water management plan for the Devils Lake basin was developed in the previous biennium. Continued flooding around Devils Lake and in the contributing watershed required special emphasis on implementing certain plan elements this biennium. Division staff were involved in the Available Storage Acreage Program (ASAP), a floodwater storage project initiated in 1996 to help relieve flooding at Devils Lake by holding water in temporary storage sites in the upper basin. ASAP was continued through the 1997-99 biennium. In 1998, about $1 million was spent to store 21,000 acre-feet of water. In 1999, 173 contracts with residents of the Devils Lake basin inundated

approximately 8,650 acres of land, which stored about 14,700 acre-feet of water. Additionally, ASAP funding was used to obtain flood storage behind a reconstructed lake control structure and is being used in conjunction with the ND Wetland Trust's Efficiency Incentive Program (EIP). This additional storage brings the 1999 totals up to 8,900 acres of land providing 18,450 acre-feet of water storage at a cost of $810,000.

Division staff contributed to the analysis of Devils Lake flood control alternative plans developed by the U.S. Army Corps of Engineers, making specific recommendations in the area of economic assessment. Economic and environmental studies of interim flood relief projects, including the Devils Lake to Stump Lake outlet and Twin Lakes short-term emergency outlet were also started.

Assistance was provided to the Devils Lake Basin Joint Board in setting up watershed planning committees and beginning their work to improve water management in the basin. A Clean Water Act, Section 319 grant is being sought to accelerate water management plans in the Devils Lake basin watersheds. Public information efforts aimed at improving downstream awareness of the Devils Lake flooding crisis and proposed projects to relieve this problem were managed by the division.

Wetlands Conservation Plan. The U.S. Environmental Protection Agency funds projects that advance the management of wetlands through their Wetlands Conservation Grants program. The Planning and Education Division administers the grant for all state and local governmental recipients in North Dakota. The Wetlands Conservation Grant program funds a broad spectrum of projects related to developing, protecting, managing, and enhancing North Dakota's wetland resources. In addition to grant management, the State Water Commission completed several projects, including: a project to estimate the area of closed basins in a subbasin of Devils Lake, a project to identify potentially illegal drainage within the Devils Lake basin, and an experimental three-dimensional mapping project using a new airborne sensor technology called LIDAR. Grant funds were used by entities outside of the Commission to coordinate the development of a Red River basin water management plan, to develop wetland informational materials and provide wetlands education, and to develop an index of wetland biological integrity for semi-permanent and seasonal wetland in North Dakota.

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 initiated in 1994 to determine the water resource needs and desires of the residents of the Cannonball River and tributary Cedar Creek watersheds. This study includes 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. As the process nears completion, tribal concerns over quantifying their water rights is causing significant delays in publishing a final report.

Missouri River Management. Continued support was provided by the division in the ongoing revision of the Missouri River Master Water Control Manual. The U.S. Army Corps of Engineers published a draft EIS in 1994 which identified a preferred alternative for the future operation of the Missouri River mainstem reservoir system. The recommended alternative met with broad objections. A revised draft is pending input from the Missouri River Basin Association (MRBA). The MRBA has worked with the numerous interest groups to build consensus on system management. Division involvement included participation in conferences of system users conducted by the MRBA.

Pembina River Basing Water Management Plan. Division staff participates with the Pembina River Basin Advisory Board (PRBAB) in the development of a Pembina River basin water management plan. The PRBAB was formed in January 1998 with the mission of developing a basin-wide water management plan and guiding its implementation. Nineteen members from the basin represent local governments, water resource boards, conservation districts and state and provincial agencies involved in water and resource management.

During its first 18 months, the PRBAB hosted a tour of the Pembina River Basin and two "Watershed Information Days." The PRBAB also established a technical committee to assist in the planning process. Technical committee members are currently compiling a geographic information system to aid in the planning process.

Other Governmental/Non-governmental Organization Involvement

The Planning and Education Division participates to varying degrees on several governmental and nongovernmental organizations providing input from the State Engineer's and State Water Commission's perspectives. During the 1997-1999 biennium, this included the State Forest Stewardship Coordinating Committee,

State Instream Flow Task Force, Grand Forks/East Grand Forks Greenway Alliance, Little Missouri State Recreation River Committee, Devils Lake Outlet Advisory Committee, and the North Dakota Wetland Policy Task Force.

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

The International Coalition/ Red River Basin Board. Planning and Education Division staff have participated in and provided technical and other support to The International Coalition since its inception in the early 1980s. This involvement continues and has lead to, among other things, the creation of the Red River Basin Board (RRBB). The new RRBB was created in the last biennium. It includes 21 members representing the states of Minnesota, South Dakota, and North Dakota, the province of Manitoba, and Native American tribes. During this biennium, the RRBB has focused on developing a basinwide comprehensive water management plan. Division staff lead or participate on several sub-committees and provide technical guidance from North Dakota's perspective in the ongoing planning process.

Community Block Grant Reviews. During the 1997-1999 biennium, the Division coordinated the review of over 500 project proposals associated with North Dakota's Community Block Grant and Loan Program. Various community development, highway improvement, and flood hazard mitigation projects were included.

Explore Your Watershed Summer Institute participants, July 1998.

Water Education Program

Planning and education staff have been involved in water education in several ways for many years. Initially, education was limited to public involvement efforts associated with specific planning projects. Experience gained in the development of the 1983 State Water Management Plan suggested a need for a more aggressive approach to water education to help residents better understand one of the state's most valuable resources.

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 nearly all states and several foreign countries. Growth of the national program has provided important new education tools that have enhanced student learning experiences. The Division staff are active in building the national program and have, in addition, 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, pre-service teachers, youth group leaders (i.e. Boy Scouts and 4H), natural resources education specialists, and science center personnel. The new *Explore Your Watershed* program promotes an interdisciplinary approach requiring significant staff coordination with specialists from several facets of natural resource management.

Explore Your Watershed has expanded the traditional teacher workshop offerings with water festivals, special teacher institutes, and youth camps. Graduate credit and non-credit offerings were made available throughout the biennium. Training during the biennium reached 315 K-12 teachers, 10,000 K-12 students, 256 pre-service teachers, 435 families, and 223 non-formal teachers and natural resource managers. These do not include exposures/presentations that did not involved WET facilitators.

North Dakota Water Magazine. Since 1993, various water interests in North Dakota have pooled resources to produce a magazine titled *North Dakota Water*. This provides a spectrum of high quality information about the state's water resources to the widest possible audience. Published ten times per year, the

distribution of some issues approaches 10,000 readers, 3,000 more than last biennium. 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.

SWC World Wide Web Site. The Division is responsible for developing and maintaining the agency's web site on the Internet. This site is designed to improve the agency's ability to provide water related information to the widest possible audience in a timely and cost effective manner. Hits (individual accesses) on the agency web site in 1999 peaked near 4,500 per day, with the average being about 2,000 per day.

The web site has integrated the agency's various data bases providing a searchable access to water rights, drainage permits, construction permits, water well inventory, and summer precipitation information. Information about the agency, water laws, and people involved in water management is also available. Special feature links have been developed to address special issues as they arise such as the 1997 Red River Flood and the Devils Lake flooding situation.

The web address is:

http://www.swc.state.nd.us.

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 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.
- Participate in committees and task forces pertaining to water quantity and/or quality issues on an as needed basis.

Major Activities for 1997-1999

The program for collecting water resource data continued at a relatively constant level from the previous biennium. The major components of the program are streamflow, ground-water levels, chemical quality, and water use data.

