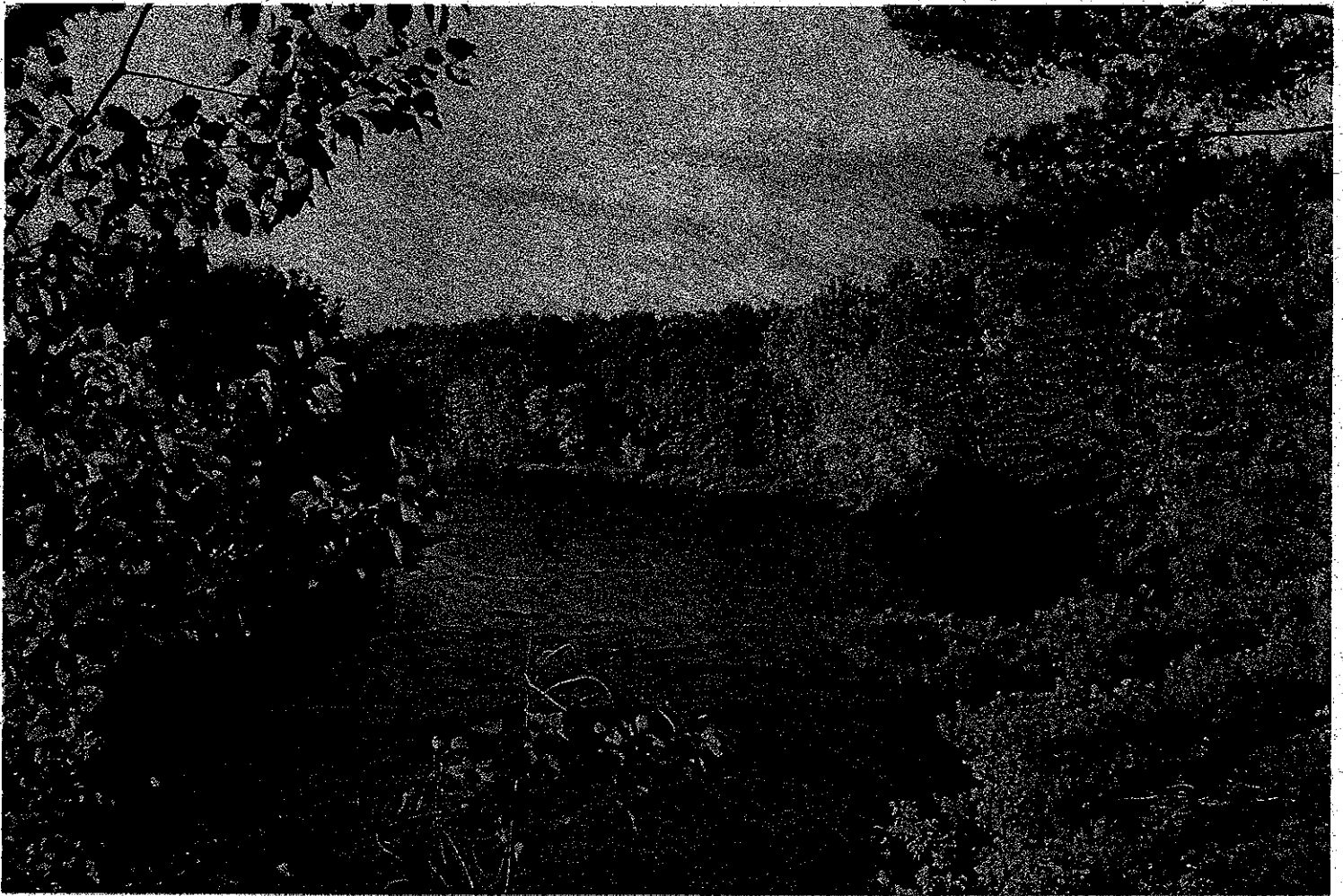


Summary of the **Minnesota Water Plan**

Directions for Protecting and Conserving Minnesota's Waters



**Environmental Quality Board
Minnesota State Planning Agency**

May 1991

To The People Of Minnesota

Water is precious to Minnesotans. It is a symbol of our state and our people. Protecting and conserving water resources is an investment in Minnesota, not a cost.

