NORTH DAKOTA

State Water Commission

AND

Office of the State Engineer

BIENNIAL REPORT

for the period July 1, 2007 to June 30, 2009

Governor John Hoeven
Chairman

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

North Dakota State Water Commission

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December 1, 2009

Governor John Hoeven
600 East Boulevard Ave.
Bismarck, ND 58505-0001

Secretary of State Al Jaeger
600 East Boulevard Ave.
Bismarck, ND 58505-0001

RE: 2007-2009 Biennial Reports, N.D.C.C. § 54-06-03; N.D.C.C. § 54-06-04; and other applicable law

Dear Governor Hoeven and Secretary of State Jaeger:

It is with great pride in the State Water Commission and the Office of the State Engineer that we present our biennial report for July 1, 2007, through June 30, 2009. This report highlights key events, accomplishments, and other pertinent activities of the State Water Commission and the Office of the State Engineer during that timeframe for your information and consideration.

Respectfully submitted,

Dale L. Frink
State Engineer

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NORTH DAKOTA STATE WATER COMMISSION

GOVERNOR JOHN HOEVEN
Chairman

Mission

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.

Philosophy and Values

In the delivery of services to the citizens of North Dakota, we the employees of the State Water Commission and the Office of the State Engineer value fairness, objectivity, accountability, responsiveness, and credibility. We pledge to use professional and scientific methods to maintain only the highest of standards in our delivery of services to our constituents.

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

Agency Goals

- To regulate the use of water resources for the future welfare and prosperity of the people of North Dakota.
- To develop water resources for the future welfare and prosperity of the people of North Dakota.
- To manage 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.
- To collect, manage, and distribute information to facilitate improved management of North Dakota's water resources.
- To conduct research into the processes affecting the hydrologic cycle to improve the management of North Dakota's water resources.

Organization

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

The State Water Commission is located primarily in the State Office Building near the State Capitol in Bismarck, North Dakota. In addition, the Commission has a field office in West Fargo.

History and Mandates

The Office of the 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 and Secretary to the Commission.

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.

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 North Dakota's Century Code to:

• Administer the water laws of the state.

• Prepare and maintain a comprehensive plan for future growth and development, and to direct project development in accordance with that plan.

• Conduct studies to determine availability and occurrence of the ground and surface waters of the state for the purposes of allocation and management.

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

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

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

• Administer water information/education programs to enhance understanding of the state's water resources.

• Coordinate with federal, state, and local entities in water resources management and development.

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

Principal Agency Activities

• Develop Missouri River water in ways that will secure North Dakota's share of Missouri River flows for our current and future needs.

• Implement plans for the distribution of Missouri River water through regional water supply systems such as the Southwest Pipeline project, the Northwest Area Water Supply project, and the Red River Valley Water Supply project.

The Missouri River

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

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

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

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

• Continue to implement the state's three-pronged approach to solving the Devils Lake area's flooding problems.

• Develop policies and initiatives that will stimulate progress toward developing flood control measures wherever feasible.

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

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

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

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

• Promote expanded development of North Dakota's water-based recreation resources.

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

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

• Manage the water resource database so that it is accessible to interested parties.

• Manage state water resources and sovereign lands within the framework of North Dakota's Century and Administrative Codes.

2009 Water Resources Legislation

House Bill 1020 is the Commission's 2009-2011 appropriation bill. It provides the agency's funding within two special line items, the Administrative and Support Services line item and the Water and Atmospheric Resources line item; and totals almost $311 million. The bill includes approximately $13.8 million from the general fund, and $55 million in federal funds. The balance of the funding is provided from the Water Development Trust Fund; the Resources Trust Fund; and other state, and local governmental sources. The bill also contains language appropriating an additional $12 million of federal stimulus funding when it becomes available. The bill identifies five specific projects in legislative intent sections. These projects are: funding for Fargo flood control; additional funding for a digital elevation mapping project; enhancement of the local share of funding for Renwick Dam; funding for a long-term flood control study in the Red River Valley; and additional funding for the Michigan spillway.

House Bill 1286 amended N.D.C.C. § 61-04-01.1 relating to the definitions of domestic use and irrigation use by increasing the area of land from one acre to five acres; and adding gardens, orchards, lawns, trees, or shrubbery as agricultural crops.

House Bill 1305 provided an appropriation of $2,792,000 for water project grants - $864,000 to cost-share the Ray and Tioga Water Supply Project; $985,000 to cost-share the Burke, Divide, and Williams Water Supply Project; $593,000 to cost-share the Wildrose Water Supply Project; and $350,000 for repayment of outstanding bonds for the Stanley water pipeline construction project.

House Bill 1322 requires the Commission to conduct a water resources study relating to energy production.

Senate Bill 2305 provided an appropriation of $342,000 to conduct a Beaver Bay embankment feasibility study.

Senate Bill 2316 requires the Commission to develop policies, including cost-share guidelines, which further the development of water retention projects for flood control.

Senate Bill 2317 amended N.D.C.C. §§ 61-24.7-01, 61-24.7-02, and 61-24.

Legal Actions

In 1999, nearly 100 landowners in the Devils Lake area sued the State of North Dakota, the State Water Commission, the State Engineer, and nine water resource districts, alleging that these government entities constructed, sponsored, operated, and maintained water management projects in the Devils Lake basin that caused the lake to flood their property. The landowners also alleged that government was responsible for all of the private drainage that occurred in the Devils Lake basin. The landowners sought money damages, restoration of all wetlands in the Devils Lake basin, and an order enjoining the counties from continued maintenance of all watercourses and water management projects. The case went to trial on July 31, 2006, and lasted more than three weeks. A favorable judgment, including an award of costs, was received from the District Court on October 26, 2007. Plaintiffs appealed and the North Dakota Supreme Court affirmed the District Court's decision that the Devils Lake flooding was caused by an act of God, and also agreed with the District Court that the Appellants' experts failed to prove that any of the government projects caused Devils Lake to flood. Although the Appellants' filed a Petition for Reconsideration, it was denied. The government entities have since recovered over $200,000 of their costs from the landowners.

In 2002, the State Water Commission began construction of the Devils Lake outlet. During the first phase of construction, the Commission was forced to condemn six parcels of property. Five of the landowners challenged the compensation awarded by the Commission

The Devils Lake Outlet

and appealed the condemnations to the District Court.They have since settled. The sixth landowner's claim for damages has not yet been settled.

In *Manitoba v. Norton*, Manitoba asserts that the U.S. Bureau of Reclamation violated the National Environmental Policy Act (NEPA) by failing to prepare an Environmental Impact Statement for the Northwest Area Water Supply (NAWS) project. Manitoba is concerned that the project will bring Missouri River basin biota to the Hudson Bay basin, causing harm to the environment. North Dakota intervened in the lawsuit to protect the state's interests. North Dakota, as well as the Bureau, filed motions to dismiss the case on the ground that because the dispute concerns the relations of the United States with another country, and relations governed by a treaty, the judiciary is without jurisdiction over the dispute. The District Court for the District of Columbia rejected the motions. All parties then filed summary judgment motions. The court denied the state's motion and the Bureau's motion but granted in part Manitoba's ruling that NEPA requires the Bureau to complete additional environmental analysis. The Bureau and state appealed this decision to the Court of Appeals for the District of Columbia, but dismissed their appeals after the Bureau decided to go ahead with additional environmental review. That work culminated in an Environmental Impact Statement issued in December 2008. After it was issued, the State of Missouri sued the Bureau, raising NEPA claims and a claim under the 1944 Flood Control Act. Missouri's suit was consolidated with Manitoba's (*Missouri v. Salazar*) and the filing and briefing of summary judgment motions was underway as of fall 2009, with a final decision by the District Court expected in later 2009 or early 2010. The suit has delayed project construction on the water supply from Lake Sakakawea, however, other pipeline work connecting northern communities was allowed by the Court to continue.

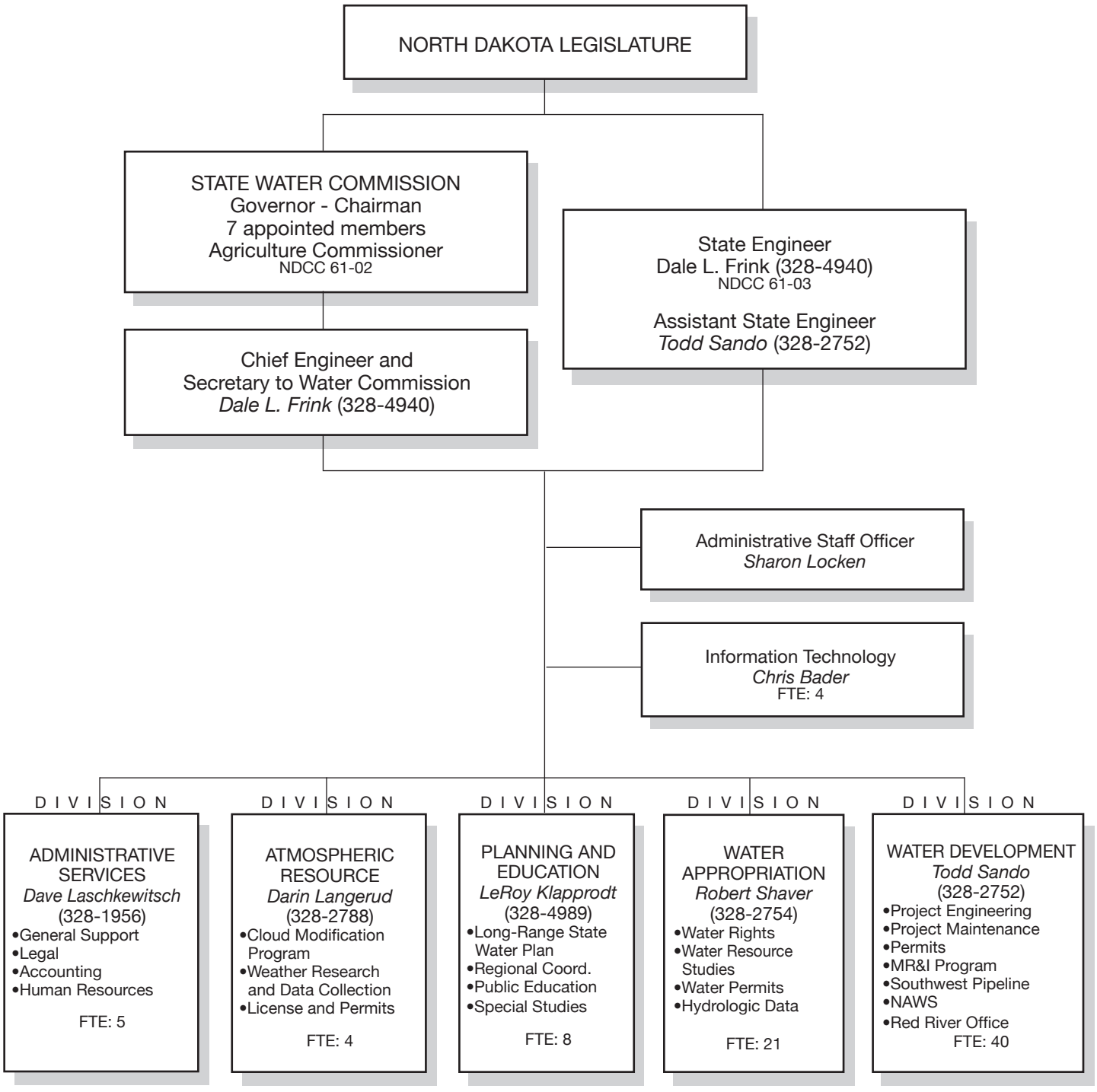
State Water Commission Members as of June 30, 2009

NAME	POSITION	APPOINTED	TERM ENDS
John Hoeven	Governor-Chairman		
Doug Goehring	Department of Agriculture		
Jack Olin	Member from Dickinson	July 1, 2001	June 30, 2009
Harley Swenson	Member from Bismarck	July 1, 2001	June 30, 2009
Arne Berg	Member from Devils Lake	December 7, 2006	June 30, 2011
Maurice Foley	Member from Minot	December 8, 2006	June 30, 2011
Larry Hanson	Member from Williston	July 1, 2001	June 30, 2011
Robert Thompson	Member from Page	July 1, 2001	June 30, 2013
Douglas Vosper	Member from Neche	August 15, 2008	June 30, 2013

State Water Commission Meetings
July 1, 2007 through June 30, 2009

DATE	LOCATION
July 17, 2007	Casselton
October 24, 2007	Bismarck
December 7, 2007	Bismarck
February 4, 2008	(conference call) Bismarck
March 17, 2008	Bismarck
April 23, 2008	Bismarck
May 14, 2008	(conference call) Bismarck
June 23, 2008	Bismarck
July 29, 2008	(conference call) Bismarck
September 30, 2008	Bismarck
December 5, 2008	Bismarck
December 17, 2008	(conference call) Bismarck
March 23, 2009	Bismarck
April 28, 2009	(conference call) Bismarck
June 5, 2009	(conference call) Bismarck
June 23, 2009	Fargo

North Dakota State Water Commission
Organizational Chart



June 30, 2009

State Water Commission Employees as of June 30, 2009

ADMINISTRATIVE SERVICES DIVISION

State Engineer: Dale L. Frink
Administrative Staff Officer: Sharon Locken
Accounting Manager: David Laschkewitsch
Account/Budget Specialist: Pam Jahner
Human Resource Officer: John Brintnell
Paralegal: Rosemary Pedersen
Administrative Assistant: Karen Heinert
IT Administrator: Christopher Bader
Hydrologist: Paul Moen
Data Processing Coordinator: Travis Stramer
GIS Specialist: Rodney Bassler

ATMOSPHERIC RESOURCE BOARD

Division Director: Darin Langerud
Executive Staff Officer: Kelli Schroeder
Environmental Sciences Administrator: Mark Schneider
Environmental Scientist: Daniel Brothers

WATER APPROPRIATION DIVISION

Division Director: Robert Shaver
Administrative Assistant: Stephanie Clooten
Hydrologist Managers: Royce Cline, Jon Patch, Steve Pusc, William Schuh, Alan Wanek
Hydrologists: Rex Honeyman, Andrew Nygren, Scott Parkin, Christopher Schultz, Gordon Sturgeon
Water Resource Engineer: Daniel Farrell, Robert White
Water Resource Senior Manager: Michael Hove
Water Resource Project Manager: James MacArthur
Engineering Technicians: Kelvin Kunz, Albert Lachenmeier, Neil Martwick, Merlyn Skaley
Rotary Drill Operator: Terry Olson
Equipment Operator: Roger Nelson

PLANNING AND EDUCATION DIVISION

Division Director: LeRoy Klapprodt
Office Assistant: Dawn Schock
Water Resource Education Program Manager: Bill Sharff
Water Resource Planners: Michael Noone, Linda Weispfenning
Natural Resource Economist: Patrick Fridgen
Research Analyst: Larry Knudtson
Graphic Artist: Brenda Hove

WATER DEVELOPMENT DIVISION

Division Director/Asst. State Engineer: Todd Sando
Administrative Assistant: Melissa Behm
Water Resource Engineer Managers: Bruce Engelhardt, J. Tim Fay, Timothy Freije, Randy Gjestvang, Karen Goff, Jonathan Kelsch, Michelle Klose, Jeffrey Mattern, John Paczkowski, Julie Prescott, Ronald Swanson
Water Resource Engineers: Laura Ackerman, Kelly Casteel, Dwight Comfort, Erwin Curry, Waylon Erdmann, James Lindseth, Sindhuja S. Pillai-Grinolds
Engineering Technicians: Daniel Bahm, Jeffrey Berger, John Edwards, Tom Engberg, Edward Gall, Chance Nolan, Daniel McDonald
GIS Specialist: Leland Krein
Water Resource Project Managers: Darron Nichols, Daniel Sauter
Water Resource Program Administrator: Gerald Heisler, Jeffrey Klein, Bruce Lange, Carolyn Merbach
Account Technician: Winston Enyart
Realty Officer: Roger Kolling
Water Resource Senior Managers: Dale Binstock, Perry Weiner
Maintenance Supervisor: Carl Duchscher

Administrative Services Division

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

Budget and fiscal control work is accomplished within the provisions of statutory law and principles or rules of that law. Agency accounting consists of keeping 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, board of directors member of the Missouri River Basin Association, executive council member of the Western States Water Council, member of the National Water Resource Association, board of directors ex-officio member of the North Dakota Water Users Association, board of directors member of the North Dakota Water Education Foundation, member of the Association of Western States Engineers, and state representative to the Red River Basin Commission.