The agency supports the operation of 43 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. Funding authorized by the Fifty-fifth Legislative Assembly eliminated the need for funding support for the program from counties and cities.

Ground-water levels continue to be measured periodically in approximately 3,500 observation wells completed in the major aquifers throughout the state. These date reflect the changes in the ground-water level resulting from natural processes and pumping for beneficial use. These data are essential for making decisions on water permit applications and overall water management, present and future.

Approximately 1200 water samples for chemical analysis were collected annually at streamflow gage stations, and from selected observation wells and production wells. These data are used to determine the suitability of the chemical quality for beneficial use, and to assess changes in the quality resulting from pumping stresses and natural processes, such as the largely above normal precipitation occurring since 1993.

Water use information is submitted annually be holders of more than 3,100 water permits. The information is essential for evaluating the impact of withdrawals authorized by water permits on streamflow and ground-water levels and making decisions on water permit applications.

Water Permit Summary July 1, 1997-June 30, 1999

WATER USE	ACRE-FEET
Irrigation	
Applications filed: 148	
Acres requested: 36,451	
Acres granted*: 31,660	
Water granted*	50,625
Ground water	29,383
(20,455 acres)	
Surface water	21,242
(11,205 acres)	
Flood Control	
Applications filed: 1	
Water granted*	3,500
Industrial	
Applications filed: 19	
Water granted*	5,100
Livestock	
Applications filed: 5	
Water granted*	80
Municipal	
Applications filed: 0	
Water granted*	1975
Recreation, Fish, and Wildlife	
Applications filed: 43	
Storage granted*	3,664
Annual use granted*	1789
Rural Domestic	
Applications filed: 5	
Water granted*	822
TOTAL Applications Filed: 221	
TOTAL Water Granted	63,891

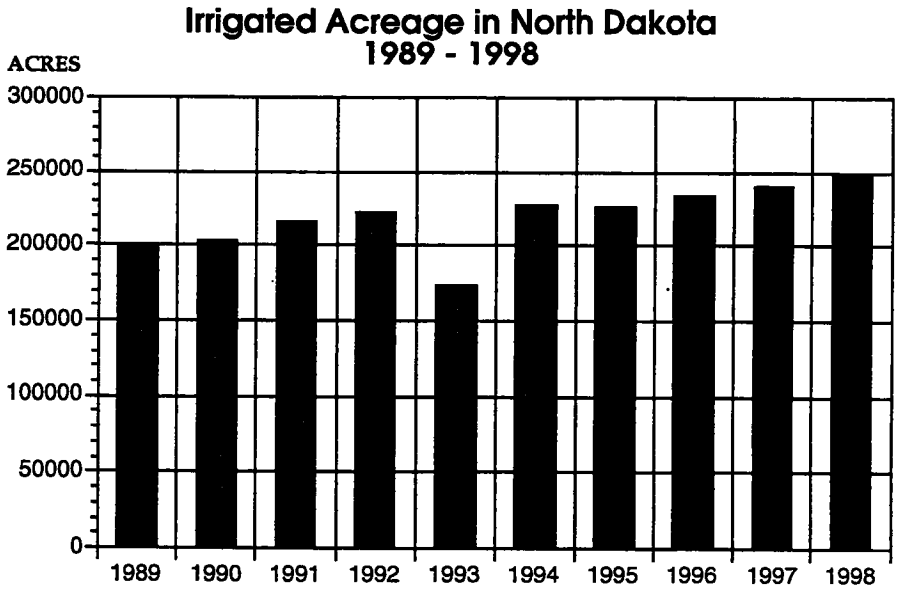
**Includes backlog—permits applied for in previous bienniums.*

The cooperative study with the Minnesota Department of Natural Resources to further define the Wahpeton buried valley aquifer in Richland County, North Dakota and Wilkin County, Minnesota is continuing. During the past two years most of the data collection has been completed with the exception that water levels in the observation wells are being measured periodically. Data interpretation is taking place and report preparation is in the preliminary stage. The aquifer is the source of water to serve the needs of the cities of Breckenridge, Minnesota, and Wahpeton, North Dakota as well as many farms and rural households. It is also the water supply for the Minn-Dak Farmers Cooperative sugar beet processing plant and the backup supply for the corn wet milling plant operated by Cargill, Incorporated. The results of the study will serve as a basis for the future management of the aquifer.

In 1998 a study was completed for the city of Fortuna to identify a ground-water source sufficient to meet the needs of its residents. The source of supply used for more than 30 years no longer provided enough water for the city. After test drilling, construction of observation wells, and conducting an aquifer test, and aquifer in the general vicinity of the old well field was identified that fulfills the city's needs. The cost of the study was shared by the City of Fortuna, Tri-County Regional Development Council, and the State Water Commission.

Because the existing water supply was only marginally meeting federal water quality standards, the City of Strasburg requested the State Water Commission to assess the variability of the chemical quality in the Strasburg aquifer. Several test holes were drilled and observation wells constructed from which water samples were collected for chemical analyses. It was determined that the quality of water in another zone of the Strasburg aquifer met the required standards. The cost of the study was shared equally by the City and the State Water Commission.

The number of irrigated acres continued to grow in the state in spite of above normal precipitation, as shown in the figure below. During the biennium the number of acres irrigated increased approximately 12,000 acres to 249,000



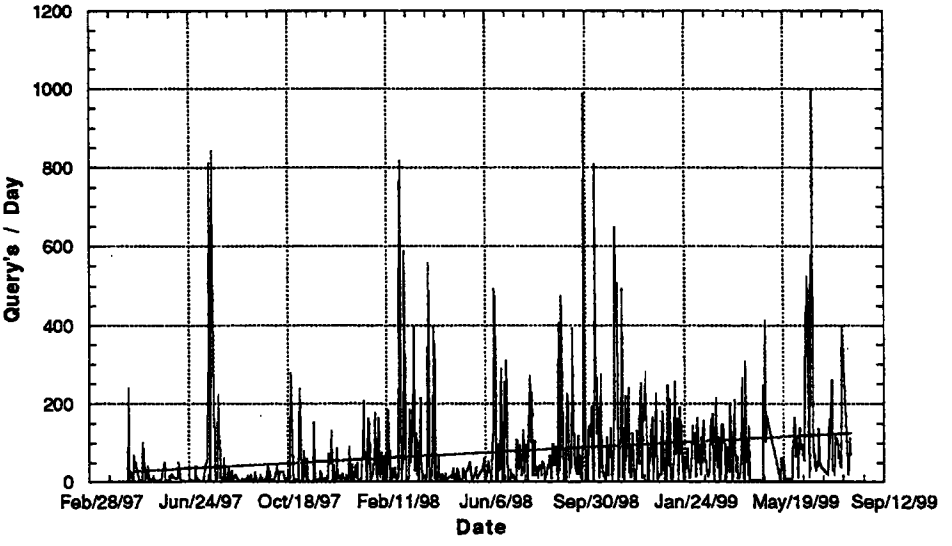
acres as a result of continued interest in high-value crops, particularly potatoes, and to a lesser extent sugar beets, in the northwest part of the state. These crops, particularly potatoes, are commonly grown on coarse textured soils with relatively low water holding capacity. As a result, irrigation is a necessity to provide sufficient moisture during periods of inadequate precipitation, to increase yield and ensure a high quality product. The decreases in acreage in 1993 and 1995 occurred as a result of well above normal precipitation and irrigation was not needed for the crops being produced on some lands.

The Elk/Charbon Irrigation District was created in early 1999. It is located in northwest McKenzie County and plans to irrigate approximately 4,800 acres utilizing water pumped from the Missouri River. Plans are being prepared for the water supply facilities with construction to take place as soon as financing is completed, and the federal 404 permit for placing a pumping plant in the Missouri River is approved.

