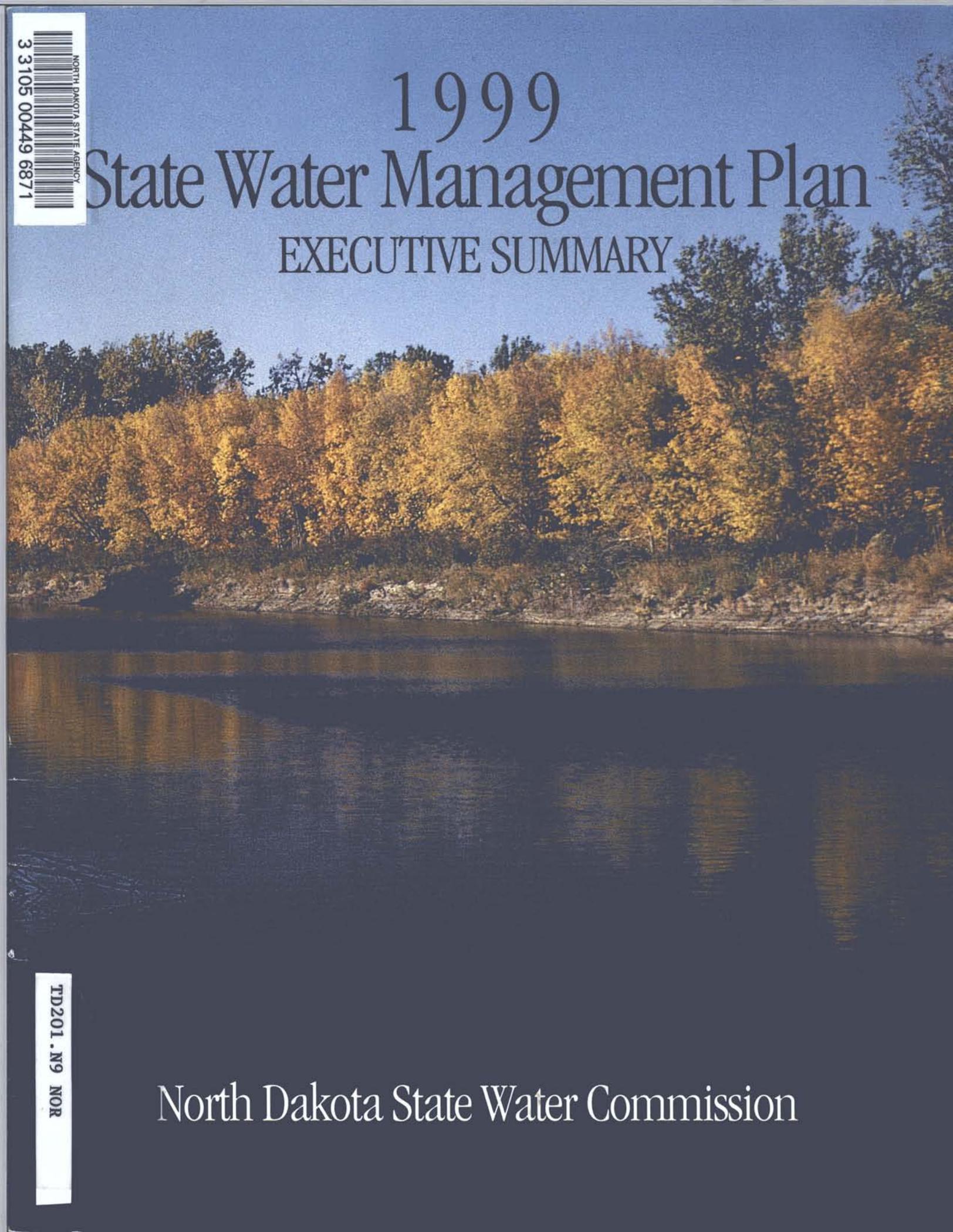


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1999 State Water Management Plan EXECUTIVE SUMMARY



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North Dakota State Water Commission



1999 State Water Management Plan

EXECUTIVE SUMMARY

GOVERNOR

Edward T. Schafer

COMMISSIONER OF AGRICULTURE

Roger Johnson

WATER COMMISSIONERS

Mike Ames, Florenz Bjornson,
Judith DeWitz, Elmer Hillesland,
Robert Thompson, Jack Olin,
Harley Swenson

STATE ENGINEER AND SECRETARY

David A. Sprynczynatyk

STATE WATER COMMISSION PLANNING AND EDUCATION STAFF

Director: Lee Klapprodt

Water Resource Planners:

Linda Weispfenning, Brett Hovde
Jeremy Williams, Bill Sharff

Research Analyst: Larry Knudtson

Graphic Artist: Brenda K. Hove

Secretary: Dawn Dukart

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North Dakota State Water Commission

January 1999

Dear Friends,

The need for water has always been a priority in this state. From the early settlement of the Native Americans, to Lewis and Clark, to the Dustbowl, until the present, water is the thread that has woven decades of families, tribes and cultures together. As North Dakota moves toward the next century, water will be no less significant. This 1999 State Water Management Plan lays the foundation for future water management in North Dakota.

The state's municipal, rural, and industrial water supply needs are continually increasing. Water for agriculture and the state's fair claim to Missouri River water remain significant priorities. An increased awareness of environmental quality issues will continue to demand a balance of economic growth and long-term environmental health.

This executive summary touches only the surface of this important plan for North Dakota. It is, however, an admirable representation of the current state of the water management and the state's vision for the 21st Century.

Sincerely,

A handwritten signature in dark blue ink, reading "David A. Sprynczynatyk". The signature is fluid and cursive.

David A. Sprynczynatyk
State Engineer

Introduction

Water is the bond of past, present, and future generations of North Dakotans. It has shaped the geographical settlement of the state's cities, the welfare of its inhabitants, and the livelihood of the state's economy.

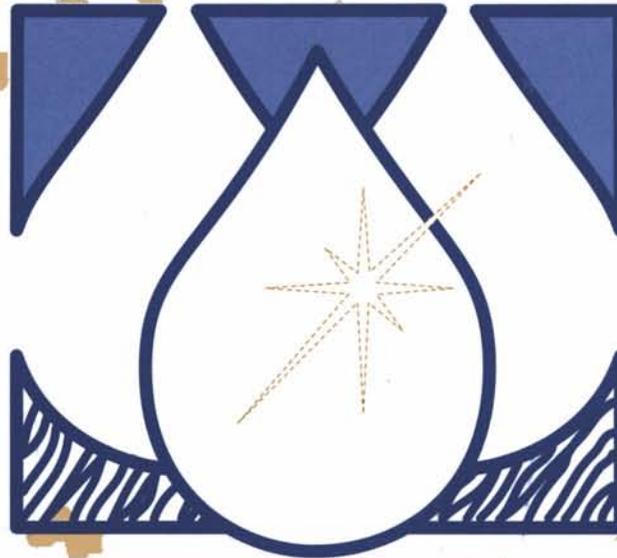
John Wesley Powell stated at the 1889 North Dakota Constitutional Convention, "Years will come of abundance, and years will come of disaster, and between the two the people will prosper and be unprosperous and the thing to do is look the question square in the face and provide for this and for all years."

The union of people, water, and land has always run as a constant thread through the state's historical backdrop. It is this thread that will determine much of North Dakota's future economic and social successes. Water is North Dakota's most precious natural resource and water planning for future generations has become increasingly more vital.

The economic future of North Dakota businesses, the future growth of the cities and towns, and the diversification of agriculture begin with one common theme—the wise management of the state's water.

The 1999 State Water Management Plan

The objectives of the 1999 State Water Management Plan are to develop a comprehensive vision for water management for the 21st century; to illustrate how



North Dakota water resources are currently managed and the responsibilities associated with that management; and to identify changes that should occur to improve water management.

The State Water Commission is required by virtue of the North Dakota Century

Code, Section 61-01-26 and Section 61-02-14, to complete the State Water Management Plan. The North Dakota Legislative Assembly has explicitly expressed a need for "comprehensive, coordinated, and well-balanced short- and long-term plans and programs. . . [with responsibility for the] optimal protection, management, and wise utilization of all the water resources in the state."

Moreover, implementation frameworks and associated recommendations are consistent with the 55th North Dakota Legislative Assembly Session Laws, Chapter 25, Section 9, which reads:

The legislative assembly finds that there is a critical need to develop a comprehensive statewide water development program. The state water commission shall develop and implement a comprehensive statewide water development program. The commission shall design the program to serve the long-term water resource needs of the state and its people and to protect the state's current usage of, and the state's claim to, its proper share of Missouri River water.

Water Use, Needs, and Trends

Water in North Dakota is used in a variety of ways. While the traditional uses of "mining, irrigating, and manufacturing" found in the North Dakota Constitution in Article XI, Section 3 still remain prevalent, new diverse uses and needs are continually being created.

Current Water Use

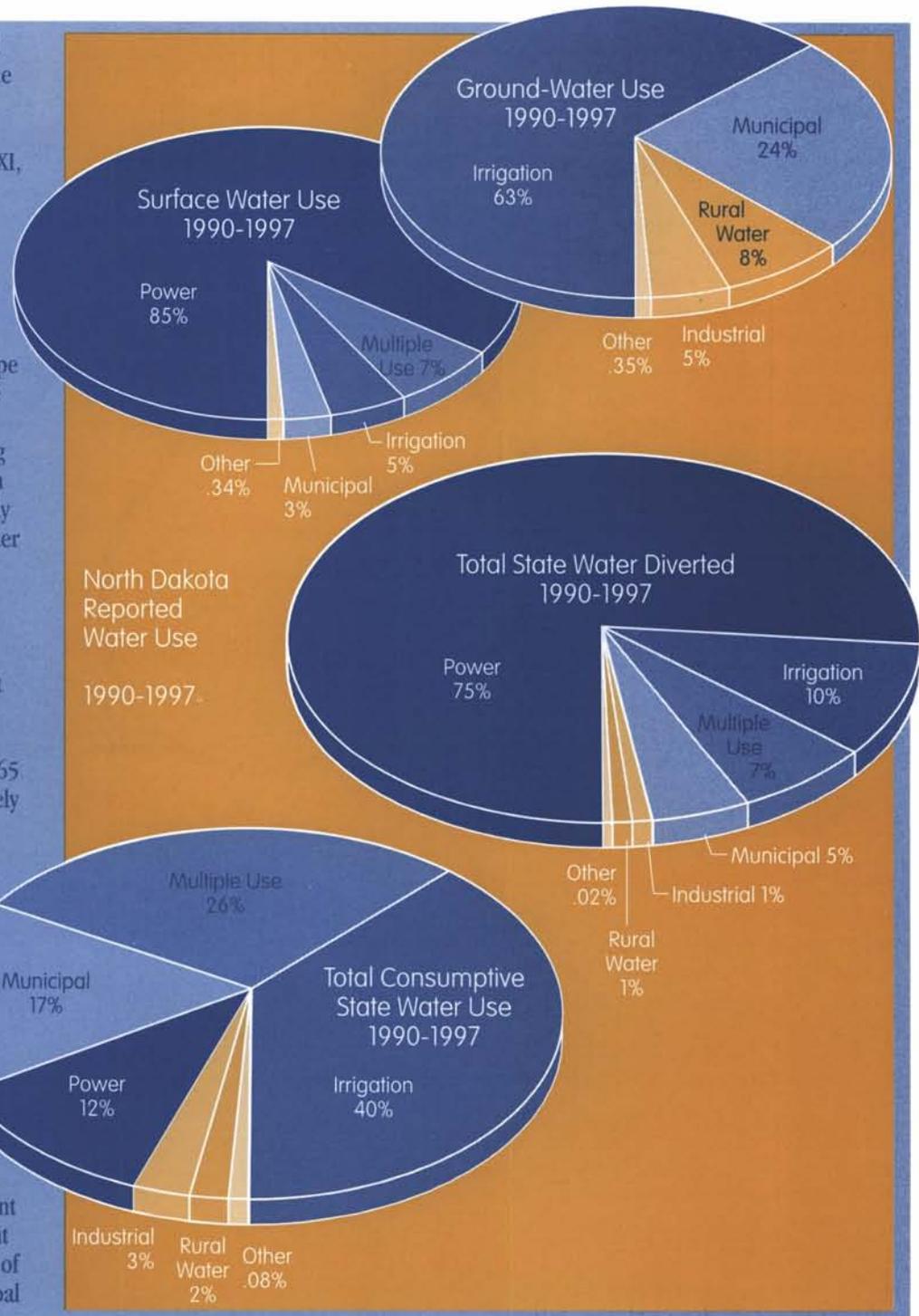
Water use is documented based on its type of use and source. Use is reported to the State Water Commission on an annual basis and used as a factor in determining future appropriations. On average, North Dakota uses 1,285,597 acre-feet annually from both ground-water and surface water sources.

