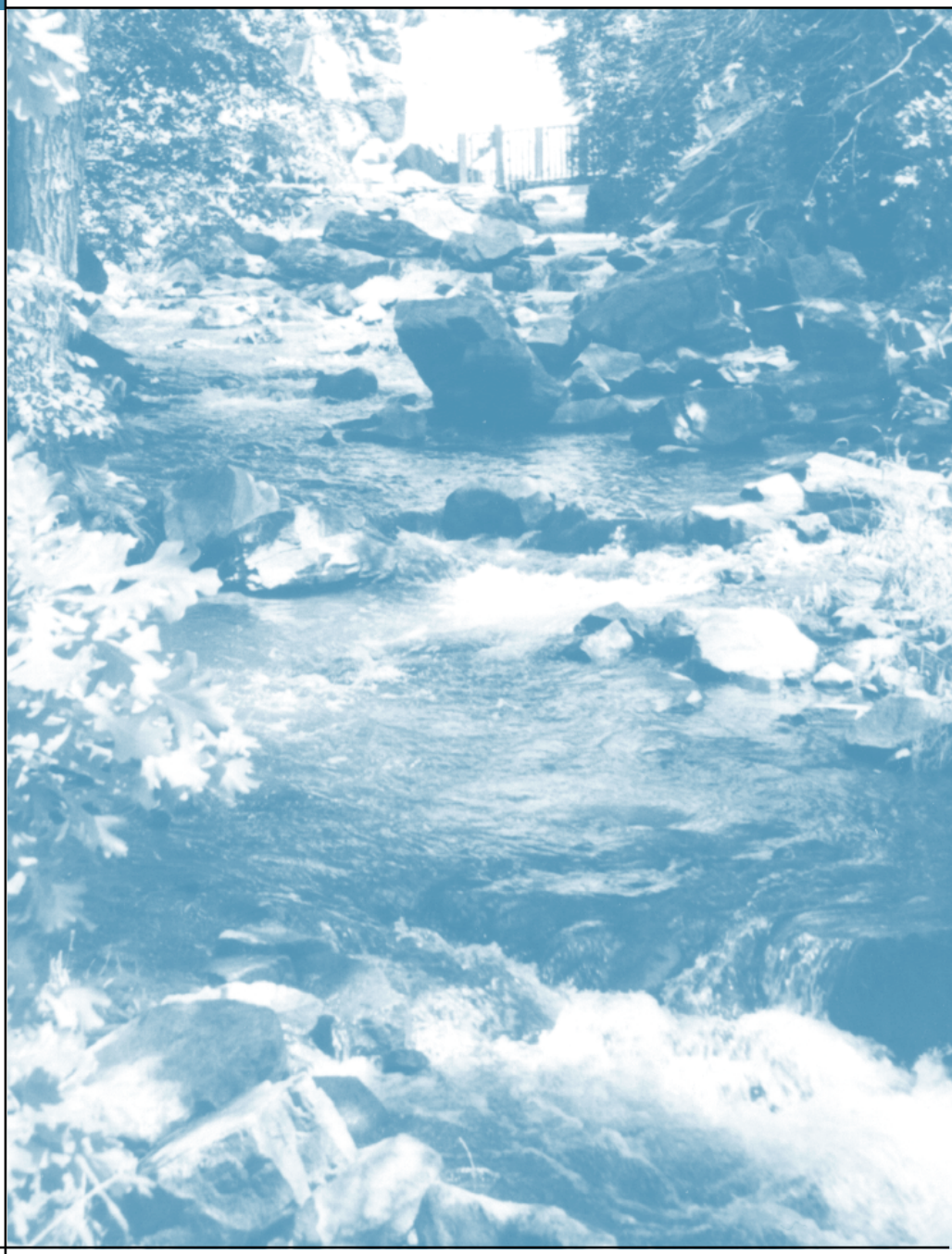
Charting a Course for the Future:

Report of the State Water Program Reorganization Project



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Minnesota Planning develops long-range plans for the state, stimulates public participation in Minnesota's future and coordinates public policy among state agencies, the Minnesota Legislature and other units of government.

The Environmental Quality Board, staffed by Minnesota Planning, draws together five citizens and the heads of 10 state agencies that play a vital role in Minnesota's environment and development. The board develops policy, creates long-range plans and reviews proposed projects that would significantly influence Minnesota's environment.

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Cover photo by Gretchen Sabel.

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Executive Summary

Charting a Course for the Future is the final work product of the State Water Program Reorganization Study ordered by 2001 Legislature, and conducted by the Minnesota Planning staff with assistance from the Environmental Quality Board.
Minnesota Planning developed the reorganization plan while focusing on three criteria specified by the Legislature. The three criteria specify that all plans and implementation projects should be coordinated with and related to an overall water management plan, similar programs and functions should be assigned to a single agency when feasible and inherent conflicts of interest should be avoided. Input on the study came from a survey of local governments involved in water management, from the EQB's Water Resources Committee and review of past reorganization studies.

FINDINGS AND RECOMMENDATIONS

During the course of developing the plan, the concept of steering water management agencies in an overall direction, as opposed to moving its parts around, became the focus of the report. As a result, findings are dealt with in terms of the issues identified in the legislative language, and recommendations that will help to chart the course for water resources management in the future are offered.