Other groups are evaluating the feasibility of developing irrigation districts. A study was undertaken in October 1998 to examine the feasibility of irrigating the Horsehead Flats area in Emmons County. The area being evaluated involves approximately 46,000 gross acres. The study is scheduled for completion in March 2000. A portion of the cost is supported by the State Water Commission.

Petitions were filed in April 1999 for the creation of the Eastern Dakota Irrigation District involving approximately 16,000 acres in Cass, Steele, and Barnes counties. The steps required for establishment of the district are underway. Almost all the acreage identified in the petitions is currently developed.

Queries to the State Water Commission Database Web



The creation of an irrigation district will provide management capabilities not available to individual irrigators.

During the 1997-99 biennium the preparation of reports continued for the following studies:

- Hydrologic investigation of the West Fargo aquifer system in Cass County.
- Hydrology of the James River basin in cooperation with the U.S. Geological Survey.

The following reports were published during the biennium:

- Geohydrology and Water Quality of the Strasburg Aquifer at Strasburg, North Dakota.
- Assessment of Potentially Irrigable Land in Eastern McLean County, ND.
- From Dry to Wet, 1988-97, North Dakota (In cooperation with the U.S. Geological Survey).

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, analysis, storage, and dissemination of a wide range of data which include well inventory, water level, water chemistry, water permit, water use, dams, drains, and precipitation, data. Because of the unique nature of much of the data, the Water Commission has developed the necessary management tools internally.

The data management capabilities have evolved into a distributed client-server system. All of the major components were redesigned during the 1997-1999 biennium to provide better integration with current management processes. In addition, initial efforts to integrate these systems with the Internet have been expanded to provide seamless access to the data through the agency's web site at http://www.swc.state.nd.us/.

Water Development Division

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

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

The Water Development Division is divided into 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/NAWS. The following is a summary of the biennial activities of each of these sections.

Highway 2 near Churchs Ferry.

Regulatory

The Regulatory Section processed 282 applications for permits to construct or modify dams, dikes, or diversion ditches. These applications consisted of 89 for fish and wildlife purposes, 35 for wetland restorations, 94 for flood control, 51 for livestock watering, 2 for irrigation, 2 for recreation projects, 8 for wastewater storage, and 1 for mining operations. In the previous biennium, the Section processed 286 applications.

The Regulatory Section processed 85 applications to drain. Last biennium the Section processed 93 applications to drain.

The Regulatory Section also processed 741 wetland restorations and 30 applications to create wetlands, and 42 sovereign land permit applications. The Section reviewed 35 revisions to existing mining permits. They also provided comments to the Corps of Engineers on 43 Clean Water Act (Section 404), permits.

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

The floodplain management staff assists 280 communities in the administration of its floodplain management responsibilities. Each community designates an individual as the floodplain administrator to oversee all development. The State Water Commission staff works closely with these individuals in providing technical assistance. The staff visits the communities on a predetermined basis of need.

During the 1999 legislative session, state floodplain management standards were changed affecting regulatory floodways and the elevation requirements for new construction in identified floodplains. Approximately 75 percent of the floodplain management costs are paid through the Community Assistance Program. This program is developed annually by the SWC and the Federal Emergency Management Agency.

Investigations

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

Devils Lake - Significant flooding has occurred throughout the Devils Lake since 1993. The level of Devils Lake rose over 24

feet from elevation 1423.24 feet msl on July 1, 1993, to 1447.04 on June 30, 1999. The volume of water in the lake has more than quadrupled since 1993 from 590,000 acre-feet to 2,428,800 acre-feet, and the surface area of the lake has more than tripled from 46,800 acres to 124,000 acres. Near record inflows occurred in 1999. State Water Commission staff spent a large amount of time providing technical assistance to local officials during this time period.

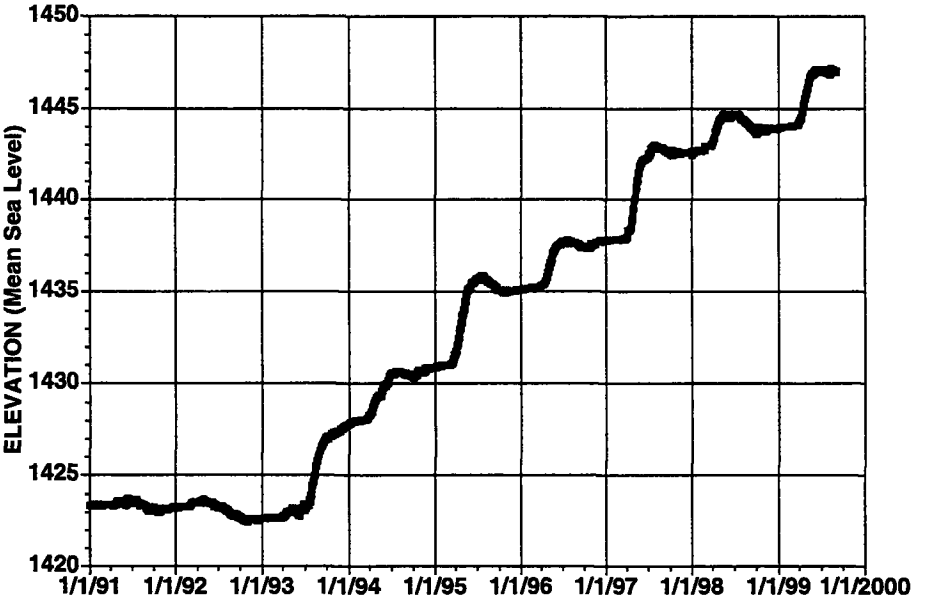
The Investigation Section worked on a number of emergency alternatives for the Devils Lake flood situation. These included water storage within the basin, a channel to Stump Lake, and outlet alternatives to the Sheyenne River.

In April 1998, State Water Commission staff developed the *Devils Lake Planning Considerations* report which summarized the flood disaster in the Devils Lake basin and identified 9 possible responses to the flooding. In May 1999, Commission staff prepared the *Devils Lake Emergency Response Alternatives* which described 17 possible Devils lake outlet alternatives.

Commission staff worked extensively with the U.S. Army Corps of Engineers on many aspects of an emergency outlet to Devils Lake. The Corps' focus during the biennium was on the Peterson Coulee outlet. Commission staff reviewed and commented on design documents, participated in the development of the draft interim report to Congress and value engineering processes, assisted in development of the ongoing draft environmental impact statement, and provided technical support to the Corps as requested.

The investigation section provided technical assistance to the Devils Lake Basin Joint Water

Devils Lake Elevations
1991 - 1999



Resource District and was instrumental in the development of the Morrison Lake control structure. 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 Bank Stabilization - The Investigations Section provided the technical support for the review of the Corps of Engineer's Missouri River Master Manual. The staff also continued to work with the Corps of Engineers and local interests on Missouri River Bank Stabilization.

Irrigation Development - The following cost share agreements were developed to assist in development of irrigation: Horeshead 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 is a summary of projects completed during the July 1, 1997 - June 30, 1999 biennium. The summary includes the work completed by the Commission's construction crew. The work performed by the Commission's construction crew includes maintenance and repair of water resource structures throughout the state and work on gauging stations for the U.S. Geological Survey. The summary also includes a list of dams inspected by the Dam Safety section of the State Water Commission.