GROUND WATER USE

Ground-water use is accounted for primarily by irrigation and MR&I uses. It serves as the primary domestic water source for areas not served by Missouri River water. Ninety-four percent of the 365 incorporated communities in the state rely on ground water from private wells, municipal distribution systems, or rural water systems. Moreover, ground water is virtually the sole source of water used for domestic purposes by farm families and residents of small communities with no public distribution system. Irrigation accounts for over 60 percent of ground-water use.

SURFACE WATER USE

Power generation accounts for 85 percent of surface water use, of which 97 percent is non-consumptive. Nearly 100 percent of the water used for thermoelectric and coal



gasification purposes is obtained from Lake Sakakawea and the Missouri River. Surface water supplies almost 60 percent of total water used for irrigation. Approximately 40 percent of the state's population and industry relies on surface water to meet their water needs.

TOTAL WATER DIVERTED

Total water diverted, including consumptive and non-consumptive uses, is primarily used for power, agriculture, and

MR&I demands. Multiple use categories may include recreational, MR&I, flood control, fish and wildlife, or any number of miscellaneous uses.

Power generation accounts for over 75 percent of the total reported water use. In terms of total consumptive water use, however, power generation accounts for only 12 percent. Irrigation accounts for 40 percent and MR&I needs comprise nearly 30 percent of the consumptive water need in the state.

Dakotans live in urban than in rural areas. Demographics point to a continuation of this trend.

The North Dakota Census Data Center estimates only eight counties (three urban counties, three predominantly reservation counties, and one energy related county) will increase in population from 1995-2010. All other counties, 46 of 53, are predicted to lose an average of 14 percent of their 1995 population during the same time period. The total state population is expected to decrease by approximately 6 percent.

Future Water Needs

MUNICIPAL, RURAL, INDUSTRIAL

North Dakota's changing population distribution has dramatic implications for the appropriation of water. Since 1950, urban growth centers, such as Fargo, Grand Forks, Bismarck, Minot, and Dickinson, increased in population by 81.6 percent, while rural areas lost 37.7 percent. Census estimates in 1987 revealed for the first time that more North

As urban areas continue to grow, especially in eastern North Dakota, water supply must be carefully planned for and managed. The Red River accounts for only 6 percent of the annual flow of surface water in the state, while the basin is home for more than 30 percent of the state's population.

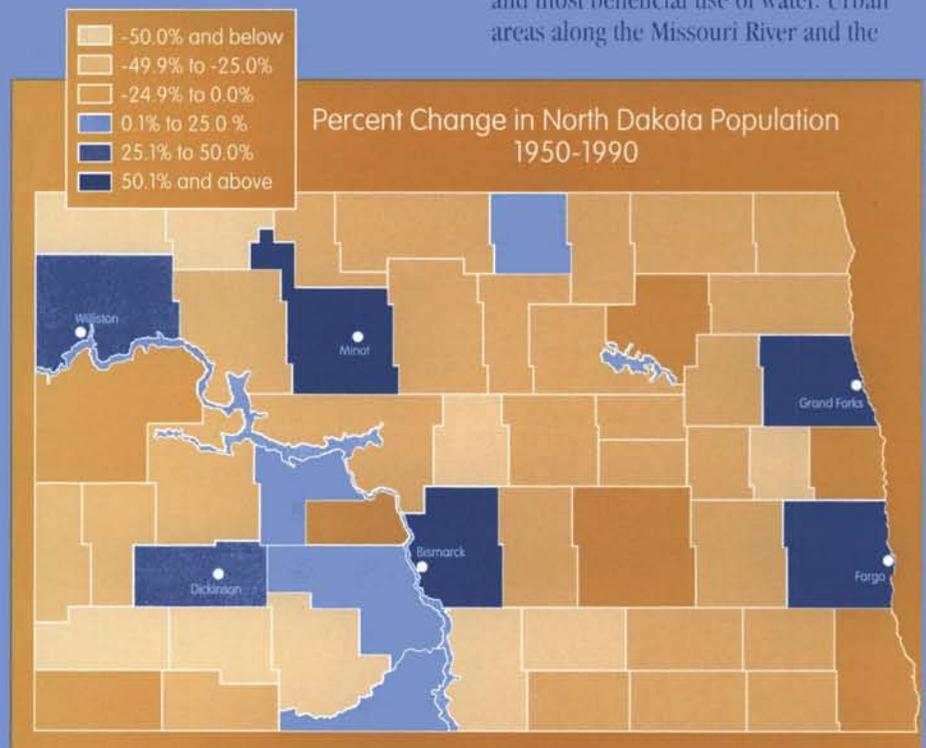
Domestic water use demands in urban areas is continuing to grow and could result in future conflicts over the highest and most beneficial use of water. Urban areas along the Missouri River and the

Dakota Water Resources Act of 1998

The Dakota Water Resources Act of 1998 (DWRA) further amends the Garrison Diversion Reformulation Act of 1986. DWRA outlines a program to meet the water needs of North Dakota including irrigation, Municipal, Rural and Industrial (MR&I), fish and wildlife, recreation, flood control, augmented stream flows, and ground-water recharge.

Key Components:

- \$200 million to complete facilities to meet Red River Valley water supply needs.
- \$300 million for State MR&I grant program.
- \$200 million for Indian MR&I program.
- \$6.5 million for recreation projects, including a wetlands interpretive center.
- \$25 million for the Natural Resources Trust.
- \$40 million for construction of a new Four Bear Bridge across Lake Sakakawea.



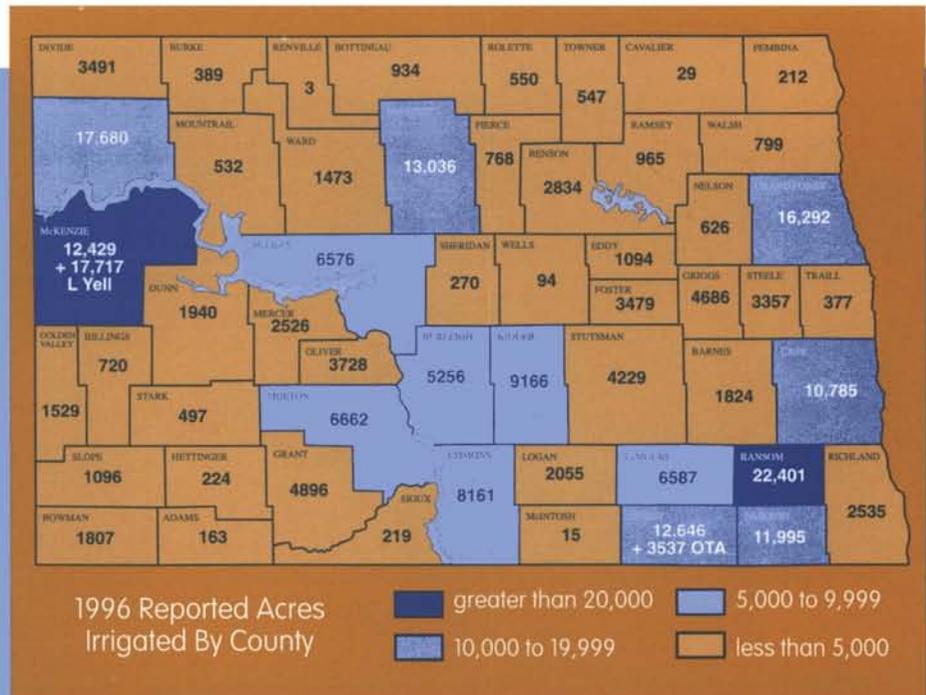
Southwest Pipeline water supply project are positively situated to meet the future water needs. Areas directly north of the Missouri River stand to have significant infrastructure improvement with the implementation of the Northwest Area Water Supply Project.

In addition to the urban growth centers, surrounding non-urban commuter counties are increasing in population and serving as bedroom communities for larger cities. The 1990 census revealed commuter rates from surrounding counties into Bismarck, Fargo, and Grand Forks to be more than 56 percent in some areas. The water supply needs for these areas will continue to grow and could be overshadowed by higher profile water problems in urban areas. This necessitates proper water supply planning in these areas.

General industrial water demands are consistent with changing population trends. With the exception of agricultural processing facilities, industrial water growth is expected to increase around larger urban areas and remain low in the rural areas. Agricultural processing, however, represents a significant demand in certain rural areas. Raw water needs and their geographic distribution relating to future agricultural processing is speculative, but is important to the future economic growth of the state.

Additional future water supply concerns exist on Native American reservations because of increasing populations. Native American reservation populations have grown from approximately 21,000 to over 36,000 since 1990. The average age of the population is 23 with 43 percent under the age of 20.

Demand for improved municipal, rural, and industrial water supply is expected to remain strong in response to more restrictive water quality standards and continued growth in agricultural processing.



AGRICULTURAL

Agriculture is the top economic sector in North Dakota. Irrigated agriculture is the largest consumptive water user in the state and represents the greatest opportunity for economic growth. In 1996, the state produced more than \$4 billion in farm commodities. Agriculture employs 24 percent of the workforce and affects 90 percent of the land-use.