1. Legislative coordination
The current committee structure in the Legislature does not put any single group of legislators in charge of all water policy and programs. This may result in fragmented policy direction and does not facilitate the Legislature taking a broad look at the state's water management and policy framework. The report recommends recreation of the Legislative Water Commission or other coordinative body – such as a bicameral task force – to review all water program budgets holistically and deal with critical policy issues including lake development, ground water withdrawals, drainage law and integration of water planning and comprehensive planning.

2. Executive branch coordination
Coordination between agencies at the operational level appears to be effective – crises can be dealt with efficiently and initiatives that span agency lines are developed. Policy-level coordination across agency lines is often more thorny, especially in the area of emerging issues. According to *Minnesota Statutes*, Section 103B.151, executive branch coordination on broad water policy issues is to come through the Environmental Quality Board. This coordination has varied in effectiveness, but is critical.

The report recommends that the EQB examine the current coordinative structures. This review should include the charge of and representation on the EQB Water Resources Committee and evaluate whether it can be an effective coordinative body. Two other coordinative options are suggested – EQB water staff working directly with the board itself on water issues, and formation of a Governor's sub-cabinet to include those agencies that have water responsibilities.

3. Greater support to local governmental units
Local governments are taking an ever-larger role in water management and protection, acting as agents of the state in delegated programs and as contractors to the state in providing water management services. This involvement is focused through local water plans, now in their third generation. Future progress will depend on the commitment of state and local governments to integrating water planning with comprehensive land use planning.

4. Comprehensive water monitoring and data management revamping
Water monitoring is essential to understanding the resource and the pressures that threaten its health. Many federal, state and local agencies collect water data, as do some private citizens. The report recommends that a strategic plan for monitoring be developed, as well as water monitoring plans (including ground water) for each of Minnesota's water basins to inform and guide all this work. These plans are in various stages of completion now, and are being developed with varying degrees of detail. The plans need to be detailed enough that anyone who wants to get involved in monitoring can tell where their efforts would be most useful.

The report also recommends that an independent study of water monitoring be conducted, with special attention as to whether structural change in the organization of state water monitoring programs would improve the situation.

5. Review of enforcement tools used by regulatory agencies for consistency
The enforcement tools used by state agencies vary and the funds available for conducting enforcement activities are stretched. The use of administrative penalty order authority by all agencies should be examined.

OTHER FINDINGS

The appearance of overlap occurs when two agencies work in similar areas. This study finds that these interactions are generally complementary and allow for people with different backgrounds and perspectives to work together for a common goal. One area where two state programs do overlap to some degree is in the flood damage reduction programs administered by DNR and BWSR. Conflict of interest by state agencies in administration of water programs does not appear to be a widespread problem at this time.

OTHER MAJOR REPORT CONTENTS

Key information to support the findings is found in several other sections of the report. There is a section that provides a functional description of state water programs, by building on the Chart of State Agency Water Programs, which was developed in the early stages of the project. The areas described are: research, monitoring, data management, regulation and enforcement, financial and technical assistance, education and outreach, and planning and policy development. For each of these areas the agencies involved are listed as well as a description of the current situation, a vision, needs, and an example of interagency coordination in that area.

The report also includes a description of state water agency missions, further examples of interagency coordination, results of the survey conducted for the project, a recap of past reorganization studies and examples of water management initiatives from other states.

Introduction

The Omnibus Agriculture and Environment funding bill (*Laws of Minnesota 2001 First Special Session*, Chapter 2, section 155) required the director of the Office of Strategic and Long-Range Planning (Minnesota Planning) to develop a plan for the reorganization of state water programs and functions. Staff began work on the project in early July 2001, seeking advice from the Water Resources Committee of the Environmental Quality Board then and throughout the study.

The law provides that the reorganization plan meet three goals:

1. All specific plans and implementation projects should be coordinated with and related to an overall water management plan.
2. Similar programs and functions should be assigned to a single agency when feasible.
3. Inherent conflicts of interest should be avoided.

The Legislature asked for three work products:

- A chart listing all the current water programs and functions of state government, submitted on August 15, 2001
- A preliminary plan for reorganizing the state water programs and functions submitted on January 30, 2002.
- A final plan with draft legislative language to accomplish the reorganization, due on February 15, 2002.

This reorganization report was done in concert with the Governor's Water Unification Initiative which began in 1999. *Minnesota Watermarks:Gauging the Flow of Progress 2000-2010* is the state's 10-year plan to protect and conserve water, and the first major product of the initiative. There is considerable synergy between the initiative and this report, both in their development and in how they may interact in the future. On a smaller scale, this mirrors the interaction among plans, agencies and governmental units which this report recognizes as essential to achieving effective resource-based water planning and management.

Meetings, discussions and interviews helped to shape the report's recommendations and findings. These included meetings with the Water Resources Committee and its agency members, other staff within each agency with water-related responsibilities, outside interest groups and representatives of local government units. The chart of state agency programs, prepared in August 2001, showed that local government units were the primary recipient in 38 of the state's 101 water-related programs; local governments are also the primary decision-makers on issues of land use development. A questionnaire assessed their views of the state's water programs. Finally, review of past reports helped to identify both the strengths and weaknesses in Minnesota's water policy and program development. This historical information provided a foundation for this report. For more detail on report development, please refer to the Background and Information Sources sections.