The table on the facing page gives a listing of the major maintenance activities by the State Water Commission's construction crew. The table gives the total cost of the project; the State Water Commission's total contribution to the project; reflecting engineering costs and construction costs; the cost share breakdown for the project, and; the final responsibility of the State Water Commission. A brief description of each project is included here:

State Water Commission Maintenance Projects
1997-1999 Biennium

Project	Period of Work	Project Cost	Project Cost-Share	SWC Contribution
Erie Dam	July 1997	$23,825	33%	$7,862
Kratchovil Dam	August-September 1997	$55,750	50%	$27,875
Daub Dam	October 1997	$5,450	50%	$2,725
North Lemmon Lake	May-June 1998	$22,800	33%	$7,524
Armourdale Dam	June, September 1998	$8,600	33%	$2,850
Lisbon Dam	August 1998	$37,200	N/A	$2,850
Silver Lake Dam	October 1998	$48,000	50%	$24,000
Antelope Creek Snagging & Clearing	December 1998	$28,825	25%	$7,200
TOTALS		**$230,450**		**$82,874**

Erie Dam SWC #1471 - The work at Erie Dam involved the construction of a new low level drawdown system and plugging the existing low level drawdown. Erie Dam is located in Cass County, Section 20, Township 142 North, Range 53 West. The Rush River Water Resource District, the North Dakota Water Commission, and the North Dakota Game and Fish Department cost shared in the project.

Kratchovil Dam SWC #1886 - The work involved removing the existing principal spillway and constructing a new spillway system. The existing spillway had deteriorated badly and needed replacement. The Walsh County Water Resource District and the Water Commission cost shared in the project. The dam is located in Walsh County, Section 24, Township 156 North, Range 58 West.

The new spillway provided the District with better management capability; allowing a partial drawdown of the reservoir in the fall to make room for the following springs runoff. The District requested the Water Commission to perform a channel cleanout below the dam, which was not included in the original cost estimate, resulting in the cost to exceed the $50,000 limit.

Daub Dam SWC #1527 - This work involved replacement of the low level drawdown valve. Daub Dam is located west of Washburn, North Dakota, Highway 200 A. The dam is located in Section 5, Township 143 North, Range 83 West, in Oliver County. The Water Commission and the Game and Fish Department cost shared in the work.

North Lemmon Lake Dam SWC #543 - The repairs to North Lemmon Lake Dam consisted of addressing erosion of the principal spillway. The spillway is an earthen channel and over time, flows through the spillway resulted in extensive erosion. The construction crew armored the channel with rock gabions to protect it from erosion. The dam is located in Section 11, Township 29 North, Range 92 West, in Adams County. The work was cost shared by the Adams County Water Resource District, the Water Commission, and the Game and Fish Department.

Armourdale Dam SWC #665 - The construction crew conducted repairs to the spillway at Armourdale Dam. The dam is located in Section 2, Township 162 North, Range 68 West, in Towner County. The work involved repair erosion at the inlet of the concrete chute spillway. The Towner County Water Resource District, the State Water Commission, and the Game and Fish Department cost shared in the work.

Lisbon Dam SWC #316 - The construction crew performed repairs to the Lisbon Dam, which included repairs to the downstream concrete apron and repairs to the slide gate of the low-flow bypass structure. The dam is located in Lisbon, North Dakota on the Sheyenne River, in Section 2, Township 134 North, Range 56 West, in Ransom County. The damage to the dam resulted from high flows during the 1997 runoff. The city requested and received cost share assistance from FEMA. FEMA provided approximately $28,650 to the city to perform repairs to the dam. The total project cost was approximately $37,200, leaving a balance of approximately

DAM SAFETY FORMAL INSPECTIONS

Name of Dam	County	Hazard
Northgate Dam	Burke	Medium
White Earth Dam	Mountrail	Medium
Kota Ray Dam	Williams	Low
Arnegard Dam	McKenzie	Low
Queen City Dam	Stark	Medium
Sheep Creek Dam	Grant	Low
Froelich Dam	Sioux	Low
Daub (Aroda) Dam	McLean	Medium
Sweetbriar Creek Dam	Morton	Medium
Burlington Dam #1	Ward	High
Burlington Dam #2	Ward	High
Armourdale Dam	Towner	Low
Big Coulee Dam	Towner	Medium
Bourbanis Dam	Cavalier	Medium
Vigness Dam	Walsh	Low
Harvey Dam	Wells	Medium
Sykeston Dam	Wells	Medium
Tolna Dam	Nelson	Medium
Wilson Dam	Dickey	Low
Dead Colt Creek Dam	Ransom	Medium
Chyle Dam	Walsh	Medium
Blacktail Dam	Williams	Medium
Clausen Springs Dam	Barnes	High
Fargo 12th Ave. N. Dam	Cass	Low
Fargo 4th St. So. Dam	Cass	Low
Riverside Park Dam	Grand Forks	Medium
Herzog Dam	Pembina	Medium
Hunter Dam	Cass	High
Lisbon Dam	Ransom	Medium
McGregor Dam	Williams	High
Neche Dam	Pembina	Medium
N. Lemmon Lake Dam	Adams	Low
Portland Dam	Trail	Medium
Square Butte Dam #4	Oliver	Medium
Square Butte Dam #5	Oliver	High
Tioga Dam	Williams	High
Ueland Dam	Griggs	Medium
Up. Turtle River Dam	Grand Forks	High
Valley City Mill Dam	Barnes	Medium
Epping Dam	Williams	Medium

DAM SAFETY SITE VISITS

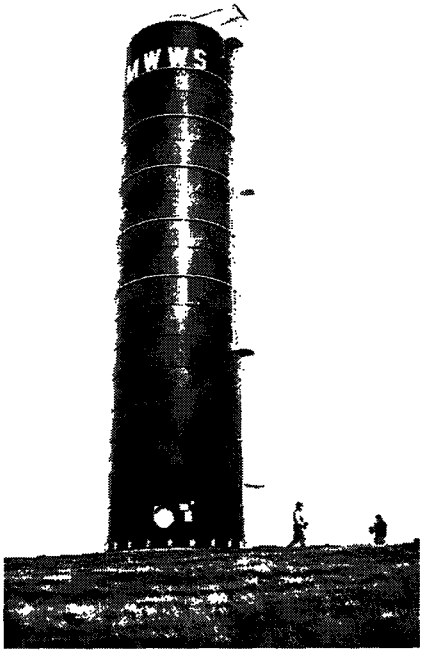
Name	County	Hazard
Smishek Dam	Burke	Low
Stanley Gulf Club Dam	Mountrail	Low
Jackson Dam	McKenzie	Low
Bill Lowmen Dam	Golden Valley	Low
Belfield Dam	Billings	Low
Charles Faiman Dam	Dunn	Low
Don Rundle Dam	Slope	Low
Brad Sigvaldsen Dam	Adams	Low
Charles Wallace Dam	Hettinger	Low
Raleigh Dam	Grant	Low
Elbie Mathisen Dam	Grant	Low
Crown Butte Dam	Morton	Medium
Dave Robertson Dam	McLean	Low
John Grunseth Dam	Ward	Low
Cathay Dam	Wells	Low
Mount Carmel Dam	Cavalier	Medium
Olga Dam	Cavalier	Low
Milton Dam	Cavalier	Low
Lynch Dam	Steele	Low
Pool #9 Outlet Dam	Sargent	Low
Pool #5 Dam	Sargent	Low
T 138, R 96, Sec 13 Dam	Stark(breeched)	Low
Valley City Park Dam	Barnes	Medium
Iverson Dam	Williams	Low
Drayton Dam	Pembina	Medium
Mayville Dam	Trail	Medium
Schophammer Dam	McHenry	Low
Talkington Dam	Ward	Low
Pheasant Lake Dam	Dickey	Medium
Dorvan Dam	Williams	Low
Moen Dam	Burke	Low
Margaret Lokken Dam	Burke	Low
Basin Dam	Oliver	Low
Lefor Dam	Stark	Low
Kalmback Dam	LaMoure	Low
Ray Dam	Williams	Low
Indian Creek Dam	Hettinger	Medium
Belfield Dam	Billings	Low
Camel Hump Dam	Golden Valley	Medium
Lansford Dam	Bottineau	Low

$8,550. The Ransom County Water Resource District, the State Water Commission, and the city of Lisbon, cost share on the remaining balance of $8,550.