The rich outdoor experience that we value, and that so typifies our state, centers on our lakes, wetlands, and streams. Beneath the surface, we also share the hidden treasure of abundant, pure ground water. Most of us get our drinking water from this treasure.

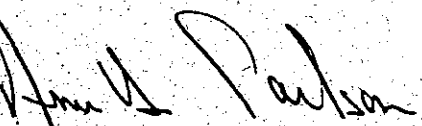
We have come to realize in recent years that our water resources are at risk. We cannot stand pat and maintain the quality of Minnesota's water.

We have also begun to understand a very simple principle — the ecological principle of interdependence. What we do on the land affects water quality and availability. When we seek to protect water quality, we had better understand quantity. When we think to use surface water, we need to realize that ground water may also be affected.

Minnesotans across the state have joined in a unique grassroots campaign called "comprehensive local water planning." The word "comprehensive" signals a recognition of the principle of interdependence; the word "local" means that the people involved are close to the real issues and solutions.

Minnesotans were honored at Earth Day 1990 festivities with the National Environmental Achievement Award for ground water protection. The winners were the initial 52 participating counties and their state partners in comprehensive water planning. Today, local water planning is the foundation of the Minnesota Water Plan.

The Minnesota Water Plan sets an ambitious agenda for protecting and conserving our water. It is an agenda in which each of us has a part to play.



ARNE CARLSON
Governor

Introduction

Minnesotans pride themselves on the abundance and quality of their water resources. In our so-called "water-rich" state, we count over 25,000 miles of fishable streams, 12,000 lakes, five million acres of wetlands, and great supplies of ground water. Most western states could only dream of such supplies as we have.

With all this water, one might ask why Minnesotans need a plan for its protection and conservation. Several compelling reasons exist.

Minnesota's water is not evenly distributed. Rainfall varies from over thirty inches in the southeast to a semi-arid nineteen inches in the northwest. Lakes are not evenly distributed, either, with most found in the central and northern sections of the state. Wetlands follow similar patterns, except that Minnesota's western prairie lands harbor wetlands of great value. The character of Minnesota's land use, a prime determinant of water quality and use, also varies dramatically across the state.

The demands Minnesotans place on water show equally diverse characteristics. Water

use is the greatest in the Metropolitan area, where people and industry are concentrated. The central sand plains are tapped for irrigation. The Iron Range places demands on water through mine dewatering and taconite processing. Electric utilities and pulp and paper mills are major users of water throughout the state.

The State of Minnesota needs a plan to manage the challenges that arise from water's changing nature and the variable demands Minnesotans place on it. Water protection and conservation require a great deal of energy, resources, and commitment. People and programs make a difference when they are supported by good policy, information, and expertise.

What the Minnesota Water Plan Is

The MWP is the foundation for Minnesota's efforts to coordinate and integrate water programs. The Minnesota Water Plan (MWP) sets an ambitious agenda for protecting and conserving water resources in the state. It

Minnesota's WATER GOALS:

- To improve and maintain the high quality and availability of Minnesota's water for future generations and long-term health of the environment.
- To ensure that our uses of water are sustainable, and that in meeting our needs for

water, we recognize its limits and interconnections, accept its changing and variable nature, and adjust our demands upon it when necessary to safeguard it for future needs.

Minnesota's WATER PRINCIPLES are that we:

- Manage water's interconnections.
- Focus on the resource.
- Manage hydrologic units.
- Make partnerships work for water.
- Make prevention the focus.
- Put public health and safety first.
- Recognize the importance of information.
- Understand the importance of research.
- Think long-term.
- Accept limits to growth.
- Make those who benefit pay.
- Let citizens make a difference.
- Educate people to change behavior.
- Make government understandable, adaptable, and accountable.

Environmental Quality Board membership:

- Chair appointed by Governor.
- Commissioner of Agriculture.
- Commissioner of Health.
- Commissioner of Natural Resources.
- Commissioner of Pollution Control.
- Commissioner of Public Service.
- Commissioner of State Planning.
- Commissioner of Transportation.
- Director of Waste Management.
- Chair of Board of Water and Soil Resources.
- Five Citizen Members.

identifies the principles, policies, and actions needed for water management in the 1990s and beyond. It is the state's plan for harnessing the energy and resources needed to protect and conserve Minnesota's water.