Information Technology (IT) Section

The State Water Commission utilizes information technology in almost all aspects of water resource management. The primary responsibility of the IT section is to provide the technology support required to fulfill the array of agency functions.

Over the past decade, the agency has developed considerable technology infrastructure for data storage and analysis required to meet the agency's water resource management responsibilities. However, the increasing demands associated with water management have resulted in changes in both the type of data collection efforts, and the types of tools required to perform the necessary analysis. The agency has made significant changes to its IT infrastructure, including enhancements to data storage, desktop computing, production equipment, and training for agency staff, as a result of the changing data and analysis requirements.

The agency's IT infrastructure was initially restructured during the 2001-2003 biennium to build a framework to meet the challenges that were anticipated over the next decade and beyond. During the 2005-2007 biennium, the agency's IT infrastructure was enhanced to leverage open source solutions to provide an open and flexible framework to accommodate both commercial and open source technology solutions. The open source framework of the agency's IT infrastructure has produced a technology infrastructure that is both cost-effective and easily extended to incorporate new technology as it is introduced. This flexibility provides the necessary utility to maintain and evolve complex agency IT capabilities while stabilizing infrastructure costs.

With the increasing emphasis on spatial relationships, geographic information systems (GIS) and related technologies continue to play an expanding role in managing North Dakota's water resources. Initial efforts focused on ground water and atmospheric data management programs. Preliminary tools that provide basic integration of the data with the GIS infrastructure have been completed. Internal integration, web based mapping services have been completed for these areas and are available via the agency Internet map service (http://mapservice.swc.state.nd.us/). With the integration of much of the agency data within base GIS systems, development efforts are moving forward to evolve and extend the current "tool-base" required to perform many of the basic hydrologic requirements for managing the state's water resources.

The agency has completed the scanning and digitization of much of the paper and aerial photographs to provide greater utilization of these resources, and to preserve them for long-term archival. These include approximately 2,800 Government Land Office (GLO) plat maps, representing the original statewide government survey of North Dakota, and more than 28,000 color infrared aerial photographs owned by the agency. In addition, the agency is currently exploring the digitization of archived Air Force photos from the early 1960s. Initial work is also currently underway to mosaic and integrate these images into a seamless photo base to be used in conjunction with all of the other spatial assets available to the agency for water management and resource assessment. Once completed, the composite mosaic scenes generated from these photographs will also be made available on the state GIS hub.

Atmospheric Resource Board

The Atmospheric Resource Board (ARB) is a quasi-judicial, quasi-legislative advisory and rule-making board under the supervision of the State Water Commission. ARB personnel are co-located with the SWC, and function as one of its divisions.

The ARB is comprised of ten members. Seven are appointed by the Governor, and ex-officio members include the State Engineer, the Director of the State Aeronautics Commission, and a representative of the Environmental Section of the Department of Health.

The primary functions of the ARB are to:

• Carry out administrative procedures required for the licensing of weather modification contractors and the permitting of cloud seeding operations and research activities;

• Develop and maintain a system for the collection of data and records of all operational weather modification activities;

• Conduct research into atmospheric precipitation processes to assess and improve the effectiveness of cloud seeding technology;

• Promulgate rules and regulations governing cloud seeding activities to ensure environmental and public safety;

• Monitor and evaluate cloud seeding activities and report back to sponsoring entities; and

• Monitor, collect, and disseminate accurate climate and precipitation data.

North Dakota Cloud Modification Program

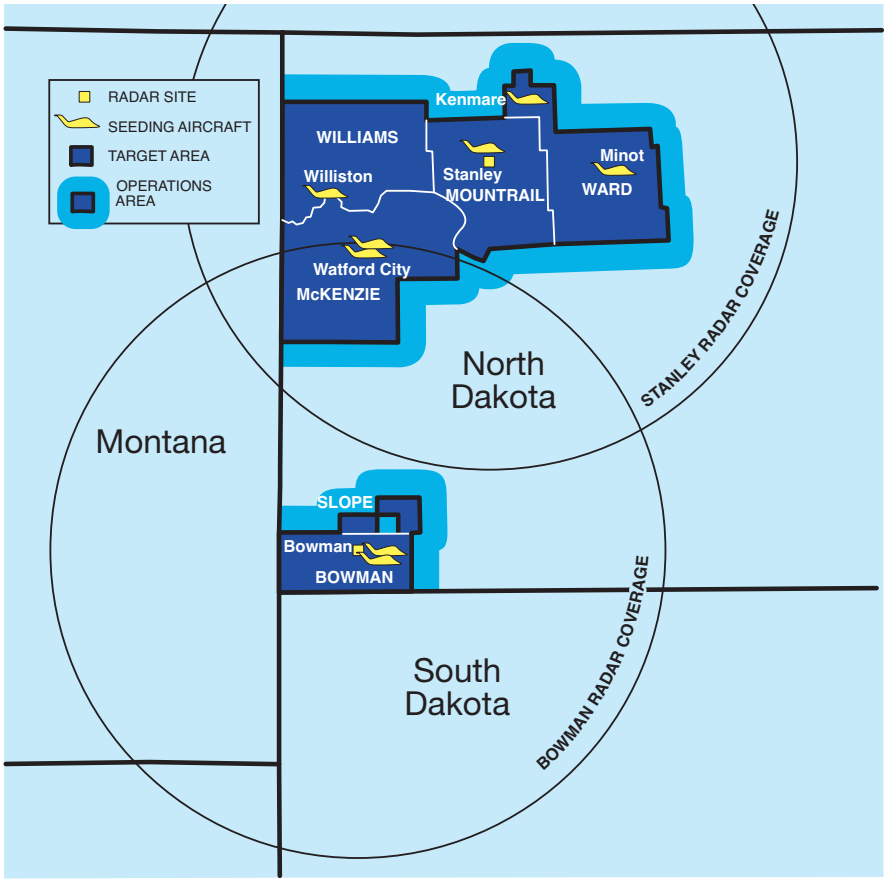
The North Dakota Cloud Modification Project (NDCMP) served six western counties during the 2007-2009 biennium. Those counties were Bowman, McKenzie, Mountrail, Ward, Williams, and part of Slope. At the conclusion of the biennium, the project target area covered 6.7 million acres of western North Dakota.

The NDCMP has two goals: 1) suppression of damaging hail; and 2) enhancement of rainfall. Suitable clouds over two multi-county operational districts were treated during June, July, and August of each summer of the biennium. Eight twin-engine aircraft operated by Weather Modification Inc. of Fargo, were deployed under contract to the ARB and participating counties. Operations were directed by project meteorologists from radar operations centers based in Bowman and Stanley.

The most recent evaluations of the program indicate a 45 percent reduction in crop-hail losses, a six percent increase in wheat yields, and up to a 10 percent increase in rainfall. An updated economic analysis, completed in February 2009 by Dean Bangsund, and Dr. F. Larry Leistritz at North Dakota State University, is summarized below.

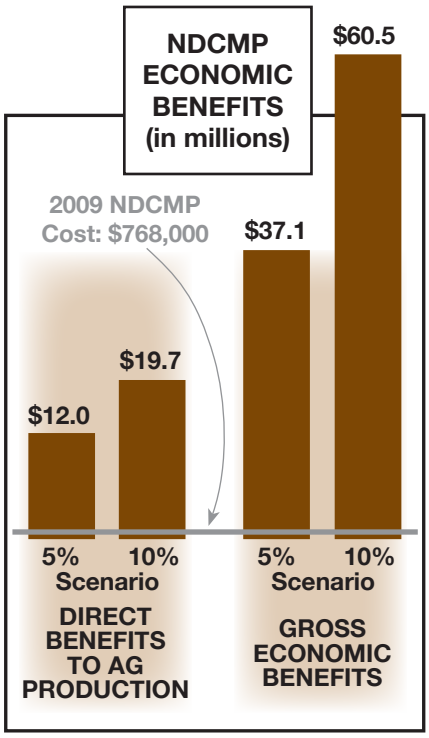
Economic Impact of Cloud Seeding in North Dakota

The direct economic impact of rainfall enhancement from cloud seeding was evaluated at two intervals: 5 and 10 percent. These two numbers reflect the long-term evaluations of the NDCMP's ability to increase rainfall. In the five percent scenario, the value of increased crop production is estimated to yield $8.4 million annually, while in the 10 percent scenario the value of increased production is estimated to yield $16 million annually.



North Dakota Cloud Modification Project (NDCMP) target areas.

The analysis of hail reduction or hail suppression shows the average crop value saved through cloud seeding is $3.7 million per year. Including hail suppression benefits, the total direct impact in the 5 percent rainfall scenario is $12 million annually, while the total direct impact in the 10 percent scenario is $19.7 million. These results yield a benefit-to-cost ratio, based on anticipated 2009 project costs, of 16 to 1 for the 5 percent scenario, and 26 to 1 under the 10 percent scenario.



Under the 5 percent rainfall scenario, total direct impacts from the NDCMP were estimated to average $12 million annually. This additional net revenue would generate secondary economic activity of $25 million annually, resulting in gross business volume of over $37 million, or $15.87 per planted acre.

In the 10 percent rainfall scenario, total direct impacts from the NDCMP were estimated to average $19.7 million annually. This additional net revenue would generate secondary economic activity of $40.9 million annually, resulting in gross business volume of $60.5 million, or $25.89 per planted acre.

Weather Radars Upgraded

The ARB continued to operate two WSR-74C weather radars during the last biennium. Radars were located in facilities at the Bowman and Stanley airports and continued to operate at approximately one-quarter the cost of previously leased systems.

The radar systems underwent a significant upgrade during the spring of 2009. Installation of advanced electronic components improved the radar's low-end sensitivity, antenna control, and analysis/display software. New features include Doppler velocity, remote monitoring and un-manned operation capability, and enhanced data sharing.

The Bowman radar is sited at the coverage limits of the National Weather Service (NWS) radars located at Bismarck, Billings, Glasgow, Rapid City, and Williston, and thus provides lower atmosphere coverage of southwestern North Dakota, southeastern Montana, and northwestern South Dakota, not available from NWS radars. The Stanley radar is sited roughly midway between the NWS radar at Williston and the Minot Air Force Base radar near Deering, which makes it a good backup if either of the NWS radars become unavailable. Images from both radars are available and updated every six minutes on the SWC website during the operational season.

Research and Development

Research during the 2007-09 biennium focused on a cooperative program between ARB, the University of North Dakota's (UND) Atmospheric Science Department, the National Center for Atmospheric Research (NCAR), Fargo-based Weather Modification Incorporated (WMI), and Ice Crystal Engineering (ICE) in Kindred. The Polarimetric Cloud Analysis and Seeding Test 2, or POLCAST2, conducted its second field campaign from June 3 - July 14, 2008.

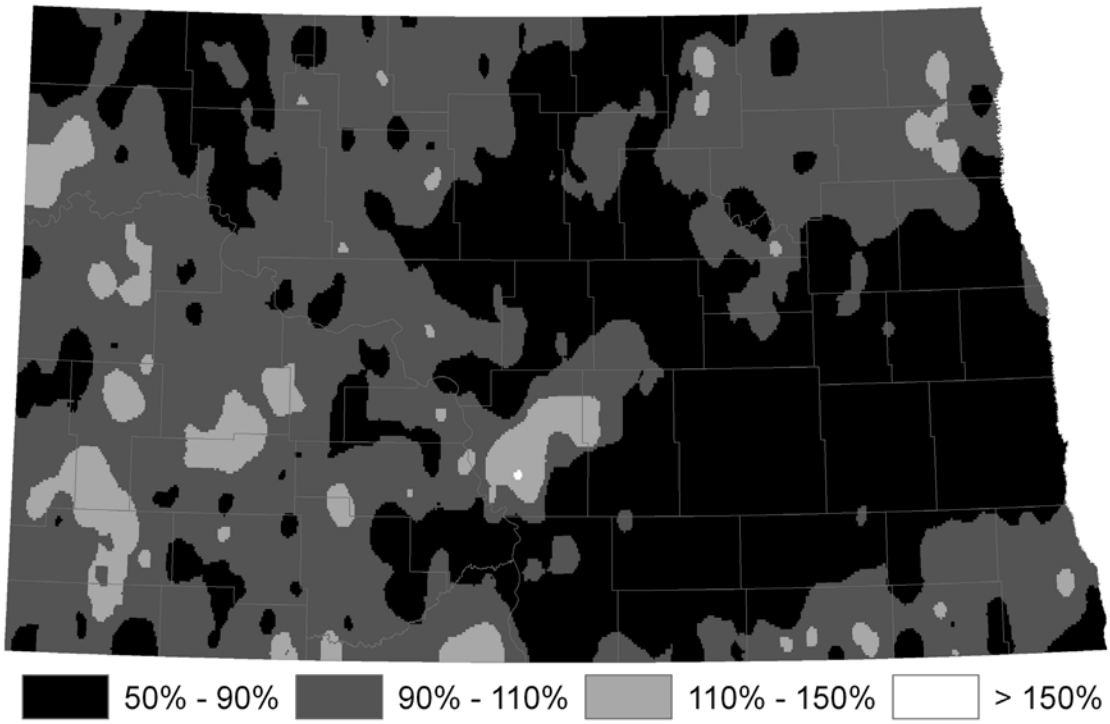
A WMI aircraft was contracted to seed clouds in North Dakota within 100 km of the UND radar with ICE hygroscopic flares, which generate large numbers of small salt particles. The randomized seeding experiment produced 13 cases (7 seeded, 6 not seeded) during the period. UND's advanced polarimetric Doppler weather radar and the well-instrumented seeding aircraft collected data from both seeded and unseeded clouds. Analysis of the data is ongoing with preliminary results expected by the end of 2009. Current plans call for a third season of field operations during the summer of 2010.

AVERAGE NDCMP IMPACTS (per planted acre)

	VALUE OF HAIL SUPPRESSION	VALUE OF RAIN ENHANCEMENT	COMBINED DIRECT IMPACT	GROSS BUSINESS VOLUME
5% Scenario	$ 1.57	$ 3.58	$ 5.16	$ 15.87
10% Scenario	$ 1.57	$ 6.84	$ 8.41	$ 25.89

POTENTIAL STATEWIDE IMPACTS

	PLANTED ACRES	VALUE OF HAIL SUPPRESSION	VALUE OF RAIN ENHANCEMENT	COMBINED DIRECT IMPACT	GROSS BUSINESS VOLUME
5% Scenario	19.6 M	$ 53.3 M	$ 42.1 M	$ 95.4 M	$ 293.8 M
10% Scenario	19.6 M	$ 53.3 M	$ 81.3 M	$ 134.5 M	$ 414.2 M



APRIL - SEPTEMBER 2009 PERCENT OF NORMAL RAINFALL, ARB COOPERATIVE OBSERVER NETWORK

Student Intern Programs

Eighteen intern copilots from the UND John D. Odegaard School of Aerospace Sciences participated in the NDCMP during the last biennium. All were trained at UND for a full academic year prior to their participation. Since the board's inception in 1975, more than 300 intern pilots have logged over 20,000 hours of flight time in the conduct of cloud seeding operations in North Dakota's skies. In addition to recording the time, location, duration, and meteorological conditions during all seeding and reconnaissance missions, the pilots are fully qualified to fly the aircraft, providing an additional safety margin. Because of the experience they gain, many intern copilots have returned to the NDCMP as Pilots-in-Command (PICs) in subsequent years. Interns are paid an hourly wage and are considered temporary employees of the ARB during the summer months.

The weather modification pilot training program is the only one of its kind in the United States and provides a significant number of qualified cloud seeding pilots for projects elsewhere in the U.S. and around the world.

ARB also retained undergraduate students majoring in atmospheric science as intern meteorologists during the 2007-2009 biennium. A total of seven student interns assisted NDCMP field meteorologists at radar-equipped operations centers in Bowman and Stanley, and at the ARB offices in Bismarck. Like the intern pilots, intern meteorologists continue to demonstrate their enthusiasm and dedication to the NDCMP and provide a pool of better-qualified persons to serve future projects as radar meteorologists.

Statewide Growing-Season Precipitation Observations

The ARB Cooperative Observer Network (ARBCON) continued observing North Dakota growing-season precipitation during the biennium. ARBCON observers numbered about 750 volunteers statewide, building on a database dating back to 1977. Rain and hail reports were recorded daily and sent in to ARB offices at the end of each month. Since the gage type employed by the network is not suitable for measuring snow, snowfall measurements are not attempted.

Observers continued to transition to Internet reporting during the biennium, adding approximately 60 volunteers to the rolls. Internet reporters enter their daily reports directly through the SWC website after logging in with a unique username and password, making the data available sooner than those submitted on monthly reporting cards. About 15 percent of observers are utilizing online reporting, a number which will grow in future years.