Nine major facilities have been constructed in the Red River basin during the past ten years, increasing farm market potential and demands on water use. In addition, the number of acres irrigated increased by 15 percent from the mid-1980s. Irrigation in the 1990s has accounted for 40 percent of statewide consumptive water use. Since 1990, irrigation has diverted an average of over 150,000 acre-feet of water annually. The total number of acres irrigated, however, remains less than 1 percent of the total acres harvested.

ENERGY

Water use for energy generation has been stable and consistent during the past decade. Although energy generation is the largest user of water, accounting for 76

percent of total use, it is largely non-consumptive. According to North Dakota Public Service Commission estimates, future demand for water is not likely to increase. Demand in the future may, conversely, slightly decrease due to increased efficiency in hydroelectric energy generation.

FISH, WILDLIFE, & RECREATION

Water uses, such as fish and wildlife and recreation, are generally a part of larger multiple use projects, such as reservoirs or small dams. Although independent uses exist, they are generally small and account for less than 1 percent of the total water use. Currently, the state does not have the legal authority to issue permits for minimum stream flows. Any change in regulatory authority would require modification to current legislative statutes. Demand for water for fish and wildlife and recreation could increase in the future through the legislation of minimum stream flow or in-stream flow permits. The permits would be intended to maintain a minimum water flow in a stream to protect crucial habitat and other purposes. A multi-agency task force is currently studying the necessity and viability of establishing minimum stream flows.

Vision for the 21st Century

It is the vision of water management for the 21st Century that North Dakota will enjoy an adequate supply of quality water. Water resource management will ensure health, safety, and prosperity; and balance the water needs for present and future generations.

North Dakota's vision of water management for the 21st Century provides a long-term direction for water development and the State Water Commission. It is reflective of current water trends and builds on the successes and opportunities available to the state.

In order to achieve the vision, the state must address several critical water development issues, including developing Missouri River water, developing adequate water supplies for eastern North Dakota, financing future water development, and balancing the public interest and the public trust.

The state's water management mission is "Stewardship of North Dakota's water resources."

Oahe account for approximately 97 percent of all available water storage. The largest use of Missouri River water today is for energy production, of which roughly 96 percent is non-consumptive. Total annual North Dakota consumptive water use from the Missouri River accounts for slightly over 1 percent of the annual flow of the river as it leaves North Dakota.

Following the Garrison Diversion Reformulation Act of 1986, the State of North Dakota was assigned 1.9 million acre-feet of the original 3.1 million acre-feet permitted for the Garrison Diversion Project. The State's permit is based on 1986 estimations of approximately 1.5 million acre-feet for potential irrigation, 36,000 acre-feet for MR&I, 200,000 acre-feet for recreation, and 231,000

other requirements. These Missouri River diversion plans represent the broad state goals for the development of Missouri River water.

CURRENT DEVELOPMENT OPPORTUNITIES

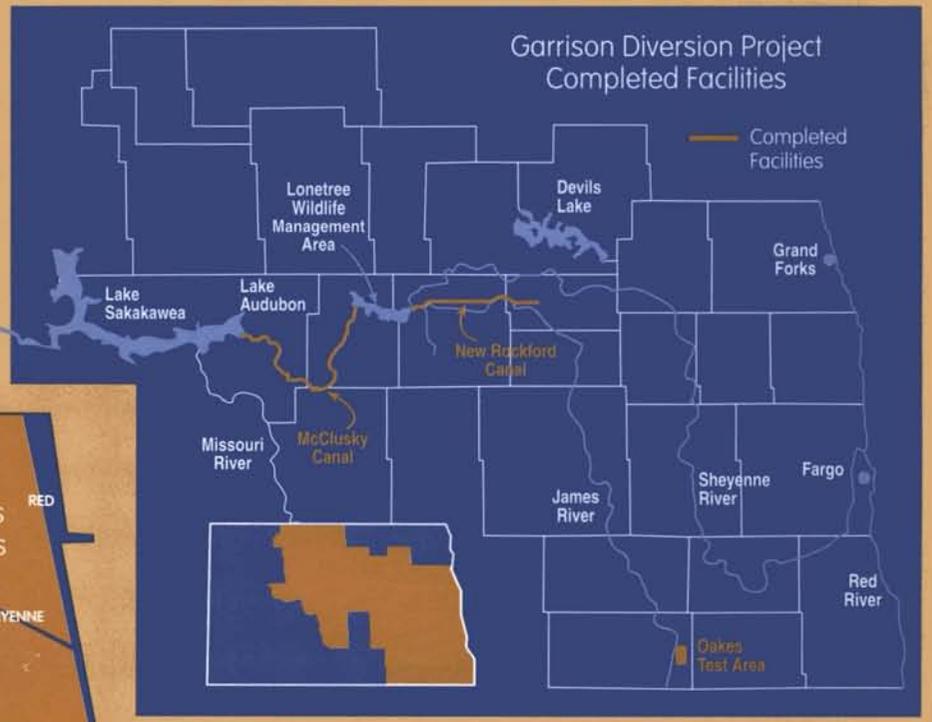
The greatest opportunities for the development of Missouri River water are irrigation and municipal, industrial, and rural water supply.

Irrigation

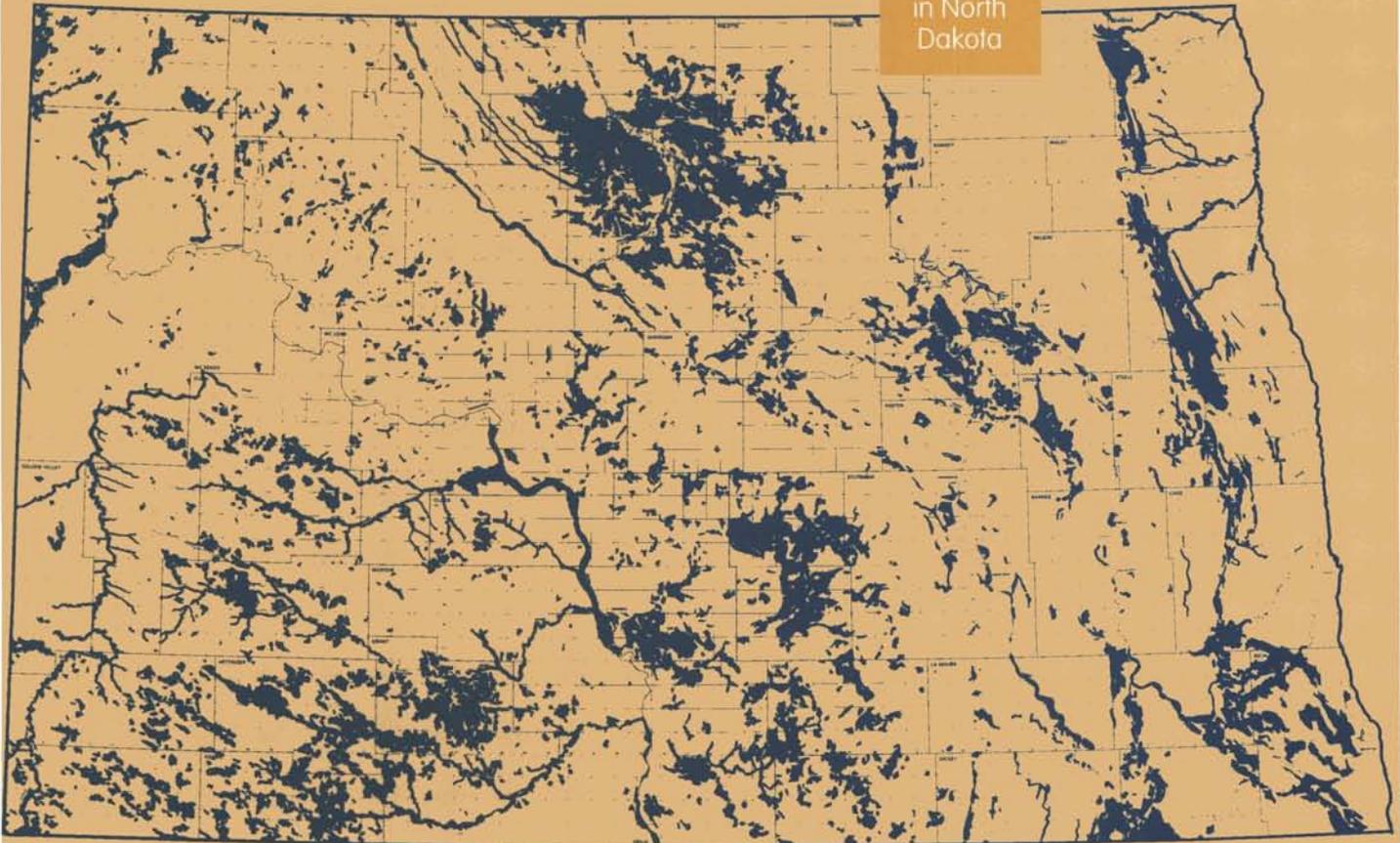
Federal support for the development of North Dakota irrigation has declined with the numerous reauthorizations of the Garrison Diversion project. Originally planned to irrigate 1.2 million acres, the 1998 version of the project, if approved, would retain authority for only 77,000 acres of irrigated land.

Development of Missouri River Water

The North Dakota State Legislature has expressed the desire to develop the state's fair claim to Missouri River water. Nearly 96 percent of North Dakota's surface water is located in the Missouri River and its reservoirs. Lake Sakakawea and Lake



Irrigable
Acres
in North
Dakota



North Dakota has significant potential for new irrigation development in 6.1 million acres of irrigable soils.

Unfortunately, without a supply project, many of these areas do not have an adequate source of water. The State of North Dakota, local entities, and private business have provided much of the needed capital and infrastructure requirements in those areas that have developed.

The potential for irrigation exists at a number of sites. Many of the identified areas for irrigation are being studied for implementation.

Additional irrigation potential exists along the banks of Lake Sakakawea and on the Standing Rock Sioux and Fort Berthold Reservations. Raw water from the Southwest Pipeline project could supply a small amount of water for irrigation.

Each successful irrigation project, in a state ranked last among the 17 western states in terms of total irrigation, will provide economic opportunities. An important element to the success of these projects will be access to federal power. Project pumping power, provided through the original Pick-Sloan project, is necessary to further ensure the success of future irrigation projects.

Municipal, Rural and Industrial Water (MR&I)

The need for Missouri River water for MR&I water uses has grown

Identified Missouri River
Irrigation Potential

| PROJECT NAME | NUMBER OF IRRIGABLE ACRES | CONSUMPTIVE USE (Acres-Feet) |
|--------------------------|---------------------------|------------------------------|
| Horsehead Flats | 46,200 | 92,400 |
| Elk/Charbon | 4,555 | 9,110 |
| Mountrail County | 28,555 | 57,110 |
| Nesson Valley | 7,569 | 15,138 |
| Oliver/Mercer County | NA | NA |
| Cartwright/Charboneau | 6,000 | 12,000 |
| Charlson/McKenzie County | 5,000 | 10,000 |
| Little Muddy | 15,000 | 30,000 |
| Tobacco Gardens | 3,800 | 7,600 |
| McKenzie County | 32,000 | 64,000 |
| Fort Clark | 1,400 | 2,800 |
| TOTAL | 148,679 | 297,358 |

since 1980. Much of the growth can be attributed to increases in population in the communities along the Missouri River and the development of the Southwest Pipeline water supply project.

