

NORTH
DAKOTA

2017-
2019

STATE WATER COMMISSION & OFFICE OF THE STATE ENGINEER

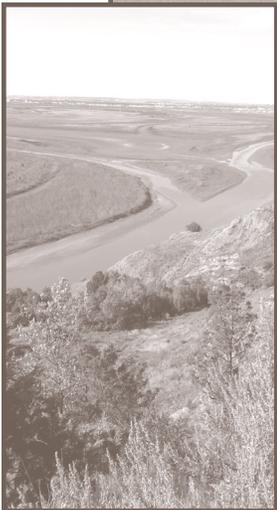
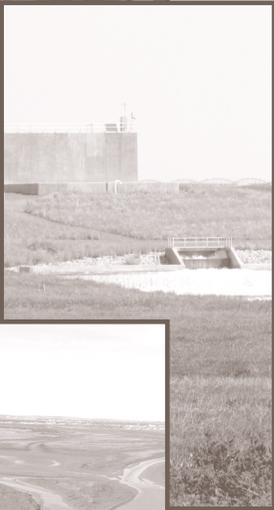
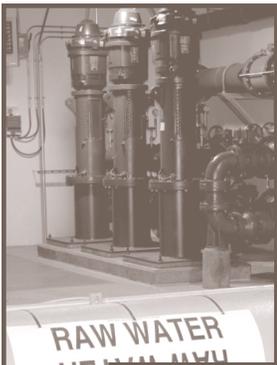
STRATEGIC PLAN



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A MESSAGE FROM THE STATE ENGINEER:

We are pleased to present the North Dakota State Water Commission and Office of the State Engineer's latest Strategic Plan. This new plan was completed to incorporate and adjust for new expectations that have developed since our previous plan, which was last published in 2015.

As in the past, the primary purpose of our 2017-2019 Strategic Plan is to clearly document agency direction and expectations we have set for ourselves through our strategic planning timeframe. Through the planning process, we have reevaluated our agency's goals to ensure that we are achieving the standards expected by the people of North Dakota. In addition, we have laid out objectives for many of our key projects and programs, to help us more effectively meet our goals. More specifically, we have defined tasks and actions that our divisions and management need to take to achieve desired outcomes.

In having this plan at our disposal, the agency will be better equipped to document the progress it is making in the management of North Dakota's water resources. To measure our progress, we will continue to voluntarily publish agency biennial reports, which outline our activities for each biennium – providing an accurate measure of goal achievement. By publishing this plan, I believe we are continuing the tradition of setting a high standard for ourselves that can be monitored by all interests in the water community.

Sincerely,

Garland Erbele, P.E.

State Engineer

Chief Engineer-Secretary

Vision

Present and future generations of North Dakotans will enjoy an adequate supply of good quality water for people, agriculture, industry, and fish and wildlife; Missouri River water will be put to beneficial use through its distribution across the state to meet ever increasing water supply and quality needs; and successful management and development of North Dakota's water resources will ensure health, safety, and prosperity, and balance the needs of generations to come.

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.

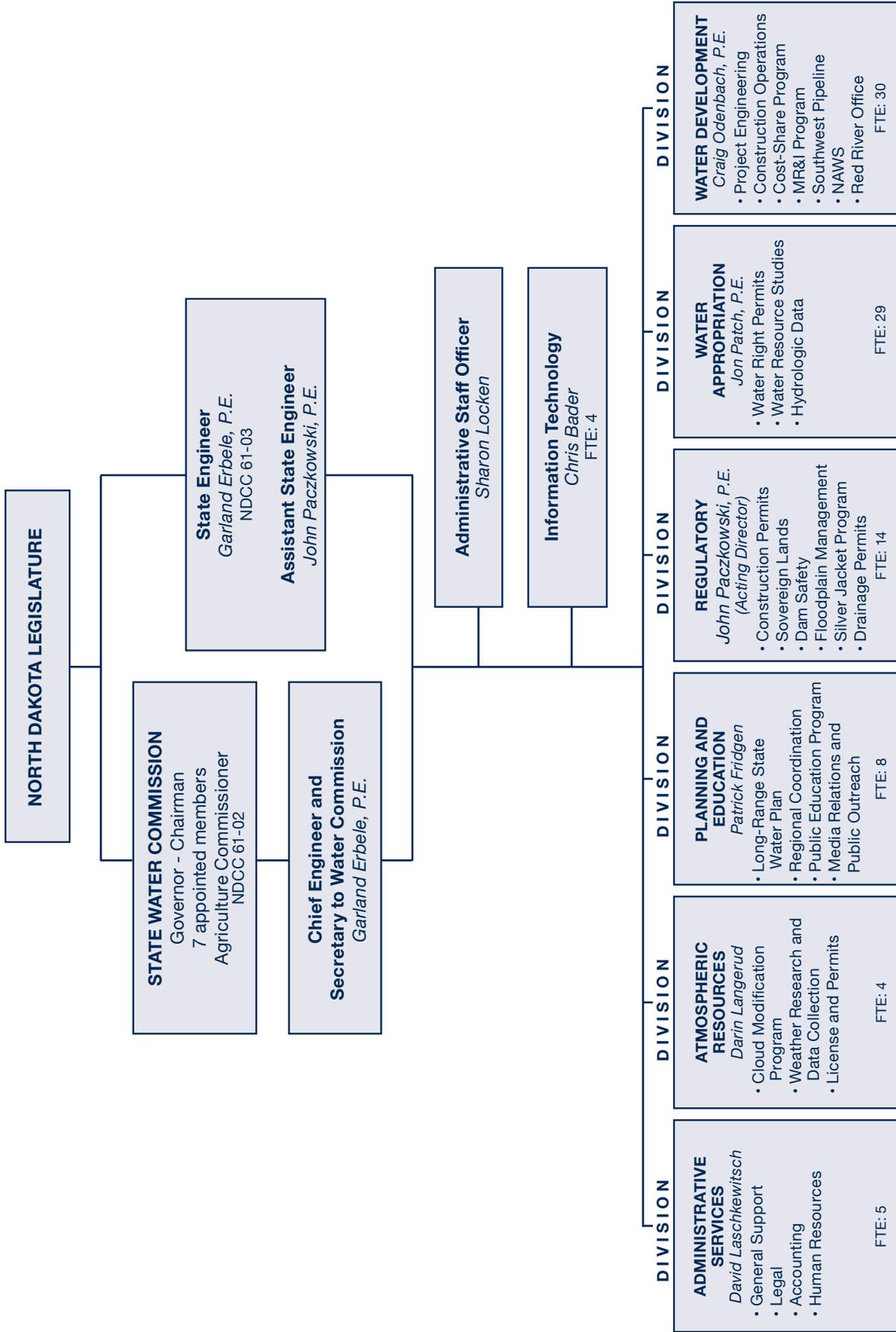
Philosophy & Values

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 the delivery of services to our constituents.

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.

Organizational Chart



TOTAL FULL TIME EQUIVALENTS OF 97 PERSONNEL

Strategic Planning Focus Projects & Programs

While the State Water Commission and the Office of the State Engineer are separate state agencies with different directives, many of their responsibilities are entwined and overlap at several levels. For that reason, the activities of these two agencies have been merged into one strategic plan.

Listed here are the projects and programs that were the focus of our strategic planning process. It should be noted that this is by no means a comprehensive list of all efforts pursued by the State Water Commission and the Office of the State Engineer, rather it is simply a collection of those efforts that were deemed appropriate to include in our strategic planning process.

Further, the projects and programs identified here have been separated by the divisions that are primarily responsible for their management. However, in several instances, many of our projects and programs require staff contributions from multiple divisions.

Administration - *Dave Laschkewitsch, Director*

Administration & Support Services

Atmospheric Resources - *Darin Langerud, Director*

ARB Cooperative Observer Network

Atmospheric Research Program

North Dakota Cloud Modification Project

Water Appropriations - *Jon Patch, Director*

Community Water Supply Studies

Water Resource Data
Information Dissemination

Water Resource-Related
Economic Development

Water Resource Monitoring

Water Resource Research

Water Rights Administration & Processing

Water Rights Evaluation & Adjudication



Water Development - *Craig Odenbach, Director*

Cost-Share Program

Design and Construction

Devils Lake Flood Control

Investigations

Municipal, Rural & Industrial Water Supply

Northwest Area Water Supply

Southwest Pipeline Project

Regulatory - *John Paczkowski, Acting Director*

Dam Safety Program

Engineering & Permitting

Floodplain Management

Silver Jackets

Sovereign Lands

Planning & Education - *Patrick Fridgen, Director*

State Water Management Plan

Water Education

Watershed Planning & Coordination

Administration & Support Services

Agency Goals Satisfied:

- 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 conduct research into the processes affecting the hydrologic cycle to improve the management of North Dakota’s water resources.
- To collect, manage, and distribute information to facilitate improved management of North Dakota’s water resources.
- To educate the public regarding the nature and occurrence of North Dakota’s water resources.

Project/Program Objectives:

- Provide umbrella administrative and technology services that support the projects and programs of the agency.

Project/Program Overview:

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 State Water Commission’s operations, as well as accounting, information technology (IT), human resources, records management, legal support, and support services for all agency projects and programs.

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

Human Resources works as a business partner with and for the divisions of the State Water Commission in developing, implementing, and supporting workforce programs that seek to recruit, develop, and retain a qualified, diverse, and engaged workforce.