Rain and hail data, as well as color maps depicting monthly and growing season precipitation, departure from normal, and 30-year averages can be publicly accessed and downloaded directly through the SWC website. The data have proven to be very helpful in the assessment of excess rainfall and attendant flooding, as well as in the monitoring and delineation of drought.

Planning and Education Division

The primary responsibility of the Planning and Education Division is to maintain and update the statewide Water Management Plan for the State of North Dakota. Division staff members also participate in numerous regional, state, local, and inter-office planning activities; manage the agency's water education programs; manage the Drought Disaster Livestock Water Supply Project Assistance Program; and coordinate environmental reviews.

Specific staff responsibilities include:

• Maintaining a water project inventory and water management plan to promote efficiency in meeting North Dakota's future water development and funding needs;

• Leading or participating in special studies that result in water resource and related land management plans, such as the North Dakota Sovereign Land Management Plan;

• Monitoring water resource issues and advising decision makers on possible impacts to North Dakota's water management objectives;

• Representing the State Engineer and State Water Commission on regional, national, and international natural resource planning bodies such as the Red River Water Resources Council, Pembina River Basin Advisory Board, International Water Institute, and Red River Basin Commission, to name a few;

• Assisting joint water resource management boards to develop watershed management plans;

• Providing opportunities for adults and students to increase their understanding about North Dakota's water resources and how these resources are managed;

• Reviewing applications and meeting with applicants to determine eligibility for cost-share under the Drought Disaster Livestock Water Supply Project Assistance Program; and

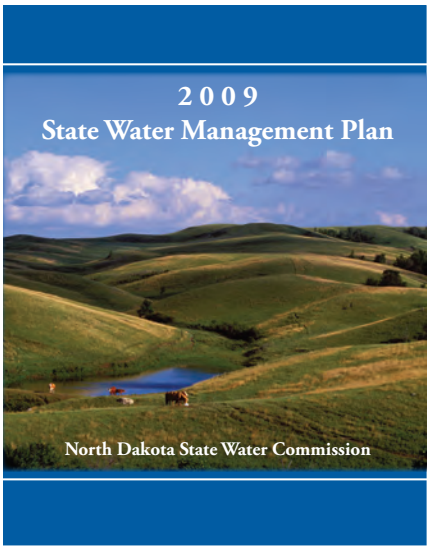
• Coordinating and managing interagency project reviews.

2009 Water Management Plan

By virtue of North Dakota Century Code, Section 61-02-14, Powers and Duties of the Commission; and Section 61-02-26, Duties of State Agencies Concerned with Intrastate Use of Disposition of Waters, the Commission is required to develop and maintain a comprehensive water plan for the sound management of North Dakota's water resources.

In December 2008, the Planning and Education Division completed the 2009 North Dakota State Water Management Plan (SWMP). This was the first full update of the plan since the last one was completed in 1999. However, supplements to the 1999 plan were completed every two years to provide updated project and program information to the Legislature and to assist with agency budgeting efforts.

The purpose of the 2009 SWMP is to: 1) provide information regarding current and projected water use; 2) identify areas where water is generally available for new beneficial uses; 3) identify goals and objectives for water resource management and development; 3) identify potential water resource management and development projects and programs; 5) provide current information regarding North Dakota's revenue sources for water resource management and development; 6) serve as a formal request for funding from the Resources Trust Fund; and 7) broadly identify water resource management and development opportunities and challenges, and provide recommendations to address them.



2009 State Water Management Plan

As in the past, the 2009 SWMP also includes a list of potential water projects for development. The potential projects list for the 2009-2011 biennium was developed by contacting water interest groups, including water resource districts, joint water boards, state and federal agencies, cities, and other water user groups, to request their input into the planning process. As a result, project sponsors from all corners of the state submitted water projects that they were interested in advancing.

With that information, and in cooperation with the North Dakota Water Coalition, the Commission developed a priority project budget. This inventory/budget lists all of the state's priority water development projects and project categories for the 2009-2011 biennium that the state works to advance and fund.

The new 2009 SWMP also includes a special topics section, which covers a vast array of issues that have a substantial impact on water management and development efforts in North Dakota.

Devils Lake Basin Planning Efforts

In previous bienniums, Planning and Education Division staff played an integral role in assisting the Devils Lake Basin Joint Water Resource Board in their efforts to review, update, and implement the Devils Lake Basin Water Management Plan (DLBWMP) – initially completed in 1995. During the 2007-2009 biennium, emphasis was focused primarily on implementation. This plan is a critical component of the state's multi-pronged approach to solving flooding problems in the Devils Lake basin.

The 2006 update of the DLBWMP has two main objectives:

1) To involve local citizenry for their experience and expertise. Through that process, four subject committees (agriculture, economic development, recreation, and wildlife and fisheries) were created to represent the four broad areas of interest in the basin.

2) To develop a list of specific goals that reflect the more general objectives developed in the DLBWMP, and to track progress on those goals prior to the next update of the plan in 2012. The goals identify areas of the highest priority as defined by each of the subject committees.

As part of this process, the Planning and Education Division provided technical planning assistance, as well as staff resources for re-writing and publishing the document, and website development.

Upper Sheyenne River Basin Planning Efforts

Planning and Education Division staff provided frequent support and guidance in the continued development of a joint water board in the watershed above Lake Ashtabula - similar to the Devils Lake board. Accomplishments have included the restoration of Sheyenne Dam, in Eddy County, and the inception of a two-year study on water quality trends in the Sheyenne River. In addition, staff also assisted the Upper Sheyenne River Basin Joint Water Resources Board with an update of a conceptual water plan that identifies water resource development needs, and focuses resources towards achieving specific objectives. That conceptual plan will be updated in 2011. Staff also developed a website for the Upper Sheyenne Joint Board to facilitate the dissemination of information about the board's activities.

Extended Storage Acreage Program (ESAP)

During the 2007-2009 biennium, the ESAP continued to be administered. Under ESAP, contacts for floodwater retention are arranged for ten-year periods. There are nine landowners participating in the ESAP program in the Devils Lake basin. In 2006, additional storage of 150 acre-feet was added to one of the ESAP sites, taking the total 400 acres under contract to an available storage of 985 acre-feet annually.

Red River Basin Planning Efforts

Throughout the 2007-2009 biennium, Planning and Education Division staff members continued to actively contribute to the Red River Basin Commission's (RRBC) planning and education advancements through involvement on several committees. In recent years, planning staff members have served on the RRBC's Plan Implementation and Communications Committees, as well as other RRBC sub-committees.

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

Red River Valley Water Supply

As directed by the Dakota Water Resources Act, the State Water Commission provided technical assistance and participated in the review of a Red River Valley Water Supply Study, which included the development of a Needs and Options Report and an Environmental Impact Statement. The Red River Valley Needs and Options Study and Environmental Impact Statement include a comprehensive analysis of all reasonable alternatives to meet the municipal, rural, and industrial water supply needs of the Red River Valley. All proposed alternatives were examined equally. As part of this effort, Planning and Education Division and other agency staff provided technical assistance as members of the study technical team. The technical team is responsible for day-to-day operations of the studies or tasks and for the evaluation, analysis, and detailed review of technical material and data developed during the course of the various tasks. The Final Environmental Impact Statement for the Red River Valley Water Supply Project was released in December 2007.

Missouri River Management

Planning and Education Division staff continued to provide technical assistance to the Missouri River Joint Water Resource Board in their grass-roots efforts to improve management of the Missouri River basin's natural resources.

Interagency Project Reviews

Planning and Education Division staff continue to conduct and coordinate interagency environmental reviews involving projects associated with Community Development Block Grants and Loans, highway improvements, airport improvements, dike/levee projects, water storage impoundments, municipal water supply projects, and various federal and state water, land, and wildlife management plans, studies, Environmental Assessments and En-

vironmental Impact Statements. On average, 25 inter-agency environmental reviews were conducted monthly during the 2007-2009 biennium.

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

Project WET

The SWC began development of its WET (Water Education for Teachers) Program in 1984. Today, Project WET is a national and international supplemental and interdisciplinary water science and water education program for K-12 formal and non-formal educators, K-12 students, and the general public. North Dakota Project WET became the pattern for its growth worldwide that now involves 50 states and 42 foreign countries on five continents. Since 1997, North Dakota Project WET has enhanced its scope and vision with the innovative Explore Your Watershed extension of WET.

Project WET is delivered to K-12 educators through multi-credit watershed institutes, single-credit workshops, seminars, in-service sessions, and preservice teacher workshops. K-12 students receive water education programs directly through their own classroom and through education events such as youth camps, youth water festivals, and community water or environmental awareness events. Adults receive water education through community water or natural resource education events.

Project WET facilitates and promotes the learning, awareness, knowledge, exploration, and stewardship of North Dakota water resources, and how water interacts with both the human and natural environments within the watersheds of North Dakota. Programs are carried out through the development and dissemination of indoor, outdoor, and classroom-ready experiences and teaching aids. Materials and resources are hands-on, easy-to-use, non-biased, interactive, and age appropriate.

Project WET K-12 educational programs and resources for educators reached 264 educators in 1-3 hour teacher in-service sessions, 39 preservice teachers in six hour workshops, 136 educators in single-credit workshops, and 50 educators in summer watershed institutes, for a total of 489 K-12 educators.

Project WET K-12 educational programs and resources for students reached 6,250 students through major water festivals and 16,384 students through youth camps, youth school programs, youth community programs, and other youth water education events, for a total of 22,634 students. Project WET also served 2,425 adults in community water or natural resource education events.

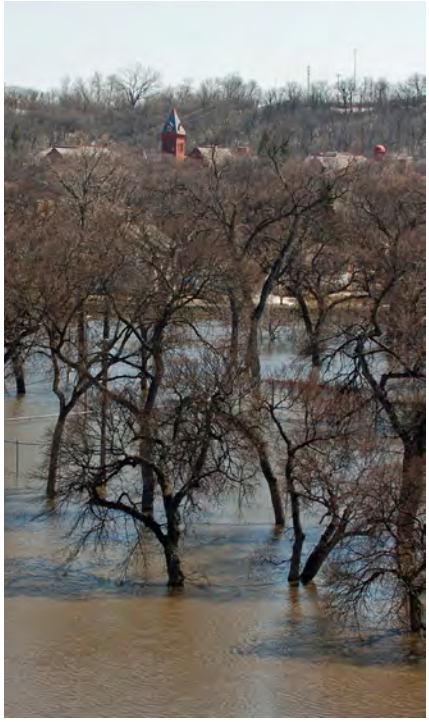
Participants and instructors of the Southwestern ND Missouri River Institute, Summer 2008.

North Dakota Water Magazine

Since 1993, various water interests in North Dakota have pooled resources through the North Dakota Water Education Foundation to publish a magazine titled North Dakota Water. This magazine provides a broad spectrum of high quality information about the state's water resources to the widest possible audience. Over the course of the 2007-2009 biennium, average monthly distribution of the magazine was approximately 12,000. Readers include the general public, local, state, and federal agencies, and elected officials.

The Planning and Education Division develops the State Water Commission's contribution - a three-page section called The Oxbow and an occasional 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.

Following the unprecedented spring floods of 2009, Planning Division staff worked in cooperation with the Water Education Foundation to develop a 36-page special edition of North Dakota Water magazine titled, "2009 North Dakota Floods." Topics covered in that publication include: precursors to the spring 2009 floods; flood monitoring and forecasting;



Spring 2009 flooding on the campus of Valley City State University.

State Water Commission cost-share was provided for this water supply system.

disaster declarations and aid programs; coordination of a statewide flood response; flood protection that worked; and a photo essay of higher-profile events that occurred in all parts of the state during the 2009 spring floods.

Drought Disaster Livestock Water Supply Project Assistance Program

The Drought Disaster Livestock Water Supply Project Assistance Program (Program) provides cost-share assistance to livestock producers with livestock water supply shortages caused by drought. The Program was originally created in 1991 in response to a severe statewide drought, but it was only administered for a short period of time.

In the summer of 2002, the Program was reactivated with a Commission allocation of $385,000 following a Drought Emergency Proclamation issued by Governor John Hoeven. At that time, only select counties throughout the state that were experiencing severe drought conditions were eligible for Program funding. But, as the drought continued to persist in subsequent years, nearly all corners of North Dakota were affected, and a statewide drought proclamation made livestock producers in all of the state's 53 counties eligible for assistance.

After the Program was reactivated once again in June 2006, the state allocated $1.2 million by year's end. By the end of the biennium, the Commission had received about 550 applications with 82 percent being approved. Of those, about 340 producers were reimbursed approximately $1.1 million, with an average reimbursement of $3,300 per producer.

A May 2008 Executive Order, in part, reactivated the Program by declaring an agricultural drought emergency. In response, the Commission allocated $1.825 million to fund the Program. In total, 586 applications to construct 790 projects were submitted. Reimbursements for those projects that were approved averaged $2,650 per producer.

Other Governmental and Non-governmental Organization Involvement

The Planning and Education Division also participated, to varying degrees, on several other governmental and non-governmental organizations, providing input from the State Engineer and State Water Commission's perspectives. During the previous biennium, staff were involved to some degree with the Army Corps-sponsored Fargo-Moorhead and Upstream Feasibility Study, the Fargo-Moorhead Metropolitan Area Flood Risk Management Study, the Missouri River Recovery Implementation Committee, the Missouri River Authorized Purposes Study, and the Missouri River Ecosystem Restoration Plan; the International Water Institute; Greenway on the Red; Red River Water Resources Council; Souris River Board of Control; Little Missouri Scenic River Commission; Voices for Oahe; Devils Lake Outlet Advisory Committee; Aquatic Nuisance Species Task Force; and Friends of Lake Sakakawea.

Water Appropriation Division

The Water Appropriation Division is responsible for the appropriation and management of the state's water resources in accordance with Article XI of the North Dakota Constitution and Chapter 61 of the North Dakota Century Code. The laws are based on the Doctrine of Prior Appropriation. 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 use on ground water levels, stream flow, and chemical quality of water for the purposes of future allocation and management;
- Collect, store, and disseminate data on stream flow, spring flow, ground water, lake levels, water quality, and water use;
- Carry out the administrative procedures required for water permit applications, water permits, and water rights;
- Conduct analyses and provide recommended decisions to the State Engineer on water permit applications;
- Develop and maintain a system for the storage and retrieval of water permit records;
- Monitor the utilization of each conditional and perfected water permit through annual water use reports, and maintain a permanent record; and
- Participate in committees and task forces pertaining to water quantity and/or quality issues as required.

Major Activities (2007-2009)

Ongoing exploration for ground water resources as well as monitoring and regulation of known aquifer systems require test-drilling and monitoring well installation. During the biennium, 23,919 feet of test drilling was completed, 139 new observation wells were installed, and an additional 41 test holes were drilled where no well was installed. As part of the ongoing well maintenance program, 5 existing monitoring wells were rehabilitated, and 48 older wells were properly plugged and abandoned.

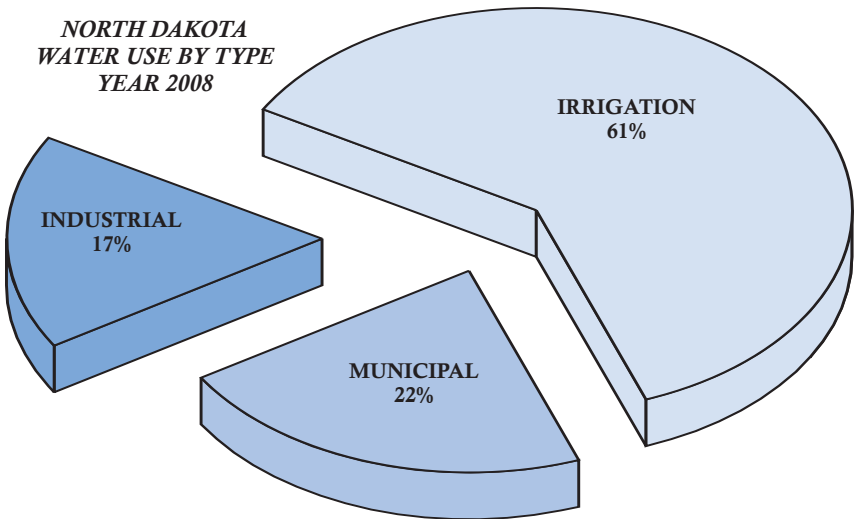
The program for collecting water resource data involves several aspects. The major components of the program are the collection of samples for water quality analyses from surface and ground waters, the collection of water level data from surface and ground waters, the acquisition of water use data from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

During the biennium, 4,275 water samples were analyzed for chemical constituents. These samples were collected from streams at gage stations, selected observation wells and production wells, and selected surface water bodies. These data are used to determine the suitability of the chemical quality for beneficial use, to interpret areal hydrology, and to assess changes in the quality resulting from the stresses of both man-induced processes like pumping, and natural processes caused by climatic variations.