With the addition of the Missouri West Water Supply Project and the Northwest Area Water Supply Project (NAWS), Missouri River water will be supplied to much of western North Dakota and to more than 95,000 people.

The most important aspect of all MR&I projects is that the people of North Dakota have a consistent and safe water supply. Rural communities in southwestern North Dakota had water supplies on the verge of

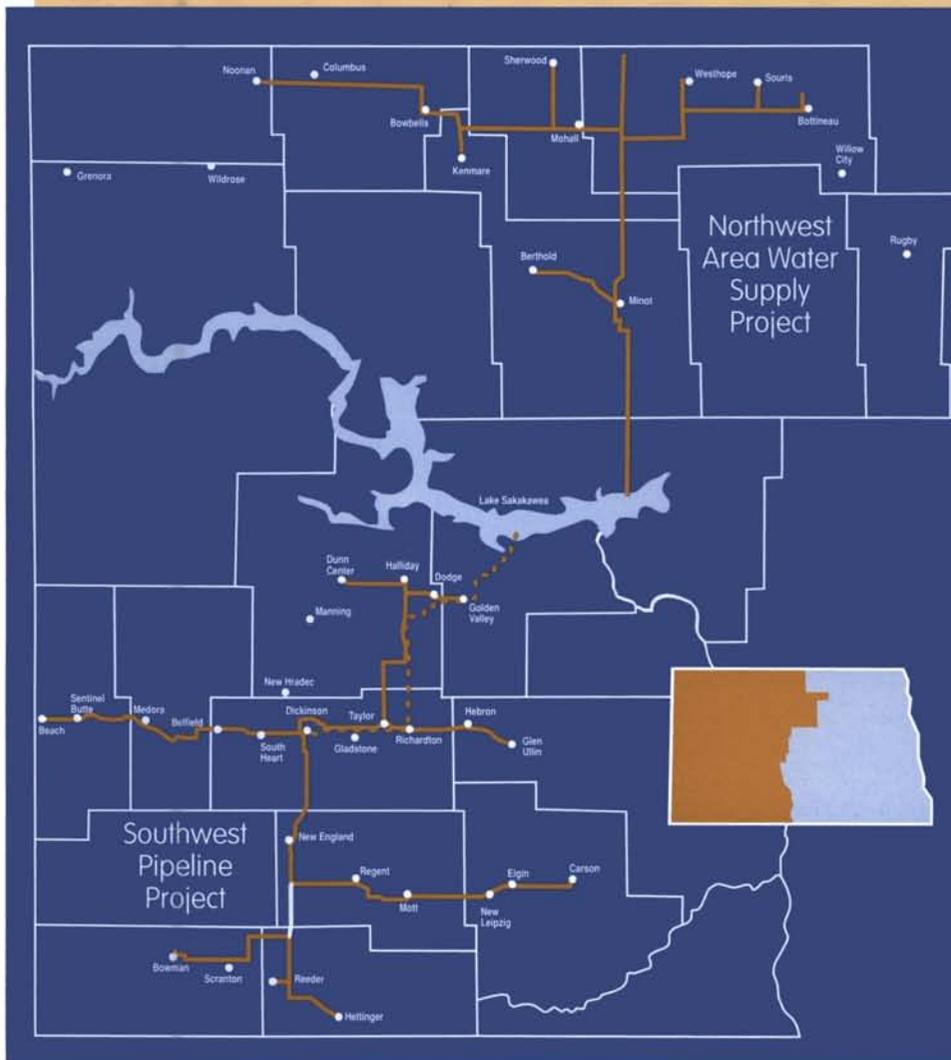
being classified as undrinkable by the U.S. Environmental Protection Agency. As a result of the Southwest Pipeline and the MR&I program, those towns now have high quality water.

The Southwest Pipeline is permitted for 17,100 acre-feet of water, with a design capacity to distribute 18,688 acre-feet. The pipeline, funded through a combination of federal, state, and local funding, currently brings water from the Missouri River to approximately 27,000 persons in southwest North Dakota.

Currently, the project accounts for just under 3,000 acre-feet of annual use, while construction continues. Some of the

capacity will be used to serve another 3,000 people in South Dakota through a cooperative effort to pipe water more than 160 miles for rural water use and livestock watering.

The remaining water in the Southwest Pipeline could be used for small processing facilities or small plot irrigation. A potato plant, consistent in size and development to others in the state, could more than double current water use.



Southwest Pipeline Project
Total Water Use
1994-1998
(in Acre-Feet)



Note: Total Water includes Treated and Raw Water.

The development of the NAWS project in northwestern North Dakota will significantly increase the MR&I use of Missouri River water. The pipeline project is designed to deliver over 12,000 acre-feet of water to towns such as Minot, Bowbells, Mohall, and Bottineau. The project is scheduled to begin construction in 1999.

Critical issues with the NAWS project are the Boundary Waters Treaty of 1909 and the inter-basin transfer of water.

Water Supply for Eastern North Dakota

Increased population growth, agricultural processing, and irrigation have increased water use in the Red River Valley by approximately 30 percent since 1980. Municipal water for Fargo and Grand Forks and others comes from surface water sources. Conversely, eastern rural water systems obtain water from ground-water sources.

Surface and ground-water supplies fluctuate based on climatic conditions. Although rates of increase and decrease in aquifers occurs at slower rates than surface water, extended periods of drought and flooding will have an effect on aquifer water levels. Moreover, during periods of prolonged severe drought, water levels may drop quicker than normal due to increases in use.

To provide municipal and rural water systems with consistent quality water for emergency drought management, as well as for sustained basic use, is a priority for North Dakota.

The Dakota Water Resources Act of 1998 calls for \$200 million in federal MR&I funding to supply Missouri River water to eastern North Dakota. Although the Act does not specify an amount to be diverted, it is generously estimated to have a peak requirement of 200 cubic feet per second (cfs). The diversion would be used to deliver water during the drought prone summer months. Assuming a nine-month operation at full capacity, approximately 108,000 acre-feet would be diverted, which would account for only one-half of 1 percent of the mean annual discharge of the Missouri River as it leaves the state.

The Dakota Water Resources Act of 1998 (DWRA) is being considered by Congress and has yet to be approved at the time of publication of this report.

Funding for Future Water Development

Water development in North Dakota will not move forward without adequate fiscal resources to support it. As the cost of new projects rise and the money available at federal and state levels decrease, funding mechanisms for water development must also change. North Dakota must explore future alternatives for funding water development in a fair and equitable manner and consistent with its vision of water management.

FEDERAL FUNDING FOR WATER DEVELOPMENT

The federal government provides a myriad of water-related funds to North Dakota. Most federal funding, measured in total financial commitment available for water development, is allocated through the Municipal, Rural, and Industrial water supply program. Funds are disbursed to the Garrison Diversion Conservancy District and allocated

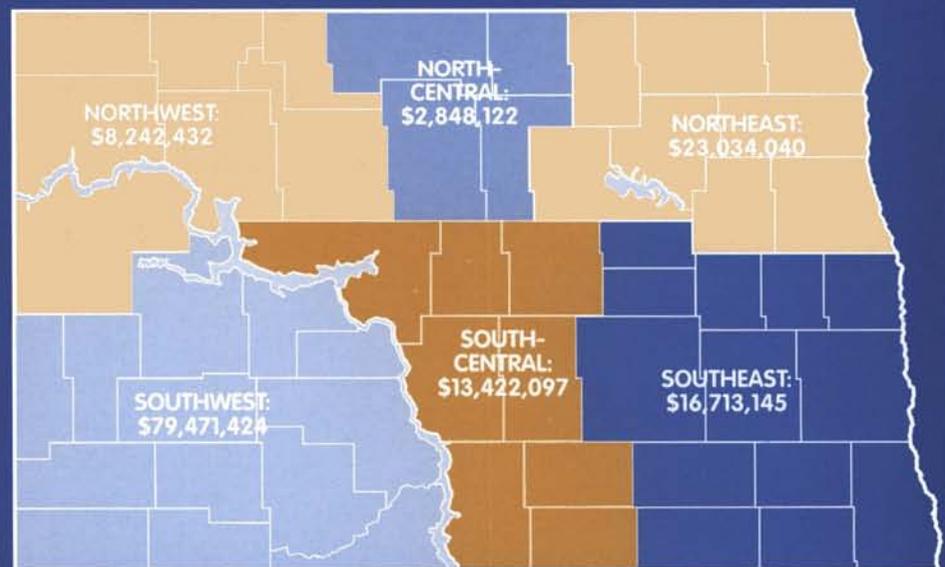
through a joint powers agreement with the State Water Commission. The total budget for the program is \$200 million, of which only \$53 million remain. If enacted, the DWRA would provide an additional \$300 million in funds for continued MR&I development.

The U.S. Army Corps of Engineers and the Natural Resource Conservation Service regularly provide technical and funding assistance to resolve water management issues such as flood control at Grand Forks and Devils Lake. The U.S. Geological Survey and Environmental Protection Agency provide important aid in monitoring and research efforts.

STATE FUNDING FOR WATER DEVELOPMENT

North Dakota funds for water development are authorized by the state legislature generally as part of the State Water Commission Contract Fund. Monies for the fund are allocated from the State General Fund, the Resources Trust Fund, bonding

Municipal, Rural, and Industrial Program Funding by Region
1987-1998



Source: State Water Commission, Summary of Applications Submitted to the Municipal, Rural and Industrial Water Supply Program, 1998.

authority, and other means. Monies allocated to the Contract Fund are not generally disbursed as line items, however budgets are submitted with expected costs for known project needs and allowances for general project needs.

Cost-Share Funding and Policy

The State Water Commission cost-share program is funded with monies allocated to the State Water Commission contract fund. In recent years, much of the fund, excluding bonding, has been financed by a percentage of oil extraction tax revenues.

The North Dakota Constitution provides for funds to be held in the Resources Trust Fund for water-related projects and energy conservation.

The Resources Trust Fund originally received 10 percent of the oil production and extraction revenues. This allocation was changed to 20 percent by the 1997 Legislative Assembly. The State Water Commission allocates monies available for cost-share broadly based on estimates of potential oil tax revenues generated. The distribution of contract funding, therefore, is always subject to a potential budget shortfall near the end of the fiscal biennium due to less than expected oil production revenues.

The State Water Commission will cost-share with political subdivisions, including, but not limited to, water resource districts, irrigation districts, and municipalities to meet local water development needs. In some cases, private industry water supply systems are supported.