Some might see this report as a way to help resolve the current budget crisis through cost-cutting measures. Such an approach would likely cause more harm than good. Rather than focus on programmatic changes, the report seeks to change the way water

policy is developed, legislated and administered through better integration and collaboration of all parties responsible for the development and implementation of water policy and plans.

THE ENVIRONMENTAL QUALITY BOARD WATER RESOURCES COMMITTEE

The EQB Water Resources Committee was formed to foster the effective integration of water programs and policies. In 1983, the Minnesota Legislature merged functions of the Water Planning Board into the EQB, assigning a set of duties now codified in *Minnesota Statutes*, section 103B.151. In 1985, the EQB established the Water Resources Committee to help it carry out its duties to coordinate and integrate water policy, planning and programs in Minnesota. In the Ground Water Protection Act of 1989, the Legislature assigned the committee responsibility for developing a series of biennial water reports. While the EQB's other water-related responsibilities are vested directly in the board or chair, the EQB has historically looked to the committee to fulfill these responsibilities, subject to its approval.

Since then, the committee has grown to include the Metropolitan Council, Minnesota Geological Survey and University of Minnesota Extension Service in addition to the original six state agencies and two citizen representatives from the EQB. Representatives from the USDA Natural Resources Conservation Service and U.S. Geological Survey are also regular attendees. The committee members include:

- Minnesota Board of Water and Soil Resources (BWSR)
- Minnesota Department of Agriculture (MDA)
- Minnesota Department of Health (MDH)
- Minnesota Department of Natural Resources (DNR)
- Minnesota EQB citizen representatives and staff
- Minnesota Pollution Control Agency (PCA)
- Minnesota Geological Survey (MGS)
- University of Minnesota Extension Service (MES)
- Metropolitan Council (METC)

Effective coordination occurs among these agencies; this report includes 14 such examples. Currently, coordination seems to be most effective when dealing with crises or specific initiatives, when there is something tangible that must be dealt with quickly. In these cases, the agencies contact each other and determine an appropriate joint course of action. Coordination is on an operational level and does not deal with overall policy or priority establishment. This is different from the policy-oriented coordination expected of the EQB and its Water Resources Committee.

The need for interagency coordination at the policy level and the effectiveness of the current system are a major focus of this report. According to *Minnesota Statutes*, sections 103A.204 and 103B.151, the EQB is responsible for development of comprehensive, long-range plans for water resources; coordination of water management and regulation activities among state agencies with water responsibilities; and coordination of local, state and federal planning activities. This coordination is only effective when the agencies to be coordinated actively participate and when EQB staff resources are sufficient to manage the effort.

Findings specific to the legislative goals

Coordination and relation to overall water management plan. In general, each agency is set up to address particular resource issues or constituencies. Its success is measured by progress toward objectives defined through

its mission and strategic plan. (The missions are provided later in this report.) Interagency coordination, while expected by Minnesota citizens and the Legislature, is often not considered so high a priority as fulfilling an agency's immediate responsibilities. Funding is generally not allocated to support coordination. Both these reasons hinder greater coordination across agencies toward an overall water management plan.

In the interviews, agencies noted that all programs are dynamic and subject to change over time. The complexities of water and diverse values stand in the way of providing simple answers to the issues of water management. Agencies also noted that natural variability (flood or drought) can occur on a scale that overrides human solutions – in other words, government cannot solve every problem.

Coordination needs to occur beyond state agency boundaries. The Minnesota Geological Survey and University of Minnesota Extension Service/Water Resources Center stand apart from the state agencies, both administratively and by function. However, their roles in research, education, public outreach and basic science are essential to providing the understanding upon which other programs, particularly those involving ground water, depend.

The Metropolitan Council is another unique member of the Water Resources Committee because of the special functions it provides within the seven-county metropolitan area. In some ways, it operates like a state agency; in others, more like a regional or local government. Because of its unique perspectives, it is a valued member of the committee.

While the programs of the above organizations were included in the August 2001 Chart of State Water Programs, this report focuses on the analysis of those agencies and water programs of state government proper.

The state water plan and its biennial updates are intended to bring together the diverse water planning activities of local, regional, state and federal bodies and integrate these plans with state strategies. Development of the state water plan is required of the EQB in *Minnesota Statutes*, section 103B.151, and was bolstered in the current administration by the Governor's Executive Order 99-15, which established the Water Unification Initiative. The state plan and biennial updates have helped to inform interested parties of water issues, as well as to guide policy development. The effectiveness of these plans in shaping executive and legislative priorities would be enhanced if the plans were tied more closely to the budget process.

Overlap and duplication. Overlap among state water programs occurs in some instances, but the notion that such overlap results in duplication is more perceived than real. For example, both the Department of Natural Resources and Minnesota Geological Survey have a geophysics program. However, the MGS program is based on research and works on a regional scale while the DNR program is more problem-oriented and site specific. They share geophysical investigation equipment and technical expertise. Collaboration also occurs in the development of county atlases; the MGS provides the geological framework and the DNR does the hydrogeology work. Both depend on the county well index that the MGS and the Department of Health have developed for baseline data. Although these functions could be combined, there may be little gain in efficiency.