Over 4,347 wells and surface water bodies are measured for water levels. These are predominantly observation wells, but some lakes, sloughs, and production wells are measured. These data reflect the changes in the surface and ground waters resulting from natural climatic variations and from pumping for beneficial use. These data are essential for making decisions on water permit applications and overall water management, present and future.

The agency supports the operation of 40 stream flow gages as a part of a cooperative program with the U.S. Geological Survey (USGS). The cost of these gages is, for the most part, shared equally by the State Water Commission and the USGS.

Water use information is submitted annually from more than 3,000 water permit holders. Approximately 500 additional permits have the associated water use estimated, based upon evaporative losses from reservoirs. This information is essential for evaluating the impacts of withdrawals authorized by water permits on ground water levels and stream flow, and making decisions on water permit applications. The pie chart below shows the relative volume of use by the major categories in 2008.



The bar graphs on this page show the trend for the last 12 years for each of the three major categories of use (irrigation, municipal, and industrial).

Water permit applications for the 2007-2009 biennium and a summary of the actions taken on them are listed in the table on page 17. There were 416 temporary water permits issued by the State Engineer during the 2007-2009 biennium. The total volume of water allocated was 20,837 acre-feet. Sixty temporary permits were from ground water sources, with a total volume of 6,341.8 acre-feet, and 356 temporary permits were from surface water sources, with a total volume of 14,495.2 acre-feet.

There were 110 conditional water permits perfected during the biennium. These water permits had been approved earlier, and had been fully developed. After being inspected, reports on these inspections were written and the permits were perfected.

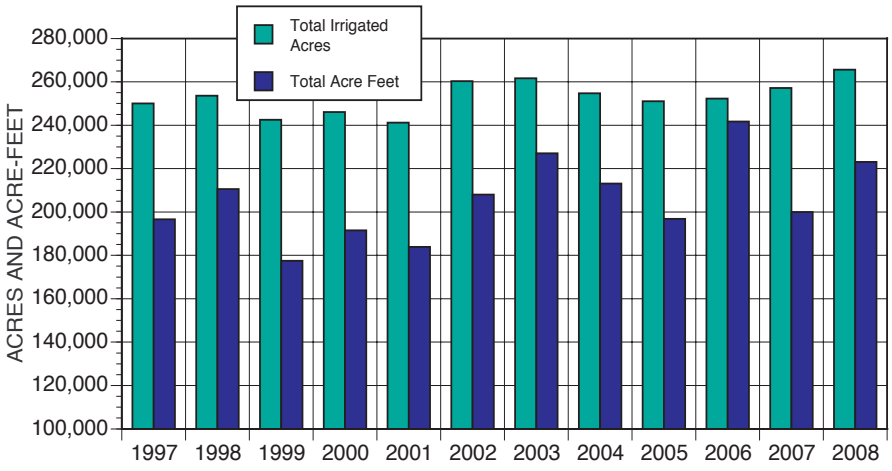
The Water Appropriation Division was also asked to assist and advise the public on the availability of water for all purposes of use. Considerable time and resources were expended to provide technical assistance for the development of water supplies for oil field development (brine dilution and hydro-fracturing). Study areas included the Killdeer, Shell Creek, Tobacco Garden, Fox Hills, and Tongue River/Sentinel Butte Aquifers.

Research, Studies, and Reports

During the 2007-2009 biennium, the division was involved in several studies that are in progress. Descriptions of these studies follow.

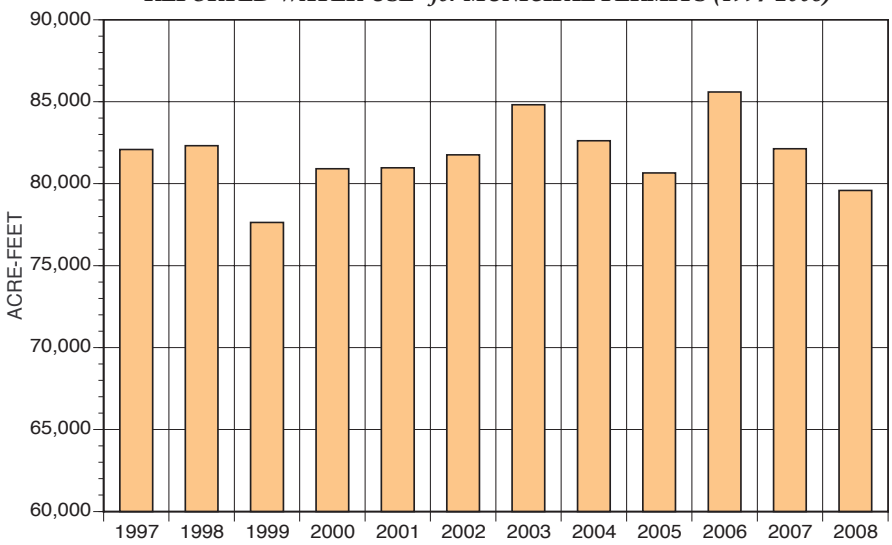
• During the spring of 2007 a ground water modeling study of the Oakes Aquifer was initiated to evaluate pending irrigation and industrial (ethanol production) water permit applications in the Oakes Aquifer. Data verification and data entry into the 4-D database has been completed. A report will be prepared during

IRRIGATED ACREAGE and ASSOCIATED WATER USE* (1997-2008)



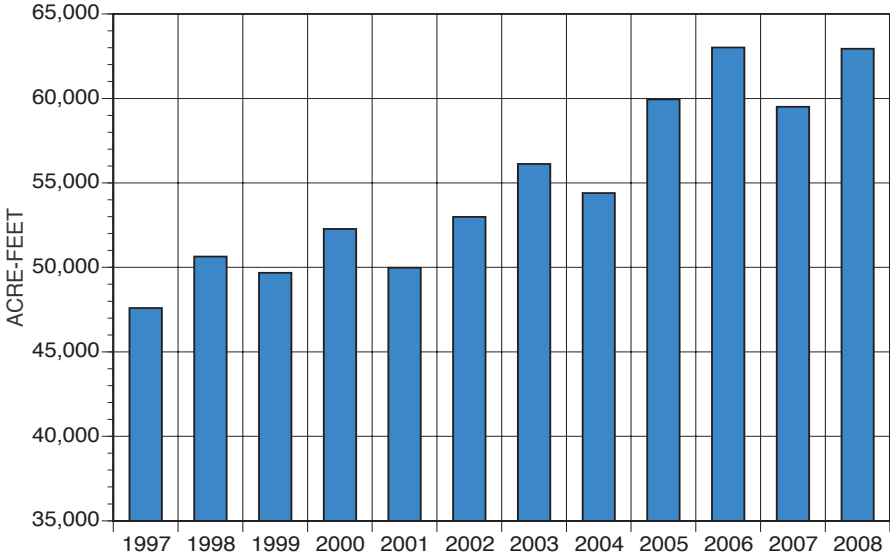
**Includes irrigated acres and associated water use from Montana points of diversion and Oakes Irrigation Test Site.*

REPORTED WATER USE* for MUNICIPAL PERMITS (1997-2008)



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

REPORTED WATER USE for INDUSTRIAL PERMITS (1997-2008)



Water Permit Summary
July 1, 2007 - June 30, 2009

WATER USE	ACRE-FEET
Irrigation	
Applications filed: 58	
Acres requested: 17,045	
Acres granted: 4,920	
Water granted (29 permits)*	7,485
Ground water	4,503
(3,158 acres)	
Surface water	2,982
(1,762 acres)	
Flood Control	
Applications filed: 0	
Industrial	
Applications filed: 69	
Water granted (60 permits)*	12,904
Livestock	
Applications filed: 3	
Water granted (1 permit)*	5
Storage granted (1 permit)*	20**
Municipal	
Applications filed: 7	
Water granted (6 permits)*	5,381
Recreation, Fish, and Wildlife	
Applications filed: 12	
Storage granted (14 permits)*	532**
Water granted (14 permits)*	331
TOTAL Applications Filed: 146	
TOTAL Water Granted	**26,106**

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

***Stored water is not included in the number for "TOTAL Water Granted" because it is non-consumptive water use.*

the winter of 2009-2010.

• The Water Commission participated in a cooperative ground water study with Cass Rural Water Users to evaluate the potential for a large industrial (ethanol production) ground water withdrawal from the Sheyenne Delta Aquifer south of Leonard. Fieldwork was completed during the winter of 2006-2007. Preparation of the written report was deferred to deal with the backlog of water permit applications. A North Dakota Ground Water Studies report will be completed during the winter of 2009-2010.

• A comprehensive ground water investigation of the north Kidder Aquifer complex was initiated in 2006. The investigation includes a modeling phase. The purpose of the study is to provide a basis for action on pending water permits for irrigation. It is anticipated that the study will be completed during the winter of 2009-2010. Action has been taken by the State Engineer on some pending water permit applications when feasible prior to completion of the model study.

• A computer model of the Little Muddy Aquifer was developed to evaluate pending irrigation water permits for ground water. Given the hydraulic connection between the Little Muddy Aquifer and the Little Muddy River and that there are prior appropriators in both the river and aquifer, a computer model was required to evaluate this complex hydrogeologic setting. Based on the results of the modeling study, action on five pending water permit applications was taken in January 2008.

• A computer model of the Page Aquifer was initiated to evaluate pending irrigation water permit applications for ground water. The model is still in the developmental stage and is targeted for completion during the winter of 2009-2010.

• A comprehensive investigation of the interaction between the Brightwood, Milnor Channel, and Hankinson Aquifers was initiated in 2006 to assess the availability and quality of ground water in the Hankinson area. Applications for the appropriation of large amounts of water for the proposed ethanol plant required a more complete understanding of the interaction of these aquifers through the construction and implementation of a computer ground water flow model. A particle tracking and capture zone analysis was implemented to address concerns with regard to potential changes in water quality that could occur in the future. The model was used to predict potential drawdown effects and time of travel in the ground water flow system. The model results provided the basis for issuance of an industrial permit on October 5, 2007 for an annual ground water appropriation of 1,742 acre-feet, at a maximum pumping rate of 2,430 gallons per minute.

• A computer model of the McVille Aquifer was developed during the 2007-2009 biennium to provide the basis for evaluating a water permit application for a proposed ethanol plant in the city of Lakota. Based on the model study, an annual appropriation of 500 acre-feet of ground water, at a maximum pumping rate of 750 gallons per minute, was approved for the proposed ethanol plant on July 23, 2008.

• An analytic model of the Buford-Trenton Aquifer was developed to provide the basis for evaluating a water permit application for a proposed ethanol plant near Trenton. Based on the analytic model, an annual appropriation of 1,129.2 acre-feet, at a maximum pumping rate of 700 gallons per minute, was approved for the proposed ethanol plant on November 27, 2007.

• A site specific ground water investigation of the proposed new well-field for the city of Devils Lake was continued during the 2007-2009 biennium. The investigation is part of a cooperative agreement with the city, which involved the installation of nested piezometers at strategic

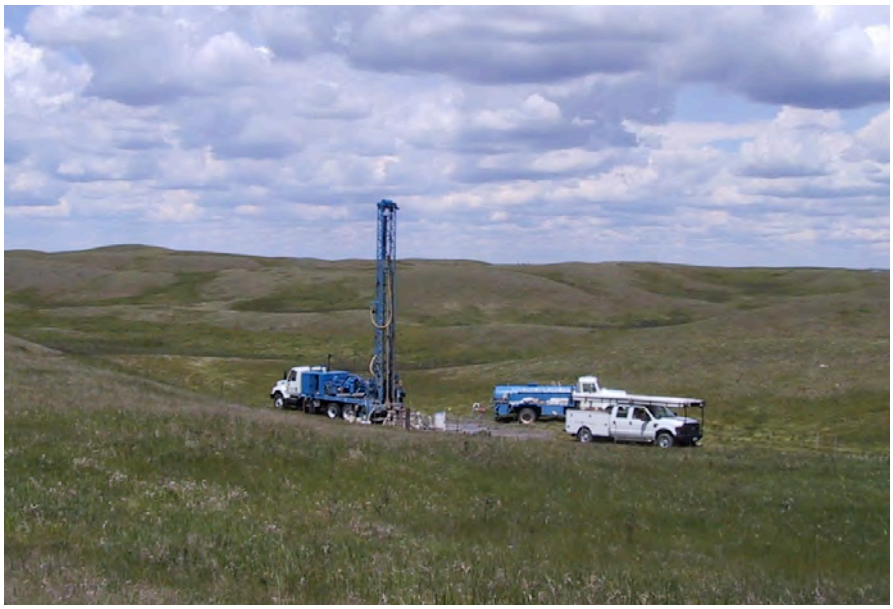
locations where both water level and water chemistry data were collected. An aquifer test was performed at the site and will assist the city in the design of the well field that will provide the water supply from the Spiritwood Aquifer west of Tolna. Water chemistry data collected will provide a better understanding of the origin of the low-TDS, low-hardness water that occurs in this area, and the potential for water quality change in the future, after the city begins pumping.

• Annual reviews of nitrogen occurrence in the Karlsrhue Aquifer were made in February 2008 and March 2009. Reports were submitted to the North Dakota Department of Health.

• The Water Appropriation Division entered into a cooperatively funded stream flow statistics study with the USGS. The project will develop the North Dakota extension of a nationally developed application known as Stream Stats. The North Dakota application will be able to provide hydrologic information that can be accessed on-line to provide scientifically defensible stream data in a uniform and non-biased manner. The project will be completed during the 2009-2011 biennium.

• The Water Appropriation Division entered into a cooperatively funded surface-water quality study with the USGS. The study will evaluate water-quality sampling programs and sulfate standards for stream classes and designated areas throughout North Dakota. The study will be completed during the 2009-2011 biennium.

• The Water Commission allocated a one-year matching fund of up to $13,850 in 2007-2008 and 2008-2009, for North Dakota university research that is federally funded through the North Dakota Water Resource Research Institute. Matching funds were for research focused on water resource issues. They were to be used for funding graduate student stipends and for research supplies and equipment.



State Water Commission's drilling rig.

• The International Souris River Board (ISRB) assigned the Hydrology Committee (HC) to examine methods to determine the diversion of flow at Rafferty and Alameda Reservoirs, and to recommend a preferred method to the ISRB. The Water Appropriation Division is representing the State Engineer on the HC. This project is ongoing.

• The ISRB has appointed a hydrologist from the Water Appropriation Division to be the U.S. Co-Secretary to the ISRB and to prepare an annual report to the International Joint Commission.

• A focused sampling regime of the major public water supplies from ground water in Grand Forks County was continued during the 2007-2009 biennium. The four major public water supplies (Grand Forks-Traill Rural Water, Tri-county Rural Water, Agassiz Rural Water, and the city of Larimore) obtain their water from the Inkster and Elk Valley Aquifers. Twenty-seven wells were sampled two times per year for an in-depth monitoring program, which began several years ago. This was done to detect any seasonal or long-term trends with respect to water quality changes - specifically nitrate.

• Monitoring the Forest River Colony Artificial Recharge Project was continued during the 2007-2009 biennium. The project involves pumping water from the Forest River during high flow times in the spring into a basin overlying the Inkster Aquifer. Water is withdrawn from the aquifer later in the season for irrigation purposes. Without artificial recharge, the aquifer would not be able to support the number of acres being irrigated. Mandatory sampling and water level monitoring protocols are given to the permit holder each year before artificial recharge begins. In addition, the colony has filed a new water permit application to irrigate more acres and expand the artificial recharge facilities. Draft reports entitled, "The Planning, Construction, and Operation of an Aquifer Recharge and Recovery Infiltration Basin in Grand Forks County, North Dakota;" and "Retention of Aquifer Recharge and Recovery Water in a Shallow, Unconfined Aquifer: Simulation of a Basin Recharge and Recovery Facility in Grand Forks County, North Dakota," were prepared and will be completed during the 2009-2011 biennium.

SWC's Appropriation Division constructs a weir to measure the rate of water discharge from a flowing drill hole.

• The demand for ground water from the Fox-Hills Aquifer has increased in response to oil field development (brine dilution, hydrofracturing, and water flooding). The Fox-Hills Aquifer is an important ground water source for ranchers in western North Dakota. A flowing well/pressure head inventory was completed in the Little Missouri, Missouri, and Knife River valleys during the summer of 2008. A comprehensive report on the status and trends of water levels in the Fox-Hills Aquifer was completed on June 26, 2009. This report provided, and will continue to provide, the basis for action by the State Engineer on pending water permit applications from the Fox-Hills Aquifer in these areas.