The division also works on contracts and agreements that are necessary to carry out investigations, planning, and cooperation with various other agencies in water resources management.

IT supports general agency business operations in areas related to workflow management and office automation. IT also supports and enhances agency data collection and management functions, and broader engineering and scientific functions.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|---|--------------|
| | Prepare and submit the agency’s budget..... | Sept. 2018 |
| | Coordinate the timing of agency bonding..... | As needed |
| | Coordinate development of agency testimony for legislative appropriations hearings..... | Dec. 2018 |
| | Maintain accounting records, and provide information technology and records management services | Ongoing |
| | Bill federal, state, and local entities for their share of project costs | Ongoing |
| | Provide legal support, including research and contract development..... | Ongoing |
| | Maintain an agency IT strategic plan, and coordinate agency IT efforts with external and statewide initiatives..... | Ongoing |
| | Support, maintain, and evolve agency IT infrastructure | Ongoing |

ARB Cooperative Observer Network

Agency Goals Satisfied:

- 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.

Project/Program Objectives:

- Make high-resolution precipitation and hail data available to county, state, and federal agencies, private organizations, and the public.
- Provide the entire database online for data download or review.
- Increase online reporting and produce value-added products that will be useful to a larger audience.
- Expand snowfall measurements in critical areas to assist with spring flood forecasting.

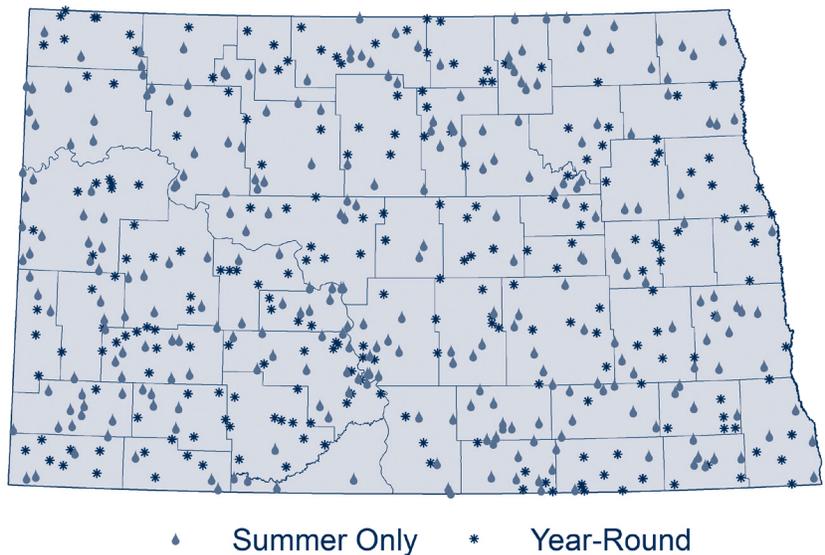
Project/Program Overview:

The Atmospheric Resource Board’s (ARB) Cooperative Observer Network has collected growing season rainfall and hail data from volunteer observers statewide since 1977. Current participation ranges between 550 and 600 observers annually, making it one of the highest density precipitation observation networks in the United States. In all, more than five million daily precipitation observations, over 330,000 snowfall observations, and nearly 13,000 hail observations have been reported.

Assumptions and Obstacles:

Continuation and expansion of existing statewide precipitation observations will require continued funding for agency operations and equipment.

2016 ARB Observers



ACTION PLAN

| TASKS | TARGET DATES |
|--|-------------------|
| Manage the program for daily observation of rainfall, hail, and snow, including data entry, quality control, and Geographic Information System (GIS) mapping | Ongoing |
| Produce growing season map products and manage volunteer renewal for following years..... | Fall, annually |
| Recruit new volunteers | Spring, annually |
| Mail reporting instructions, reporting cards, and rain gauges to volunteer observers..... | March, annually |
| Expand the online reporting program | Ongoing, annually |
| Expand snowfall measurements in critical areas..... | Winter, annually |

Atmospheric Research Program

Agency Goals Satisfied:

- 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 processes affecting the hydrologic cycle to improve the management of North Dakota’s water resources.

Project/Program Objectives:

- Better quantify the physical processes of rainfall and hail formation.
- Improve operational application of cloud seeding technologies.
- Better quantify seeding effects through development and application of improved evaluation techniques.

Project/Program Overview:

North Dakota has a long history of research in weather modification. Since the mid-1980s, eight field research programs have been conducted in the state, most recently through focused campaigns in 2008, 2010, and 2012. Historically, the Bureau of Reclamation and the National Oceanic and Atmospheric Administration have provided program funding. Currently, program funding is being provided by the state.

Assumptions and Obstacles:

Funding is the primary obstacle for the Atmospheric Research Program.



| ACTION PLAN | TASKS | TARGET DATES |
|---|---|--------------|
| | Develop methodologies using new technologies to evaluate and enhance North Dakota’s operational cloud seeding program | Spring 2018 |
| Collaborate with other states and organizations/institutions doing similar research to improve and enhance North Dakota’s program | Ongoing | |

Community Water Supply Studies

Agency Goals Satisfied:

- To develop water resources for the future welfare and prosperity of the people of North Dakota.
- To conduct research into the processes affecting the hydrologic cycle in order to improve the management of North Dakota’s water resources.

Project/Program Objectives:

- Provide interpretation of existing water resource data.
- Conduct studies of potential water resources.
- Publish reports on water resource studies.
- Provide guidance and/or recommendations with regard to water supply concerns.
- Process appropriate paperwork to establish or maintain water rights.

Project/Program Overview:

Rural water entities and municipalities in need of help with their water supply can access agency staff for interpretation of existing data. These are usually cooperative studies with partial funding from the entity. Cooperators can also apply for cost-share assistance from the State Water Commission for water supply studies. Rural water entities and municipalities use the reports of the water-resource studies to help with their decisions regarding water-supply concerns and options.

Assumptions and Obstacles:

In recent biennia, as more communities have tied in to expanding regional water supply systems, the need for individual community water supply studies has declined.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|------------------------------------|--------------|
| | Conduct water supply studies | As requested |

Cost-Share Program

Agency Goals Satisfied:

- 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 conduct research into the processes affecting the hydrologic cycle to improve the management of North Dakota’s water resources.
- To collect, manage, and distribute information to facilitate improved management of North Dakota’s water resources.
- To educate the public regarding the nature and occurrence of North Dakota’s water resources.

Project/Program Objectives:

- To financially assist federal and state agencies and political subdivisions with eligible projects categorized as rural flood control, water supply, flood control, flood protection, flood acquisitions, dam safety, recreation, snagging and clearing, studies, irrigation, bank stabilization, dam removal/breach, FEMA levee accreditation, water retention, engineering and technical assistance.

Project/Program Overview:

Beginning in 1943, the North Dakota Legislative Assembly appropriated funds to the State Water Commission for cost-share assistance on existing drain channels. Since then, the State Water Commission Cost-Share Program has significantly evolved, and has now developed into a program that adequately meets the goals of the State Water Commission, and the needs of our constituents.

The State Water Commission Cost-Share Program identifies types of projects that are eligible for cost-share assistance per the agency policy. Currently, as determined by that policy, the State Water Commission cost-shares on several types of projects, and has existing agreements to fund: flood control, irrigation, drainage and diversion channels, ring dikes, flood acquisitions, water supply projects, engineering and other studies, miscellaneous education and research projects, emergency action plans, imagery acquisition, dam safety reconstructions, recreation-based lake facilities, dikes, levees, woody debris snagging and clearing, non-point source pollution, central irrigation system supply lines, rip-rap bank stabilizations, dam removals, and technical assistance projects.

Upon determining a proposed project’s eligibility and approval of funding, an agreement/contract is entered into with the project’s sponsor describing the scope of work, how funds will be disbursed, insurance and indemnification requirements, and other terms as applicable. Request for payments are processed per the terms of the agreement. At the discretion of the State Water Commission, projects are reviewed and/or inspected upon final payment.

Assumptions and Obstacles:

The amount of funds available for the Cost-Share Program is dependent on state appropriations and agency budgeting from the contract fund.

| ACTION PLAN | TASKS | TARGET DATES |
|-------------|--|---------------------|
| | Review approximately 160 cost-share inquiries and/or applications for cost-share eligibility and assistance | June 30, biennially |
| | Present approximately 100 cost-share proposals for approval and authorization by the State Water Commission and 60 cost-share proposals for State Engineer approval and authorization..... | June 30, biennially |
| | Develop agreements/contracts for approximately 160 approved and authorized projects..... | June 30, biennially |
| | Process requests for payment, monitor agreement/contract compliance, and review or inspect work..... | Ongoing |

Dam Safety Program

Agency Goals Satisfied:

- To regulate the use of water resources for the future welfare and prosperity of the people of North Dakota.
- To educate the public regarding the nature and occurrence of North Dakota’s water resources.
- To collect, manage, and distribute information to facilitate improved management of North Dakota’s water resources.

Project/Program Objectives:

- Conduct dam inspections in order to identify dams in need of maintenance or repair.
- Report inspection findings and make recommendations to dam owners.
- Maintain and update an inventory of all dams in North Dakota.
- Encourage the development of Emergency Action Plans (EAPs) for high and medium hazard dams, including the development of inundation maps for high hazard dams.
- Increase awareness of dam safety issues among dam owners and the public.