The MWP signals the state's commitment to local water planning as a key to managing water in the 1990s. The state's directions are built around local initiative through comprehensive water planning. Commitments are made by key state agencies responsible for water. They build on current efforts while strengthening the focus on overall resource protection.

The MWP is not a regulatory document. It guides by the use citizens, legislators, and agencies make of it. It is up to those who manage water, and those who make policy, to apply the MWP principles and to address the actions recommended. It is a sounding board for evaluation of the new policies needed to protect and conserve Minnesota's water into the 21st century.

A few themes emerge from the MWP, including understanding water's interconnections and integrating government efforts to address them; providing assistance to partnerships that address these connections; and making the most out of what we have.

Understanding water's interconnections and integrating government efforts to address them. Government often approaches resource protection in a fragmented way. The MWP makes integrating water management a priority for Minnesota agencies. To do this, the plan calls for a renewed focus on the resource. By focusing on protecting a lake, stream, or aquifer, people may worry less about specific government program "wants" and more about what the resource needs.

Helping partnerships address these connections. The state intends to continue working closely with local governments involved in comprehensive local water planning. This local-state partnership holds a key to our ability to manage water in the 1990s. Local and state government, the academic community, and the private sector, especially non-profit organizations, offer important opportunities for Minnesota's water.

Making the most out of what we have. Minnesotans must work together to protect and conserve water. We cannot afford to waste efforts on inefficient programs. We need to use authorities at each level to protect water; we need to target government's efforts toward the most pressing problems; and we need to

Minnesota Facts.

Population (1990):
4,387,029.

State surface area:
85,447 square miles.

Nine major water basins.

Miles of rivers and streams:
92,000.

Lakes and reservoirs:
12,034 covering
3,411,200 acres.
> 5,000 acres — 62 lakes.
< 5,000 acres — 11,972 lakes

Approximately 5 million acres of wetlands.

Minnesota Water Plan Implementation Leaders

AG	Office of the Attorney General	MDE	Department of Education
BWSR	Board of Water and Soil Resources	MDH	Department of Health
DNR	Department of Natural Resources	MES	Minnesota Extension Service
EQB	Environmental Quality Board	METC	Metropolitan Council
FED	Federal Agencies	MGS	Minnesota Geological Survey
GOV	Governor of Minnesota	NRRI	Natural Resources Research Institute
LCMR	Legislative Commission on Minnesota Resources	OEE	Office of Environmental Education (SPA)
LCWM	Legislative Commission on Waste Management	OWM	Office of Waste Management
LEG	Legislature	PCA	Pollution Control Agency
LGU	Local Governmental Units	SPA	State Planning Agency
LWC	Legislative Water Commission	SUS	State University System
MDA	Department of Agriculture		

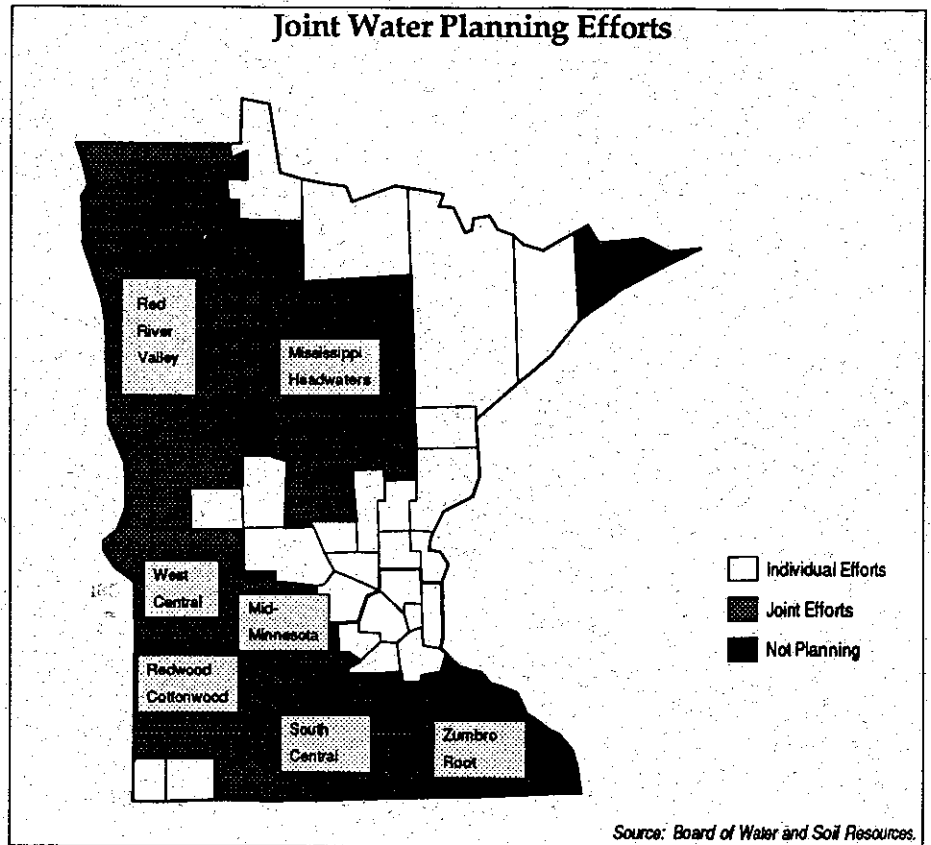
implement a well-coordinated focused state effort.