Silver Lake Dam SWC #391 - Silver Lake Dam is located in Sargent County, in Sections 33 and 34, Township 130 North, Range 55 West. The dam is a concrete weir, located on the Wild Rice River, and creates a reservoir used by the local residents for recreation. The Sargent County Water Resource District requested the State Water Commission to modify the structure by increasing the height of the dam by two feet in order to deepen Silver Lake and increase the recreational opportunities.

The work was completed at a cost of approximately $48,000. The project cost was shared equally between the Sargent County and the Water Commission.

Antelope Creek Snagging and Clearing SWC #1291 - The State Water Commission entered into an agreement with the Mercer County Water Resource District to conduct a snagging and clearing project on Antelope Creek, with the city of Hazen, North Dakota. The reach length of the affected area is approximately 1.5 miles. The State Water Commission cost shared 25% of the work with the District paying the remaining 75 percent.



The elevated tank at Flasher, a part of Phase II of the Missouri West Water System.

Snagging and Clearing - The State Water Commission's construction crew is involved with snagging and clearing projects in the state, primarily projects in southeastern North Dakota. The construction crew is involved primarily with conducting channel inventories of snags and tree-falls requiring removal. The construction inspection is provided by Randy Gjestvang from the West Fargo office.

The snagging and clearing work for the current biennium was conducted during December 1997 on the Wild Rice River in Cass County. The Water Commission conducted an inventory and inspected removal of snags and trees, with engineering costs totaling $3,200.

USGS Gaging Stations - The State Water Commission works with the United States Geological Survey (USGS) to maintain the system of USGS gauging stations located throughout the state. The State Water Commission's cost in construction and engineering amounted to approximately $44,250 for the current biennium.

Municipal, Rural, & Industrial Water Supply

In federal fiscal years 1998 and 1999, the Garrison Diversion Municipal, Rural, and Industrial (MR&I) water supply program received $15.4 million in federal grant funds for the development of water supply facilities in the state. Projects that were allocated funds included the Southwest Pipeline, Northwest Area Water Supply (Rugby and Minot Phases), Ransom-Sargent Water Users, All Seasons Water Users, Langdon Water Users, Ramsey Rural Water, and North Valley Water District. This brought the total received from the federal government to $154.4 million since the program was authorized in 1986.

A total of 132 applicants have requested assistance through the MR&I program. Of these, 50 projects have been approved for MR&I funding by the Garrison Diversion Conservancy District and the State Water Commission.

Thirty-six projects have been completed including: Abercrombie, Agassiz Water Users, Cavalier, Crown Butte, Englevale, Fargo, Garrison Rural Water, Grandin, 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, Edgeley, Gackle, Grand Forks Water Treatment, Grand Prairie Estates, Hebron, Marion, Neche, Walhalla, All Seasons Rural Water Phase I, Fingal, and Ransom Sargent Water.

Five more projects were in the design and/or construction phase at the end of the biennium, including Rugby Water Treatment and the Southwest Pipeline Project.

The total estimated cost of the 133 projects is $547 million. This cost includes $115 million for the Northwest Area Water Supply 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 1997-99 biennium, the personnel coordinated State Water Commission activities in eastern North Dakota and provided the following specific services.

1. 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 was also provided to individual water resource boards on various drainage problems and other water related issues.

2. Inspections were made on various projects that the State Water Commission had approved for cost-sharing.

3. Provided engineering for the construction of snagging and clearing projects. Contractors completed 31 river miles on Wild Rice River in Cass County and removed three snags on the Wild Rice River in Richland County.

4. Considerable time was required to represent the State Water Commission and to provide technical assistance on various committees that have been formed as a result of the persistent flood problems. These committees include the data subgroup for the

International Joint Commission, the flood damage reduction team for the Red River Basin Board, and the drainage team for the Red River Basin Board. 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.

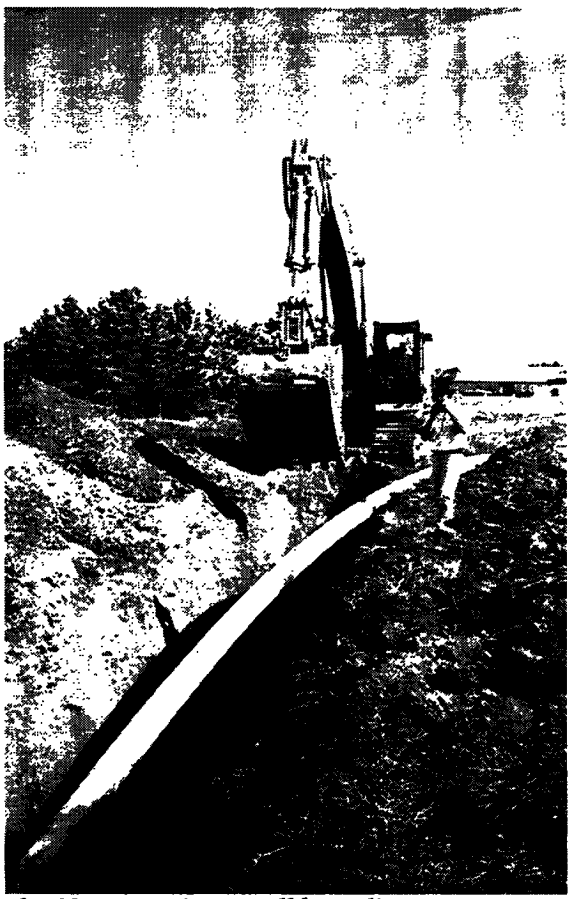
Southwest Pipeline Project

At the start of the biennium the Southwest Pipeline served as the water supply for Dickinson, Dodge, Dunn Center, Gladstone, Golden Valley, Halliday, Manning, Mott, New England, New Hradec, Regent, Richardton, South Heart, and Taylor, as well as approximately 1,220 rural customers in five service areas. Construction on the project continued to expand it as a regional water supply system.

By December 1997, the project had extended service south to Reeder and Hettinger. In November 1998, the pipeline had been extended eastward to reach Hebron followed by Glen Ullin in April 1999. During the biennium, an additional 385 rural customers in five service areas were connected to the project. The total population served by the project at the end of the biennium was approximately 28,650 persons.

Capital repayments from the Southwest Pipeline Project totaled $1,828,586.83 for the biennium. Of this amount, $1,047,728.11 was paid to bondholders, and the balance, $780,858.72, was deposited in the Resources Trust Fund.

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



A backhoe is used to install large diameter pipe south of Hettinger in this particular phase of the Southwest Pipeline project.