• As mandated by the 2007 legislature, the Water Appropriation Division completed a study entitled, "Potential Effects of Subsurface Drainage on Water Appropriation and the Beneficial Use of Water in North Dakota." (Water Resource Investigation No.45)

• The Water Appropriation Division provided $13,283 to North Dakota State University to help fund a study entitled, "Feasibility of the Use of Tile Drainage for Subsurface Irrigation in the Red River Valley and its Impact on Soil Chemical and Physical Properties." In addition, the Water Appropriation Division installed the ground water monitoring well network required for the study.

• An annual report on water movement in Tolna Coulee was prepared and provided to the Devils Lake Joint Board in December 2008.

• The Water Appropriation Division cooperates with the North Dakota Department of Health in reviewing ground water aspects of landfill applications and with the State Public Service Commission in reviewing ground water aspects of coal mining permits and revisions. Written responses are provided to the Department of Health regarding the suitability of locations for the proposed landfill uses and to the Public Service Commission regarding the accuracy and completeness of supporting information and ground water monitoring plans.

Data Management

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

Agency Representation

The Water Appropriation Division represents the State Engineer and the State Water Commission on state, regional, and national natural resource organizations. Members of the division have provided soils, ground, or surface water assistance in meetings or reviews pertaining to the following: Section 319 Task Force; Working Committee of the State Pesticide in Ground Water Protection Plan; Technical Committee of the State Pesticide in Ground Water Protection Plan; Northern Great Plains Management Consortium; North Dakota Board of Water Well Contractors; Midwest Ground Water Conference; North Dakota Water Resources Research Institute; North Dakota Public Service Commission Mining Plans; North Dakota State University Extension Irrigation Workshops; Red River Valley Water Supply Project; and the International Red River Board (for discussion on water appropriations and naturalizing flow of the Red River).

Economic Development

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

Water Development Division

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

• Preparing engineering and feasibility reports and designs for the construction, maintenance, and major repair of water resource projects;

• Reviewing and making recommendations on permit applications for drains, dikes, dams, and sovereign lands;

• Providing technical assistance to water resource district boards;

• Inspecting and reporting on the safety of dams;

• Assisting communities in practicing floodplain management through the National Flood Insurance Program;

• Administering FEMA's Map Modernization Project;

• Providing joint coordination of the Municipal, Rural, and Industrial Water Supply Program;

• Management and operation of the Devils Lake Outlet project;

• Managing the design, construction, and operation of the Southwest Pipeline Project (SWPP); and

• Managing the design and construction of the Northwest Area Water Supply (NAWS).

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

Regulatory

During the 2007-2009 biennium, the Regulatory Section processed 32 applications for permits to construct or modify dams, dikes, diversion ditches, or other water control facilities. The section also processed 46 wetland creations, 69 wetland restorations, 58 sovereign land permit applications, and 147 applications for permits to drain, of which 99 were for tile drain systems. In addition, the engineering staff provided assistance with the environmental reviews coordinated by the Planning Division, addressed several appeals of water resource district decisions, and dealt with numerous water-related complaints from around the state.

Staff members also represented the agency at a variety of technical meetings held by such groups as the: U.S. Army Corps of Engineers, NRCS State Technical Committee, NRCS Interagency Watershed Committee, Association of Soil Conservation Districts, North Dakota Soil Conservation Committee, and the Natural Resources Trust.

Three staff members work with Federal Emergency Management Agency (FEMA) funded programs within the Regulatory Section. These programs are the Map Modernization Management Support (MMMS) program, and the Community Assistance Program (CAP). The Flood Mitigation Assistance (FMA) program was also under the Regulatory Section for some time, but in August 2008, the FMA program was transferred to North Dakota's Department of Emergency Services.

The MMMS Coordinator manages another FEMA program called Map Modernization, which was initiated in federal fiscal year (FFY) 2005 to update and convert existing Flood Insurance Rate Maps (FIRMs) of the National Flood Insurance Program (NFIP) to digital versions (DFIRMs). In FFY 2009, the program transitioned into Risk MAP, which will continue the work initiated under Map Modernization and also include more outreach activities to be determined by FEMA.

The MMMS Coordinator oversees the selection of engineering consultants chosen annually to do the work tasks of FIRM digitization and subsequent contract management. In FFY 2008, $875,000 was secured in funding to perform countywide DFIRM projects in McLean, Hettinger, Stutsman, and Bowman Counties. In FFY 2009, $1.3 million was made available for a countywide DFIRM project in Slope County and map maintenance activities in Burleigh, Morton, and Pembina Counties.

Two staff members work with the 75 percent FEMA funded CAP and FMA programs, which compliment the National Flood Insurance Program (NFIP). Through CAP, the floodplain management staff assists over 300 communities with administration of their floodplain management responsibilities. Each community designates an individual as a floodplain administrator to oversee floodplain development within their identified floodplains. State staff work closely with those individuals to provide technical assistance through telephone and correspondence, visits to communities directly, as well as conducting periodic training workshops. The NDCC Chapter 61-16.2 also outlines state minimum floodplain standards related to the NFIP that communities must follow.

Staff also completed about 1,000 floodplain determinations for home mortgages under a cooperative agreement with the Bank of North Dakota.

Investigations

The Investigations Section continued to devote a large share of its staff time and resources to Devils Lake flood-related issues.

Significant flooding has occurred

throughout the Devils Lake Basin since 1993. The level of Devils Lake rose over 27.5 feet from an elevation of 1,423.2 feet above mean sea level (amsl) on July 1, 1993, to a new record elevation of 1,450.72 feet amsl on June 27, 2009.

To start the 2007-2009 biennium, the elevation of Devils Lake was 1,447.78 feet amsl. During the previous 2005-2007 biennium, Devils Lake filled Stump Lake, so the two were essentially at the same level since that time. By the end of the 2007-2009 biennium, the elevation of Devils Lake was 1,450.63 feet amsl, an increase of 2.85 feet. As a result of this elevation change, Devils Lake and Stump Lake (combined) increased in volume by 445,105 acre-feet, and in area by 23,511 acres.

Throughout the 2007-2009 biennium, the Water Commission continued to operate the Devils Lake outlet within the constraints of required permits. During the 2007 operating season, the outlet ran for 38 days, removing 298 acre-feet of water. In 2008, the outlet ran for 80 days, and removed 1,241 acre-feet of water. And in 2009, the outlet ran for 162 days, and removed 27,500 acre-feet of water.

In 2009, operation of the Devils Lake outlet was changed significantly in two ways, and work began on a third change that will take effect in 2010. All of the changes were requested with the intent of increasing outlet discharges. The first change was initiated by a court ruling in a Florida case that found that water to water transfers do not need a Section 402 Pollutant Discharge Elimination System permit. This led the Water Commission to request that the North Dakota Department of Health terminate the permit and allow operation of the outlet based upon Sheyenne River water quality standards. The Health Department approved this request on June 25, 2009. The second change in operations was requested from the Health Department for a modification of Sheyenne River sulfate standards above Baldhill Dam, from 450 mg/l, to 750 mg/l, while the Sheyenne River below Baldhill Dam continues to maintain a sulfate standard of 450 mg/l. A decision on this request was still pending at the time this publication was developed.

The Investigation Section also worked in cooperation with several other state and federal agencies at the State Emergency Operations Center (SEOC) and in the field in response to the extensive spring floods of 2009. During that time, the SEOC was at full activation, functioning 24 hours a day, seven days a week, for 37 days, from March 23 to April 28, 2009. Investigations staff were actively engaged in monitoring and response efforts during the entire 2009 flood crisis.

The Investigation Section provided a great deal of the continuing education required for staff members' registration as Professional Engineers. The section also conducted hydrologic studies for Emergency Action Plans for Mott Watershed Dam, Dead Colt Creek Dam, and McGregor Dam. The section also updated the hydrology and dam break analysis for Dead Colt Creek Dam.

Design and Construction

During the 2007-2009 biennium, the State Water Commission's construction crew conducted repairs and modifications to water resource structures throughout the state.

Tolna Dam, Nelson County

This project was quickly advanced because of concerns about increasing seepage through the dam, exiting out the toe of the spillway. Work included constructing a new cutoff wall on the upstream side of the spillway to stop seepage coming through the spillway. The reservoir was lowered several feet with the low-level drawdown and

DAM SAFETY FORMAL INSPECTIONS

Name of Dam	County	Hazard
Beaver Creek Dam (Bc-20)	Steele	Significant
Big Coulee Dam	Towner	Significant
Bylin Dam	Walsh	High
Clausen Springs Dam	Barnes	High
Crown Butte Dam	Morton	Significant
Daub Dam	Oliver	Significant
Dead Colt Creek Dam	Ransom	Significant
Devils Lake Roads as Dams	Ramsey	N/A
Drayton Dam	Pembina	Significant
English Coulee Dam	Grand Forks	High
Erie Dam	Cass	Significant
Fort Ransom Dam	Ransom	Low
Jackman Coulee Dam 2	Burleigh	High
Lisbon Dam	Ransom	Significant
Maple River Dam	Cass	High
Maple River Dam (T-180)	Cass	High
Matejcek Dam	Walsh	High
Middle Br. Park River #5	Walsh	Significant
Mott Watershed Dam	Hettinger	High
Mount Carmel Dam	Cavalier	Significant
North Lemmon Lake Dam	Adams	Significant
Olson Dam	Pembina	High
Raleigh Dam	Grant	Significant
Renwick Dam	Pembina	High
Senator Young Dam	Cavalier	High
Square Butte Creek Dam 5	Oliver	High
Square Butte Creek Dam 6	Morton	Significant
Sweetbriar Creek Dam	Morton	High
Tolna Dam No. 1	Nelson	Significant
Upper Turtle River #9	Grand Forks	High

DAM SAFETY SITE VISITS

Name	County	Hazard
Antler Creek Dam	Bottineau	Low
Armourdale Dam	Towner	Low
Arnegard Dam	McKenzie	Low
Balta Dam	Pierce	Low
Baukol-Noonan Dam #1	Divide	Low
Beach Dam	Golden Valley	High
Beaver Creek Dam (BC-20)	Steele	Significant
Beaver Lake Dam	Logan	Low
Belfield RR Dam	Stark	Low
Beulah Flood Control Dam	Mercer	High
Big Coulee Dam	Towner	Significant
Blacktail Dam	Williams	Significant
Braddock Dam	Emmons	Low
Brown Dam	Barnes	Low
Bucephalia Dam	Foster	Low
Buffalo Springs Dam	Bowman	Significant
Burke's Dam	Hettinger	Low
Burlington City Park Dam	Ward	Low
Burlington Dam #1	Ward	Low
Burlington Dam #2	Ward	Low
Burlington Dam #3	Ward	Low
Bylin Dam	Walsh	High
Camel Butte Dam	Golden Valley	Significant
Cat Coulee Dam	Grant	Low
Cavalier City Dam	Pembina	Significant
Cedar Lake Dam GMA	Slope	Significant
Christine Dam	Richland	Low
Clausens Springs Dam	Barnes	High
Coleharbor Water Supply Dam	McLean	Low
Cottonwood Creek Dam	LaMoure	Significant
Crown Butte Dam	Morton	Significant
Crystal Water Supply Dam	Pembina	Significant
Danielson Dam	Morton	Significant
Danzig Dam	Morton	Significant
Daub Dam	Oliver	Significant
Davis Fish Dam	Slope	Low
Dead Colt Creek Dam	Ransom	Significant
Des Lacs City Dam	Ward	Low
Drayton Dam	Pembina	Significant
East Broadway Dam	Stark	Low
Ellendale Water Supply	Dickey	Significant
Enderlin Park Dam	Ransom	Low
English Coulee Dam	Grand Forks	High
Epping Dam	Williams	Significant
Erie Dam (Brewer Lake)	Cass	Significant
Fargo 12Th Ave. N. Dam	Cass	Low
Fargo 4Th St South Dam	Cass	Significant
Fargo Dam #2	Cass	Low
Flasher Dam	Morton	Significant
Fort Ransom Dam	Ransom	Low
Froelich Dam	Sioux	Low
Garrison Dam	McLean	High
Glen Ullin RR Dam 1	Morton	Significant
Glen Ullin RR Dam 2	Morton	Significant
Golden Lake Dam	Steele	Low
Grafton RR Dam	Walsh	Low
Grand Forks Riverside Park	Grand Forks	Significant
Green Lake Outlet Control	McIntosh	Low
Harvey Dam	Wells	Significant
Heart Butte Dam	Grant	High
Hickson Dam	Cass	Low
Hillsboro Dam	Traill	Low
Hoskins Lake Dam	McIntosh	Low
Hovde Dam	McKenzie	Low
Hunter Dam	Cass	High
Indian Creek Dam	Hettinger	Significant
Jackman Coulee Dam 2	Burleigh	High
Jamestown Ice House Dam	Stutsman	Low
Karey Dam	Hettinger	Low
Kathryn Dam	Barnes	Low
Kota Ray Dam	Williams	Low
Kulm-Edgeley Dam	LaMoure	Low
Lake Metigoshe	Bottineau	Low
Lake Tobiason and Diversion	Steele	Low
Lamoure City Dam	LaMoure	Low
Lisbon Dam	Ransom	Significant
Long Creek Dam	Divide	Low
Magnolia Dam & State GMA	Cass	Low
Maple River Dam	Cass	High
Maple River Dam (T-180)	Cass	High
Maple River Nwr 1	Dickey	Low
Maple River Nwr 2	Dickey	Low
Mayville Dam 2	Traill	Low
McGregor Dam	Williams	High
McVille Railroad Dam	Nelson	Significant
Memorial Park Dam	LaMoure	Low
Middle Branch Park River #5	Walsh	Significant
Minot Water Supply Dam	Ward	Significant
Minto Dam	Walsh	Low
Mirror Lake Dam	Adams	Significant
Morrison Dam	Pembina	Low
Mount Carmel Dam	Cavalier	Significant
ND No Name 276	Mountrail	Significant
ND No Name 299	Mercer	Significant
Neideffer Flood Control Dam	Burleigh	Low
New Rockford Rr Dam 1	Eddy	Low
Niagara RR Dam #1	Grand Forks	Low
Niagara Twp. Dam #2	Grand Forks	Low
Nieuwsma Dam	Emmons	Significant
North Golden Lake	Steele	Low
North Lemmon Lake Dam	Adams	Significant
Northgate Dam 2	Burke	Significant
Nygren Dam	Morton	Low
Odland Dam	Golden Valley	Low
Painted Woods Lake	McLean	Low
Pelton Dam; Craig 1	Dunn	Significant
Pelton Dam; Craig 2	Dunn	Significant
Pembina City Dam	Pembina	Significant
Pheasant Lake	Dickey	Significant
Portland Dam	Traill	Low
Queen City Dam	Stark	Significant
Raleigh Dam	Grant	Significant
Regent Dam - Spring Creek Dam	Hettinger	Low
Rush Lake Dam	Steele	Low
Sarnia Dam	Nelson	Low
Scophammer Dam 1	Renville	Low
Sellie's Dam	Wells	Low
Sheep Creek Dam	Grant	Low
Sheyenne Dam	Eddy	Low
Sheyenne River Div. Dam	Cass	Significant
Short Creek Dam 1	Burke	Significant
Silver Creek Dam	Nelson	Low
Silver Lake Dam	Sargent	Low
Siverton Dam	McKenzie	Significant
Smishek Lake Dam	Burke	Low
Soldiers Home Dam	Ransom	Low
Spring Lake Dam	Bowman	Low
Square Butte Creek Dam 6	Morton	Significant
Stanley Dam	Mountrail	Significant
Sussex Dam	Steele	Low
Swan Buffalo Det #12 (Absaraka Dam)	Cass	Significant
Sweetbriar Creek Dam	Morton	High
Sykeston Dam	Wells	Significant
Temvik Dam	Emmons	Low
Tioga Dam	Williams	High
Tolna Dam No. 1	Nelson	Significant
Ueland Dam	Griggs	Low
Valley City Mill Dam	Barnes	Significant
Valley City Park Dam	Barnes	Significant
Vigness Dam	Walsh	Low
Wakopa Dam	Rolette	Low
Warsing Dam	Eddy	Low
Welk Dam	Emmons	Low
White Earth Dam	Mountrail	Significant
Wild Rice Dam	Cass	Low
Wilson Dam	Dickey	Low
Wolf Butte Dam	Adams	Low
Wyard Dam	Foster	Low
Yanktonai Dam	McLean	Significant

the approach channel was excavated. Exposed seepage paths were sealed beneath the weir, and a bentonite/clay cut-off wall was constructed by trenching approximately 12 feet. Then a bentonite mat was used to cap the approach channel and the top of the cut-off wall up to the weir face. Rock cover was reestablished on the approach channel, and the project was completed ahead of schedule and under the estimated budget.