MWP Goals and Principles. The MWP identifies key goals and principles for water management and policy development in Minnesota. These apply to all water activities in Minnesota. They are part of every recommendation made in the plan.

Future Directions

The MWP identifies objectives for the decade, key recommendations, and "first steps" for carrying them out. These are organized around the themes of integrating water management, focusing on the resource, protecting and conserving water resources, and managing water's interconnections. The objectives define the Environmental Quality Board's targets for Minnesota's water program in the next ten years, but the recommendations are really the heart of the MWP.

The following pages contain the MWP recommendations in italics and selected first steps indented below with bullets. The acronyms listed in parentheses after the first steps indicate the lead agencies for helping carry out the step.



Source: Board of Water and Soil Resources.

1990 Status of Water Protection Ordinances Zumbro-Root River Joint Powers Board

County	Sinkhole	Water Well Construction	Water Well Abandonment	Sewage System	Livestock Waste	Erosion Control	Solid Waste	Geologic Atlas
Dodge	EP/I	EP/I	EP/I	●	●	R	●	
Fillmore	●	●	EP/I	●	EP/I	●	●	
Goodhue	EP/I	EP/I	●	●	EP/I	EP	●	
Houston	EP/I	EP/I	EP/I	●	●	EP	●	
Mower	EP/I	EP/I	●	●	EP/I	EP	●	
Olmsted	X	X	●	●	EP/I	●	●	●
Rice	EP/I	EP/I	●	●	●	EP	●	X
Wabasha	EP/I	EP/I	●	●	EP/I	EP	●	
Winona	●	●	●	●	X	●	●	●

● - Adopted X - In Progress R - Revising Old Program
EP - Education Program Only I - Inventory

Local government is often in the best position to understand a problem and its possible solution. Land use controls are a primary responsibility of cities and counties and are a major tool for protection and management of water resources.

Advantages of Intercounty Approaches to Local Water Planning:

- Manage major watersheds and aquifers as units.
- Ensure communication and coordination.
- Provide consistent approaches.
- Share innovative ideas and information.
- Share staff and expertise.

Recommendations and Selected First Steps

Integrating Water Management In Minnesota

The Minnesota Coordination Strategy

Establish, monitor, and refine a Minnesota coordination strategy.

Make comprehensive local water plans a highly visible element of the coordination strategy.

- identify state water-related grant programs not yet tied to comprehensive local water plans and make appropriate ties. (BWSR)
- set an agenda for strengthening comprehensive local water plans. (BWSR)
- expand the state's ability to provide technical assistance to local units involved in comprehensive local water planning. (BWSR, DNR, MDA, MDH, PCA)

Communication and Education

Launch a major environmental education initiative to show people how their actions affect the environment.

- develop a water information and education plan. (EQB, OEE)
- establish state and regional Environmental Education Resource Centers that serve as clearinghouses for environmental materials. (OEE)
- help local governments carry out educational efforts called for in local water plans. (OEE, BWSR)

Open up lines of communication among local, state, and federal levels of government, as well as citizens and the private sector.