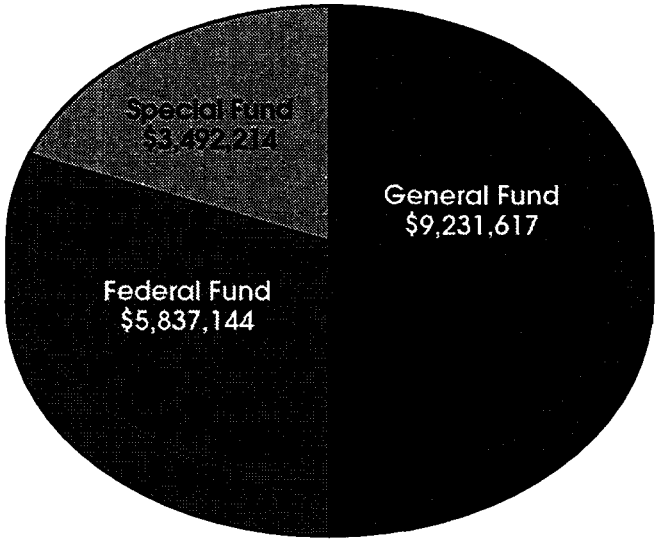
Northwest Area Water Supply (NAWS) Project

Final design of the Northwest Area Water Supply (NAWS) project continued in the biennium. The primary design issue continues to be environmental compliance and more specifically, interbasin biota transfer.

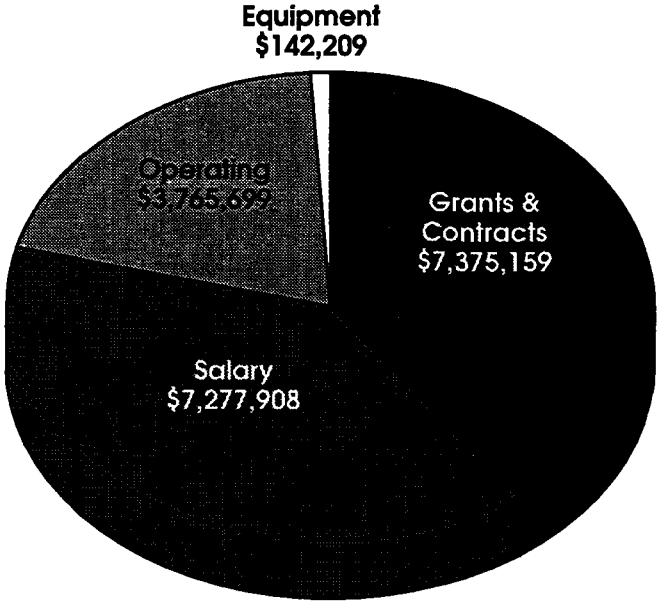
In the fall of 1996, work on the project's environmental assessment began with a draft report published in June 1997. Comments on the draft were received in July 1997, from the province of Manitoba, the Canadian Section of the Garrison Joint Technical Committee, Garrison Diversion Conservancy District, Natural Resource Conservation Service, ND Department of Transportation, ND Game and Fish Department, ND Department of Health, U.S. Environmental Protection Agency, and Gary Pearson. Responses to the comments were prepared and a proposed final Environmental Assessment was published in September 1998. A draft Finding of No Significant Impact (FONSI) was published by the Bureau of Reclamation in September 1998. The State Water Commission and sponsors of the project recognize the importance of maintaining a barrier to transfer of biota from the Missouri River basin into the Hudson Bay basin and are confident that the project, as proposed, does not violate the Boundary Waters Treaty of 1909.

Plans and specifications for the first phase of construction, from the Minot Water Treatment Plant south about 7.5 miles, were distributed in May 1999. The beginning of construction depends on final approval of Environmental Compliance by the Bureau of Reclamation. It is anticipated that construction can begin in the year 2000.

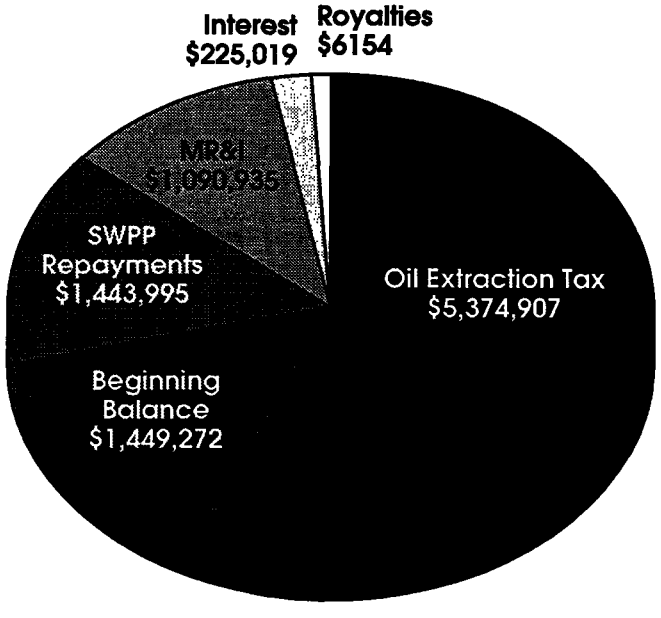
State Water Commission Appropriations
1997 - 1999 Biennium