Necessarily, distinct services are also provided by hydrogeologists in four agencies. MDH hydrogeologists aid in the development of wellhead protection plans, a major

undertaking to safeguard the health of public water supplies. Department of Agriculture hydrogeologists monitor the movement of fertilizers and pesticides through the soil into shallow ground water systems. DNR hydrogeologists investigate and resolve questions of well interference and analyze surface and ground water connections. PCA hydrogeologists model ground water pollutant transport, evaluate ground water contamination at remediation sites, design cleanup protocol and offer technical assistance. These distinct agency functions might only be combined at some risk to diminishing the mandated outcomes of the programs they serve.

One area of duplication is the Area II Flood Damage Reduction program administered by BWSR and the statewide FDR program administered by DNR. The Area II program began in the late 1970s and currently serves nine counties in southwest Minnesota with an annual state allocation of $189,000. The statewide FDR program began in 1987 and distributes approximately $10 million per year in flood damage reduction funds. However, Area II staff described how its work has expanded to take in smaller projects like the maintenance and clean-out of stock ponds or the replacement of bridges with culverts in order to provide water storage along roadsides. Area II used some of its grant money to help fund a wetlands restoration project. These activities go beyond those established for the program by *Minnesota Statutes*, sections 103F.173 – 103F.187.

Conflict of interest and separation of program functions. Conflicts of interest do not appear to be a major problem, largely because Minnesota's "advocacy" system of water management provides for checks and balances among the state programs. A more detailed explanation is found in *Crosscurrents: Managing Water Resources*, a 1996 Minnesota Planning report.

The 1989 Ground Water Protection Act called upon the Commissioner of Agriculture to annually review water monitoring data to determine whether a pesticide is detected broadly enough in ground water to be labeled "common detection." If so, then MDA must develop and promote voluntary best management practices to minimize the impacts of a pesticide's use. MDA is in the process of reviewing information that may lead to a common detection recommendation. Critics have raised concerns that there is a conflict of interest between environmental protection and agriculture promotion. Building a bigger role for the Department of Health in the decision process may help alleviate the perception of a conflict of interest.

Compliance monitoring and the establishment of standards are appropriately linked to the regulatory functions of agencies. The training and technical assistance activities that agencies currently provide in association with their regulatory functions help to explain why regulations are needed and increase acceptance and compliance. State agencies continue to provide technical assistance and training in water protection to local governments.

Functional description of state water programs

To some degree, all state water programs perform the functions of research, monitoring, data management, regulation and enforcement, financial and technical assistance, education and outreach, and planning and policy development. These functions are somewhat different from those listed on the chart of water programs that was prepared in August 2001; however, they present a more comprehensive view of how a water program develops, beginning with basic research, the necessary first step. Functions

are described beginning with a list of the agencies that are involved, a description of the current situation, a vision statement and discussion of what would be needed to attain that vision. Each function ends with an example of interagency coordination. Additional examples are listed at the end of the report.

RESEARCH

Purpose: To acquire a basic understanding of natural and impacted water systems through sound scientific study, including the collection and interpretation of high-quality scientific data.

Agencies involved: A primary task of MGS, USGS and components of DNR, MDH and university researchers. EQB is responsible for identifying state research needs and priorities.

Situation: Important scientific progress continues to be made. In general, however, progress is slow and expensive. Acceleration will require inputs of new money and further improvements in interagency cooperation at the research, planning and strategy level.

Vision: A statewide hydrological, geological and biological framework from which resource-related programs at all levels of government can draw.

Needs: Accelerated funding of the county geologic atlas program, regional hydrogeologic assessments, county biological surveys and related local training programs; completion of soil surveys; additional work on defining the sustainability of ground water reserves in specific areas; and a more complete understanding of both ground and surface water quality.

INTERAGENCY COORDINATION

Nitrate contamination in a rural water supply well field. In 1997, water being pumped into the Lincoln-Pipestone Rural Water distribution system from the Holland well field exceeded the 10 milligrams per liter nitrate-nitrogen drinking water standard. Although the Minnesota Department of Health administers the Public Water Supply Supervision Program, finding practical solutions far beyond water treatment were needed. The well field is located entirely in an agricultural area of Pipestone County and even the water utility intensively farmed the land immediately surrounding their wells. Furthermore, knowledge of local interaction between ground water and surface water and local nutrient application practices was sketchy.

The Minnesota departments of Agriculture, Health and Natural Resources; the Board of Water and Soil Resources; and the PCA formed a team to work with Lincoln-Pipestone Rural Water to address the problem. The Pipestone County Soil and Water Conservation District, University of Minnesota Southwest Research and Outreach Center, Extension staff, Natural Resources Conservation Service, USDA-Agricultural Research Service, local landowners, and the Minnesota Rural Water Association soon became active participants. This coalition of partners has numerous accomplishments, including:

- Construction of a nitrate treatment plant to address the immediate need to bring water quality back into compliance with drinking water standards.
- Detailed interviews with area farmers to determine nutrient application practices, to identify potential problems and to design appropriate educational responses.