Sheyenne Dam, Eddy County

Sheyenne Dam is used for recreational purposes and is also valuable to local farmers, ranchers, and businesses. Sheyenne Dam was originally built in 1936, and was in poor condition. Several items needed repair to prevent further deterioration of the dam. The project included removing the existing concrete cap, which was damaged, and partially missing, and constructing a new concrete cap over the weir structure. The existing sheetpiling on the abutments, which was damaged, was cut off, and the abutments were protected from erosion with rock. Rock riprap was added downstream of the low head dam, which acted as a fish passage, and also eliminated the dangerous undertow previously present. This project required over 4,000 cubic yards of rock and gravel. Project costs were about $100,000, shared by the Game and Fish Department, the Water Commission, and Eddy County Water Resource Board.

Green Lake, McIntosh County

During 2008 spring inspections, the Water Commission's inspection crew identified problems with the Green Lake outlet control structure. Only weeks later, the Water Commission was contacted by the McIntosh County Water Resource District about the same concerns. It appeared that ice had damaged the sheet pile weir causing it to deform, rotate, lift, and separate at one of the joints. Ice did not make direct contact with the weir while the lake was frozen, but it was suspected that high winds pushed ice up against the weir after breaking up, causing the damage.

A project was approved to repair the weir by installing a new PZ27 sheet pile weir on the upstream side of the existing weir, and pouring concrete between the two. Rock protection was added on both the upstream and downstream sides of the structure. The old weir was straightening and cut to the original 1973 elevation.

Odland Dam, Golden Valley County

Odland Dam is an old rubble masonry weir that has been gunited several times, most recently in the early 1980s. The gunite was spalling and abutment drains had buildup material covering the outlets.

The Golden Valley County Water Resource District requested a project with the Water Commission's construction crew to repair the spillway weir by removing the existing spalling surface and wire mesh and resurfacing with new gunite. Abutment drains were located and cleaned and extended to allow flow.

Nieuwsma Dam, Emmons County

Rehabilitation of Nieuwsma Dam began in June 2007. Work included a new concrete spillway apron, gunite spillway face, embankment repair, and a downstream plunge pool. Work was completed in August 2007. Project costs were close to the estimated $83,000, and were shared between Emmons County Water Resource District, the Game and Fish Department, and the Water Commission.

Enderlin Park Dam, Ransom County

This project was mostly completed in 2006, but because of the onset of winter, the project was suspended for the season. Therefore, some minor repairs and additional rock were added in July 2007, after spring runoff and heavy early summer rains.

Wakopa Dam, Rolette County (319)

The Game and Fish Department requested assistance on a repair of the emergency spillway at Wakopa Dam.

After looking at repair options and associated costs the Water Commission's design team came up with a cost effective solution. This would be to repair the erosion in the emergency spillway, and form a channel downstream of the roadway where erosion had already cut a preferred path. The project had some complications because of the road and steep grade downstream, but it was determined the erosion could be controlled with a rock channel and vigilance on keeping the principle spillway unplugged. This would not decrease the capacity of the emergency spillway, but help pass small flows in the emergency spillway without the erosion damage. The estimated project cost of the work was $38,000, which was shared by the Game and Fish Department and Water Commission.

McGregor Dam, Williams County

An inspection during the summer of 2006 revealed a hole on the downstream slope of the dam above the outlet of the principle spillway pipe. After further investigation with a remote inspection camera, the source of the problem was determined to be the deterioration of the air vent above the stilling basin section of the principal spillway conduit.

The repair involved replacement of the air vent pipe, and repair of the sinkhole in the embankment. The estimated cost for the work was $4,000, which primarily included labor and equipment costs. The cost was shared between the Williams County Water Resource District, the Game and Fish Department, and the Water Commission.

Skyrud Dam, Walsh County

A 24-inch internal expansion band pipe seal was purchased during a 2006 project but was not installed until late summer of 2007 to wait for favorable weather and water discharge conditions. The band was installed to seal a separated joint, which was 20 feet from the inlet. The pipe had pulled apart just enough to allow embankment material to fall into the pipe, causing a small sinkhole above. The internal expansion band was secured and should prevent any additional material from entering the pipe as long as it stays in place.

Spring Creek at Zap, Mercer County

This was a bank stabilization project of the right bank of Spring Creek in Zap. The project area was the right bank from the Third Avenue Bridge, extending approximately 200 feet downstream, directly across from a 1989 bank stabilization project on the left bank. The bank was stabilized by shaping the bank to a slope of 1.5 to 1, and placing rock rip-rap to protect the bank from erosion. Removal of approximately 50 railroad piles from an old railroad bridge that remained in place along the bank and in the stream channel just upstream of the project site was also completed. The work was completed under the estimated cost of $60,000, and was shared equally between the Mercer County Water Resource District and the Water Commission.

Cedar Lake Dam, Slope County (353)

On April 4, 2009, the Water Commission was notified of a breach at Cedar Lake Dam. Game and Fish Department staff confirmed that the breach was in the south dike, not the main embankment. This breach caused a drop in the lake level a couple feet below the normal pool level but was in a location were the discharge could flow to Cedar Creek in a drainage channel without causing damage.

Slope County and their water resource board, along with the Game and Fish Department requested the Water Commission's assistance with the repair. The Game and Fish Department is the owner of the dam and surrounding land, however, access to the breach had to be through private land.

The Water Commission completed the repair in August 2009. Repairs to the south dike were made by replacing the eroded area with borrow from the adjacent landowner, and repairing the rock protection on the upstream side.

Project costs for labor and equipment were $30,000, which were spilt between the Game and Fish Department and the Water Commission. Material costs were paid for by the Slope County Water Resource Board, including borrow and rock used for the repair.

Cottonwood Creek Dam, LaMoure County (1515)

On the morning of April 13, 2009, water began flowing over the emergency spillway at Cottonwood Creek Dam for the second time that spring. The first time, water flowed 1 to 1.5 feet deep through the emergency spillway and lasted for about a week when the spring runoff stopped because of cold weather. The second runoff lasted more than three weeks at depths of 3 to 3.5 feet in the emergency spillway. This caused significant erosion to the emergency spillway channel, causing concerns of a possible dam breach if the erosion reached the reservoir. The Water Commission and many other local, state, and federal agencies/departments worked to stabilize the spillway during those three weeks. Repairs to the spillway were scheduled for completion in the fall of 2009. The Natural Resource Conservation Service developed the repair plans to return the dam to pre-flood conditions.

Sweetbriar Creek Dam, Morton County

August 2009 investigation work was completed to gather information to complete final design plans for seepage control and needed repairs to conduit and the stilling basin. Seven test pits were dug to collect soil samples and document water tables around the stilling basin and toe of downstream embankment. The stilling basin was also pumped out and

SWC Construction Crew used a track hoe to slow erosion of the spillway at Cottonwood Creek Dam by placing rip-rap.

excavations were done to examine footings and determine seepage paths. The repair project is scheduled for 2010, with an estimated cost of $950,000.

Discovery Farms Project

The Discovery Farms Project involves local, state, and federal natural resource agencies cooperating with working farm and ranch operations to implement best management practices to reduce environmental impacts – while maintaining farm profitability. North Dakota's Discovery Farms Project involves two cattle and grain operations near Underwood and Dazey, and a cropping operation with drain-tile fields near Embden. The Water Commission construction crew's role in the project was to assist with the construction of data collection shelters at each of the sites. The project is a cooperative effort between the U.S. Geological Survey, North Dakota State University, the Department of Health, the U.S. Environmental Protection Agency, and the Water Commission.

U.S. Geological Survey Gaging Stations, Statewide

The Water Commission's construction crew repaired several U.S. Geological Survey gaging stations throughout North Dakota. The work involved installation of orifice lines, installation of staff gages, removal of gage houses, installation of gage houses, and repairs to sheet pile control sections.

Municipal, Rural & Industrial Water Supply

In federal fiscal years 2008, and 2009, the Garrison Diversion Municipal, Rural, and Industrial (MR&I) water supply program received $51.4 million in federal grant funds for the development of water supply facilities in the state. Also received was a one-time, two-year appropriation of $32 million through the American Recovery and Reinvestment Act of 2009 (ARRA) under the state MR&I program in fiscal year 2009 and 2010. This brought the total received from the federal government to $285.7 million since the program was authorized in 1986.

The State Water Commission and the Garrison Diversion Conservancy District also provided funding toward project development. Since the program began, over $440 million in water system projects have been completed. In addition, the proposed Red River Valley Water Supply Project has an estimated cost of $700 million.

Projects that were allocated funds during federal fiscal years 2008 and 2009 included the All Seasons Rural Water System (City of Upham), city of Garrison, North Central Rural Water Consortium (South Benson), North Central Rural Water Consortium (Anamoose-Benedict), Northwest Area Water Supply, South Central Regional Water District Phase 1 and 2, Southwest Pipeline Project, Traill County Water District Phase 1, Tri-County Water District (city of Lakota Water Supply), and city of Williston Water System.

The State Water Commission also allocated $53.8 million from the state contract fund for the following projects: All Seasons Rural Water System (City of Upham); City of Devils Lake water system; McKenzie County Rural Water System II; North Central Rural Water Consortium (South Benson); North Central Rural Water Consortium (Anamoose-Benedict); Northwest Area Water Supply; city of Parshall water system; Red River Valley Water Supply Project; R&T Water System; South Central Regional Water District Phase 1 and 2; Southwest Pipeline Project; Traill County Water District Phase 1, 2, and 3; Tri-County Water District (city of Lakota); Walsh Rural Water Phase 1 and 2; city of Washburn water system; and city of Williston water system.

Red River Office

Located in West Fargo, the Red River office consists of one full-time position. During the 2007-2009 biennium, Red River office personnel coordinated the State Water Commission's activities in eastern North Dakota and provided:

- Technical assistance to the Red River Joint Water Resource District in pursuing flood control projects in the Red River watershed;
- Assistance with reconnaissance level studies of potential dams;
- Service as U.S. representative to the International Red River Board;
- Assistance to individual water resource boards on 19 water-related issues;
- Inspections on 27 projects that the State Water Commission had approved for cost-sharing; and
- Technical assistance on various committees that were formed as a result of the Red River basin's flooding problems.

These committees include: 1) the Flood Damage Reduction team for the Red River Basin Commission (RRBC), which serves as a technical committee for the RRBC for the development of various computer models; 2) technical committee for the RRBC Long Term Flood Solutions Study; 3) the hydrology committee for the International Red River Basin Board; 4) the Lower Pembina River Task Force Team for the International Red River Basin Board; 5) the technical committee for Pembina River Basin Advisory Board; and 6) various other groups.

Personnel have also represented the State Water Commission at meetings of the Red River Joint Water Resource Board, Pembina River Basin Advisory Board, Red River Basin Riparian Advisory Board, Sheyenne River Joint Water Resource Board, Lake Agassiz Water Authority Work Group, Upper Sheyenne River Joint Water Resource Board, and the Fargo-Moorhead Metropolitan Flood Risk Management Study.

Southwest Pipeline Project

At the beginning of the biennium, the Southwest Pipeline Project served as the water supply for Beach, Belfield, Carson, Dickinson, Dodge, Dunn Center, Elgin, Gladstone, Glen Ullin, Golden Valley, Golva, Halliday, Hebron, Hettinger, Manning, Medora, Mott, New England, New Hradec, New Leipzig, Reeder, Regent, Richardton, Scranton, Sentinel Butte, South Heart, Taylor, and Zap, as well as roughly 3,500 rural water customers.

Construction of the project continued to expand it as a regional water supply system during the 2007-2009 biennium. Work continued on the Medora-Beach regional service area, connecting nearly 400 rural users.

Rural water user memberships increased from 3,100 to 3,500 and contract users increased from 48 to 55. Sign up campaigns were held for the Oliver, Mercer, North Dunn Regional Service Area in late 2007, and the Preliminary Engineering Report was completed in late 2008 - paving the way for construction of the Oliver, Mercer, North Dunn regional service area to commence during the 2009-2011 biennium.

Capital repayment collected from July 2007 through June 2009 was $4,911,642. Of that amount, $2,778,878 was paid to the pipeline's trustee, Wells Fargo Bank, NA, to pay bondholders. The remaining $2,132,764 was deposited in the Resources Trust Fund.

Northwest Area Water Supply

At the start of the biennium, the NAWS Project was in its sixth year of construction, with a focus on the 45 miles of water line between Lake Sakakawea and Minot. The project was under a Federal Court injunction, but the Court had allowed work to continue on the High Service Pump Station in Minot and the pipeline projects to get to Berthold. In addition, the Berthold and Minot pipeline work had been awarded in April and May of 2007; the storage reservoirs along the Berthold pipeline had been bid in June 2007; and the 90 percent design review had been completed on the High Service Pump Station.

Ribbon-cutting for NAWS celebration at Berthold, August 2008.

An Environmental Impact Statement had been started to address the Federal Court's order for additional environmental review of the NAWS biota treatment and risk of pipeline breaks. The draft EIS was planned to be released to the public in August 2007. As part of the additional review on biota treatment, the State Water Commission had just completed a pilot plant study of raw and treated water quality sampling at Snake Creek Pumping plant and a draft of that report was being reviewed.

In the federal lawsuit with Manitoba, the state approached the Court and was granted permission to construct the entire northern tier of the NAWS project, which includes pipelines, pump stations, and reservoirs connecting the communities and rural water districts north of Minot. The Court allowed these projects to continue as they would not affect treatment decisions being examined in the Environmental Impact Statement. Missouri filed a separate lawsuit in the same Federal Court against the project and the Corps of Engineers. But, the Court later consolidated this lawsuit with the one from Manitoba. The Administrative Record was filed in March 2009, and a briefing schedule was set with documents being filed in Fall 2009.

The Final Environmental Impact Statement on water treatment was completed in December 2008. The Record of Decision was issued in January 2009. The preferred alternative was treatment with chlorine and UV disinfection at Max, North Dakota where the location is prior to the water pipeline crossing the basin divide. The estimated cost of treatment was $17.5 million.

Contracts with Minot were negotiated to provide an interim supply of water to Berthold. NAWS water rates for 2008 and 2009 were established. In August 2008, a celebration was held for the startup of the NAWS system providing water service to Berthold, Minot's North Hill Region, and North Prairie Rural Water District.

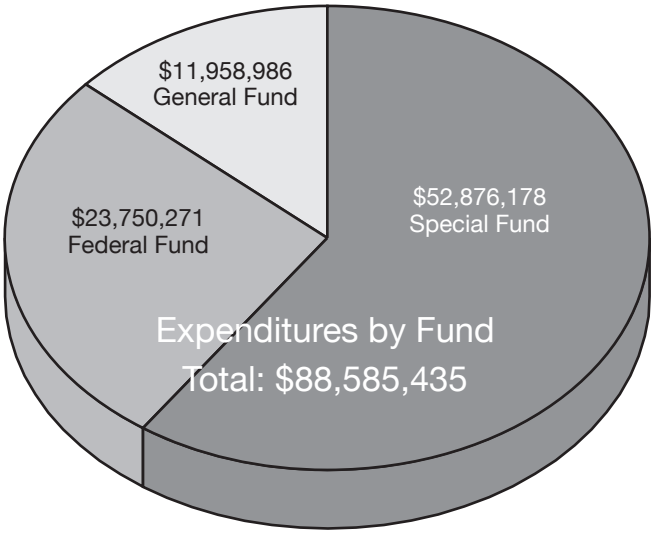
By the end of the biennium, $26.8 million in additional work had been completed, bringing the total to $67.9 million invested in the NAWS project. The last 15 miles of pipeline between Minot and Lake Sakakawea was completed. The 25 miles of pipeline, three pump stations, and two reservoirs from the Minot treatment plant to Berthold were completed. The 52 miles of pipeline, pump station, and million gallon reservoir for water service to Kenmare and the Upper Souris Water District were under contract. The 18 million gallon per day High Service Pump Station with 2 million gallon underground storage was under contact. The joint project for the 13-mile pipeline between the All Seasons water treatment plant near Bottineau to Gardena was under construction and near completion. The design work for the 62 miles of pipeline for the Mohall, Sherwood, and All Seasons area was 90 percent complete, and the design work was started for the 29 miles of pipeline to the Minot Air Force Base and Upper Souris system along highway 83. Also, design work was near completion for the Burlington-West River connection along the Berthold line.