Project/Program Overview:

The purpose of North Dakota’s Dam Safety Program is to minimize the risk to life and property associated with the potential failure of dams in the state. A national dam inspection program took place in 1978-1981 under the direction of the U.S. Army Corps of Engineers, following a series of dam failures across the country in the 1970s. The North Dakota Dam Safety Program, administered by the State Water Commission, was initiated to continue and build on that inspection program. There are currently 3,152 dams in North Dakota’s dam inventory. Of these, 48 dams are classified as high hazard and 82 are classified as medium hazard, meaning that there is the potential for loss of life or significant property damage downstream if one of those dams were to fail.

Assumptions and Obstacles:

Federal grants through the Federal Emergency Management Agency and the National Dam Safety Program provide annual funding for training, equipment, and special projects. The availability and timing of these grants is uncertain from year to year. In addition, there is a very limited timeframe in which to complete projects under these grants. These factors make program planning a challenge.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|---|-------------------|
| | Conduct full, periodic inspections of non-federally owned high hazard and medium hazard dams on a rotational basis, approximately 20 per year | Oct. 31, annually |
| | Conduct partial inspections of approximately 140 dams each spring following spring runoff..... | June 30, annually |
| | Report inspection findings and make recommendations to dam owners..... | Ongoing |
| | Maintain and update North Dakota’s dam inventory | Ongoing |
| | Submit data to the National Inventory of Dams (NID) | As requested |
| | Assist dam owners with developing EAPs and inundation mapping, and review and approve EAPs as they are submitted | Ongoing |
| | Review and update the hazard classification of dams in North Dakota | Ongoing |
| | Develop hazard classification guidelines for North Dakota..... | December 31, 2018 |
| | Develop a dam maintenance manual for North Dakota..... | December 31, 2017 |

Design & Construction

Agency Goals Satisfied:

- To develop 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.

Project/Program Objectives:

- Maintain water resource facilities within the state to ensure public safety, and enhance quality of life, by meeting multiple uses such as flood control, water supply, and recreation opportunities.
- Work with the United States Geological Survey (USGS) to maintain the network of stream gauges throughout the state, thereby ensuring reliable data necessary for managing North Dakota’s water resources.

Project/Program Overview:

The Design and Construction Section are involved with assisting dam owners throughout the state in designing repairs and modifications to existing water facilities. The section works with the North Dakota Game and Fish Department (NDGF) to maintain outlet structures and install low-level drawdowns used by NDGF to manage fisheries. The section is also involved in directing emergency actions during major dam incidents.

Assumptions and Obstacles:

Weather is the primary obstacle for timely completion of annual construction and repair efforts.



| ACTION PLAN | TASKS | TARGET DATES |
|--|--|--------------|
| | Assist dam owners with design and repairs of existing water facilities | Ongoing |
| Repair and maintain North Dakota’s stream gauge network through cooperative efforts with the USGS..... | Summer, annually | |
| Conduct general construction projects | Summer, annually | |
| Assist the Dam Safety Program with spring inspections of dams | Annually | |
| Emergency Response..... | As Needed | |

Devils Lake Flood Control

Agency Goals Satisfied:

- To manage water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Reduce the risk of flooding in the Devils Lake basin.

Project/Program Overview:

In 1993, Devils Lake began its historic rise before reaching a modern day record elevation of 1,454.3 feet above mean sea level in 2011 (covering over 208,000 acres). During that time period, Devils Lake rose over 31 feet, and inundated over 164,000 acres of land – with a large portion of those acres once in agricultural production. In addition to all of the land that has been inundated, Devils Lake has also consumed Stump Lake, Pelican Lake, Lake Irvine, Lake Alice, Mike’s Lake, Chain Lake, and Dry Lake (See Map Appendix). In recent years, the lake has receded only four feet from its record, and the threat of flooding remains throughout the basin.

The State Water Commission completed an emergency outlet from West Devils Lake to the Sheyenne River in 2005 that was sized for a maximum discharge of 100 cubic feet per second (cfs). In the spring of 2010, the state increased the capacity to 250 cfs. An East Devils Lake outlet with a 350 cfs pumping capacity was completed in June of 2012. The combined capacity of the two outlets is 600 cfs, and together they are capable of removing approximately one foot of water per pumping season (based on a lake elevation of 1454).

Since the outlets began operating, about 907,500 acre-feet of floodwater has been pumped from the lake. Of that total, about 768,400 acre-feet of floodwater was pumped since 2012, when both the West and East Devils Lake outlets began pumping simultaneously.

In regards to infrastructure, the embankment protecting the City of Devils Lake is complete, but rural areas continue to face a threat from the swelling lake. Cities and counties continue to work with state and federal agencies to maintain roads and protect public infrastructure.

For a map of the state’s emergency Devils Lake outlet projects, see the Appendix.



| ACTION PLAN | TASKS | TARGET DATES |
|--|--|--------------|
| | Maintain and operate the Devils Lake emergency outlets | Ongoing |
| Develop discharge monitoring reports for outlet operation | As needed | |
| Work with local and federal entities to remove additional water from the lake..... | Ongoing | |
| Implement Outlet Mitigation Plan and respond to damage claims..... | Ongoing | |

Engineering & Permitting

Agency Goals Satisfied:

- To regulate the use of 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 collect, manage, and distribute information to facilitate improved management of North Dakota’s water resources.

Project/Program Objectives:

- Regulate the construction or modification of dams, dikes, and other water resource facilities.
- Facilitate the regulation of drainage projects.
- Provide technical assistance and determinations to local water resource managers, and members of the public.

Project/Program Overview:

As authorized by NDCC 61-03 and 61-16.1, the State Engineer has been responsible for regulating the construction of dams, dikes, and other water resource facilities since approximately 1935. Since 1957, NDCC 61-32 has authorized the State Engineer to regulate drainage. The State Engineer coordinates these activities with county and regional water resource districts (WRDs) across the state.

In addition to these permitting processes, the Engineering and Permitting Program provides technical assistance to WRDs and members of the public, through stream crossing determinations in accordance with NDCC 24-03-08; Watercourse determinations in accordance with NDCC 61-01-06; and processing public appeals of WRD decisions. The Engineering and Permitting Program also serves as a source of information to the public, handles easement releases for abandoned dams, participates in training workshops, represents the State Engineer on various interagency committees, and provides agency review of Public Service Commission permitting activities and U.S. Army Corps of Engineers’ Section 404 permits.

Assumptions and Obstacles:

Enforcement and management of various drainage and construction activities will potentially require continued cooperative efforts with the North Dakota Department of Health and other law enforcement entities.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|--|--------------|
| | Process all incoming construction, drainage, and sovereign land permit applications in a timely manner | Annually |
| | Provide technical assistance to WRDs as requested..... | Ongoing |
| | Address all incoming WRD decision appeals in a timely manner | Annually |
| | Digitally map all permitted assessment drains and dams that are currently in the agency’s database | Annually |
| | Provide 100 percent of stream crossing determinations requested per NDCC 24-03-08 in a timely manner | Annually |
| | Review 100 percent of incoming Public Service Commission permitting activities and U.S. Army Corps of Engineers’ Section 404 permits | Annually |

Floodplain Management

Agency Goals Satisfied:

- 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.

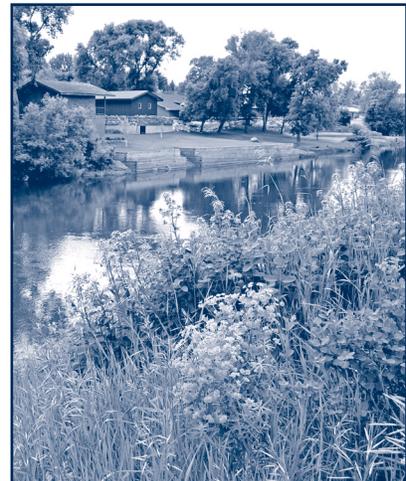
Project/Program Objectives:

- Fulfill the responsibilities of the Federal Emergency Management Agency’s (FEMA) Community Assistance Program (CAP) and Risk Mapping and Assessment Planning (MAP) program.
- Guide development of the floodplains of this state, in accordance with legislative direction.
- Reduce flood damages through sound floodplain management.
- Ensure, as far as practicable, that the channels and floodways are kept free and clear of interference or obstructions.
- Provide state coordination and assistance to communities with floodplain management activities.
- Encourage communities to adopt, administer, and enforce sound floodplain management ordinances.
- Coordinate federal, state, and local floodplain management activities in this state.

Project/Program Overview:

Through the FEMA CAP and Risk MAP programs, the state is able to accomplish these program objectives as outlined in the North Dakota Floodplain Management Act of 1981, which adopted the National Flood Insurance Program (NFIP) by reference in NDCC 61-16.2. This chapter was amended in 1999 and again in 2003 by the North Dakota Legislature, which broadened and refined the duties of the State Engineer.

The federal CAP is designed to provide technical assistance to communities participating in the NFIP and to evaluate their performance in implementing NFIP management activities. In exchange for enforcing the floodplain development regulations, flood insurance is available for structures within the participating community’s jurisdiction. Flood Insurance Rate Maps (FIRMs) are key resources to regulating floodplains. These documents are created and updated through the Risk MAP program. FEMA provides partnership funding to states for their role in the CAP and Risk MAP program.