Current State and Local Funding for Water Development

| LOCAL FUNDING SPONSOR | FUNDING SOURCES |
|--|---|
| Water Resource Districts (WRD) | Power to accept funds from federal, state, public, or private sources and borrow money for projects. WRDs can issue improvement warrants, revenue bonds, and special assessments, and to levy general taxes (up to 4 mills). WRDs can combine to form Joint WRD Boards for larger, regional projects and levy an additional two mills. |
| Irrigation Districts | Districts can finance for works through the issuance of bonds, warrants, water fees, or user charges. Bonds, warrants, and contracts are payable from special assessments on real property of the district, water charges, sale of water, or a combination of all three. |
| Garrison Diversion Conservancy District (GDCD) | The GDCD has the authority to levy one mill annually within the district to pay expenses and accumulate funds for district purposes. |
| Weather Modification Authorities | Local weather modification authorities may certify annually to the board of county commissioners a tax of up to 7 mills to be used only for weather modification activities in conjunction with the state. |
| Southwest Water Authority | The authority has the power to levy taxes not to exceed one mill for payment of expenses and for accumulation of a fund to pay obligations incurred by the district for the Southwest Pipeline. In 1997, Series A and Series B bonds were issued to fund construction during the 1997-1999 biennium. These revenue bonds are backed by oil extraction tax proceeds. |
| Northwest Area Water Supply Advisory Committee | The State Water Commission may provide for the issuance of bonds to finance the costs of the project. |
| Municipalities | A city has broad authority to finance water projects. It may borrow money on the credit of the corporation and may also issue bonds. |

Biennial Expenditures from the State Water Commission Contract Fund

| BIENNIUM | FUNDS ALLOCATED |
|-----------|-----------------|
| 1987-1989 | \$2.6 million |
| 1989-1991 | \$7.5 million |
| 1991-1993 | \$9.0 million |
| 1993-1995 | \$6.6 million |
| 1995-1997 | \$7.7 million |
| 1997-1999 | \$6.2 million |

FUTURE FUNDING FOR WATER DEVELOPMENT

The federal funding that North Dakota depends heavily on for the development of water supply infrastructure may be reduced or ended. Federal budgets often fluctuate and programs such as the

Municipal, Rural, and Industrial water supply program could feel the weight of budget cuts.

If federal funding does cease, the state must fund water development using other revenue sources. Many local counties do not have the tax base or the economic resources to adequately meet the current cost-share requirements necessary to fulfill their water needs. North Dakota must explore future alternatives for funding water development in a fair and equitable manner.

New combinations of funding mechanisms need to be explored or implemented to at least partially meet future water demands. The State Water Commission noted in 1994 that, "If federal funding allocations were to be reduced or eliminated, the state will be severely challenged. . .to provide revenue to fully implement all projects and programs required to manage and develop the state's water resources."

Increased Local Funding

Cooperation among federal, state, and local governments and the private sector is typically necessary to finance water management projects and programs. A partnership is fostered by each entity's interest in water management and the need to pool financial resources.

The progress of projects and programs, however, is driven by local commitment. Local water management funds usually originate through county or city government actions which are initiated by the project or program's proponents. Local cost-share can be raised through one or a combination of: property taxes (mill levy), special assessments, user fees, revenue bonds, city sales taxes, other fees, and donations.

Reductions in federal or state funds will shift an increased fiscal burden of small and medium size water development projects to local communities.

Bonding

Bonding has been used successfully to finance many recent large water development projects. Two types of bonds are most often used, general obligation bonds and revenue bonds.

General obligation bonds are backed by the full faith and credit of the issuer. Although these bonds have a more favorable interest rate, constitutional and statutory limits exist on the amount of debt issuing governmental entities may incur. Revenue bonds, however, are backed by a claim on the revenue to be

generated by the project. The North Dakota Constitution provides that the state may issue or guarantee the payment of bonds provided that issues in excess of \$2 million are secured by first mortgages upon real estate or upon real and personal property of state-owned utilities, enterprises, or industries.

Revenue bonds are used to finance the Southwest Pipeline Project and could be used for the non-federal funding for the NAWS project. Revenue bonds are also authorized for use in the development of the Devils Lake Outlet Project.

Past Finance Reform Efforts

| EFFORT AND DATE | PROVISIONS OF REFORM | ACTION |
|---|---|--|
| Water Resource Development Study (1979) | HB 1074 was recommended—a bill to raise the Commission's bonding limit from \$3 million to \$20 million, with possibility of an issue in excess of \$20 million where specifically authorized by the legislature. | Bill failed to meet legislative approval. |
| Water Sales Tax (1981) | Prior to 1981, a tax of 3 percent was levied on the gross receipts from all sales at retail, for the "furnishing or service of steam, gas, water, or communication services." There were no statutory provisions which would exempt sales of water from the state sales tax. As a result, the legislature recommended an exemption for all sales of water. | Approved an exemption for all water sales. |
| Governor's Water Strategy Task Force (1991) | The task force recommended a 0.25 percent increase in the state's sales tax, a 7.5 percent surcharge on individual income tax liability, and a 5 percent surcharge on corporate income tax liability. The revenue generated by the taxes would be placed in the resources trust fund and made available for appropriation by the legislature for constructing water-related projects, including rural water systems. The tax increases would have been effective for taxable years beginning after December 1, 1991, and expire on December 31, 1999. Initiated Measure No. 4, creating a 1/2 cent sales tax, was placed on the 1992 General Election Ballot. | The measure was defeated. |

Changes in the current bonding authority may provide for additional funds and flexible financing alternatives.

Prioritization of State Water Commission Cost-Share Policies

The State Water Commission does not prioritize projects for cost-share unless there are insufficient funds to fulfill competing applications. Competing projects must be the same in time. Under these circumstances, water supply projects are the highest priority. No explicit policy exists for ranking the remainder of applications.

The State Water Commission could impose specific and limited filing dates for state funding assistance without legislative changes. Implementing such a policy change would likely increase competition between applicants for available funds.

A multitude of alternative priority systems exist. Health and safety issues could be used as a rationale for moving flood control projects to a higher priority. This would be consistent with the objectives of the State Water Commission. Water development funding allocations could be based on a combination of fiscal capacity and urgency of need, rather than on set funding amounts.

An alternative prioritization could be formed based on the highest economic return for water, based on the concept that water should be paid for as a commodity rather than as a free staple. Water and projects that affect use must have an economic rationality, be assessed on their potential impact on markets, and generate new public wealth. The commodification of water is a growing trend throughout the world and in western appropriation states.

Partnering

As federal funds decrease there is a greater need to develop cooperative partnerships. Cost-sharing between federal, state, and local entities is commonplace for many projects. This trend

will likely continue to grow. The private sector, although active in irrigation and other selected arenas, has not always been a significant participant in providing general water supply and water quality improvements. In order to meet increasing financial costs, however, private investors may need to take additional responsibility for large water infrastructure developments.

A potential barrier to public/private partnerships is the requirement of a local public sponsor for state cost-sharing eligibility. Many private entities may view the local public sponsorship as adding to the development and administrative costs of a project. The state views the local sponsorship as necessary for providing public funds consistent with the public interest of the county and the state.

State Loan Revolving Fund

Presently, the State Revolving Fund Program is administered by the North Dakota Municipal Bond Bank and the State Department of Health for the purpose of financing the construction and improvement of waste water treatment systems owned by political subdivisions of the State of North Dakota. Qualifying political subdivisions receive a below market subsidized interest rate on loans.

This type of funding program could be adapted to address other water development needs such as water supply, flood control, and snagging and clearing projects. It could provide a mechanism for local entities to use when sufficient cost-share is not available from other resources and the project must be implemented to address a serious problem.

Balance Public Interest and Public Trust

The State Water Commission and the State Engineer have the responsibility to manage water in the public interest and act as a

steward to water held in the public trust. As recognized in the Vision Statement, the state must balance the water needs of present and future generations.

North Dakota was the first state to recognize the public trust doctrine in water rights. The public trust is based on the idea that water is held in trust for the beneficial use of all citizens of the state.

In *United Plainsmen V. State Water Conservation Commission*, the North Dakota Supreme Court based the public trust doctrine on the fact that the state constitution expressed state ownership of all streams and natural watercourses, and several statutes declared a strong state interest in water resources policies.

The court held that in order for the state engineer to allocate water held in the public trust, the State Engineer must consider the effects of the water allocation on the present water supply and future needs of the state, consistent with the State Engineer's duties as resource allocator and consistent with the public interest.

The decision reflected doubts and inadequacies in the statutory public interest review process in considering all relevant factors and issues. The determining factors for measuring the public interest were ambiguous at the time of the case and later clarified through legislative statute.

The State Water Commission and State Engineer seek to balance the public interest and the public trust in all water management decisions. Additionally, the Commission and State Engineer recognize the importance of maintaining the state's environmental quality, while developing adequate water supplies to meet future demands.

The State Water Management Plan is considered an expression on the state's public interest and in balance with its public trust obligations.

Goals and Objectives

The purpose of the goals and objectives is to assist in the long-term planning of water management. They represent measurable items upon which to gauge the progress toward the State's vision of the future. The broadly stated goals and the more specific objectives represent the sentiment and input gathered through the public involvement process. Although the number of goals and objectives may be great, they accurately represent the unmet needs of the state. The goals are not prioritized, but are arranged alphabetically by water management topic.

ATMOSPHERIC RESOURCE GOAL:

To ensure safe and effective atmospheric resource management programs.

OBJECTIVES:

- Ensure all cloud seeding projects are conducted in a scientifically-sound and environmentally-safe manner.
- Ensure that adequate records are kept of all cloud seeding operations.
- Evaluate the impacts of cloud seeding on precipitation patterns and the environment.
- Continue public information/education regarding our atmosphere and how it works, and the capabilities and limitations of cloud seeding.
- Define hail climatology for North Dakota.
- Continue and improve the statewide growing season precipitation reporting network.
- Continue the dissemination of project weather radar and precipitation data via the Internet.
- Conduct basic storm research in cooperation with universities and federal agencies.

ECONOMIC DEVELOPMENT GOAL:

To maintain and enhance economic opportunities.

OBJECTIVES:

- Develop water resources to support a broad economic base.
- Develop and maintain a consistent quantity and quality of water for domestic, agricultural, recreational, wildlife, and industrial uses.

- Implement the Dakota Water Resources Act to meet water supply needs of people throughout North Dakota.
- Complete the Southwest Pipeline and Northwest Area Water Supply, and other water distribution systems.
- Promote the value and functions of wetlands associated with enhanced recreational opportunities, such as hunting and ecotourism.
- Coordinate floodplain management development with communities and counties.

ENERGY GOAL:

To maintain an adequate water supply for energy production.

OBJECTIVES:

- Encourage efficient hydroelectric power generation at Garrison Dam.
- Encourage most efficient use of water in coal-fired power plants.

ENVIRONMENTAL QUALITY GOAL:

To perpetuate and enhance environmental quality through sound management.

OBJECTIVES:

- Provide incentives through voluntary education programs to encourage private landowners to maintain or enhance environmental quality.
- Encourage best land management practices.
- Eliminate point and non-point pollution that adversely impacts natural ecosystems.
- Encourage the maintenance of adequate wildlife populations.
- Promote the value and functions of wetlands.
- Explore the desirability and options for establishing wetland trading mechanisms.

FLOOD MITIGATION GOAL:

To reduce or eliminate flood damages.