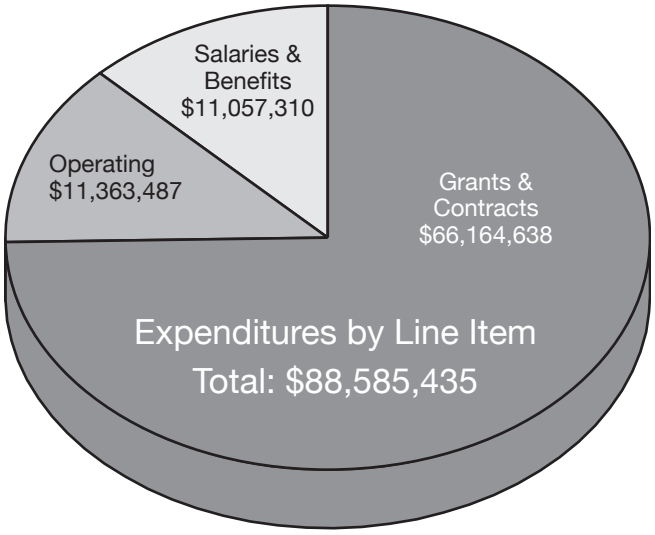
FINANCIAL INFORMATION

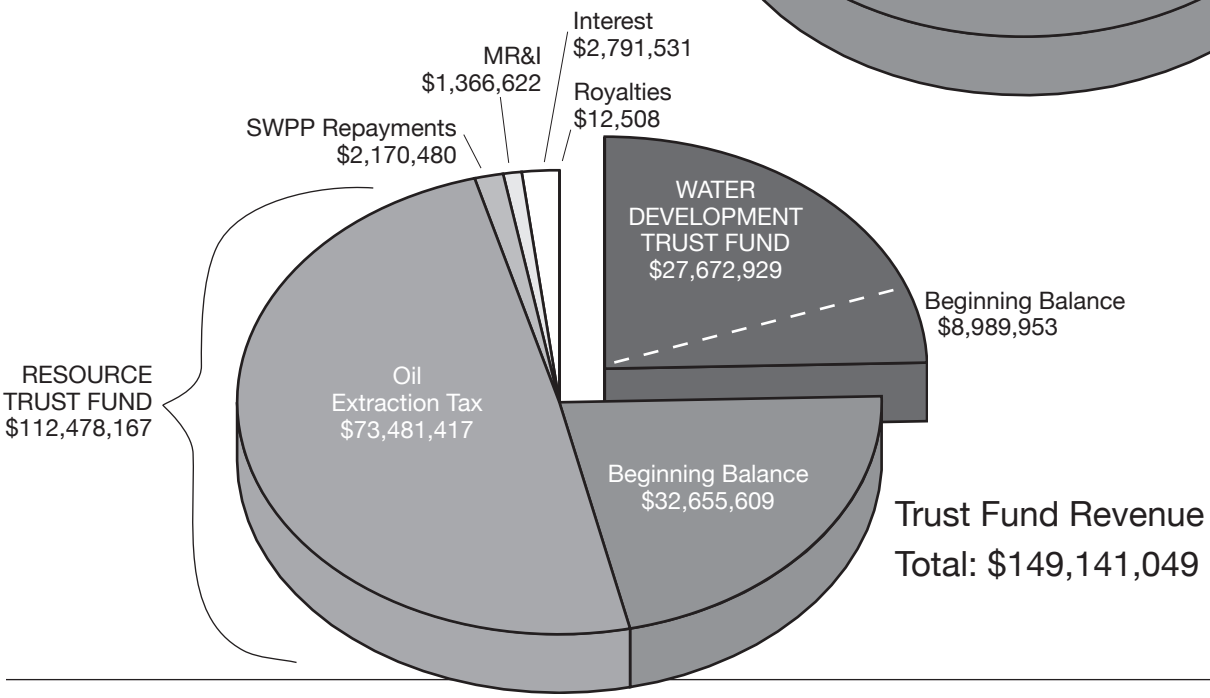
The following pages contain financial information summmarized in various formats. There are pie charts classifying the agency's expenditures by fund and by line item. There is a chart identifying expenditures by division and line item, and there is a detailed listing by object code.

The trust fund revenue pie chart on this page includes both the Resources Trust Fund and Water Development Trust Fund revenue. The remainder of the report addresses project and program obligations, completed projects, object expenditures, long-term debt, and resources available from the agency.

State Water Commission Appropriations
2007-2009 Biennium







State Water Commission

Program Budget Expenditures
for Biennial Period Ending June 30, 2009

AGENCY PROGRAM	SALARIES & BENEFITS	OPERATING EXPENSES	GRANTS & CONTRACTS	PROGRAM TOTALS
ADMINISTRATION				
Allocated	$1,533,818	$931,688	$0	$2,465,506
Expended	$1,532,433	$895,624	$0	$2,428,057
Percentage	100%	96%	0%	98%
PLANNING AND EDUCATION				
Allocated	$989,379	$186,511	$99,000	$1,274,890
Expended	$1,001,772	$161,051	$86,762	$1,249,585
Percentage	101%	86%	88%	98%
WATER APPROPRIATION				
Allocated	$2,817,362	$503,454	$970,000	$4,290,816
Expended	$2,851,502	$370,193	$1,055,306	$4,277,001
Percentage	101%	74%	109%	100%
WATER DEVELOPMENT				
Allocated	$4,336,444	$5,566,645	$225,000	$10,128,089
Expended	$4,188,316	$2,281,980	$336,564	$6,806,859
Percentage	97%	41%	150%	67%
ATMOSPHERIC RESOURCE				
Allocated	$778,396	$712,830	$4,354,430	$5,845,656
Expended	$722,881	$316,508	$1,473,043	$2,512,431
Percentage	93%	44%	34%	43%
SOUTHWEST PIPELINE				
Allocated	$397,990	$1,683,314	$6,621,834	$8,703,138
Expended	$316,299	$3,425,838	$9,200,069	$12,942,207
Percentage	79%	204%	139%	149%
NORTHWEST AREA WATER SUPPLY				
Allocated	$433,936	$3,810,088	$33,000,000	$37,244,024
Expended	$444,107	$3,912,294	$22,472,915	$26,829,315
Percentage	102%	103%	68%	72%
STATEWIDE WATER PROJECTS				
Allocated			$106,148,448	$106,148,448
Expended			$31,539,980	$31,539,980
Percentage			30%	30%
AGENCY TOTALS				
Allocated	**$11,287,325**	**$13,394,530**	**$151,418,712**	**$176,100,567**
Expended	**$11,057,310**	**$11,363,487**	**$66,164,638**	**$88,585,435**
Percentage	**98%**	**85%**	**44%**	**50%**

State Water Commission - Projects/Grants/Contract Fund - Program Obligations
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	CITY FLOOD CONTROL				
1907-01	Grand Forks	12/07/01	2,384,557	2,384,557	0
1907-03	Wahpeton	10/23/01	1,337,957	1,337,957	0
1928	Fargo/Southside Flood Control Prelim Eng	3/10/05	500,000	0	500,000
1927	Fargo/Ridgewood Flood Control Proj	6/22/05	2,084,750	0	2,084,750
	Subtotal City Flood Control	6,307,264	3,722,514		2,584,750
	MR&I				
	MRI ADVANCES				
2373-03	Ramsey-Grahams Island	10/23/01	16,269	16,269	0
2373-04	Lakota WS (Tri-Co WD)	7/17/07	208,000	89,865	118,135
2373-07	Williston Phase II	12/7/07	32,000	32,000	0
2373-09	South Central RWD (Phase I)	7/17/07	1,918,000	1,918,000	0
2373-09	South Central RWD (Phase II)	6/23/08	2,350,000	0	2,350,000
2373-11	Walsh Rural Water District Supply	7/17/07	16,000	16,000	0
2373-13	All Seasons Rural Water - (Upham)	7/17/07	128,000	0	128,000
2373-15	North Central Rural Water Consortium (S. Benson County)	12/7/07	916,000	0	916,000
2373-15	North Central Rural Water Consortium (Anamoose/Benedict)	6/23/08	3,295,000	0	3,295,000
2373-16	Traill Regional Rural Water (Phase I)	1/25/08	3,167,000	0	3,167,000
2373-16	Traill Regional Rural Water (Phase II)	6/23/08	2,411,500	273,752	2,137,748
2373-19	City of Washburn Water Supply	4/28/09	1,500,000	0	1,500,000
	MRI GRANTS				
2373-06	City of LaMoure	12/9/05	399,899	399,899	0
2373-17	City of Parshall	6/23/08	1,750,000	83,226	1,666,774
2373-18	Ray-Tioga Water Supply	12/17/08	4,200,000	0	4,200,000
	HB No. 1305 PERMANENT OIL TAX TRUST FUND				
2373-20	City of Stanley	6/23/09	350,000	265,555	84,445
2373-21	Burke, Divide, Williams Water District	6/23/09	985,000	0	985,000
2373-22	Ray & Tioga Water Supply Association	6/23/09	864,000	0	864,000
2373-23	City of Wildrose	6/23/09	593,000	0	593,000
	Subtotal MR&I		25,099,668	3,094,567	22,005,102
	IRRIGATION DEVELOPMENT				
1389	BND AgPace Program	10/23/01	513,182	318,743	194,439
AOC/IRA	ND Irrigation Association	7/17/07	100,000	100,000	0
	Subtotal Irrigation Development		613,182	418,743	194,439
	DEVILS LAKE BASIN DEVELOPMENT				
416-01	Devils Lake Basin Joint Water Resource Manager	6/8/07	52,000	39,924	12,076
416-02	City of Devils Lake Levee System Extension & Raise	12/6/02	1,624,202	0	1,624,202
416-05	Devils Lake Outlet Awareness Manager	6/8/07	30,000	28,819	1,181
416-07	Devils Lake Outlet	2/20/02	515,477	354,152	161,325
416-10	Devils Lake Outlet Operations	1/1/00	800,000	553,599	246,401
416-11	USGS DL Model Study	12/9/05	53,550	45,956	7,594
2373-14	City of Devils Lake Emergency Water Supply Project	5/9/07	4,553,000	4,553,000	0
1294	Nelson County Emergency Road Projects	8/11/05	14,490	14,490	0
1932**	Michigan Spillway Rural Flood Assessment Drain	8/30/05	126,409	5,698	120,711
1131*	Nelson County Central Hamlin Rural Flood Control	12/9/05	8,940	0	8,940
1131	Nelson County Channel Maintenance & Misc	3/22/06	29,578	23,165	6,413
	Devils Lake Subtotal		7,807,646	5,618,804	2,188,843
	FLOOD CONTROL				
300	Baldhill Dam Flood Pool Raise	4/30/98	227,004	134,172	92,832
849	Renwick Dam Rehabilitation	6/23/08	1,378,190	0	1,378,190
1878-02	Upper Maple River Dam Project Dev & Preliminary Eng	9/29/08	112,500	0	112,500
1878/1344	Maple River Dam Construction Project	2/4/92	611,235	374,819	236,416
	Subtotal Flood Control		2,328,929	508,991	1,819,938

Water Commission - Projects/Grants/Contract Fund - Program Obligations (cont.)
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	GENERAL WATER MANAGEMENT				
	Hydrologic Investigations				
331	Donna Bliss	1/1/00	420	420	0
331	Monte Dralle	1/1/00	420	420	0
637	UND Dept of Geology & Geological Eng. Visual MODFLOW	1/28/09	373	373	0
818	Judi Hintz	1/1/00	0	0	0
862	Arletta Herman	4/7/08	3,093	3,093	0
869	NDSU "Impact of Subsurface Drainage on Water RRB"	1/25/08	13,283	13,283	0
967	Mary Lou McDaniel	5/6/09	0	0	0
984	McHenry County, Eaton Irrigation District	4/20/09	2,837	2,837	0
989	US Geological Survey, US DOI, Surface-Water Quality Study	3/17/08	43,000	43,000	0
1400/1	Houston Engineering Water Permit Application Review	3/26/05	6,000	5,855	145
1400/2	Houston Engineering Water Permit Application Review	3/20/08	6,000	5,721	279
1400/3	Houston Engineering Water Permit Application Review	6/17/08	6,000	5,767	234
1400/4	Houston Engineering Water Permit Application Review	8/22/08	6,550	6,550	0
1400/5	Houston Engineering Water Permit Application Review	10/29/08	6,042	6,042	0
1400/6	Houston Engineering Water Permit Application Review	2/10/09	6,004	6,004	0
1400/7	Houston Engineering Water Permit Application Review	4/2/09	6,000	4,416	1,584
1400/8	Houston Engineering Water Permit Application Review	6/2/09	7,500	0	7,500
1690	Mary Lou McDaniel	5/6/09	4,620	4,620	0
1703	Neil Flaten	4/7/08	4,797	4,797	1
1707	Neil Flaten	4/7/08	3,561	3,561	0
1714	David Robbins	5/7/09	2,340	2,340	0
1761	Gloria Roth	5/6/09	1,071	1,071	0
1761	Fran Dobits	4/7/08	1,765	1,765	0
1393	US Geological Survey, US DOI, Hydrologic Survey General	3/17/08	32,802	32,802	0
1395A	US Geological Survey, US Dept. Of Interior 10/1/08-9/30/09	10/1/08	375,375	375,376	1
1395D	US Geological Survey, US Dept. Of Interior	10/1/06	14,850	14,850	0
1395	US Geological Survey, US Dept. Of Interior	10/1/07	364,375	364,375	0
1395	US Geological Survey, US Dept. Of Interior	10/1/07	15,300	15,300	0
	Subtotal for Hydrologic Investigations Obligations		934,378	924,637	9,741
	Remaining Hydrologic Investigations Authority		(54,378)		
	Hydrologic Investigations Authority Less Payments				
	Flood Mitigation Assistance Program				
1896-02	Flood Mitigation Program (2003) Walsh	10/8/02	524	0	524
1896-03	Flood Mitigtion Assistance Program (2005) Minto	1/0/00	15,077	0	15,077
	Subtotal for Flood Mitigation Assistance Program		15,601		15,601
	General Projects Obligated		11,129,071	3,162,899	7,966,172
	General Projects Completed		2,006,304	2,006,304	0
	Subtotal General Water Management		14,030,976	6,093,840	7,937,135
	SOUTHWEST PIPELINE				
1736	Southwest Pipeline Project	7/17/07	13,409,130	6,249,426	7,159,704
	NORTHWEST AREA WATER SUPPLY				
237-04	Northwest Area Water Supply	7/17/07	8,019,859	2,406,339	5,613,518
	RED RIVER VALLEY WATER SUPPLY				
1912	Red River Valley Water Supply	3/17/08	1,800,000	1,000,000	800,000
	MISSOURI RIVER MANAGEMENT				
1943	Missouri River Siltation Assessment Study	10/12/06	70,000	40,000	30,000
	WEATHER MODIFICATION				
	Weather Modification	8/23/08	525,000	525,000	0
TOTAL PROJECTS/GRANTS/CONTRACT FUND - PROGRAM OBLIGATION			**80,011,652**	**29,678,224**	**50,333,428**