Assumptions and Obstacles:

Successful management of the state’s floodplain and flood prone areas will continue to require active participation and enrollment of cities, counties, and townships in the NFIP.

| ACTION PLAN | TASKS | TARGET DATES |
|---|---|------------------------|
| | Monitor community floodplain management compliance by assessing a minimum of 32 participating communities on a rotational basis. | September 30, annually |
| Provide technical assistance regarding the NFIP, 100% of the time it’s requested. | As needed/Ongoing | |
| Process 100% of the requests for a State Engineer’s floodway review | As needed/Ongoing | |
| Coordinate floodplain management training workshops and participate in related training opportunities. | September 30, annually | |
| Manage the selection and study process of community candidates for initial and revised flood hazard identification relative to the NFIP. | Ongoing | |

Investigations

Agency Goals Satisfied:

- 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 collect, manage, and distribute information to facilitate improved management of North Dakota's water resources.

Project/Program Objectives:

- Conduct preliminary engineering, hydrologic, and hydraulic studies, and review studies done by others.
- Provide engineering services for surface water projects throughout the state.

Project/Program Overview:

The Investigations Section is responsible for the preliminary engineering of surface water projects throughout the state. These projects include flood control, irrigation development, recreation dams, and bank stabilizations. The Investigations Section also conducts and reviews hydrologic and hydraulic models for floodplain management, dam design and repair, and other matters. This includes reviewing proposed modifications to existing regulatory floodways that require State Engineer approval, hydraulic and hydrologic analyses, and review for dam safety and emergency planning and response.

Technical assistance is also provided for special issues such as the Pembina border dike, Mouse River international activities, and Corps of Engineers Section 22, and Silver Jackets projects.

In addition, the Investigations Section provides technical expertise in dealing with the management of the Missouri River, flood response, and other water issues, as well as providing government survey information to the public. The section provides coordination for the Mouse River Enhanced Flood Protection Project and develops tools for Geographic Information Systems techniques in water resources engineering.

Assumptions and Obstacles:

Severe flooding problems throughout the state, flood response and recovery activities, and concerns over changes to management of the Missouri River system have consumed much of the Investigations Section's time over the course of the last decade. In addition, the collection, analysis, and interpretation of data from floods continue well beyond the actual events. With those issues expected to be in the forefront in the coming years, that trend will likely continue.



| ACTION PLAN | TASKS | TARGET DATES |
|--|---|--------------|
| | Provide technical reviews of Missouri River management issues, especially the Missouri River Authorized Purpose Study | As needed |
| Continue to represent the State of North Dakota as part of the Missouri River Recovery Implementation Committee (MRRIC)..... | Ongoing | |
| Manage government survey information | Ongoing | |
| Conduct water resource investigations | As needed | |
| Provide technical support in response to flooding and other disasters | As needed | |
| Review proposals for modifications of regulatory floodways..... | As needed | |

Municipal, Rural, & Industrial Water Supply Program

Agency Goals Satisfied:

- To develop water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Coordinate alternative funding solutions for water supply and water treatment projects to help water users in cities and rural water areas obtain an adequate supply of quality water for municipal, rural, and industrial purposes.
- Provide planning and technical assistance to water supply systems to promote wise use of water resources throughout the state.

Project/Program Overview:

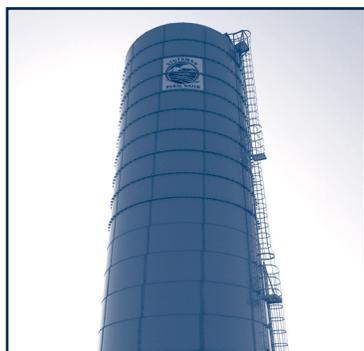
The Municipal, Rural, and Industrial (MR&I) water supply program is one source of federal funding used for public water systems. North Dakota’s MR&I program was originally established by the 1986 Garrison Diversion Reformulation Act. At that time, Congress authorized \$200 million in the form of a maximum grant of 75 percent. The state has since received the original \$200 million from the 1986 Act. Later, the Dakota Water Resources Act of 2000 added an additional \$200 million for the MR&I program, which is indexed, of which the state has received \$164 million. Funding used for the MR&I program is provided through the U.S. Bureau of Reclamation (BOR). The Garrison Diversion Conservancy District (GDCCD) signed a cooperative agreement with the BOR to receive the federal funding. Further, the State Water Commission and GDCCD signed a joint powers agreement to administer the program based on a memorandum of understanding.

Because of North Dakota’s MR&I program, cities, regional and rural water systems have received assistance throughout the state. As a result of this added assistance, there are 32 regional water systems in North Dakota, providing quality drinking water to cities and rural users. Currently, all or parts of North Dakota’s 53 counties are served by regional water systems.

Assumptions and Obstacles:

Adequate federal funding must be received in a manner that does not impede progress.

For a map of North Dakota’s rural and regional water systems, see the Appendix.



ACTION PLAN

| TASKS | TARGET DATES |
|--|--------------|
| Implement a five-year plan for MR&I project funding requests | Ongoing |
| Participate in meetings with communities and rural water districts to provide technical and planning assistance..... | Ongoing |
| Provide MR&I budget estimates for project development | Ongoing |
| Coordinate meetings with various funding entities to discuss projects..... | Ongoing |
| Work with North Dakota’s Congressional Delegation to increase federal MR&I appropriations..... | Ongoing |
| Coordinate with the GDCCD in the prioritization and allocation of MR&I funds..... | Ongoing |

North Dakota Cloud Modification Project

Agency Goals Satisfied:

- To manage water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Reduce hail damage in the North Dakota Cloud Modification Project (NDCMP) target area.
- Enhance summer rainfall from thunderstorms in the NDCMP target area.

Project/Program Overview:

The NDCMP is a long-running cloud seeding program with the dual purposes of hail suppression and rainfall enhancement. The target area covers 11,554 square miles, in seven western North Dakota counties during the months of June, July, and August. Counties partner with the state through the Atmospheric Resource Board (ARB), employing contractors that provide the aircraft, pilots, seeding equipment, and radar maintenance services. The ARB owns and operates two radar systems and employs the meteorologists to coordinate seeding operations. In addition, the program offers two intern programs; one for students studying meteorology, and another for pilots studying at the University of North Dakota's J.D. Odegard School for Aerospace Sciences.

Evaluations of the NDCMP indicate that the program reduces hail damage to crops by 45 percent, increases wheat yields by 5.9 percent, and increases rainfall between 5 and 10 percent. A 2009 economic study estimates the NDCMP increases the value of agricultural production by \$12 million to \$19.7 million annually, producing a benefit to cost ratio of 12-20 to 1.

Assumptions and Obstacles:

The project assumes continued participation by western North Dakota counties and cost sharing of one-third of project costs, by the state.

For a map of the North Dakota Cloud Modification Project, see the Appendix.



| ACTION PLAN | TASKS | TARGET DATES |
|--|--|-------------------|
| | Hold planning meetings with participating NDCMP counties | January, annually |
| Public notice and comment period for NDCMP permitting..... | March, annually | |
| Hire NDCMP field personnel | May, annually | |
| Conduct pre-project ground school | May, annually | |
| Conduct NDCMP operations | June-August, annually | |
| Conduct data analysis and final reporting to participating counties..... | Winter, annually | |
| Report cloud seeding activities to the National Oceanic and Atmospheric Administration | Spring and fall, annually | |

Northwest Area Water Supply

Agency Goals Satisfied:

- To develop water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Finish construction of the pretreated water delivery system to Minot, and distribution infrastructure to Bottineau.

Project/Program Overview:

North Dakota Century Code (NDCC), Section 61-24.6 declares necessary the pursuit of a project "...that would supply and distribute water to the people of northwestern North Dakota through a pipeline transmission and delivery system..." NDCC 61-24.6 authorizes the State Water Commission to construct, operate, and manage a project to deliver water throughout northwestern North Dakota.

The Water Commission began construction on the Northwest Area Water Supply (NAWS) project in April of 2002. The first four contracts involving 45 miles of pipeline between the Missouri River and Minot were completed in the spring of 2009. However, additional work will be required in the future to fill existing gaps in the pipeline. The project is currently serving Berthold, Kenmare, Burlington, West River Water District, Upper Souris Water District, Mohall, Sherwood, All Seasons Water District, and Minot (also serves North Prairie Water District and Minot Air Force Base). NAWS is getting interim water supply through a 10-year contract with Minot, which expires in 2018.

In 2002, a lawsuit was filed by the Province of Manitoba; primarily arguing that NAWS could increase the risk of transferring non-native biota between the Missouri River and Hudson Bay drainage basins. In 2009, the State of Missouri filed against the U.S. Bureau of Reclamation (BOR) and the Corps of Engineers; primarily arguing NAWS would negatively affect depletions of the Missouri River. The Missouri filings were ultimately combined with Manitoba's. Various elements of project construction have been allowed to proceed by court order, despite the pending lawsuit. The court found that the Environmental Impact Statement (EIS) completed in 2009 was not adequate and needed to address impacts to Canada and Missouri River depletions. Scoping for a Supplemental EIS to address the court's May 2009 order was started in July 2010. The final Supplemental EIS was published in April of 2015 and the Record of Decision was signed in August of 2015. Filing in the District Court for the District of Columbia began in January of 2016 and was completed in August of 2016. Summary judgment is expected between January and April of 2017.

When complete, the project is designed to provide up to 26 million gallons of Missouri River water per day to tens of thousands citizens in northwest North Dakota.