Expenditures by Fund
Total: 18,560,975

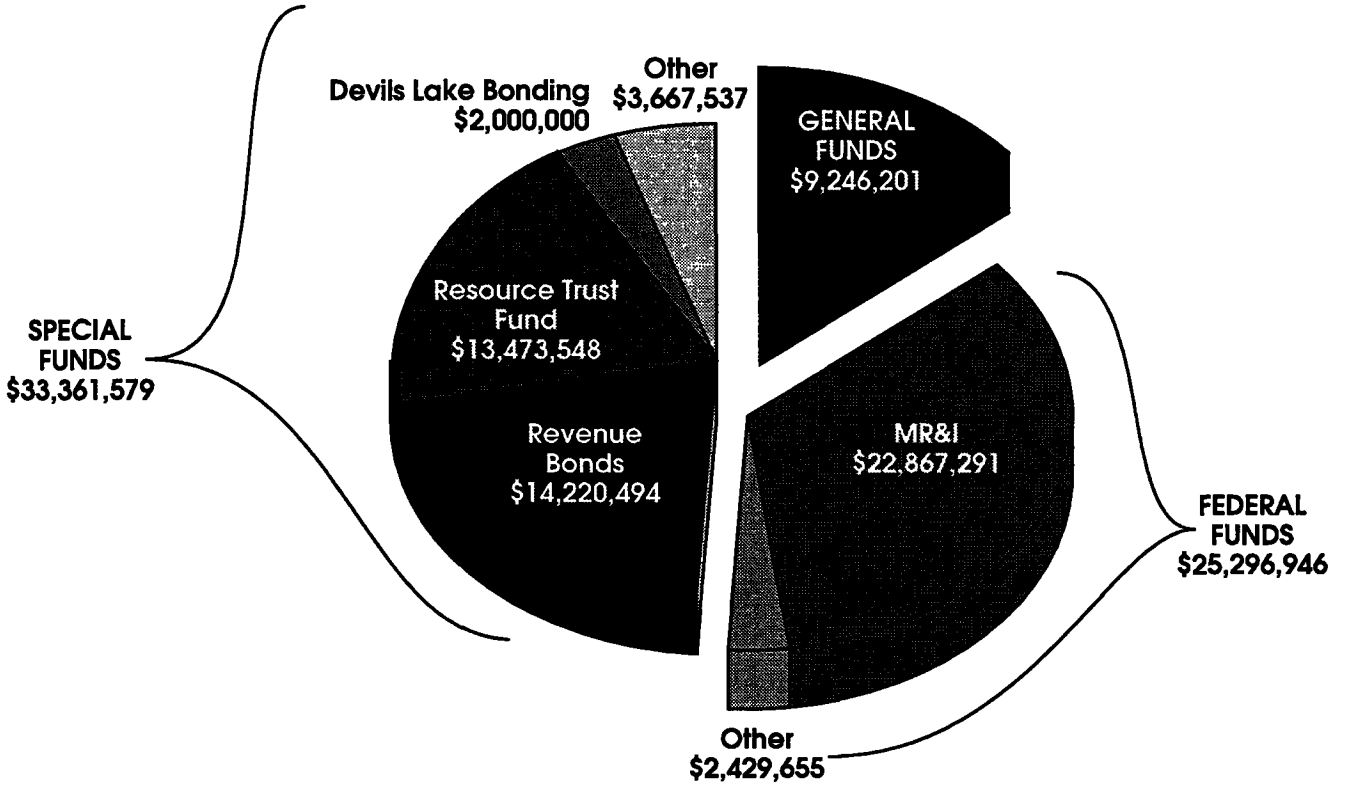


Expenditures by Line Item
Total: $18,560,975



Resource Trust Fund Revenue
Total: $9,590,282

State Water Commission
Funding Authority
1997 - 1999 Biennium



State Water Commission
1997-1999 Grants Summary

PROGRAM/ PROJECT	RESOURCES TRUST FUND	GENERAL FUNDS	FEDERAL FUNDS	OTHER FUNDS	TOTALS
Atmospheric Resources	$125,000				$125,000
Hydrologic Investigation	$669,318			$30,000	$699,318
Devils Lake	$2,327,043	$224,134		$58,563	$2,609,740
Devils Lake Bonding				$2,000,000	$2,000,000
Maple River Flood Control	$2,096,706				$2,096,706
Northwest Area Water Supply	$69,216				$69,216
Nesson Valley Irrigation	$1,500,000				$1,500,000
Southwest Pipeline Project (CI)	$1,400,000				$1,400,000
EPA Wetlands Grant			$407,500		$407,500
Flood Mitigation Assistance Program	$34,129	$9,005	$258,800		$301,934
General Projects	$1,148,776	$1,226,236			$2,375,012
SWC GRANTS TOTAL	$9,370,188	$1,459,375	$666,300	$2,088,563	$13,584,426

State Water Commission

Program Budget Expenditures
for Biennial Period Ending June 30, 1999

AGENCY PROGRAM	SALARIES & WAGES	OPERATING EXPENSES	EQUIPMENT	GRANTS & CONTRACTS	PROGRAM TOTALS
ADMINISTRATIVE SERVICES					
Budget	$816,877	$501,881	$33,500	$0	$1,352,258
Expended	$786,488	$436,102	$32,782	$0	$1,255,372
Percentage	96%	87%	98%	0%	93%
ATMOSPHERIC RESOURCES					
Budget	$497,527	$360,200	$11,250	$4,247,468	$5,116,445
Expended	$457,787	$359,322	$4,235	$743,775	$1,565,119
Percentage	92%	100%	38%	18%	31%
NORTHWEST AREA WATER SUPPLY					
Budget	$197,394	$3,233,029	$0	$19,919,216	$23,349,639
Expended	$64,030	$1,081,448	$0	$19,217	$1,164,695
Percentage	32%	33%	0%	0%	5%
SOUTHWEST PIPELINE					
Budget	$375,407	$3,269,024	$2,000	$12,600,000	$16,246,431
Expended	$345,551	$1,061,577	$1,857	$3,097,542	$4,506,527
Percentage	92%	32%	93%	25%	28%
WATER APPROPRIATION					
Budget	$2,315,017	$317,700	$52,500	$699,318	$3,384,535
Expended	$2,226,700	$315,223	$52,293	$609,071	$3,203,287
Percentage	96%	99%	100%	87%	95%
WATER DEVELOPMENT					
Budget	$2,830,017	$367,003	$45,000	$12,300,079	$15,542,099
Expended	$2,719,468	$347,285	$43,042	$2,884,337	$5,994,132
Percentage	96%	95%	96%	23%	39%
PLANNING AND EDUCATION					
Budget	$684,804	$198,016	$8,000	$22,500	$913,320
Expended	$677,884	$164,742	$8,000	$21,217	$871,843
Percentage	99%	83%	100%	94%	95%
DEVILS LAKE BOND PAYMENTS					
Budget				$2,000,000	$2,000,000
Expended				$0	$0
Percentage				0%	0%
STATEWIDE WATER BONDS					
Budget				$84,800,000	$84,800,000
Expended				$0	$0
Percentage				0%	0%
AGENCY TOTALS					
Budget	**$7,717,043**	**$8,246,853**	**$152,250**	**$136,588,581**	**$152,704,727**
Expended	**$7,277,908**	**$3,765,699**	**$142,209**	**$7,375,159**	**$18,560,975**
Percentage	**94%**	**46%**	**93%**	**5%**	**12%**

State Water Commission

Grants Programs/Projects Authorized
July 1, 1997 - June 30, 1999

SWC PROJ NO.	NAME	DATE APPROVED	AMOUNT APPROVED	PAYMENTS	BALANCE
	ATMOSPHERIC RESOURCES				
	Atmospheric Resources	09/11/97	125,000	125,000	0
	ATMOSPHERIC RESOURCES TOTALS		$125,000	$125,000	$0
	WATER APPROPRIATION DIVISION				
	Hydrologic Investigations	07/19/95	699,318	604,997	94,321
	WATER APPROPRIATION DIVISION TOTALS		$699,318	$604,997	$94,321
	WATER DEVELOPMENT DIVISION				
	DEVILS LAKE				
416-1	Devils Lake Basin Joint WRB Manager (Ramsey)	09/11/97	20,770	20,770	0
416-1	Devils Lake Basin Joint WRB Manager (Ramsey)	12/21/98	23,000	9,978	13,022
416-1	Devils Lake Long Term Studies	02/04/92	69,484	8,800	60,684
416-1	Devils Lake - LEMC (Ramsey)	05/21/97	429	0	429
416-1	Starkweather Coulee Basin Analysis (Ramsey)	07/22/97	90,000	50,715	39,285
416-2	Devils Lake Levee Raise (Phase II)	03/26/97	66,921	0	66,921
416-2	Dike Realignment Feasibility Study (Ramsey)	07/01/97	7,500	3,034	4,466
1882-01	Available Storage Acreage Program (Ramsey)	05/07/97	36,304	36,304	0
1882-01	Available Storage Acreage Program (Ramsey)	06/11/97	162,299	162,298	1
1882-01	Available Storage Acreage Program (Ramsey)	09/11/97	1,001,021	1,001,021	0
1882-01	Available Storage Acreage Program (Ramsey)	12/21/98	950,000	38,342	911,658
1882-02	Devils Lake Emergency Response Plan (Ramsey)	11/29/95	8,646	660	7,986
1882-03	Devils Lake Prairie Wetland Restoration	02/23/96	50,000	10,000	40,000
1882-1	Cox Wetland Tax Payment	03/25/98	984	0	984
1832	Hammer - Sullivan (Ramsey)	07/02/93	6,079	3,182	2,897
416-05	Devils Lake Outlet Awareness Manager	12/22/97	15,000	15,000	0
416-05	Devils Lake Outlet Awareness Manager	08/13/98	28,563	28,563	0
416-1	Devils Lake Emergency Outlet Consult	06/08/98	4,700	4,700	0
416-1	Devils Lake - USGS Water Quality Bulletin	02/06/98	2,000	2,000	0
416-1	Devils Lake - USGS 1997 Satellite Imagery	08/20/98	1,040	0	1,040
416	Devils Lake Historian (contract with Attorney General)	10/19/98	20,000	0	20,000
416-05	Devils Lake Outlet Awareness Manager	12/21/98	45,000	21,217	23,783
	DEVILS LAKE TOTALS		$2,609,740	$1,416,584	$1,193,156
	SPECIAL PROJECTS				
	Devils Lake Bonding		0	$0	0
1344	Maple River Flood Control	02/04/92	96,706	25,975	70,731
1858	Nesson Valley Irrigation	09/11/96	1,500,000	6,400	1,493,600
234-4	Northwest Area Water Supply	09/04/96	69,216	69,464	(248)
1736	Southwest Pipeline Project	07/22/97	1,400,000	1,008,832	391,168
	SPECIAL PROJECTS SUBTOTAL		$3,065,922	$1,110,671	$1,955,251
	EPA WETLANDS GRANT				
1500-1	Game & Fish (CRP)		19,726	19,726	0
1500-2	Water Education Foundation		6,754	6,753	1
	Game & Fish		54,232	54,231	1
	Devils Lake Coordinator		15,000	15,000	0
	Grand Harbor		15,657	15,657	0
	Health Dept		20,774	20,774	0
	NDSU		27,152	27,152	0
	Horizons, Inc		10,000	10,000	0
1500-3	Wetland Capacity Evaluation (Devils Lake)		55,600	9,225	46,375
	Red River Water Coordinator		45,000	45,000	0
	Wetland Education & Information		63,000	63,000	0
	Index of Wetland Integrity (Health)		59,456	37,185	22,271
1500-04	ND Water Education Foundation		15,149	15,149	0
	EPA Subtotal		$407,500	$338,852	$68,648