OBJECTIVES:

- Refine floodplain management regulations to help reduce future flood losses

- Enhance public information/education programs on floodplain management.
- Improve educational/training opportunities for floodplain managers.
- Encourage a balance of structural and non-structural techniques for efficiently reducing flood damages.
- Encourage the implementation of land treatment methods to help control runoff during spring snowmelts.
- Assist in the development of new floodplain maps and revisions to older maps.
- Assist communities with technical evaluations of potential floodplain development.
- Encourage enrollment in the National Flood Insurance Program of all communities and counties.
- Encourage consistent disclosure information concerning the geographic location of the floodway.
- Maintain and improve the existing rain gaging network to aid flood forecasting.
- Continue and/or enlarge the existing stream gaging system, particularly in areas subject to overland flooding and smaller streams, in cooperation with U.S. Geological Survey.
- Refine watershed models and techniques.
- Maintain channel flow capacity of coulees and streams.
- Improve coordination between state agencies and local entities for addressing rural flood control issues.
- Encourage the use of ring dikes for farmstead protection.
- Encourage the recognition of downstream environmental and economic effects of flooding through more comprehensive floodplain management planning.

IRRIGATION GOAL:

To encourage the development of all viable irrigation.

OBJECTIVES:

- Satisfy water supply demands for current and future irrigation to support growth in agriculture industry.
- Assist in the development and application of technology to increase the efficiency of agricultural water conveyance systems.
- Implement the Dakota Water Resources Act to meet water supply needs of people throughout North Dakota.
- Encourage reuse, reclamation, and conservation of water.
- Support research to determine how, when, and at what rates water can be applied to various soil types and crops to arrive at long-term, cost-effective, efficient use of water.
- Encourage completion of digital format detailed soil surveys.
- Encourage the use of GIS technology and a high-tech agriculture approach in identifying new areas of potential development.
- Continue public information/education programs on irrigation opportunities.

WATER SUPPLY GOAL:

To meet projected water supply demands for all purposes.

OBJECTIVES:

- Develop water supplies to meet all beneficial uses.
- Implement the Dakota Water Resources Act to meet water supply needs of people throughout North Dakota.
- Develop sufficient quantities of Missouri River water to provide a viable source to meet North Dakota's future demands.
- Assist in the development of self-supporting municipal and rural water systems, including the Southwest Pipeline, Northwest Area Water Supply, and other water supply systems.
- Develop emergency management plans for drought mitigation and assistance.
- Develop small dams where appropriate to retain water for use during periods of scarcity.
- Encourage the reuse, reclamation, and conservation of water.
- Evaluate quality and quantity of surface and ground-water resources and provide public inventories of water availability.
- Negotiate Native American water rights when requested by the tribes.
- Explore desirability and options for establishing in-stream flows on major streams.
- Water supply development should recognize long-term sustainable use of available resources.

WATER QUALITY GOAL:

To maintain and enhance the quality of all the state's waters.

OBJECTIVES:

- Encourage best land management practices.
- Increase monitoring of water quality to detect pollution sources.
- Assist the Department of Health in monitoring water quality and wellhead protection.
- Promote the value and functions of wetlands.
- Support development of riparian buffer zones where applicable.
- Complete the Southwest Pipeline, Northwest Area Water Supply, and other water supply systems.
- Encourage research, best management practices, and high-tech agricultural practices for the application of agricultural chemicals and fertilizers.
- Encourage the consideration of water quality in floodplain management and emergency planning.
- Coordinate with and assist all North Dakota agencies in the protection of water quality in the state.
- Explore the funding options for a state-operated Clean Water Act, Section 404 permitting process.
- Coordinate with federal, state, and local entities to reduce high sediment loads on the Missouri River and other river systems.
- Coordinate bank stabilization efforts on public lands.

Water Development Project Needs

The water development project needs for North Dakota are steadily increasing. While many projects are constructed through the State Water Commission's general contract fund, a few larger statewide or regional projects require more substantial funding acquired primarily through bonding authorities, general fund allocations, or other large-scale financing methods. Often, statewide or regional projects are completed in phases requiring consistent multi-year funding allocations from the state. The following sections represent the short- and long-term water development funding needs for the state. All listed projects are consistent with the goal and objectives of the State Water Management Plan.

Statewide/Regional Projects

The funding needs for statewide or regional projects are summarized in the table on the following two pages. All projects costs are displayed by biennium including expected state, local, and federal shares.

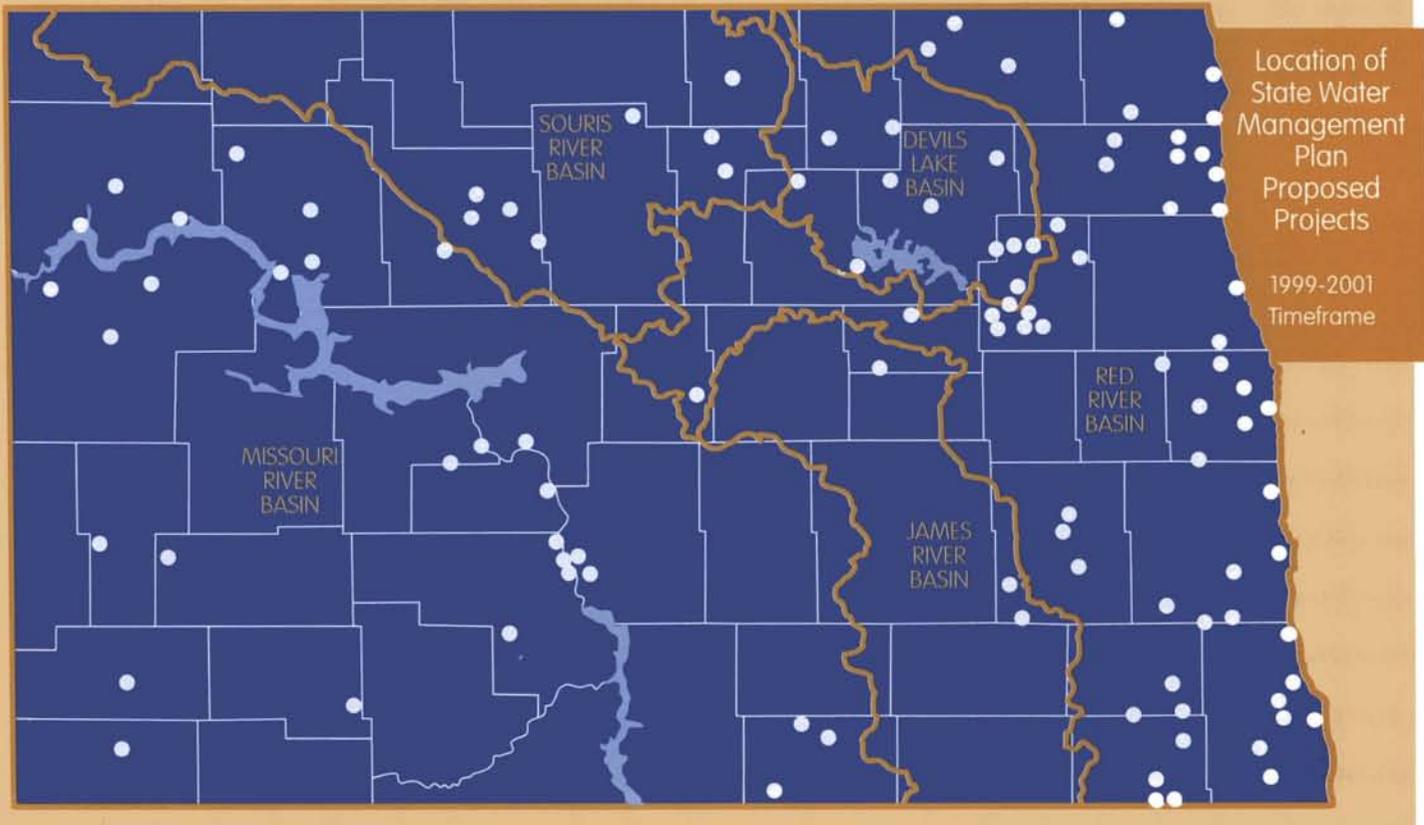
THE DAKOTA WATER RESOURCES ACT OF 1998

When approved by Congress and the President, North Dakota will partner with local communities to meet the non-federal match associated with specific aspects of

the Dakota Water Resources Act. The Act includes several important components vital to meeting the state's current and future needs. Some of the components of the project include:

Water Supply to Eastern North Dakota

An important and critical component of the Dakota Water Resources Act of 1998 is providing a water supply to eastern North Dakota. One alternative being considered involves constructing a pipeline to connect the New Rockford and McClusky canals and extending the New Rockford canal to the Sheyenne River. The alternative would supply approximately 200 cfs of water to the Sheyenne River for use downstream.



The project is currently being evaluated to determine all relevant issues.

Southwest Pipeline Project

The project is a regional water supply system diverting water from Lake Sakakawea to southwestern North Dakota. It delivers high quality Missouri River Water to approximately 28,000 persons. The remaining components of the project will be implemented over the next eight years at total cost of \$79,275,000, with completion of the project in 2007. Phases include: Mott-Elgin (implementation 1999-2001); Scranton (implementation 2001-2003); Medora-Beach (implementation 2003-2005); Little Missouri, Oliver, Mercer, North Dunn (implementation 2005-2007).

Funding sources include: USDA Rural Development Grant and Loan Program, State Water Commission bonding authority, appropriation from the ND Resources Trust Fund, funds appropriated by the State Legislature from the ND Resources Trust Fund, the State General Fund and other funds, and monies provided through the MR&I Program's anticipated appropriation from the Dakota Water Resources Act of 1998.

Northwest Area Water Supply Project

The project is a regional water supply system for northwestern and northcentral North Dakota utilizing Missouri River water. The project will be implemented over a period of 10 to 15 years at a total cost of \$139 million. The first two phases of the project (NAWS-Phase I-Rugby; NAWS-Phase II-Minot) will be funded with a portion of the remaining \$53.2 million to be appropriated through the MR&I program. The balance of the project is expected to be funded through the Dakota Water Resources Act of 1998.

The current project configuration includes 15 cities, three existing and four proposed rural water systems. The total population served is approximately 63,000 with the

potential to deliver water to nearly 81,000 people. The total population of the project area is about 125,000.

Other Municipal, Rural, and Industrial Projects

The remaining \$53.2 million in current Garrison Diversion MR&I funding will likely be used to complete the following projects: portions of Benson Rural Water, Rugby and Minot Phases of the Northwest Area Water Supply, Pierce Rural Water, and Ransom Sargent Regional Water System.

The list of projects available for future funding includes the current MR&I Program list of more than 144 projects.

Municipalities face a great deal of financial burden to meet other water-related infrastructure needs including repair, improvement, and expansion of water supply systems and stormwater management projects. Some cities submitted infrastructure-type projects for inclusion in the 1999 State Water Management Plan. A total of 61 infrastructure-type projects totaling \$36 million were submitted to be included in the plan. These types of projects have not received State Water Commission cost-share in the past and are not included in the project list of identified needs for this reason.

Other Features

The DWRA contains components that require no additional funding through the State Water Commission 1999-2001 budget request.