- develop a pilot electronic information system to share water-related information, including data bases, water news, calendar, with interested parties. (SPA)
- prepare a citizens guide to state and local water programs and regulations. (BWSR, EQB)

Strengthen efforts to meet the ongoing training needs of local and state water managers and policy-makers.

Information and Research

Build a long-term base of support for the priority research needs identified in the biennial EQB water research needs assessment.

- establish an EQB research advisory committee to recommend water research priorities each biennium. (EQB)

Improve the state's Geographic Information System so that all users can easily access and integrate data on surface water, ground water, and related land resources.

- use regional and state water information depots to house information collected by state and local units in an accessible format. (SPA, EQB)
- enforce LMIC compatibility standards for data collection, information, and integration. (SPA, EQB)

Make The Commitment of money and authority necessary to carry out the state Water Resources Monitoring Plan.

- layout the framework for a comprehensive, intergovernmental environmental quality monitoring network. (SPA)
- establish regional monitoring cooperatives through local water planning groups and ensure accessibility of data through state systems. (PCA, SPA)
- encourage citizen monitoring, such as through the Waterwatch Program. (PCA, LCMR)
- evaluate the adequacy of public and private laboratory facilities for meeting new demands for water tests. (MDA, MDH, PCA)

Public support for protecting Minnesota's water:

85% of Minnesotans believe that more needs to be done to solve state ground water pollution problems.

75% support increasing taxes on polluting industries.

75% support banning activities which cause pollution.

Over 90% were in favor of the following measures:

- Increasing regulation of disposal practices;
- Researching ways to minimize the production of industrial waste; and
- Requiring the use of processes which minimize the generation of hazardous wastes.

Survey results from Center for Urban and Regional Affairs, University of Minnesota, January 1989

Liability and Enforcement

Develop a consistent state approach to fairly and equitably assigning consequences and liability for water misuse.

- stiffen penalties for persons knowingly discharging toxics into air or water in violation of an emission limit or knowingly creating an unpermitted solid waste disposal site. (AG, PCA)

Enhance the state's environmental compliance strategy.

Infrastructure

Upgrade Minnesota's water infrastructure with new technology to better safeguard public health and the environment.

- ensure that stormwater system improvements are made for water quality protection as systems are expanded or maintained. (PCA, LGU)

Take steps to ensure that money is set aside for infrastructure maintenance and improvement.

- enact requirements for a wastewater treatment facility replacement fund within each public entity with a central treatment system to finance future infrastructure improvements. (PCA, TED)