- LCMR and EPA 319 funding which provided support to develop locally needed agricultural research, demonstration plots and education, and leverage to obtain federal cost sharing for accelerated adoption of nutrient management planning.
- Enrollment of the land immediately surrounding the wells into the Conservation Reserve Program (in partnership with an area hunting club).
- Implementation of localized research on "phytofiltration." This may eventually allow the use of perennial forages such as alfalfa for cleaning up contaminated aquifers and for recycling the nitrate removed by the treatment facility.
- Integration of state and local geological data to develop a better understanding of the local hydrogeology.
- Delineation of the wellhead protection area and development of a plan to address long-term nutrient management issues.
- Development of a long-term public information program and an outreach and education plan for landowners.

This project shows that local, state and federal organizations can work collaboratively to address ground water contamination issues through applied research and targeted investigations. It also clearly demonstrates the need for proactive planning and implementation of protection measures before development of a water supply. MDH now works with water utilities to help prevent situations like this from occurring.

MONITORING

Purpose: To measure physical, chemical and biological parameters on the quantity and quality of surface water and ground water and the health of aquatic systems. This is done to: establish baseline or ambient resource conditions; document trends and identify degradation; investigate problems by identifying specific causes of impairments, quantifying loads, allocating reductions and designing management actions; and measure effectiveness of the results of actions. In addition, monitoring is conducted by both regulatory agencies and regulated parties to demonstrate compliance with permit or other required conditions.

Agencies involved: Major task of PCA, MDA, MDH and components of DNR. Local governments also do monitoring, especially for identifying nonpoint related water quality problems and defining solutions. The EQB is directed to work with agencies to coordinate biennial assessments of water quality and availability.

Situation: Many monitoring programs function smoothly for their intended purposes. However, ambient or baseline monitoring necessary for determining trends is often the first to be cut in times of tight budgets and is consequently often lacking. Some shortcomings in data sharing and data interpretation could be overcome by improvements in data gathering. New technologies such as the interpretation of satellite imagery to determine changes in water quality offer promise, but require funding for testing and application.

Vision: A consistent, long-term, statewide, resource-based monitoring system that draws from the input and expertise of various agencies, research organizations, local government units and citizen volunteers and is based upon good science, standardized measurements, quality control and appropriate training. Statewide updating and analysis of land cover and land use is routine.

Needs: Water monitoring is a critical foundation for sound water management. There is a need to increase representative monitoring of both surface and ground water

to identify impacted waters and establish baseline conditions from which future trends can be determined. Minnesota also needs to continue the development of basin monitoring plans by interagency teams in order to determine actions for improving water resource management through cooperative agreements among agencies, local government units and the University of Minnesota. Because of the fundamental importance of monitoring to the management of both surface and ground water, Minnesota needs a formal mechanism for the coordination of state-wide monitoring efforts.

INTERAGENCY COORDINATION

Interagency water monitoring initiative. This 1997 initiative was a concerted effort to identify and fill the critical gaps in Minnesota's water monitoring. Participants included the principal state water monitoring agencies (MPCA, BWSR, MDNR, MDA, MDH) as well as the Metropolitan Council and the University of Minnesota.

The initiative grew out of the 1992 Minnesota Water Monitoring Plan, an interagency effort of the EQB. The agencies examined the progress made as a result of the plan and prioritized the remaining needs. The goal was a more complete picture of Minnesota's waters to help ensure that dollars are spent wisely, leading to state and local water-management programs that are cost-effective and directly accountable. The result was the proposal of a number of coordinated efforts involving two or more agencies as well as local groups. The initiative's proposal was the first of its kind in Minnesota, and has in turn led to further cooperative monitoring. Examples are numerous:

- Integrated condition monitoring for streams, a joint effort of the PCA and DNR, has strengthened a program that brings together chemical, physical and biological water monitoring.
- Lake monitoring has improved with an Interagency Lakes Coordinating Committee and PCA lake assessment projects that are cooperative efforts with lake associations and local government.
- The new Citizen Stream Monitoring Program, modeled after the Citizen Lake Monitoring Program, works with local organizations and has involved several hundred citizens across the state in monitoring their local water resources.
- Fish contaminant monitoring has been strengthened through interagency efforts of PCA, MDH and DNR.
- The MDA has formed agricultural chemical monitoring cooperatives with various counties and cities.
- The PCA's increased data management efforts have been instrumental in getting and using monitoring data generated by other state agencies and local groups.

These efforts were successful in bringing together programs and enhancing cooperation among agencies at the operational level. However, the need for development of a common monitoring strategy and consistent methodologies among monitoring entities still exists, and is discussed later in this report.

DATA MANAGEMENT

Purpose: To manage water resource data such as chemical analyses of water, water-level and flow measurements, water clarity and turbidity measurements, well construction and geological information from well logs, precipitation and aquatic ecosystem variations, among others. The function involves the organization, storage, retrieval and dissemination of data for the benefit of agencies, local government units, educators, researchers, consultants and the general public.

Agencies involved: All agencies have responsibilities in this area.