Assumptions and Obstacles:

Adequate federal funding must be received in a manner that does not impede progress. Completion of the litigation will greatly determine design and construction schedules. If Minot's aquifers continue to decline, and progress is not made in getting the needed water supply from Lake Sakakawea, then the existing communities and rural water systems will need to return to their inadequate ground water supplies.

For a map of the NAWS project, see the Appendix.

ACTION PLAN

| TASKS | TARGET DATES |
|--|--------------|
| Successfully complete project litigation | Winter 2017 |
| Initiate design work on a biota treatment plant and intake, and remaining contracts to move water from Lake Sakakawea to Minot | Winter 2017 |
| Initiate design work and begin construction to move potable water to remaining service area including Bottineau | Winter 2017 |
| Develop plans and manuals as required by EIS commitments | Summer 2018 |

Silver Jackets Program

Agency Goals Satisfied:

- 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.

Project/Program Objectives:

- Educate state agencies, county water boards, and communities on the Silver Jackets Program.
- Assist communities with FEMA’s levee recertification requirement or Provisionally Accredited Levee (PAL) program.
- Assist communities with project requests in support of flood control or long term flood mitigation projects through the State Water Commission and other federal or state agencies as appropriate.
- Assist communities with flood related Emergency Operation Plans as necessary and requested.
- Assist in educating counties and communities on the importance of maintaining current Hazard Mitigation Plans as related to flooding.
- Coordinate with Silver Jacket charter agencies to discuss state flood-related priorities, recommendations, efforts and improve communication.
- Coordinate with Silver Jacket charter agencies for the collection, processing, and posting of Light Detection and Ranging (LiDAR) data for the James, Mouse, and Missouri River basins.

Project/Program Overview:

North Dakota’s Silver Jackets Program was initiated in January 2010 (in response to the extensive flooding of 2009) with the intent to identify comprehensive, long-term flood solutions through a collaborative, interagency effort between state and federal authorities. A Silver Jackets charter was completed and signed between the State Water Commission, North Dakota Division of Emergency Services, FEMA Region VIII, and the U.S. Army Corps of Engineers (St Paul and Omaha districts) in May 2010, and recently updated in 2014, with the addition of the National Weather Service, US Geological Survey, ND Geological Survey, U.S. Fish and Wildlife Service, and the Natural Resources Conservation Service. The Corps of Engineers initiated the Silver Jackets concept through a partnership with FEMA in 2005, with a goal of establishing Silver Jackets teams in at least one state in each Corps division, and ultimately one in each state.

Assumptions and Obstacles:

The potential for flooding in North Dakota will continue annually due to both rain and spring snow melt events. The need for local, state, and federal coordination in support of comprehensive long-term flood control and mitigation efforts must continue throughout the state to ensure success. Continued funding of this program is critical to its existence.



| ACTION PLAN | TASKS | TARGET DATES |
|---|---|-------------------|
| | Promote awareness of North Dakota’s Silver Jackets Program..... | Ongoing/As Needed |
| Assist communities with FEMA’s levee recertification requirement..... | Ongoing/As Needed | |
| Assist communities with flood control and long-term flood mitigation project requests | Ongoing/As needed | |
| Assist selected counties and communities with Flood Emergency Operation Plan development and maintenance..... | Ongoing/As needed | |
| Coordinate with Silver Jackets Program charter agencies..... | Ongoing/As needed | |
| Collect, process, and distribute LiDAR annually, as funding permits..... | 2017-2018 | |

Southwest Pipeline Project

Agency Goals Satisfied:

- To develop water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Continue construction to expand the intake, raw water transmission and water treatment capacity to meet the growing needs in southwest North Dakota, and to continue construction of projects to optimize the operation of the Southwest Pipeline Project.

Project/Program Overview:

The Southwest Pipeline Project (SWPP) is a regional water supply system, that draws water from Lake Sakakawea, and serves approximately 56,000 people in southwest North Dakota, including 33 communities, and over 6,800 rural hookups.

NDCC, Section 61-24.3 declares necessary that the SWPP “...be established and constructed, to provide for the supplementation of the water resources of a portion of the area of North Dakota south and west of the Missouri River with water supplies from the Missouri River for multiple purposes, including domestic, rural, and municipal uses.” The State Water Commission has been working to develop the SWPP ever since – with construction beginning in 1986. NDCC 61-24.6 authorizes the State Water Commission to construct, operate, and maintain the project.

Private contractors are constructing the project according to designs developed by the State Water Commission’s engineering contractor. The State Water Commission oversees the design and construction of the project.

Assumptions and Obstacles:

Adequate state and federal funding must be received in a manner that does not impede progress.

For a map of North Dakota’s Southwest Pipeline Project, see the Appendix.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|--|--------------|
| | Bid Residual Handling Building for the Dickinson Water Treatment Plant (WTP) | Summer 2017 |
| | Bid the Dodge and Richardton Pump Station upgrades | Fall 2017 |
| | Bid 2nd Davis Buttes Tank..... | Fall 2017 |
| | Bid the Supplementary Intake Pump Station Building | Spring 2018 |

Sovereign Land Management

Agency Goals Satisfied:

- To regulate the use of 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.

Project/Program Objectives:

- Determine the navigability or non-navigability of the state’s lakes and streams.
- Delineate the ordinary high water mark of the state’s Navigable Waters.
- Regulate the construction of any projects located partially or entirely located on sovereign lands.
- Coordinate with other local, state, and federal agencies, and the public on sovereign lands management and related issues.
- Interact with other local, state, and federal agencies and the public to inform and educate the people of North Dakota on sovereign lands management and related issues.

Project/Program Overview:

The State Engineer is responsible for administering the state’s non-mineral interests in North Dakota’s sovereign land under NDCC 61-33. The State Engineer is responsible for determining which waterbodies are navigable in fact, and therefore sovereign to the State of North Dakota. The State Engineer is responsible for delineating the Ordinary High Water Mark (OHWM) of the state’s navigable waters.

Any projects located partially or entirely on sovereign land require authorization in the form of a Sovereign Land Permit from the State Engineer prior to construction. The State Engineer is responsible for the day-to-day management of the state’s sovereign land. This may include the preparation and execution of agreements with city, county, state, or federal entities for the management of specific parcels of sovereign land, and enforcement of state code relative to sovereign land.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|---|--------------|
| | Process all incoming sovereign land permit applications | Ongoing |
| | Determine navigability or non-navigability of specific water bodies when the question arises..... | As Needed |
| | Conduct OHWM delineations for specific locations as necessary | Ongoing |
| | Provide technical assistance to other local, state, and federal agencies and the public as requested..... | Ongoing |

State Water Management Plan

Agency Goals Satisfied:

- To educate the public regarding the nature and occurrence of North Dakota’s water resources.
- To manage water resources for the future welfare and prosperity of the people of North Dakota.
- To collect, manage, and distribute information to facilitate improved management of North Dakota’s water resources.

Project/Program Objectives:

- Develop a new 2019-2021 Water Development Report by January 2019.

Project/Program Overview:

By virtue of North Dakota Century Code, Section 61-02-14, Powers and Duties of the State Water Commission; Section 61-02-26, Duties of State Agencies Concerned with Intrastate Use or Disposition of Waters; and Section 61-02-01.3, Comprehensive Water Development Plan the State Water Commission is required to develop and maintain a comprehensive Water Management Plan (WMP) for the sound management of North Dakota’s water resources. The most recent comprehensive WMP was completed in 2015. Following major water plan revisions, Water Development Reports (WDR) are published on a biennial basis to assist with agency budgeting efforts, and to provide updated project and funding information during Legislative Assemblies.

Assumptions and Obstacles:

Active participation and accurate input from local water managers and project sponsors regarding project funding needs will be critical to accurate budget development, and successful statewide water planning efforts.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|--|--------------|
| | Contact local water managers to request updated water project/program information, including funding timeframes for the 2019-2021 biennium and beyond..... | Jan. 2018 |
| | Coordinate project information collection efforts with the North Dakota Water Coalition and its membership | Spring 2018 |
| | Develop a preliminary water resource project/program inventory for the 2019-2021 biennium and beyond..... | May 2018 |
| | Process project information for use in State Water Commission budget development..... | Aug. 2018 |
| | Assist with the advancement of proposed new legislation for the 2019 Legislative Assembly | Fall 2018 |
| | Develop a final 2019 WDR | Dec. 2018 |
| | Present the 2019 WDR to the Legislative Assembly – outlining funding needs..... | Jan. 2019 |

Water Education

Agency Goals Satisfied:

- To educate the public regarding the nature and occurrence of North Dakota’s water resources and water development efforts.

Project/Program Objectives:

- Develop, promote, and provide opportunities statewide, to K-12 formal and non-formal educators and students to expand their knowledge and understanding of water resources by:
 - Maintaining availability of indoor and outdoor water science/education programs and training resources.
 - Acquiring and distributing a balanced inventory of water resource information, education tools, services, programs, and resource materials.
 - Conducting institutes, workshops, in-service and pre-service educational opportunities.
 - Conducting and supporting classroom events, youth camps, water festivals, community water awareness, and youth service events.