Water Commission - Projects/Grants/Contract Fund - Project Obligations (cont.)
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	GENERAL PROJECT OBLIGATIONS				
249	2009 Mott Dam Emergency Action Plan	6/23/09	25,000	0	25,000
281	2007-09 Three Affiliated Tribes/Fort Berthold Irrigation Study	3/23/09	80,000	0	80,000
322	ND Water: A Century of Challenge	12/10/04	36,800	2,500	34,300
322	2009 Upper Sheyenne River WRB Administration	12/5/08	3,000	0	3,000
394	2007-09 Odland Dam Spillway Rehabilitation	8/25/08	16,700	0	16,700
420	Mirror Lake One-Foot Pool Raise	8/2/07	11,666	0	11,666
450	2007-09 Sykeston Dam 2008 Emergency Action Plan	11/25/08	7,840	0	7,840
528	2009 McGregor Dam Emergency Action Plan	6/23/09	25,000	0	25,000
560	2009 Blacktail Dam Emergency Action Plan	5/28/09	9,600	0	9,600
568	2008 Sheyenne River Snagging & Clearing Project	4/11/08	5,000	0	5,000
568	2009 Sheyenne River Snagging & Clearing Project	12/5/08	135,000	0	135,000
586	2009 Short Creek Dam Emergency Action Plan	5/28/09	9,600	0	9,600
620	2008 Mandan Flood Control Protective Works (Levee)	9/29/08	125,396	0	125,396
642-04	Sweetbriar Creek Dam Project	12/9/05	39,497	38,078	1,419
642-05	2007-09 Sweetbriar Creek Dam Project	3/6/09	683,400	0	683,400
662	2009 WCWRD'S Park River Snagging & Clearing Project	6/30/09	1,948	0	1,948
671	2007-09 Harvey Dam 2008 Emergency Action Plan	11/25/08	7,840	0	7,840
847	Maple River - Retention Study Rush River Joint WRD	8/15/02	25,000	0	25,000
847	2007-09 Swan Creek FC Diversion Ditch	6/23/08	1,963,167	398,703	1,564,464
928/988/ 1508	2008 SE Cass WRD Boise de Sioux, Wild Rice, & Antelope	6/23/08	60,000	0	60,000
985	2009 Kolding Dam Emergency Action Plan	5/29/09	9,600	0	9,600
988	SE Cass WRD Antelope Creek Eng Feas	10/12/06	40,000	0	40,000
1070	2008 Cass County Drain No. 14 Improvement Recon	2/25/09	175,577	0	175,577
1080	2007-09 Cass County Drain No. 27 Improvement Recon	10/24/07	94,197	0	94,197
1084	2008 Cass County Drain No. 32 Partial Improvement Recon	3/17/08	162,881	94,343	68,538
1088	2007 Cass County Drain No. 37 Improvement Recon	7/17/07	75,150	0	75,150
1093	2008 Cass County Drain No. 45 Extension Project	3/17/08	150,800	0	150,800
1140	Pembina County Drain No 11 Outlet Improvement	12/8/06	53,599	0	53,599
1155	2008 Pembina County Drain No. 42 Partial Impr. Recon.	3/17/08	67,070	62,391	4,679
1176	2008 Richland County Drain No. 2 Partial Improvement Recon.	3/17/08	35,102	29,311	5,791
1238	2007-09 Traill County Drain No. 19 Legal/Ext Outlet	6/24/08	2,000	0	2,000
1249	2008 Traill County Drain No. 34 Partial Improv. Recon.	3/17/08	500,000	244,371	255,629
1289	2007-09 Noxious Weed McKenzie County - Sovereign	10/24/07	33,732	26,485	7,247
1328	2007 Cass County Drain No. 23 Area Improvement	7/17/07	35,980	0	35,980
1334	Traill County Drain No. 38 Reconstruction	3/11/04	222,172	164,541	57,631
1401	International Boundary Roadway Dike Pembina	3/11/04	275,621	15,383	260,238
1413	2009 TCWRD Buffalo Coulee Snagging & Clearing Project	6/23/09	49,000	0	49,000
1438	2008 Mulberry Creek Drain Partial Improv. Phase II	3/17/08	61,920	15,104	46,816
1461	2008 Pembina River Area Bank Stabilization Project	12/5/08	24,307	0	24,307
1523	2008 Souris River Golf Course Area Bank Stabilization	9/29/08	136,499	104,887	31,612
1556	2009 Indian Creek Dam Emergency Action Plan	5/28/09	9,600	0	9,600

Water Commission - Projects/Grants/Contract Fund - Project Obligations (cont.)
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	GENERAL PROJECT OBLIGATIONS (Cont.)				
1572	Burnt Creek Floodway Diversion Channel	4/30/08	177,220	56,129	121,091
1591	Revision of Handbook ND Water Managers Proj	4/12/07	14,750	0	14,750
1625	High Water Mark Delineation Methods & Guidelines	10/24/07	100,000	45,952	54,048
1625	OHWM Delineations MT/ND Border Yellowstone & Missouri	10/29/08	75,000	0	75,000
1705	2007-09 RRJWRD Public Relations Coordinator	10/24/07	36,000	8,673	27,327
1842	2009 SCWRD Wild Rice River Snagging & Clearing	5/28/09	20,000	0	20,000
1849	2008 Tongue River Diversion Channel Rock Project	11/25/08	19,087	0	19,087
1869	2008 McDowell Dam Emergency Action Plan	9/29/08	25,000	0	25,000
18502	(2006) Drought Disaster Livestock Water Supply	1/1/07	102,750	90,345	12,405
18502	(2008) Drought Disaster Livestock Water Supply	5/14/08	1,875,000	1,303,253	571,747
1921	Square Butte Dam No. 6/Recreational Facility	3/23/09	935,639	53,609	882,030
1921	2009 Square Butte Dam No. 6/Emergency Action Plan	3/9/09	16,000	0	16,000
1934	2007-08 Traill County WRD Elm River Snagging	12/7/07	24,500	0	24,500
1934	2009 Elm River Snagging & Clearing Project Trial	12/5/08	49,000	45,734	3,266
1936	Nash Drain Extension Construction Proj	10/12/06	19,913	0	19,913
1941	Walsh County Assessment Drain 4A Construction	6/19/06	81,594	0	81,594
1942	Walsh County Assessment Drain 10, 10-1, 10-2	5/19/06	273,056	0	273,056
1947	Cass County Drain No. 62, Maple River WRD	4/30/08	125,550	85,763	39,787
1948	2008 Cass County Drain No. 67 Construction Project	3/25/08	334,250	0	334,250
1950	2008 Cypress Creek Drain No. 2 Construction	6/23/08	45,437	23,037	22,400
1951	2007-09 Lynchburg-Buffalo Drain Improvement	6/23/08	500,000	0	500,000
1131*	Nelson County Central-Hamlin Rural Flood	12/9/05	47,020	0	47,020
1932**	Michigan Spillway Rural Flood Assessment	8/30/05	311,696	0	311,696
AOC/ RRB	Red River Basin Commission Contractor	8/1/07	200,000	150,000	50,000
AOC/ WEF	ND Water Education Foundation Magazine	8/1/07	36,000	36,000	0
ARB/ NDSU	NDAWN, NDSU Agriculture Dept. 2/16/09 - 3/31/11	1/28/09	3,000	3,000	0
CON/ WILL-CAR	2007-09 Will & Carlson Consulting Contract	8/1/07	70,000	43,552	26,448
PS/WRD/ MRJ	Missouri River Joint Water Board, Start up	12/5/08	32,348	17,519	14,829
PS/WRD/ MRJ	Missouri River Joint Water Board (MRRIC) T. FLECK	12/5/08	10,000	3,610	6,390
PS/WRD/ USRJWRB	2008 Upper Sheyenne River Joint Water Resource Board	1/12/09	3,000	627	2,373
	TOTAL		11,049,071	3,162,899	7,886,172

Water Commission - Projects/Grants/Contract Fund - Completed Projects
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	COMPLETED GENERAL PROJECTS				
322	2007-09 Red River Basin Mapping Initiative Cost-Share	10/24/07	400,000	400,000	0
330	Willow Creek Watershed Eng Services Proj	6/23/09	1,237	0	1,237
346	Epping Dam Review & Investigation	9/30/04	1,072	0	1,072
568	Sheyenne River Snagging & Clearing	12/10/04	5,986	0	5,986
568	2005-06 Sheyenne River Snagging & Clearing	12/9/05	8,336	1,659	6,677
568	2007-08 SE Cass WRD Sheyenne River Snagging & Clearing	10/24/07	65,000	24,043	40,957
568	2007 Nelson County WRD Sheyenne Rice River Snagging	3/5/07	2,552	1,325	1,227
670	2007-09 Lake Tobiason Dam Repair/Improvement Recon	2/20/08	10,332	0	10,332
841	Upper Maple River Watershed Basing Eng Feasibility	6/19/06	37,160	37,160	0
847	Casselton Township Imp Dist No. 64	6/22/05	26,278	5,398	20,880
847	2007-09 Lower Swan Creek Four-Mile Imp Reconstruction	6/23/08	49,204	38,332	10,872
870	Crown Butte Dam Inlet	3/10/05	1,049	1,049	0
988	2008 Antelope Creek Retention Sites Phase II	6/17/08	14,670	0	14,670
1056	Butte Lake Natural Outlet Elevation Determination	11/12/08	6,194	6,194	0
1057	2007-09 Gessner Drain Improvement	2/6/08	4,818	4,818	0
1066	Cass County Drain No. 9 Drop Structure	3/5/03	6,814	373	6,441
1069	Cass County Drain No.13	6/12/03	230,451	39,597	190,854
1070	Cass County Drain No. 14 Reconstruction	3/11/04	79,924	18,665	61,259
1090	Cass County Drain No. 40 Southeast Cass WRD	6/12/03	80,072	80,072	0
1093	Cass County Drain #45 Extension Construction	5/9/07	179,800	0	179,800
1111	2007-09 Grand Forks County Drain No. 12 Partial Imp	4/30/08	16,352	4,862	11,490
1117	Grand Forks County Drain 27A Outlet Imp	11/1/04	15,750	0	15,750
1142	Pembina County Drain #16	4/16/04	4,111	648	3,463
1164	Pembina County WRD/Drain No. 64 Improvement	10/12/06	27,529	13,316	14,213
1204	Richland County Drain No. 62-Reconstruction	2/6/08	14,095	14,095	0
1207	Richland County Drain No. 65-Reconstruction	5/9/07	47,815	47,815	0
1222	Sargent County WRD Drain No. 11 Improvement	10/12/06	34,354	15,709	18,645
1238	2007-09 Traill/Roseville Drain No. 19 Legal Extension	4/30/08	250,000	0	250,000
1271	Ring Dikes - Maple River Water Resource Dist	12/6/02	46,874	0	46,874
1271	Ring Dikes - Southeast Cass Water Resource	12/6/02	45,200	0	45,200
1280	Grand Forks WRD 2005-07 Farmstead Ring Dike	10/12/06	28,485	25,000	3,485
1290	City of Garrison, City Intake Water Line Boring Project	10/12/06	4,751	4,751	0
1293	Mountrail County Irrigation Proj Feasibility Study	6/9/99	2,681	0	2,681
1294	Engineering Feasibility Study - Traill County PL566	8/30/06	15,000	13,525	1,475
1308	Greenview Dam Removal - Culvert Install (Steele)	8/11/08	13,018	13,018	0
1346	Mount Carmel Dam Incident Consultant	4/28/03	19,499	0	19,499
1346	Mount Carmel Dam Incident	3/11/04	572,330	0	572,330
1346	Mount Carmel Dam Eng Services Project	4/30/04	5,000	0	5,000
1403	2008-09 ND Water Resource Inst (WRRI) Fellowship	12/7/07	13,850	13,850	0
1403	2009-10 ND Water Resources Research Inst (NDSU)	12/5/08	13,850	13,850	0
1438	Mulberry Creek Drain Six-Mile Improv Phase I	3/22/06	113,028	113,029	(1)
1508	2007-09 Wild Rice Mainstream Retention Sites Study	6/13/08	8,378	0	8,378

Water Commission - Projects/Grants/Contract Fund - Completed Projects (cont.)
July 1, 2007 - June 30, 2009

SWC PROJ. NO.	NAME	INITIAL APPROVAL	AMOUNT APPROVED	PAYMENTS	BALANCE
	COMPLETED GENERAL PROJECTS (Cont.)				
1517	City of Hazen Topographic Mapping	3/8/06	3,652	0	3,652
1667	Steele/Nelson County WRD 2006 Middle Branch	10/12/06	5,678	5,531	147
1701	2007-2009 Red River of the North Unsteady Flow	7/24/08	5,000	5,000	0
1705	2005-07 AMENDED RRB Flood Control Coordinator	12/8/06	27,569	20,090	7,479
1742	Eng Feasibility Study - Steele County Sussex D	8/30/06	12,500	11,676	824
1746	2007-09 Sweetwater/Morrison Storage Program	12/5/08	32,745	19,944	12,801
1813	Maple River WRD/Maple River Snagging	10/12/06	10,969	5,633	5,336
1826	ND Natural Resources Trust Cost-Share FY07	10/15/07	19,799	19,799	0
1826	2007-09 ND Natural Resources Trust	9/29/08	172,353	172,353	0
1842	2008 Wild Rice River Snagging & Clearing Project	4/18/08	5,329	3,675	1,654
1842	2007-08 SE Cass WRD Wild Rice River Snagging & Clearing	10/24/07	47,500	42,891	4,609
1842	2007-09 Richland County Wild Rice Snagging & Clearing	3/23/09	36,500	0	36,500
1849	2008 Pembina Co. Tongue River Diversion Channel	6/23/08	7,379	7,379	0
1859	2007-09 Non-Point Source Pollution Projects	10/24/07	200,000	199,968	32
1918	SE Cass WRD/Normanna Township 8/15/02	3,065	0	3,065	
1919	Steele-Traill Drain No. 17 Construction Proj	6/22/05	101,294	72,246	29,048
1921	Square Butte Dam No. 6/Harmon Lake	12/8/06	88,259	88,259	0
1926	Steele-Traill County Drain No. 2	8/30/05	149,700	90,100	59,600
1931	Walsh County Assessment Drain 4B	6/22/05	6,596	6,596	0
1934	Steele County WRD Elm River Snagging	12/4/06	9,664	9,270	394
1934	2006-07 Traill County WRD Elm River Snagging	3/22/05	8,889	8,599	290
1935	Harwood Township	10/12/06	8,066	0	8,066
1939	Pembina County Drain #72	3/22/06	11,384	5,677	5,707
1944	Cass County Drain #66 Construction	5/9/07	147,000	0	147,000
1945	2007 Rush River Snagging & Clearing Project	6/28/07	19,000	13,700	5,300
1949	2007-09 NOAA Atlas 14 update	3/17/08	184,400	184,400	0
1952	NDSU "Red River Tile Drainage Study"	10/1/08	20,000	20,000	0
1523-01	2008 Souris River Snagging & Clearing Project	12/5/08	28,500	28,500	0
1751-06	Digital Aerial Survey Map & Eng Project	6/24/02	17,325	4,864	12,461
642-01	Sweetbriar Creek Dam Eng Agreement	12/9/05	4,953	0	4,953
AOC/WEF/TOURS - 2008 ND Water Education Foundation Tours		2/26/08	2,500	2,500	0
AOC/WEF/TOURS - 2009 ND Water Education Foundation Tours		2/26/09	2,500	2,500	0
ARB/NDSU - NDAWN, NDSU Agriculture Dept. 4/1/08 - 3/31/09		1/28/08	3,000	3,000	0
	TOTAL		3,925,967	2,006,304	1,919,663

State Water Commission

Object Expenditures
for Biennial Period Ending June 30, 2009

Permanent Salaries	$8,013,867.10
Temporary Salaries and Overtime Salaries	368,981.88
Fringe Benefits	2,674,460.56
Travel	762,905.98
Supplies - IT Sotware	78,067.90
Supplies/Materials - Professional	240,300.00
Food and Clothing	1,632.32
Building, Grounds, Vehicle Supply	129,461.93
Misc. Supplies	37,094.04
Office Supplies	26,680.03
Postage	37,448.06
Printing	28,040.10
IT Equipment Under $5,000	155,326.57
Other Equipment Under $5,000	25,807.69
Office Equipment and Furniture Under $5,000	36,559.43
Utilities	197,965.26
Insurance	38,452.53
Rentals/Leases - Equipment and Other	18,818.29
Rentals/Leases - Building and Land	52,664.79
Repairs	89,639.52
IT - Data Processing	176,817.92
IT - Communications	101,863.25
IT - Contractual Services and Repairs	26,302.22
Professional Development	191,685.66
Operating Fees and Services	273,939.14
Fees - Professional Services	9,014,462.21
Land and Buildings	627,241.77
Other Capital Payments	43,554,435.19
Extraordinary Repairs	49,316.50
Equipment Over $5,000	420,049.00
IT Equipment and Software Over $5,000	34,584.00
Grants, Benefits, and Claims	20,813,135.79
Transfers	287,428.23
TOTAL	$88,585,434.86

State Water Commission

LONG-TERM DEBT

The State Water Commission has issued revenue bonds for the Southwest Pipeline Project. The Commission has also issued bonds for statewide water development projects. The following table shows the State Water Commission's long-term debt as of June 30, 2009:

Water Development Bonds

PROJECT	SERIES	AMOUNT
Southwest Pipeline Project	2000 Series A	$975,000
Southwest Pipeline Project	2005 Series A	1,976,500
Southwest Pipeline Project	2005 Series B	565,500
Southwest Pipeline Project	2007 Series A	1,426,000
Southwest Pipeline Project	2007 Series B	13,350,000
Southwest Pipeline Project	2009 Series A	3,005,000
Statewide Water Development Projects	2000 Series A	2,855,000
Statewide Water Development Projects	2005 Series A	21,150,000
Statewide Water Development Projects	2005 Series B	59,250,000

Resources Available from the Agency

Meeting minutes may be obtained by writing to:

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

Or, via the Internet: http://www.swc.nd.gov; click on About the SWC, and Commission Meeting Minutes.

Data available for public use:

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

Additional information about the State Water Commission is available on our web site on the Internet at **http://www.swc.nd.gov**