Situation: On most issues related to water resources, effective decision-making requires sound scientific data. Several agencies and affiliated units presently have well-managed information systems that are designed to handle data to meet the needs of specific agency missions and goals. However, there is no overall system to efficiently link together data sets for the benefit of other agencies, governmental units and researchers having a need for the same data.

Vision: Data gathered by an agency or unit of government is easily accessed and used by others who need the information.

Needs: All agencies and government units should provide their data in a geo-referenced form (GIS) following appropriate data standards so they are easily usable by others. At a minimum, there should be links from one agency to the appropriate page on another agency's Web site. Going beyond these simple links, a Web site is needed in which a reference map could be used to locate specific water resource information and agency points of contact.

INTERAGENCY COORDINATION

Evaluation of water supply safety in Minnesota. The Minnesota departments of Health, Agriculture and Natural Resources and the PCA were asked by the administration to assess water supply safety in Minnesota in the aftermath of the September 11 attacks.

MDH, PCA and DNR have regulated facility data computerized and geographically located so that information can be shared and displayed on maps using GIS. This greatly facilitated the assessment and allowed it to be done quickly. The MDA did not receive funding to allow them to completely computerize and locate regulated facilities with pesticides. This leaves a "hole" in the information and assessment, and points to the importance of all agencies having the necessary resources to use available technology.

Minnesota agencies that work with water protection and control have traditionally cooperated in sharing data and have tried to create electronic systems that meet their individual needs, while still encouraging broader use of valuable information. This electronic sharing of information allows everyone to do a better job of assessment, evaluation and planning. The limiting factor has been a lack of consistent funding rather than an unwillingness to cooperate or share.

REGULATION AND ENFORCEMENT

Purpose: To regulate uses that affect the quantity or quality of Minnesota's water resources and aquatic habitat, and implement policies designed to protect water resources. This includes the development of standards, application and enforcement of rules and other regulatory tools and the delegation of authority, as appropriate, to local government. One element of regulation includes the use of voluntary controls such as best management practices in place of permits, provided there is sufficient monitoring to ensure compliance to water resource standards.

Agencies involved: Primary task of PCA, MDH, MDA and DNR. Secondary task of BWSR.

Situation: Water quality and quantity are regulated through a system of statutes and rules. Permits and other types of approvals are common regulatory tools. This system has evolved over time and has adjusted to respond to changing circumstances including the trend toward greater local control and decision-making. Enforcement efficiency is an issue at all levels of government because of the time required and associated legal costs

involved in judicial review. Administrative penalty orders help to ensure compliance with state laws and rules, but require legislative authorization. The departments of Agriculture, Health and the PCA currently have this authority, as do local government units in their land use controls. An administrative penalty order allows the regulating authority to issue a fine and/or request for corrective action without having to resort to legal action. For example, the DNR currently lacks this authority for its waters permits. A violation of permit rules is handled as a misdemeanor through the local court and county attorney. Administrative penalty orders are more efficient than either an administrative hearing or criminal proceeding and less costly.

Vision: There is greater clarity in regulatory functions among agencies, local government units and the public. Local water plans are closely linked to land use planning and zoning, and counties have assumed many of the previous roles of state agencies in providing oversight and guidance on local water resource issues relating to ground water, lakes, wetlands, rivers and streams. Where appropriate, counties and other designated local government units have assumed or superseded state agency regulatory controls of water resources. State agencies continue to provide local technical support and training. Where agency regulations are still needed, they are combined into joint permits through interagency agreements.

Needs: Greater state regulatory agency participation with local governmentals on the development and implementation of local water plans and interagency coordination on the development of permit regulations that lead to simplified forms, local assistance, training and enforcement. All regulatory agencies should have the authority to use administrative penalty orders as a tool for enforcement.

INTERAGENCY COORDINATION

Funding for feedlot upgrades. After successfully working together on the feedlot rule (mostly through the Feedlot and Manure Management Advisory Committee meetings), the Minnesota PCA, the Department of Agriculture and the Board of Water and Soil Resources decided it was worthwhile to collaborate on other initiatives to help farmers meet environmental requirements. Specifically, the agencies knew that the new feedlot rule would have a financial impact on some feedlot owners, and they wanted to make sure that the state could provide financial and technical assistance to those who needed it.

Staff from these three agencies and the Department of Finance met to determine the financial impact the new rule would have on feedlot owners. The result was MDA's Financial Needs Assessment Report to the Legislature. Using information in the report, the four agencies continued to meet to develop a strategy for the administration to allocate cost-share money for environmental corrections. The Legislature appropriated $2.3 million per year in cost-share money based on the strategy.

Additionally, funding was increased for delegated counties in the feedlot program, putting technical assistance right at the local level. Money was also appropriated for nine new feedlot positions at the PCA to improve permit efficiencies and provide technical assistance to feedlot owners.

By working together, the agencies were able to develop a strategy that all could support. Each agency's expertise was tapped to prepare the package. Although this example does not relate specifically to enforcement, it does show how agencies worked together with the Legislature to improve environmental compliance.

Financial and technical assistance

Purpose: To assist local governmental units and citizens through grants, technical assistance and emergency response, and to coordinate with government units on projects of mutual local, state and federal interest.