State Water Commission

Grants Programs/Projects Authorized
July 1, 1997 - June 30, 1999

SWC PROJ NO.	NAME	DATE APPROVED	AMOUNT APPROVED	PAYMENTS	BALANCE
	FLOOD MITIGATION ASSISTANCE PROGRAM				
1896	Flood Mitigation Assistance Program (1997)	10/29/97	20,500	19,687	813
1896	Flood Mitigation Assistance Program (1998)	08/13/98	22,634	0	22,634
1896	Flood Mitigation Assistance Program (FEDERAL)	08/13/98	258,800	109,370	149,430
	FLOOD MITIGATION ASSIST PROG TOTALS		$301,934	$129,057	$172,877
	WATER DEVELOPMENT DIVISION (continued)				
	GENERAL PROJECTS				
1803	Belfield Flood Control (Stark)	12/20/91	38,800	0	38,800
1577-10	Langdon Floodplain Management Study (Cavalier)	12/02/93	4,100	0	4,100
828	Homme Dam (Walsh)	11/29/95	28,000	0	28,000
1401	International Drainage	04/23/96	1,725	0	1,725
1486	Cooperstown Area Drain Project (Griggs)	07/11/96	5,200	0	5,200
1315	Twelve Mile & Truax Township Pipeline (Williams)	01/27/97	87,800	0	87,800
1813	Cass County Joint Water Resource Dist	02/13/98	95,300	0	95,300
576	Missouri River Coordinated Resource Management Program	10/19/98	30,000	10,203	19,797
300	Baldhill Dam (Sheyenne River Joint Water Resource District)	04/30/98	43,302	10,259	33,043
1054	Meadow Lake Flood Control (Barnes County)	09/02/98	4,825	0	4,825
1312	Phase I, Rural Ring Dike Project (Walsh County WRD)	08/13/98	175,000	0	175,000
295	Horsehead Irrigation Project (Feasibility Study) (Emmons)	08/13/98	90,000	14,485	75,515
1894	Tri-County Flood Control Project Phase II	12/21/98	47,400	0	47,400
1271	Ring Dike Cost-Share North Cass WRD	12/21/98	162,500	0	162,500
1901	Steele County Drain # 13	12/21/98	27,000	19,835	7,165
1069	Cass County Drain # 13 Reconstruction	12/21/98	150,000	0	150,000
222	Buford-Trenton Irrigation - Williams County	01/27/99	36,000	16,885	19,115
1389	High Value Irrigated Crops Task Force	01/27/99	2,000	0	2,000
1291	Antelope Creek Snagging and Clearing Project(Mercer County)	02/19/99	3,600	3,172	428
AOC/WEF	Water Education Foundation 1997 Tours	05/25/99	2,500	0	2,500
1264	Sanborn Lake/Barnes County	05/27/99	5,000	0	5,000
841	Floodwater Retention Dam/Barnes & Cass County	05/27/99	20,000	0	20,000
1315	Williams County Flood Study	05/27/99	15,400	0	15,400
1903	Trail County Drain No. 57A	06/09/99	150,000	0	150,000
1905	Walhalla Township Drain #2 - Cavalier/Pembina	06/09/99	95,311	0	95,311
1904	Walhalla Township Drain #3 - Cavalier/Pembina	06/09/99	52,490	0	52,490
1293	Mountrail County Irrigation	06/09/99	28,750	0	28,750
1751	Digital Aerial Survey - Laser Terrain Mapping - Cass County	06/09/99	45,150	0	45,150
	Fish Creek Dam / Morton County	06/18/99	6,500	0	6,500
583/1889	Midtown Dam Project (City of Fargo)	06/15/99	3,434	0	3,434
	Subtotal General Projects		$1,457,087	$74,839	$1,382,248
	Completed General Projects		917,925	917,925	0
	Approved General Projects Subtotal		$2,375,012	$992,764	$1,382,248
	Unallocated Balance		4,000,000	0	4,000,000
	WATER DEVELOPMENT DIVISION TOTALS		$12,760,108	$3,987,928	$8,772,180
	ALL FUNDS TOTAL		**$13,584,426**	**$4,717,925**	**$8,866,501**

State Water Commission

Object Expenditures
for Biennial Period Ending June 30, 1999

Permanent Salaries	$ 5,481,618
Temporary Salaries and Overtime Salaries	282,713
Fringe Benefits	1,538,618
Data Processing Service	46,695
Intergovernmental Services	80,934
Payments to State Motor Pool	298,322
Employee Travel	304,554
Travel, Non Employees	66,234
Utilities	13,883
Postage	47,525
Telephone Services	29,491
Leases/Rental	52,160
Dues and Professional Development	115,083
operating Fees and Services	158,083
Repair Services - Non Contract	27,737
Repair Services - Contract	12,406
Professional Services (including Southwest Pipeline)	2,074,368
Insurance	6,635
Office Supplies	10,348
Data Processing Supplies	61,351
Printing	45,691
Resource and Reference Materials	30,718
Scientific Supplies	149,246
Building/Equipment Supplies	123,113
Equipment Maintenance/Other Supplies	60,225
Office Equipment/Furniture	124,366
Machinery, Implements and Tools	2,578
Scientific Equipment	16,854
Land/Buildings/Other	3,117,877
Contract payments (Includes Southwest Pipeline)	3,477,711
Water Resources Grants	646,063
Cooperative Research	57,145
TOTAL	**$18,560,975**

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, 1999:

Water Development Revenue Bonds

PROJECT	SERIES	AMOUNT
Southwest Pipeline Project	1997 Series A	$6,685,000
Southwest Pipeline Project	1997 Series B	3,400,000
Southwest Pipeline Project	1998 Series A	100,000
Northwest Area Water Supply (Rugby)	1998 Series A	1,220,000

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 includes:

- Government Land Office Plats
- Survey Horizontal and Vertical Control
- Various Ground-Water Studies
- Growing Season Rainfall Data
- Water Permit Data
- Drainage Permit Data
- Stream Flow 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.