1. Increased funding for the MR&I projects on Indian lands.
2. Oakes Test Area remains a feature of the revised plan.
3. Additional provision allowing for ground-water recharge and establishing augmented stream flows in the Sheyenne and Red River basins.
4. A focus on wildlife protection issues.
5. Funding for recreation projects including a wetlands interpretive center.
6. Four Bears Bridge.

GRAND FORKS FLOOD CONTROL

The proposed project will provide protection from a future flood event greater than the magnitude of the 1997 flood for the cities of Grand Forks, ND/ East Grand Forks, MN. The project consists of a levee system that will be constructed on both sides of the Red River. The total cost is estimated at \$343 million of which \$112.7 million is proposed to be cost-shared by the City of Grand Forks and the State of North Dakota. The total cost includes portions of the water treatment facilities costs that are required because of the levee alignment.

Completion of the project is anticipated for 2004. Certain components of the Grand Forks Flood Control Project involve the water treatment plant. Those costs are reflected as a general or "Other MR&I" project because of potential MR&I cost-sharing. Other projects such as the proposed greenway are considered a local or multi-county project.

DEVILS LAKE OUTLET

The purpose of the project is to provide flood relief to the area surrounding Devils Lake by diverting water into the Sheyenne River. The preferred alternative is a buried pipeline that generally follows Peterson Coulee. The cost is estimated at \$50 million. The non-federal cost-share is 35 percent or approximately \$17.5 million including mitigation costs which is anticipated to at least be partially bonded with loan repayment over a 20 year period.

The project may pump a maximum of 300 cubic feet per second (cfs) to the Sheyenne River. This could remove up to approximately 120,000 acre-feet of water annually or approximately 1.2 feet at the current level of 1444 msl. The current design precludes the emergency outlet from being used as an inlet. The number of years of operation is dependent upon lake level elevations. The operating cost is estimated at \$1.25 million per year.

Potential Statewide or Regional Projects — State Funding Needs

DAKOTA WATER RESOURCE ACT (in millions of dollars)

| | Water to Eastern North Dakota | Southwest Pipeline Project | Northwest Area Water Supply Project | Other MR&I |
|------------------------------|----------------------------------|-------------------------------|--|--------------------|
| 1999-2001 TIMEFRAME | | | | |
| Local | — | 0.0 | 8.2 | 25.5 |
| State | — | 6.0 | 0.0 ² | 0.0 |
| Federal | — | 11.5 ⁵ | 14.8 | 39.9 |
| Total | — | 17.5 | 23.0 | 65.4 |
| 2001-2003 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | 0.5 | 8.7 | 17.7 |
| State | 0.0 | 1.7 | 0.0 | 0.0 |
| Federal | 17.0 | 12.5 | 16.3 | 32.8 |
| Total | 17.0 | 14.7 | 25.0 | 50.5 |
| 2003-2005 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | 1.0 | 11.8 | 17.7 |
| State | 0.0 | 5.0 | 0.0 | 0.0 |
| Federal | 6.0 | 11.4 | 21.8 | 32.8 |
| Total | 6.0 | 17.4 | 33.6 | 50.5 |
| 2005-2007 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | 1.0 | 5.8 | 17.7 |
| State | 0.0 | 9.5 | 0.0 | 0.0 |
| Federal | 84.0 | 19.5 | 10.9 | 32.8 |
| Total | 84.0 | 30.0 | 16.7 | 50.5 |
| 2007-2009 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | — | 3.7 | 17.7 |
| State | 0.0 | — | 0.0 | 0.0 |
| Federal | 59.0 | — | 7.0 | 32.8 |
| Total | 59.0 | — | 10.7 | 50.5 |
| 2009-2011 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | — | 1.7 | 17.7 |
| State | 0.0 | — | 0.0 | 0.0 |
| Federal | 2.0 | — | 3.3 | 32.8 |
| Total | 2.0 | — | 5.0 | 50.5 |
| Beyond 2011 TIMEFRAME | | | | |
| Local | Undetermined ⁶ | — | 8.7 | 130.2 |
| State | 0.0 | — | 0.0 | 241.2 ⁸ |
| Federal | 0.0 | — | 16.3 | 0.0 |
| Total | Undetermined ⁶ | — | 25.0 | 371.4 |
| GRAND TOTALS | | | | |
| Local | Undetermined ⁶ | 2.5 | 48.6 | 244.2 |
| State | 0.0 | 22.2 | 0.0 | 241.2 |
| Federal | 168.0 | 54.9 ⁷ | 90.4 | 203.9 |
| Total | 168.0 | 79.6 | 139.0 | 689.3 |

OTHER POTENTIAL PROJECTS (in millions of dollars)

| Grand Forks Flood Control ¹ | | Devils Lake Outlet ¹ | | General Projects | | State TOTAL |
|---|--------------------|---------------------------------|--------------------|------------------|-------|-------------|
| 25.0 | | 0.0 | | 31.7 | | |
| 25.0 | (0) ³ | 17.5 | (0) ⁴ | 25.9 | 74.4 | (31.9) |
| 38.5 | | 32.5 | | 39.8 | | |
| 88.5 | | 50.0 | | 97.4 | | |
| 35.7 | | 0.0 | | 24.0 | | |
| 27.0 | (7.8) ³ | 0.0 | (3.0) ⁴ | 18.4 | 47.1 | (30.9) |
| 62.9 ⁷ | | 0.0 | | 5.5 | | |
| 125.6 | (7.8) | 0.0 | (3.0) | 47.9 | | |
| 0.0 | | 0.0 | | 24.0 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 18.4 | 23.4 | (34.2) |
| 0.0 | | 0.0 | | 5.5 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 47.9 | | |
| 0.0 | | 0.0 | | 24.0 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 18.4 | 27.9 | (38.7) |
| 0.0 | | 0.0 | | 5.5 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 47.9 | | |
| 0.0 | | 0.0 | | 24.0 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 18.4 | 18.4 | (29.2) |
| 0.0 | | 0.0 | | 5.5 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 47.9 | | |
| 0.0 | | 0.0 | | 24.0 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 18.4 | 18.4 | (29.2) |
| 0.0 | | 0.0 | | 5.5 | | |
| 0.0 | (7.8) | 0.0 | (3.0) | 47.9 | | |
| 0.0 | | 0.0 | | 196.2 | | |
| 0.0 | (58.5) | 0.0 | (15.0) | 138.0 | 379.2 | (452.7) |
| 0.0 | | 0.0 | | 25.8 | | |
| 0.0 | (58.5) | 0.0 | (15.0) | 360.0 | | |
| 60.7 | | 0.0 | | 347.9 | | |
| 52.0 | (97.5) | 17.5 | (30) | 255.9 | 588.8 | (646.8) |
| 101.4 | | 32.5 | | 93.1 | | |
| 214.1 | (259.6) | 50.0 | (62.5) | 696.9 | | |

FOOTNOTES:

1 - The cost in parenthesis () reflects a bonding financing option.

2 - An option being considered is the State Water Commission will bond the local cost-share with local repayment to State Water Commission, resulting in no real cost to the Commission.

3 - State total cost-share of \$52 million will be bonded, requiring a loan repayment estimated at \$3.9 million per year; repayment beginning in 2001.

4 - The total state cost-share of \$17.5 million, which includes mitigation costs, will be bonded, requiring a loan repayment estimated at \$1.5 million per year; the split between state and local is not determined.

5 - Assuming Perkins County Water System payment to State Water Commission of \$4.5 million.

6 - The local cost is not determined at this time and will be determined after project configuration is complete.

7 - Components of the Grand Forks Flood Control Project involve Water Treatment Plant improvement. Those federal costs are reflected in the "Other MR&I" column because of potential cost-share using Garrison Diversion MR&I funds. Other projects, such as Greenway, are listed in "General Projects."

8 - The anticipated \$345 million in federal cost-share, including SWPP and NAWS, has been used in the previous bienniums; the remaining cost-share for projects has been identified as a potential state cost-share.

GENERAL PROJECTS

The State Water Commission provides support for many general water projects through its contract fund appropriation. Typically, these are relatively small scale projects cost-shared with local entities.

Timeframes for implementing proposed general projects are: 1999-2001 (Immediate); 2001-2011; and Beyond 2011. These timeframes are intended to depict the urgency of the funding need.

Agency knowledge and experience allowed refinement of funding requirements by the timeframe. Reasonable project start and completion dates were determined by the present stage of each proposal (i.e. planning level, status of required permits, funding package status, and pre-construction activities).

The total cost of general project needs identified in the planning process for the

1999-2001 biennium is \$97.4 million. The state contribution would be \$25.9 million, with the balance provided by the federal government and local cost-share. Due to limited state resources and substantial requirements for local cost-share, only \$11.7 million is expected to be funded from the State Water Commission's Contract Fund in the 1999-2001 biennium.

Other Water Management Related Projects

There are several programs that are administered by the ND State Department of Health including such programs as: Non-point Source Pollution Management Program; Wellhead Protection; Storm Water Management; Clean Lakes Program; and River and Stream Monitoring and

Assessment Program. Because these programs do not involve State Water Commission cost-share, the specific projects associated with these programs are not identified or included in the list of potential projects.

Indian Water Needs

The total needs have not been identified at this time. The needs are federally funded and not included in the state and local funding requirements. The state will continue to work with Indian Tribes to ensure coordination, cooperation and mutual consent on water resources related projects and programs.



Potential General Projects by River Basin

| | NO. OF PROJECTS | LOCAL | STATE | FEDERAL | TOTAL |
|-------------------------------------|-----------------|-----------------------|-----------------------|----------------------|-----------------------|
| Devils Lake | 11 | \$ 1,042,169 | \$ 2,326,056 | \$ 26,000 | \$ 3,394,225 |
| Red River | 63 | \$ 17,654,408 | \$ 14,594,536 | \$ 21,916,000 | \$ 54,164,944 |
| Souris River | 6 | \$ 1,278,000 | \$ 597,000 | \$ 0 | \$ 1,875,000 |
| James River | 3 | \$ 94,800 | \$ 63,200 | \$ 0 | \$ 158,000 |
| Missouri River | 23 | \$ 11,663,150 | \$ 7,714,850 | \$ 17,235,000 | \$ 36,613,000 |
| Statewide Data Collection & Studies | 1 | \$ 0 | \$ 630,000 | \$ 630,000 | \$ 1,260,000 |
| Total 1999-2001 | 107 | \$ 31,732,527 | \$ 25,925,642 | \$ 39,807,000 | \$ 97,465,169 |
| Total 2001-2011 | 107 | \$ 119,977,500 | \$ 92,100,000 | \$ 27,375,500 | \$ 239,453,000 |
| Total Beyond 2011 | 97 | \$ 196,201,500 | \$ 137,977,500 | \$ 25,845,000 | \$ 360,024,000 |

* State Water Commission 1999-2001 budget request for general projects is \$11.7 million, resulting in an unmet need of \$14.2 million.