Project/Program Overview:

The North Dakota Water Education Program is a balanced, supplemental, and interdisciplinary water science and education program for formal and non-formal K-12 educators and students. The program facilitates and promotes learning, awareness, appreciation, knowledge, and exploration to promote stewardship of North Dakota’s water resources. Project WET (Water Education for Teachers) curriculum guides and resource materials assist in helping youth learn how to think, and not just what to think, while providing means for teachers and students to grasp fundamental concepts related to water resources, watersheds, and the environment. Through a variety of programs, educators and students obtain skills for acquiring and applying knowledge, and to evaluate the results of their actions toward North Dakota’s water resources.

Assumptions and Obstacles:

Continued funding through the Environmental Protection Agency’s (EPA) Section 319 Grant is critical to the success and continuation of the North Dakota Water Education Program.



| ACTION PLAN | TASKS | TARGET DATES |
|---|---|---------------------|
| | Maintain Project WET classroom-ready teaching aids and service contracts in support of water resource education efforts | As needed |
| | Provide in-service and pre-service credit and non-credit educational programs for K-12 educators and resource personnel | Ongoing |
| | Provide varying educational programs/events for K-12 students, communities and general public statewide | Ongoing |
| | Recruit and maintain a Project WET facilitator network by providing leadership training and development opportunities | March 2016 |
| | Provide funds for the Keep North Dakota Clean water education poster contest..... | March 2018 and 2019 |
| | Complete all Section 319 EPA grant development and reporting requirements..... | Ongoing |
| Complete two Project WET Watershed Institutes | Summer 2017 and 2018 | |

Water Resource Data Information Dissemination

Agency Goals Satisfied:

- 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.

Project/Program Objectives:

- Maintain quality water resource data.
- Develop and maintain databases for retrieval of data.
- Maintain trained staff to interpret data.
- Develop and maintain web-based integration for access to data.

Project/Program Overview:

Significant volumes of data are contained in the State Water Commission’s Water Resources Information Management Systems (WRIMS). Private individuals and private enterprise, as well as local, county, state, federal, and international entities routinely make use of various portions of these data sets. Staff facilitate the ability of interested parties to access data of interest to them. A web-based interactive interface is available to allow for direct access to the data on the part of the interested parties. Additionally, numerous interpretive reports are available for various water resources in the state.

Assumptions and Obstacles:

The continuation of the in-house and online retrieval system will depend on the ability of the State Water Commission to maintain internal data management infrastructure.



| ACTION PLAN | TASKS | TARGET DATES |
|---|--|--------------|
| | Anticipate uses for which the data would be needed | Ongoing |
| Educate staff on the use of WRIMS as improvements are implemented | As needed | |
| Communicate with interested parties to determine their informational needs..... | As requested | |
| Create unique programs in order to satisfy requests of an unanticipated nature..... | As requested | |
| Image and store well drilling completion reports | Ongoing | |

Water Resource Monitoring

Agency Goals Satisfied:

- 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, administer, 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.

Project/Program Objectives:

- Collect water resource data.
- Organize and store water resource data.
- Evaluate water-resource data and future data needs.

Project/Program Overview:

Water resource data pertaining to water levels, water quality, and well information is collected on an ongoing basis. This data is stored in a web accessible database. The database currently contains about 1.5 million water-level measurements, 35,000 site locations, 68,000 water quality analyses, and 25,000 sites with lithological descriptions. Additional data acquisition sites are implemented as needed through time. Aquifer parameters and properties are evaluated through an aquifer-testing program.

Assumptions and Obstacles:

Due to federal budget constraints, State Water Commission cost-share has increased to support the United States Geological Survey (USGS) Cooperative Water Resource Monitoring Program. This may continue in the future.



ACTION PLAN

| TASKS | TARGET DATES |
|---|---------------------|
| Install test holes and plug obsolete observation wells | Apr.-Dec., annually |
| Install 125-175 monitoring wells | Apr.-Dec., annually |
| Install 20-30 staff gauges, and monitor water levels and flows | Apr.-May, annually |
| Measure 25,000-30,000 water levels in wells and surface water bodies | Apr.-Dec., annually |
| Collect data from 60-70 continuous water level recorders..... | Jan.-Dec., annually |
| Upgrade 60-70 continuous monitoring locations with real-time telemetry | Dec 2017 |
| Collect 1,500-2,000 samples from wells and surface-water bodies..... | Apr.-Dec., annually |
| Analyze samples for various chemical constituents | Apr.-Jan., annually |
| Repair and maintain 3,500-4,000 measurement and sampling locations..... | Apr.-Dec., annually |
| Enter data into database..... | Ongoing |
| Coordinate with the USGS Cooperative Water Resource Monitoring Program to continue funding support for approximately 46 surface water gage sites, 84 observation wells monitored monthly, 22 observation wells monitored real-time, and 150 water quality analyses collected from co-op monitoring network..... | Ongoing, annually |
| Conduct aquifer tests – 1 or 2 per year | As requested/needed |

Water Resource-Related Economic Development

Agency Goals Satisfied:

- 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.

Project/Program Objectives:

- Identify and evaluate potential water supplies for economic development.
- Support programs to encourage water-using industries.
- Support programs to encourage irrigation.

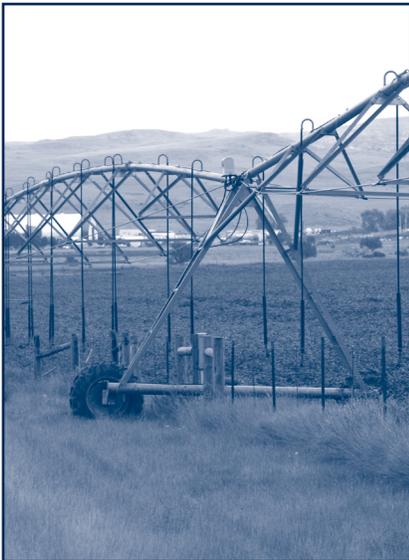
Project/Program Overview:

Water utilization is a key ingredient in many potential opportunities for economic development. Numerous studies and reports have documented potential water supplies for economic development. Additionally, existing reports and/or water resource data are interpreted by staff in the form of short reports to aid industries in determining the viability of various water resources with respect to their water needs in their consideration of locating in North Dakota.

The State Water Commission, in conjunction with the Bank of North Dakota, provides cost-share for new irrigation under the auspices of the Agricultural Partnership in Assisting Community Expansion (AgPACE) program. The State Water Commission also provides support for irrigation through its cost-share program.

Assumptions and Obstacles:

There is a limited amount of ground water of a quality suitable for irrigation and industry. The one significant water resource in the state, the Missouri River, is not located where most potential water users want to locate.



| ACTION PLAN | TASKS | TARGET DATES |
|--|--|--------------|
| | Produce "synopsis" reports on water supplies for interested entities | As requested |
| Produce or provide water resource interpretive reports | Ongoing/As requested | |
| Administer the AgPACE program | Ongoing | |
| Support the North Dakota Irrigation Association's efforts to expand irrigation development | Ongoing | |

Water Resource Research

Agency Goals Satisfied:

- To conduct research into the processes affecting the hydrologic cycle in order to improve the management of North Dakota’s water resources.

Project/Program Objectives:

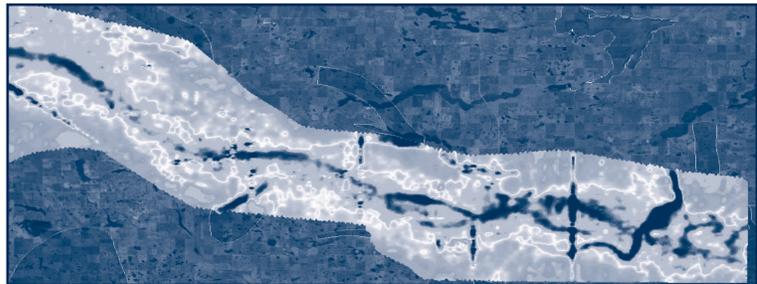
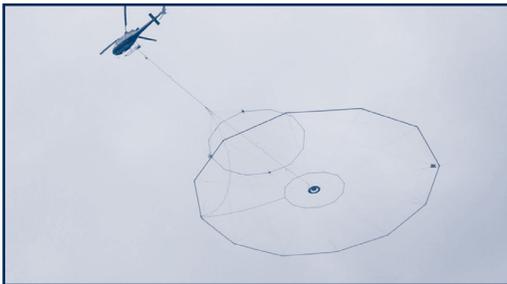
- Support research into water resources of the state.
- Conduct studies of the nature and occurrence of water in order to optimize its conservation and development throughout the state.

Project/Program Overview:

Water resource research involvement falls into three categories. The first is where the State Water Commission provides monetary support for water resource-related research, which is generally conducted by the United States Geological Survey (USGS) or universities. The second category is where the State Water Commission enters into a cooperative study, again generally with university researchers or the USGS. The third category is when the entire study is conducted by the State Water Commission.