Agencies involved: A task of all agencies dependent upon specific needs.

Situation: It appears that financial and technical assistance services are adequately delivered, although the questionnaire revealed some complaints about agency availability and the red tape involved in securing grants. Multi-agency responses to emergencies (floods, spills) and in dealing with emergency planning (security of water supplies, safety of food supplies) have generally been well-coordinated, timely and efficient. Agencies coordinate on some grant programs, but more coordination is possible and should continue to be explored. One particular need is to ensure that assistance activities integrate solutions to water problems with land and other related issues. Coordination of technical assistance is exemplified in the Local Solutions Alliance, a multi-agency pilot initiative that delivers integrated assistance to communities requesting help with comprehensive planning, community design and other specific priorities.

Vision: Agencies provide timely, coordinated and integrated financial and technical assistance while the relationship between agencies and local government units grows to one of equal partners having separate roles in managing and protecting Minnesota's water resources.

Needs: Counties seek greater support from state agencies to develop and implement their comprehensive local water plans. Recommendations in a county's local water plan should be fully integrated into its comprehensive land use plan; the two plans should work together to help manage future development while sustaining critical resources.

Local government units also require access to state agency information and expertise in the development of their plans. This requires greater availability and participation of state agency field staff with local planning efforts. To help in avoiding gaps or overlaps, there should be more local interagency teams and shared points of contact among agencies. Such support should be incorporated into an agency's work plan. Agency work plans need to include staff time for coordination and assistance, and staff must be recognized for their successful efforts in these areas.

INTERAGENCY COORDINATION

Natural Resources Block Grant Program. This is a program that works to streamline assistance and funding to local governments and landowners, coordinate activities of state agencies and local governments, and measure environmental benefits of their implementation efforts.

In 1991, the Legislature created the Natural Resources Block Grant Program, administered by the Board of Water and Soil Resources. This program provides funding to local governments for activities conducted under comprehensive local water planning and the Wetland Conservation Act (BWSR), the feedlot program and on-site sewage treatment program (PCA), and the shoreland management program (DNR).

This program eliminated duplicate processes of three agencies by consolidating them into a single grant application, work plan and budget, and annual report. This move has reduced costs for both state and local government. The concept of this program fits

nicely into how local governments plan for and implement water and natural resource projects and activities. The application process is designed to complement the local process of providing education and information, monitoring and data collection, inventory and mapping, land and water treatment, and planning and environmental controls. This allows local governments to see how various programs and departments fit together into a more comprehensive approach to addressing their own high priority water-related goals.

An additional benefit has been the ability to get program results reported back to the state in a uniform and consistent manner. In addition to the normal reporting of the number of projects, acres treated and permits issued, the system allows BWSR to estimate the amount of sediment and phosphorous that is kept out of Minnesota's rivers, streams and lakes from the land and water treatment practices implemented by local governments and cooperating landowners.

Agencies are also working to internally integrate funding. From 1998 to 2000, the PCA researched and developed a framework for integrating its nonpoint source and point source funding programs into a single system in order to better allocate funds to the projects and areas of greatest environmental priority. The PCA developed this framework with the assistance of other state and federal agencies, some of which expressed interest in having their agency's funding programs be part of the integrated system. The PCA began implementing the system internally within the nonpoint source program during the past two years, and hopes in the next two years to expand it to include the point source programs and other agency programs.

These examples show how funding programs can be integrated within a given agency. The Natural Resources Block Grant Program also shows how interagency cooperation can make it simpler for local government partners to access state program funds. Both of these examples provide common ground upon which other agencies can build.

EDUCATION AND OUTREACH

Purpose: To increase general knowledge about the behavior and condition of water resource systems, strategies for water resource protection and management, and public awareness and stewardship of water resource systems. This includes the development, distribution and use of educational materials, and workshops, classes, voluntary actions and other forms of learning.

Agencies involved: A primary function of all agencies, the Minnesota Geological Survey and the University of Minnesota Extension Service.

Situation: Although all agencies have educational objectives, the overall effort to educate the public about water resources lacks coordination and funding. University units (MES, MGS) have clear responsibilities in this area under the University's land-grant mission, but lack the financial resources for sustained general education programs in water. Education of local officials on the impacts of land use decisions on water resources is also lacking, as is a comprehensive effort to include Minnesota's schools in service learning opportunities involving water resources.

Vision: University units, state agencies and schools work together to develop and deliver integrated education materials and opportunities to meet a variety of local needs, including best management practices, better resource-related decisions and stewardship of all natural resources including water.

Needs: Greater support for and participation of University units with state agencies in the development and implementation of research and educational policies and programs related to water resource management at the local level. An example is the statewide support for NEMO (Nonpoint Education for Municipal Officers) or related programs aimed at providing local government decision-makers with knowledge and choices on water resource-related decisions.

Closer linkages of state agencies to all forms of education are needed in order to build citizen awareness and understanding of water resource systems, foster stewardship, and create greater opportunities for applied research and monitoring of natural resources by citizen volunteers and supervised student researchers.