Water Management Policies

Water in North Dakota is managed through an extensive set of rules, policies, and programs administered at federal, state, and local levels. The State Engineer identified a need to inventory all applicable federal and state programs that affect water management. Additionally, an inventory and review of all State Water Commission internal policies was conducted.

All programs and policies were reviewed through the public involvement process and subsequent comment periods. Public involvement input, a needs analysis, and interagency comments were used to generate future study recommendations for State Water Commission internal policies.

A brief analysis of potential policy and regulatory changes is found in this section.

All recommendations require future study and are intended to serve as an initial starting point to addressing long-term water management issues.

GENERAL RECOMMENDATIONS FOR FUTURE STUDY

- **WATER SUPPLY BANK**

It is recommended that the sale or lease of water is critical to the efficient management of the state's water resources. Further study into the use of a State Water Supply Bank is encouraged.

- **RECHARGE**

It is recommended that the state study managed aquifer recharge.

- **CLIMATE VARIABILITY**

It is recommended that climate variability be considered in planning for and in the management of the state's water resources. Specifically, the state should develop a comprehensive drought mitigation plan.

- **IN-STREAM FLOW**

It is recommended that the State Water Commission determine if it is in the public interest to protect water in the state for in-stream flow purposes, insofar as those flows do not impede on prior appropriations.

- **IRRIGATION DISTRICT DEVELOPMENT FUNDING**

It is recommended that the State Water Commission explore possible special funding programs to assist in the development of public and private irrigation development.

WATER MANAGEMENT RECOMMENDATIONS FOR FUTURE STUDY

- **WATERSHED MANAGEMENT**

It is recommended that where practical, the water needs of a geographic area be satisfied by a legal entity having the authority and responsibility to address all water needs in a comprehensive manner.

- **RESEARCH PROGRAM**

It is recommended the State Water Commission encourage and conduct research on important water resource topics.

- **DISTRICT DEVELOPMENT FUNDING**

It is recommended that the State Water Commission explore possible special funding programs to assist in the development of public and private irrigation development.

Continued

Water Management Recommendations Continued

- **FUNDING PROGRAM ALTERNATIVES**

It is recommended that the State Water Commission explore alternative funding opportunities for meeting the future water development needs of the state.

- **PLANNING PROGRAM**

It is recommended that water management plans be prepared for the individual river basins.

- **LAKE, RESERVOIR, AND AQUIFER MANAGEMENT**

It is recommended that the State Water Commission continue support of the Department of Health in its development of coordinated management plans for use and water quality protection for lakes, reservoirs, and aquifers in the state.

- **STATE PROTECTED RIVER SYSTEM**

It is recommended that North Dakota study and consider a state protected river system, maintained to meet the desires of the citizens of North Dakota and appropriate on a case-by-case basis. The system could provide for the protection of the unique features that exist on various rivers within the state, and could provide the necessary authority and funding to protect such rivers and related lands for recreational, scenic, and natural values. The Little Missouri River is already protected under this concept.

- **FEDERAL AND TRIBAL WATER RIGHTS**

North Dakota supports negotiated rather than litigated settlements to Indian reserved water rights disputes. Indians and Indian tribes possess vested rights to water sufficient to provide a homeland. The federal government holds a "trust" responsibility for Indian tribes. The trust is a recognition of the indigenous nations' and tribes' inherent sovereignty within the context of a wider national government. The trust responsibility requires that the federal government protect the tribes' continued enjoyment of their existing *Winters* rights.

The State of North Dakota is open to cooperative negotiations and the development of mutually agreeable timetables for completion. Any future negotiations should include all applicable federal agencies, the state, tribes, and local governments. The federal government has the responsibility for ensuring a successful conclusion of any processes, including providing information and technical assistance to tribes, providing federal negotiating teams to represent one federal voice, seeking approval of agreements, fully funding the federal share, and ensuring that the settlements are implemented.

- **WATER MEASUREMENT**

It is recommended that the SWC, through a cooperative effort with other state and federal agencies, improve the existing stream gaging program and enhance in the most efficient manner the system to meet present and future water planning and management needs.

ADDITIONAL ISSUES REQUIRING FURTHER STUDY

- Cost-sharing for periodic imagery of water resources.
- Cost-share for urban flood control and stormwater management.
- Cost-share or financial assistance for water resource boards and landowners to meet wetland mitigation requirements.
- A wetlands conservation policy for the unavoidable loss of an existing habitat base.
- Development of a baseline model for addressing cumulative impact assessments.

Floodplain Management Policies

In the wake of the 1997 floods, Governor Edward Schafer, in his 1998 State of the State Address, identified the need to refine the state's floodplain management policies and consider possible statutory changes for the 1999 legislative session. The State Water Commission, as part of the 1999 State Water Management Plan, held flood-specific public input meetings and discussions with citizens and various local, state, and federal officials to determine potential changes.

The following recommendations, drafted as potential legislation and sponsored by the State Engineer, are potential legislative changes for the 1999 session.

Changes Requiring Legislative Revision

★ The State Engineer would review all technical documentation associated with development proposed in regulatory floodways. The authority of the State Engineer, however, would be limited to that of a third party or impartial review and comment. The authority to grant a floodway development permit would remain with the city, township, or county. The State Engineer would be required only to review the technical accuracy of an application and advise of potential problems.

★ The State would establish a level of one-foot over the 100-year flood elevation (base flood elevation) as the new minimum state standard for new structures built in the floodplain. This requirement would exceed minimum NFIP standards. The one-foot increase does not raise the elevation level of the floodway or prevent future development in the mapped floodplain. Once in effect, communities will have 12 months to establish their own freeboard figure. Failing to do so, the one-foot figure takes effect.

★ The state would require new county subdivision plats to delineate by topographic elevation, the boundary of the identified 100-year floodplain.

★ Specify that the comprehensive plans adopted by zoning authorities should consider "emergency management" as defined in NDCC 37-17.1-04 (4). "Emergency management," as defined, would provide for the development and maintenance of an effective capability to mitigate, prepare for, respond to and recover from, known and unforeseen hazards or situations, caused by an act of nature or man, which may threaten, injure, damage, or destroy lives, property, or our environment.

★ Requiring all counties to be enrolled in the National Flood Insurance Program.

★ Allow the State Engineer to establish a base flood elevation for lakes and nonfederal reservoirs.

Changes Not Requiring Legislative Revision

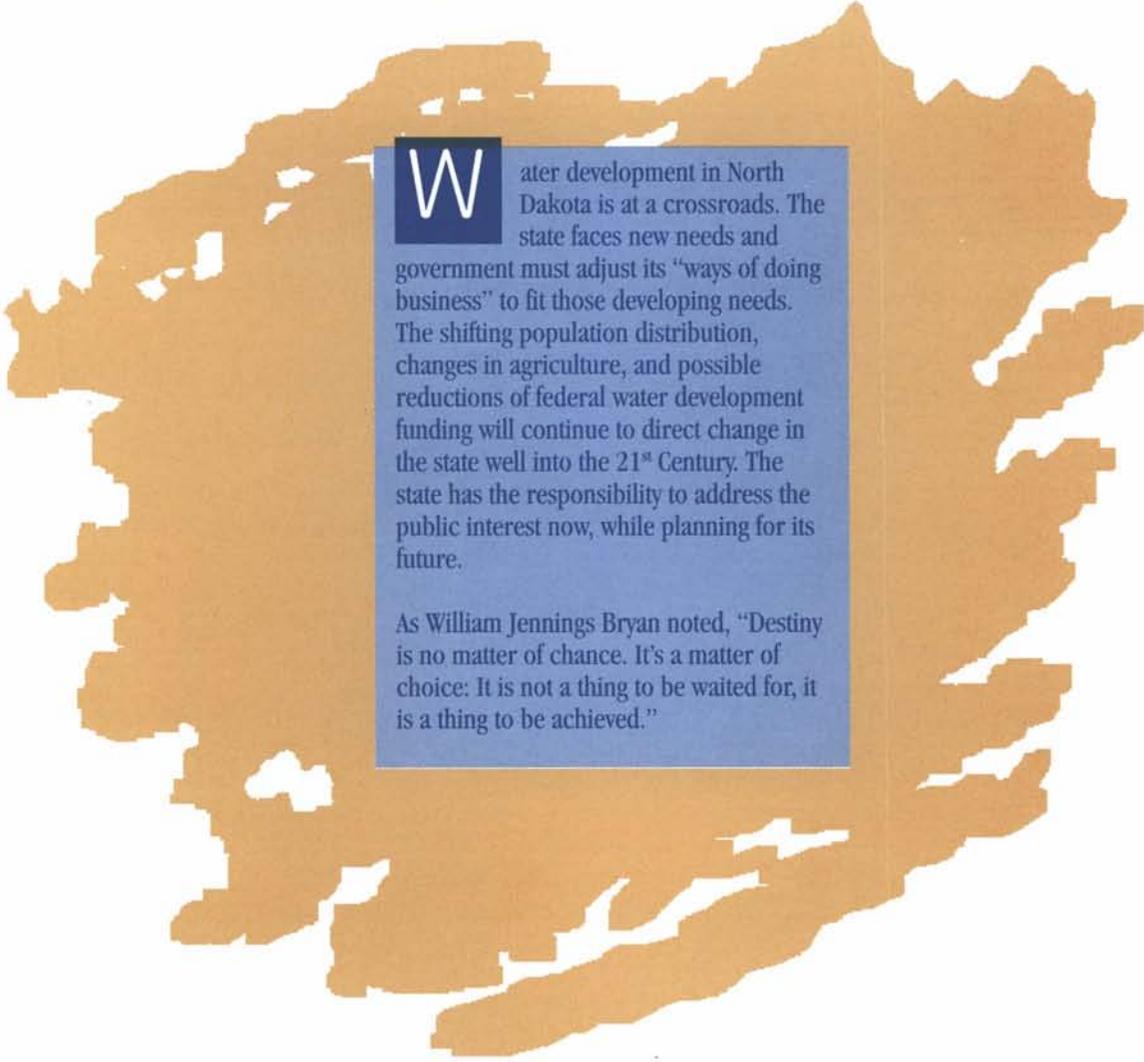
Several changes have been identified that would require no additional legislative authority. Most could be administered through changes in State Water Commission policy.

★ The state would provide additional training and certification for floodplain managers. Additionally, training would account for differences between urban and rural floodplain issues and management.

★ The state would consider a cost-share for riparian buffers zones in critical areas. Funding should be limited to encourage the extensive use of partnerships.

★ The state would consider a program, in cooperation with FEMA, to develop new maps and revise older floodplain maps. Mapping could be done with local, state, and federal cost-share. A cost-share of funds for mapping would reduce the mapping development period and provide a better quality map.

Conclusion



Water development in North Dakota is at a crossroads. The state faces new needs and government must adjust its “ways of doing business” to fit those developing needs. The shifting population distribution, changes in agriculture, and possible reductions of federal water development funding will continue to direct change in the state well into the 21st Century. The state has the responsibility to address the public interest now, while planning for its future.

As William Jennings Bryan noted, “Destiny is no matter of chance. It’s a matter of choice: It is not a thing to be waited for, it is a thing to be achieved.”