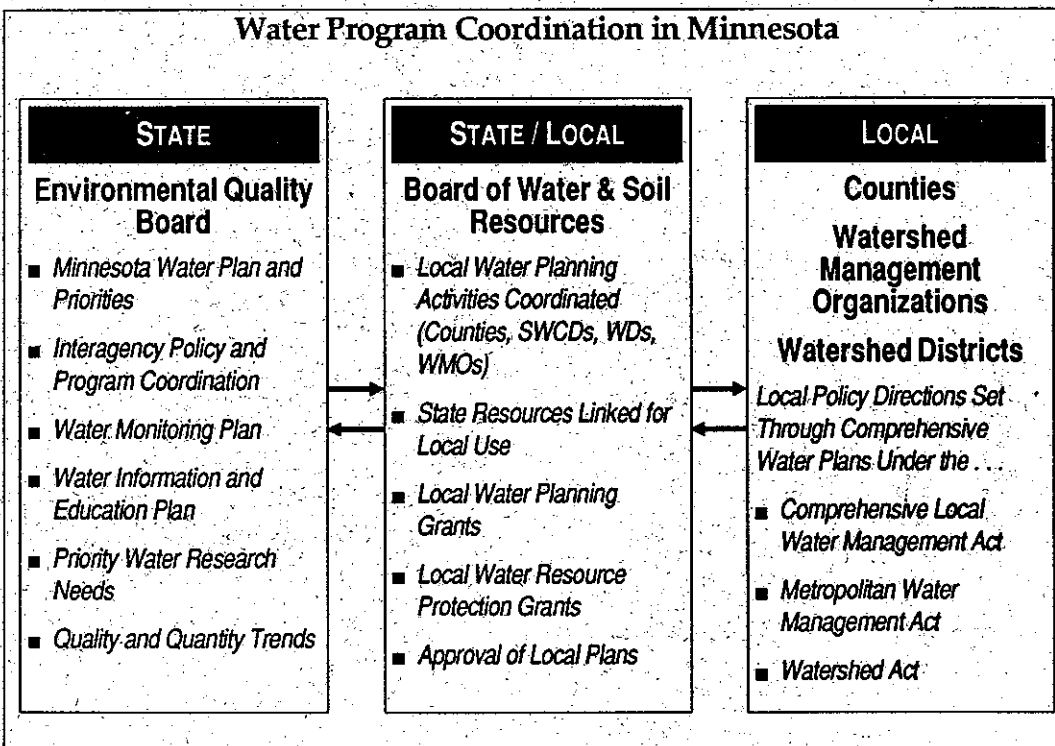
Financing

Expand Revenue sources and options available to state and local units.

- develop a package of funding options upon which local governments may draw for implementation of comprehensive local water plans. (BWSR, LGU, Revenue)

Tie allocation of funds to priorities identified in the Minnesota Water Plan at the state level, and to comprehensive local water plans, at the local level.

Water Program Coordination in Minnesota



Costs of Contamination

- Over \$80 million for clean up at the Twin Cities Army Ammunition plant.
- \$150,000 to replace seven Lansing residential wells polluted with pesticides.
- \$90,000 for one year to provide carbon filtration in Long Prairie.
- \$159,312 for one year for 97 Lakeland residences to receive bottled water and for remedial investigations.
- Property valuations reduced by \$8,000 apiece in 1989 for Lakeland properties on bottled water.
- No FHA and VA mortgage when drinking water standards are exceeded.

Well Facts:

- 2 million people served by public wells.
- About 11,000 public water supply systems (17,000 wells).
- 1,000 community systems (4,000 wells) and 11,000 noncommunity systems (13,000 wells).
- 1 million people served by private wells.
- About 400 water well contractors construct between 7,000 and 12,000 wells each year.
- 300,000 to 370,000 abandoned wells have the potential to degrade ground water in the vicinity of municipal water supplies.

Focusing on the Resource

Lakes

Develop a strategy for integrated lake management.

- convene a lake management task force to identify problems, priorities, and a state strategy for comprehensive management of lakes. (DNR, PCA)
- adopt requirements in the new state rules for metropolitan water planning to ensure that metropolitan surface water management plans effectively address lake protection, lake enhancement, and lake management. (BWSR)

Wetlands

Establish and operate a state-local no net loss program for wetlands.

- enact a comprehensive wetland management act that incorporates a wetland enhancement policy and a watershed-based "no net loss" policy to cover wetlands that

fall through current regulatory cracks. (DNR)

- incorporate wetland protection provisions in metropolitan water management rules to ensure no net loss of wetland values. (BWSR)

Rivers

Address water and related land resource issues from both a major river basin and a smaller watershed perspective.

- establish inter-agency, inter-governmental river basin coordinating teams to advise agencies about river system concerns with the programs they administer. (DNR, PCA, BWSR, EQB)
- give priority to local proposals designed to carry out comprehensive river management strategies. (DNR, PCA, BWSR, EQB)

Ground Water

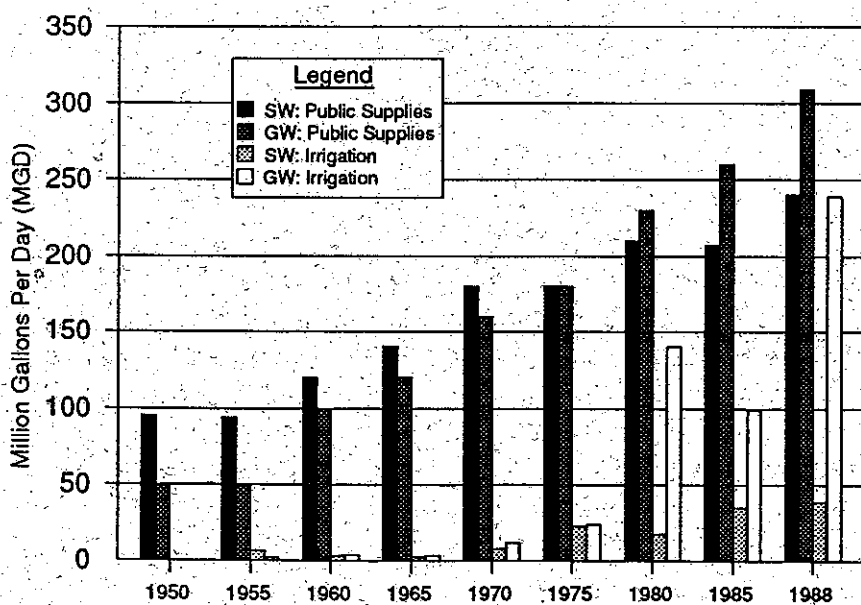
Protect and manage aquifers as hydrologic units.