Assumptions and Obstacles:

Continuing or reformulated research could result from the interpretations that result from these studies. Continue assisting North Dakota State University (NDSU) tile drainage project with monitoring and placement. Continued USGS funding for the urban water use study. A denitrification study is in the early stages of discussion and planning, and is still tentative.



| ACTION PLAN | TASKS | TARGET DATES |
|-------------|---|------------------------------|
| | Annual review, decisions, and supplemental funding for graduate water resource investigations (North Dakota Water Resources Institute) | Annually |
| | Conduct an evaluation of nitrate contamination and remediation in the Karlsruhe aquifer | Annually |
| | Assist and provide partial funding for study of irrigation through tile drains in Richland County..... | 2016-2019 |
| | Conduct cooperative study of urban water use with the USGS and North Dakota State University..... | 2017 & possibly through 2019 |
| | Conduct airborne electromagnetic survey of the Spiritwood aquifer in Stutsman County | Fall 2016-2019 |
| | Potential collaboration with other state agencies in an evaluation of aquifer denitrification capacity..... | In planning |
| | Conduct investigations and pilot studies of aquifer storage and recovery (ASR) potential in aquifers throughout the state..... | Ongoing |
| | Conduct investigations of the potential for aquifer reservoiring to maximize the the efficiency of beneficial use of the waters of the state through conjunctive management of the surface and ground waters of the state | Ongoing |

Water Rights Administration & Processing

Agency Goals Satisfied:

- To regulate the use of water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Process water permit applications.
- Perfect conditional water rights.
- Maintain meticulous water right records.
- Document permitted water use.

Project/Program Overview:

NDCC 61-04-02 requires that all water uses except for domestic, livestock, fish, wildlife, and other recreational uses (unless the aforementioned are greater than 12.5 acre-feet per year) apply for a water permit before putting water to beneficial use. Set procedures are mandated by Century Code and regulations. Staff guide applicants through this process. In addition, records, documents, and a relational database are meticulously maintained. Upon completion of water use development, inspections are conducted to verify the ability of the applicant to put water to beneficial use. Based on the inspection report, a Conditional water permit is perfected and filed with the county recorder’s office as a water right associated with the land. Annual self-reported water use forms are verified and recorded to document that water is being put to beneficial use and the water right is being maintained. Technicians in the Water Appropriations Division periodically inspect water meters at water depots serving the oil industry. Beginning July 1, 2014, all temporary permits required an application fee. An online permit application system has been developed, which includes an E-Commerce compliant system for the submission of water permit applications and their associated filing fees. Beginning January 1, 2015, all water depots selling water to the oil industry were required to have a telemetry system that can communicate with the State Engineer Water Depot Database using the agency Simple Object Access Protocol (SOAP) service. The SOAP data is periodically reviewed and compared with meter readings to help ensure data integrity.

Assumptions and Obstacles:

Water use records are dependent on self-reporting of annual water use, which are enforced through fines. Some conditional water permits take long periods of time to resolve water and legal complications.

| ACTION PLAN | TASKS | TARGET DATES |
|---|---|-------------------------|
| | Guide applicants through the water permit application process | Ongoing |
| | Maintain records in each water permit application file | Ongoing |
| | Enter appropriate data into water permit database | Ongoing |
| | Conduct 50-75 inspections of “completed” conditional water permits | Annually |
| | Perfect 25-50 inspected, completed, and conditional water permits | Annually |
| | Send out requests for annual use reports to permit holders for over 3,000 permits | Nov. and Jan., annually |
| | Complete the annual water use data collection process | May, annually |
| | Develop a summary report on annual water use in North Dakota | Sept., annually |
| | Measure pumping rates to help establish water rights | Ongoing |
| | Maintain water use records to quantify water rights..... | Ongoing |
| | Monitor telemetry compliance for industrial water depots | Ongoing |
| | Process meter reports from industrial water depots | Ongoing |
| | Inspect all active water depot sites associated with Conditional, Perfected, and Temporary permits..... | Annually |
| Maintain & enhance the On-Line Temporary Water Permit Database system for the processing of 800 to 900, temporary water permit applications | Annually | |

Water Rights Evaluation & Adjudication

Agency Goals Satisfied:

- To regulate the use of 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.

Project/Program Objectives:

- 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 water to protect and enhance the quality and quantity of North Dakota’s water resources.
- Evaluate water permit applications and recommend decisions to the State Engineer.

Project/Program Overview:

The allocation of water resources for beneficial use can result in competition for those resources. This competition may cross political boundaries. Efforts are continually underway to protect prior water rights, while maximizing benefits. These efforts are extended outside of the state, in other states and provinces, as well as internally, with other state agencies having varying regulatory authorities. In the assessment of the degree to which the state’s water resources can be used beneficially, the rights of prior appropriators need to be assessed and protected. Staff prepare recommendations for the State Engineer, with the objective of encouraging beneficial use while protecting prior rights.

Assumptions and Obstacles:

Different organizations and different states and provinces have different perspectives and laws pertaining to the best way to manage water resources. In the evaluation of water right applications, the state’s water resources are becoming more fully appropriated. Thus, the process of allocating additional water while protecting prior water rights is becoming more difficult and time consuming.



| ACTION PLAN | TASKS | TARGET DATES |
|--|---------------------------------------|--------------|
| | Gather data on shared resources | As needed |
| Discuss possible actions regarding water resources | As needed | |
| Negotiate management decisions..... | Ongoing | |
| Conduct water resource investigations | As needed | |
| Prepare recommended decisions on water right applications, and administration of water rights for the State Engineer | Ongoing | |
| Prepare recommended decisions on temporary authorized water use applications for the State Engineer..... | Ongoing | |
| Monitor annual water use and enforce water laws and regulations..... | Ongoing | |
| Streamline the water permit application process to improve time efficiency..... | Ongoing | |

Watershed Planning & Coordination

Agency Goals Satisfied:

- To manage water resources for the future welfare and prosperity of the people of North Dakota.

Project/Program Objectives:

- Provide technical expertise and assistance toward the development and implementation of regional watershed management planning efforts, and studies.

Project/Program Overview:

In addition to water management planning efforts at the state level, the State Water Commission believes that it is also beneficial for stakeholders that live and work within key watersheds of the state, to guide the management of water resources in their region through the development of regional water plans. In order for regional planning efforts and studies to proceed and evolve in a productive manner, it is often required that local, state, and federal government officials participate in those planning processes as technical advisors.

In recent years, the State Water Commission has provided technical assistance to the Devils Lake, Upper Sheyenne, Red, Mouse, and Missouri River joint water boards toward the development of water management plans and other watershed planning efforts. In addition, in the Red River basin, which is the focus of many projects and planning efforts, the Water Commission has an office with a full-time engineer in Fargo.

Beyond participating in regional planning and coordination efforts within the state, State Water Commission staff members are also involved with international and national organizations involved in interjurisdictional water management. Examples include the International Joint Commission, the Red River Basin Commission, the International Red River Board, the International Souris River Board, the International Water Institute, the Red River Retention Authority, the Assiniboine River Basin Initiative, and the Missouri River Association of States and Tribes.

Assumptions and Obstacles:

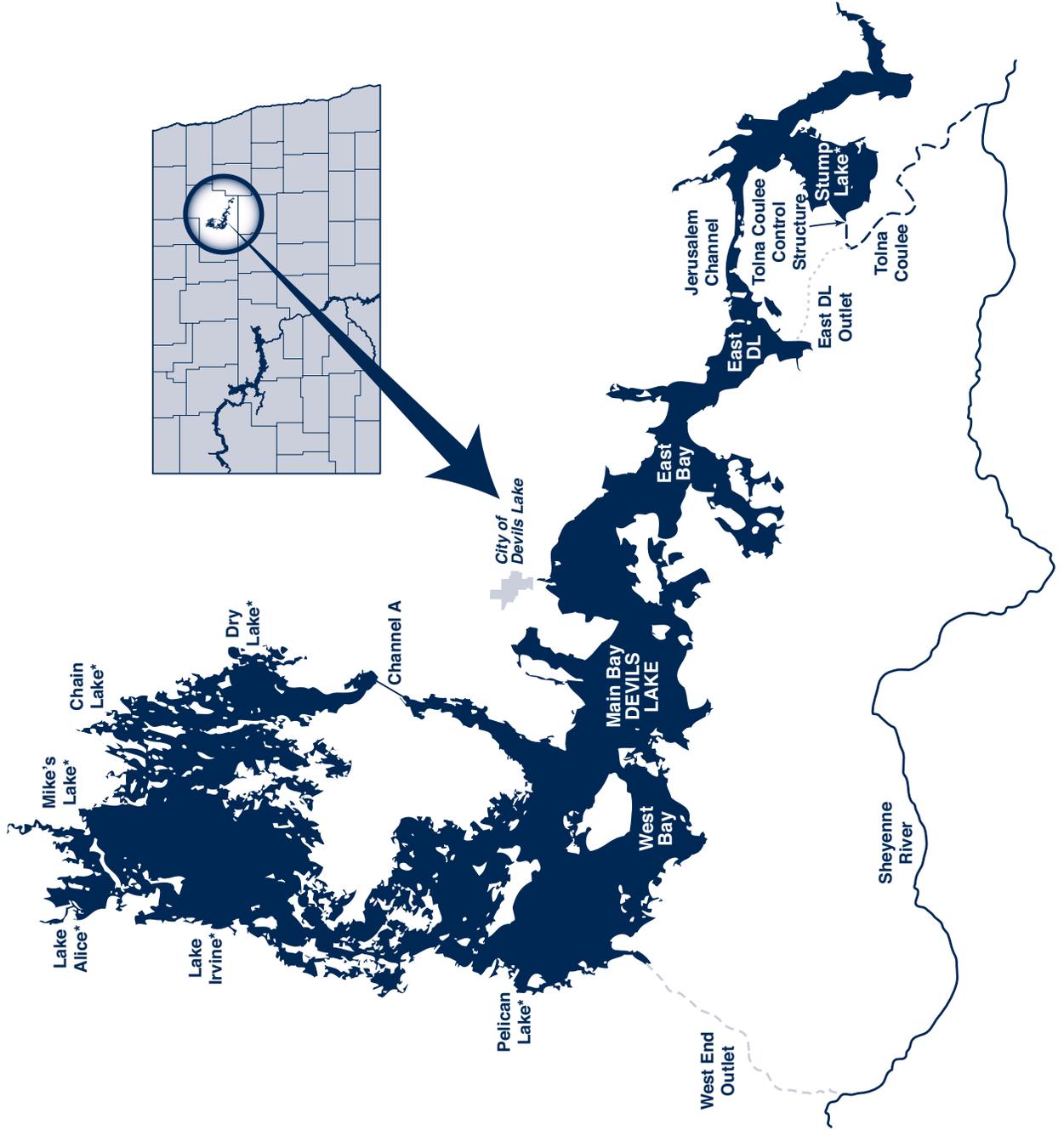
In order for all of the above organizations and planning/coordination efforts to succeed in the future, they will require continued commitment and dedication from all stakeholders involved in those processes.