- identify priority aquifers for comprehensive management based upon resource quality and use, problems and opportunities, the adequacy of information describing aquifer sensitivity, and local interest. (DNR, BWSR, EQB, MDA, MDH, PCA)
- give priority to local proposals designed to carry out comprehensive aquifer management strategies. (DNR, BWSR, EQB, MDA, MDH, PCA)

Gather sufficient hydrogeologic information for making adequate water management and protection decisions.

- accelerate programs for development of county geologic atlases and regional hydrogeologic assessments and automate the information from these efforts as they are completed. (DNR, MGS, LCMR, LGU)

Trends in Surface Water and Ground Water Use



Source: Minnesota Department of Natural Resources.

Protecting and Conserving Water Resources

Reduction of Environmental Pollutants

Evaluate how state programs should be changed to move toward the Minnesota clean water goals, then begin making the changes.

- accelerate efforts to protect areas sensitive to ground water pollution. (BWSR, PCA, DNR, LGU)
- complete and begin to implement recommendations to reduce nitrogen compounds in ground water. (MDA, PCA)

Reduce the amounts of polluting materials used, wastes produced, and pollutants entering the environment.

- recommend further actions needed to reduce toxic releases or discharges. (PCA, OWM)
- design approaches for evaluating and managing fuel storage tanks and on-site wastewater treatment systems; these should include monitoring and maintenance procedures and repair or abandonment of non-conforming systems; comprehensive local water plans should guide approaches developed. (BWSR, PCA)
- recommend elements of a systematic program to prevent spills, especially in the Mississippi River. (PCA)

Ensure that agricultural activities in the state are environmentally sound, and economically and socially viable in both the short and long term.

- adopt a state goal of reducing soil erosion on all agricultural lands to tolerable rates by the year 2000. (BWSR)

- link expenditures of state erosion control funds to adoption and enforcement of erosion control ordinances. (BWSR)
- develop management plans for farms in environmentally sensitive areas. Provide incentives and assistance for transition to alternate practices. (BWSR, LGU)

Water Well Management

Strengthen enforcement of the well code at the state and local level.

- establish procedures for identifying and priorities for sealing unused polluting wells, including multi-aquifer, injection, and agricultural drainage wells. (MDH, BWSR)
- Develop a system for private well testing that provides a basic level of service across the state, while encouraging innovation in meeting regional needs. (MDH)
- Develop and implement wellhead protection for public and private wells. (MDH)

Water Conservation

Develop a water conservation strategy for long-term and seasonal water use throughout Minnesota.

- examine rate schedules, what water should be subject to charges, and what effects charges have on use. (DNR, MDH)
- complete the Metropolitan Area Water Use and Supply Plan. In it, evaluate a regionally planned, locally operated, Twin Cities metropolitan water supply system. (METC)

One or more pesticides have been detected in 39 percent of wells sampled in susceptible areas of the state.

42 percent of 199 private wells tested and 7 percent of 395 public wells tested had nitrate levels exceeding the standard for drinking water.

Volatile organics have been found in 8 percent of community water supply wells tested.

About 40,000 large underground storage tanks are located in Minnesota and many are leaking.

178 hazardous waste disposal sites have been identified for priority clean-up activity.

Over 95,000 tons of hazardous wastes are produced annually in Minnesota.

Effects of the drought:

- Nearly 200 surface water irrigation permits were suspended along 17 Minnesota Rivers.
- 40 homes left without water in Sherburne County when wells went dry.
- Town of Stephen water supply (Tamarac River) had to be supplemented at a cost of \$2.50 per thousand gallons.
- Controversy surrounded proposed release of water from the Headwaters Reservoirs.
- Minneapolis instituted its first ban on outdoor water use.
- White Bear Lake dropped to a new record low and Minnetonka dropped nearly three feet.

Managing Water's Interconnections

Identify and remove barriers to managing water's interconnections for a sustainable environment.

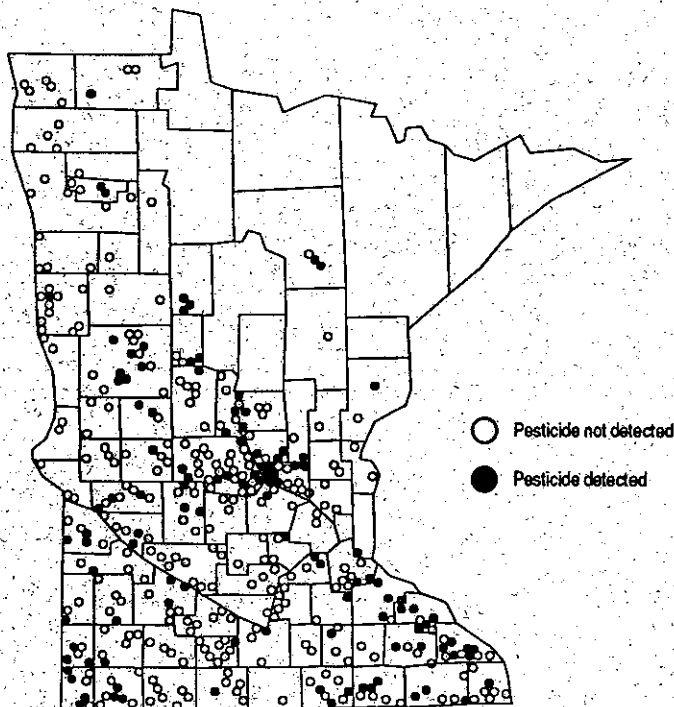
- Identify program changes needed to recognize interconnections and sustain environmental quality, including:
 - linking water quality protection and restoration projects to ordinances and regulations to prevent recurrence. (PCA)
 - linking decisions under drainage proceedings to policies of approved comprehensive local water plans. (LGU)
 - tying land treatment cost-sharing, water quality and agricultural chemicals regulation, stormwater management, and land use regulation into wellhead protection requirements by state law and rule through comprehensive local water plans. (MDH, BWSR, MDA, PCA)

Build consideration of water protection needs into land use decisions.

- Address land use connections including:
 - managing the quality, habitat, and bluffslands of the Mississippi/Minnesota rivers.
 - managing land uses in areas of the state sensitive to ground water contamination.
 - managing gravel pits to ensure environmental protection (local/state government). (LGU, DNR, MDA, MDH, NRRI, PCA, UM)
- Evaluate how to coordinate the management of growth. (SPA, UM, SUS)

The MWP provides the agenda for managing Minnesota's water in the 1990s and beyond. Working closely together as partners in water management, the Legislature, local, regional, state, and federal governmental agencies, the educational community, the private sector, and Minnesota citizens, can indeed carry out this agenda.

Occurrence of Pesticides in Public Wells
1988



Source: Minnesota Department of Health.

Acknowledgments

EQB Water Resources Committee

Paul Toren, EQB Citizen Member, Chair
Robert Dunn, EQB Citizen Member, Vice-Chair
Martha Brand, former EQB Citizen Member and WRC Chair
Pat Brezonik, Don McNaught, University of Minnesota
Bill Bulger, Department of Agriculture
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Ann Glumac, Pollution Control Agency
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State Planning Agency

The Minnesota State Planning Agency staffs the Environmental Quality Board and its Water Resources Committee. The **Minnesota Water Plan** was prepared by Marilyn Lundberg, Deborah Pile, and John Wells, WRC Director, as part of this service. Sandy Henry and Pat Ciernia were responsible for technical production of the report.

For additional copies of the summary or for copies of the complete Minnesota Water Plan, please contact the Minnesota State Planning Agency at (612) 297-2602, or write to the EQB Water Resources Committee, 300 Centennial Office Building, 658 Cedar Street, St. Paul, MN 55155.

"It will take some tough policies over the next 100 years to protect our environment and all life that it sustains. . . . The next 100 years call for a change in course involving human restraint, international cooperation, and the money to keep our planet livable."

Willard Munger
State Representative



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