| ACTION PLAN | TASKS | TARGET DATES |
|--|---|--------------|
| | Provide technical assistance toward the implementation of watershed management improvement plans..... | Ongoing |
| Continue to participate as board members and technical advisors for regional, international, and national watershed planning and coordination efforts..... | Ongoing | |

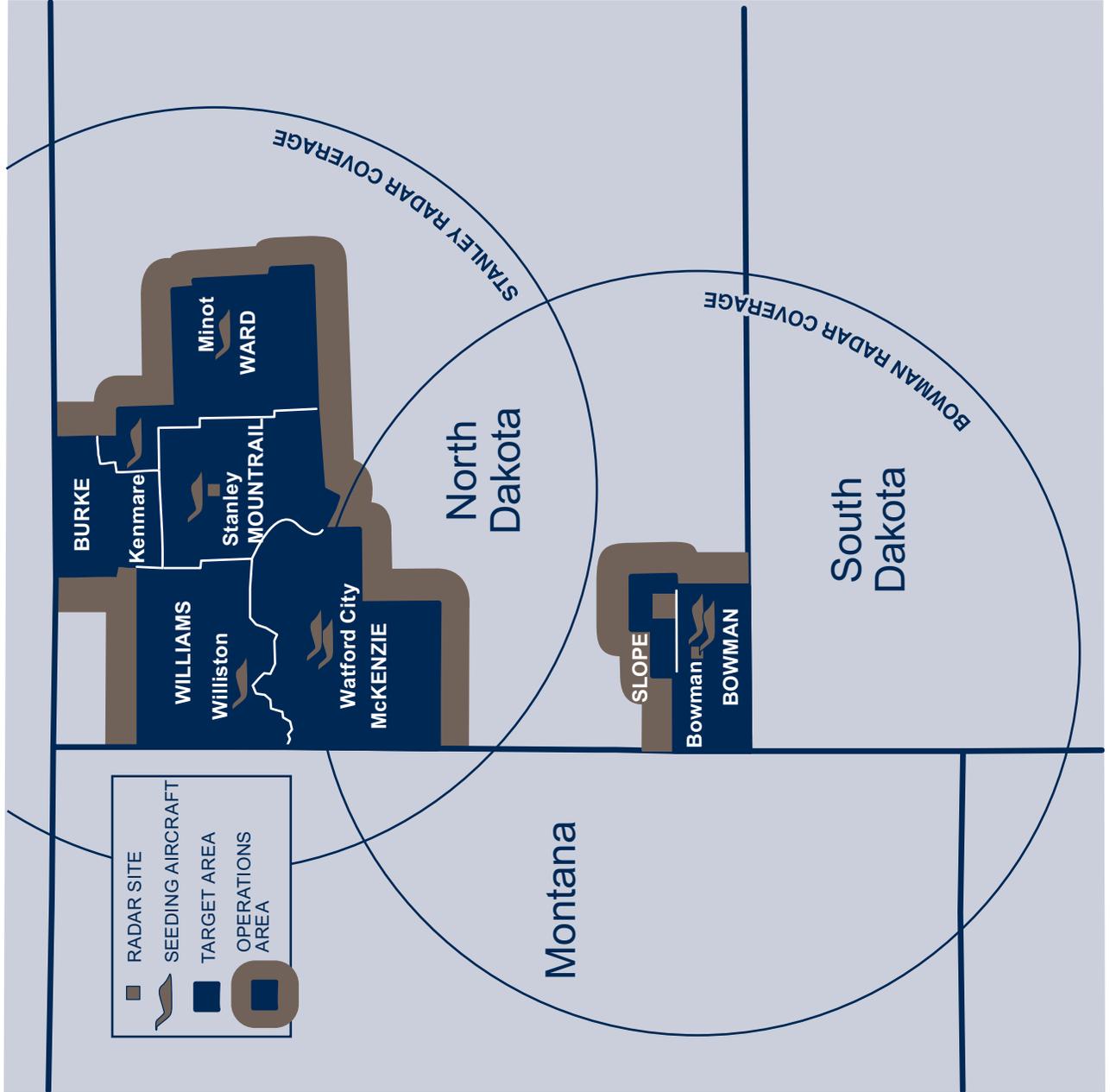
Map Appendix

Devils Lake Outlets

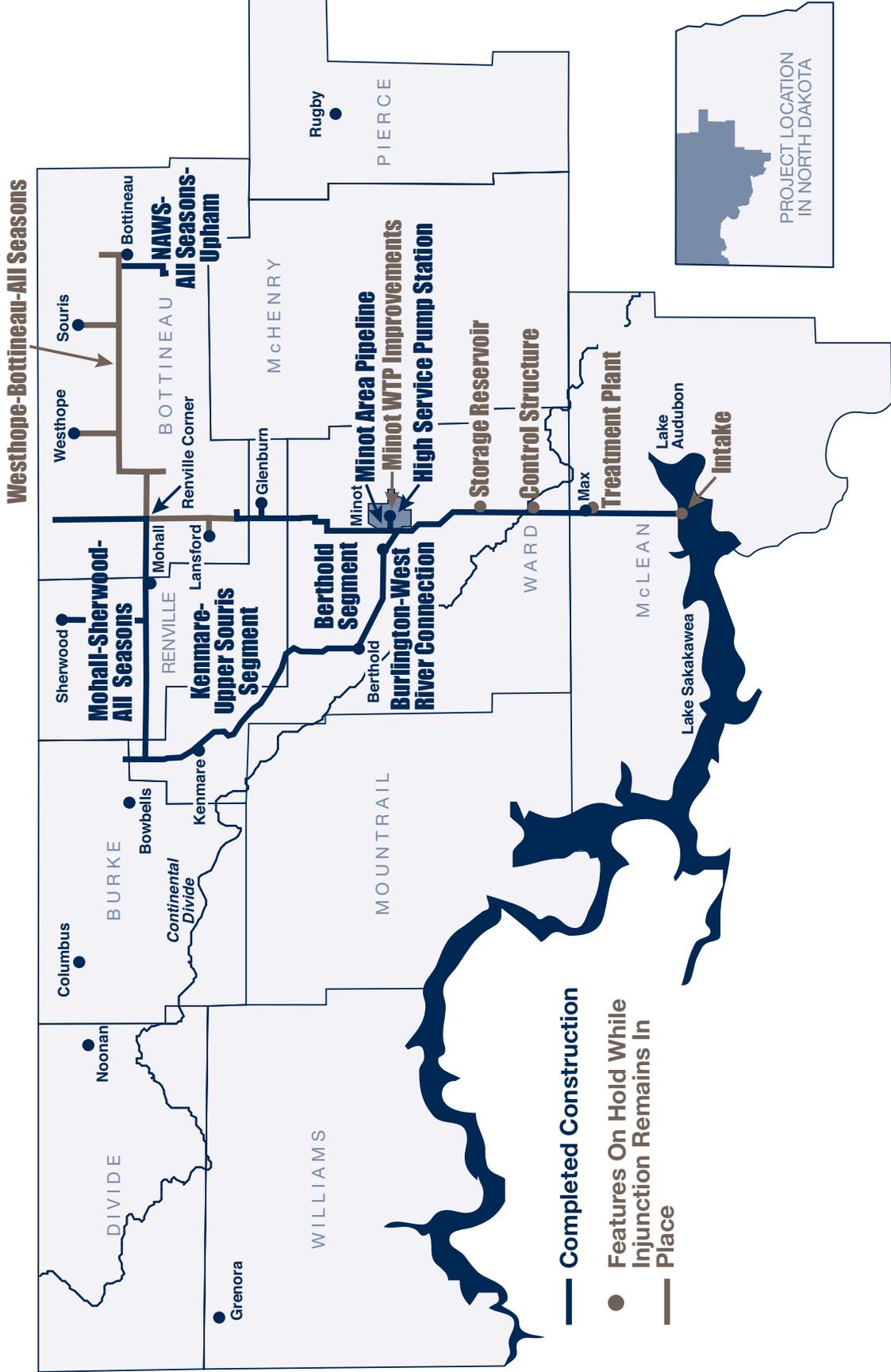


*As the Lake has risen, a series of smaller lakes have been absorbed by Devils Lake.

North Dakota Cloud Modification Project



Northwest Area Water Supply Project





North Dakota State Water Commission
900 East Boulevard Ave. Dept. 770
Bismarck, ND 58505-0850
www.swc.nd.gov