INTERAGENCY COORDINATION

Farmer education. MES is working to educate farmers, agricultural professionals and county staff on new state feedlot rules and appropriate manure management practices. MES, the PCA, the Department of Agriculture, the Board of Water and Soil Resources, the USDA Natural Resources Conservation Service, and the U.S. Environmental Protection Agency have all contributed staff and/or funds to produce publications and make education programs available at the regional and county level throughout the state. The project formed around a federal 319 grant with coordination by MES.

Information for publications and programs was jointly prepared by staff of MES, PCA and NRCS. These same staff delivered regional workshops for county staff and agricultural professionals. At the county level, programs for farmers are organized jointly by MES, county feedlot officers, soil and water conservation districts, and other organizations. In the first year over 4000 farmers and interested parties attended the county education meetings and 338 county staff attended the regional training sessions. The second year of education programs is now underway.

This model works well when providing training to the agricultural sector. Would it be as effective in helping to educate urban residents? Minnesota needs to continue to explore ways to broaden the environmental understanding of its citizens and leaders.

PLANNING AND POLICY DEVELOPMENT

Purpose: To identify current and emerging water resource issues and develop coherent policies for addressing them. This involves long-range strategic thinking and planning and requires effective communication among agencies and with the Legislature. It also requires coordination with local constituencies and affected parties.

Agencies involved: A primary task of the EQB. Member agencies also have their own planning and policy functions. BWSR has the responsibility of providing input from local government units.

Situation: The EQB has recently produced two documents (*Soundings: A Minnesota Water Plan Assessment,* October 1998, and *Watermarks: Gauging the Flow of Progress 2000 – 2010,* September 2000) that together lay out broad statewide goals for water management in the next decade. *Minnesota Statutes* also requires the development of water plans by counties, watershed districts, and other entities throughout the state, including the seven-county metropolitan area. All of these plans require periodic updating. However, the sequence of these planning events and their relationship to others can cause confusion and frustration. The Governor's Water

Unification Initiative directs the EQB to work with the state's other water agencies to build a state water plan from the diverse elements presented in these more-specific plans.

Vision: A strong link exists between planning and policy development and the resultant implementation and operations of all agencies and levels of government. This results in better legislative support of the policy development process. Issues are brought forward and addressed as needed. Planning is integrative and serves as a vehicle for helping to address local needs. Plans and programs are based on resources and achievable goals.

Needs: There must be greater participation and coordination among state agencies and the Legislature on the development of major water policy and management issues. Within the executive branch, there should be an effective forum to discuss critical water management issues and develop related policies and priorities. Within the legislative branch, there needs to be a similar body where legislators can be informed and contribute to the identification and development of major water policies and priorities for Minnesota.

INTERAGENCY COORDINATION

Water Unification Initiative. Executive Order 99-15 was signed by Governor Ventura in June 1999. This order recognizes that the sustainability of Minnesota's water resources is of primary importance and directly affects Minnesota's economic, environmental and community health; that management should reflect differing conditions throughout the state; that many federal, state and local efforts are focused on river basins for water management purposes; and that local government has a notable role in water management. This order directs the EQB and its member agencies to develop water-related goals, objectives and measurable outcomes tailored to the state's major river basins for the year 2010. The goals and objectives served as the basis for *Minnesota Water Plan 2000,* published in October 2000.

Now in its second phase, The Water Unification Initiative is working with teams in each of Minnesota's river basins to document the highest priority needs for each basin, and to incorporate the recommendations of local water plans, basin plans and various statewide special-purpose plans into a coordinated set of priorities. According to the executive order, these will determine water priorities, policies and budgets of the Ventura administration. This phase should be complete by July 2002.

INTERAGENCY COORDINATION

The Upper Mississippi Source Water Protection Initiative. The Upper Mississippi River Source Water Protection Initiative was sponsored by the cities of St. Cloud, St. Paul and Minneapolis, the Minnesota Department of Health, the Metropolitan Council, the Mississippi Headwaters Board and the Rivers Council of Minnesota. The geographic scope of this project includes the Mississippi River from its headwaters to the Minneapolis water intake in Fridley and to major Mississippi tributaries. The drainage basin for this stretch of the river covers approximately 19,000 square miles. Additional participants include the 29 community water suppliers along the Mississippi River which pump from shallow aquifers near the river. The project has worked cooperatively with several other initiatives focused on the Upper Mississippi River, reviewed the wealth of information relating to the Mississippi River and associated shallow aquifers, attempted to draw conclusions based on that information, and identified data needs to be addressed through future work.

Several separate research efforts have been conducted in conjunction with the initiative, but have not been made part of it. These efforts include ground water flow modeling, oil and chemical spill prevention and river protection, geologic mapping, characterization of sand and gravel aquifers in the project area, and research on the presence of pharmaceuticals and endocrine-disrupting chemicals in surface water, including the Mississippi River. As the initiative continues, agencies will continue to share information and resources to protect the Mississippi River Basin in Minnesota.

Recommendations

In a system as complex as Minnesota's where many agencies and programs are involved with water, there is an ongoing need for coordination and integration of major water policy and program initiatives. To be effective, such coordination should take place within both the legislative and executive branches of government as well as between them. Because of the importance of water to all forms of development and the impacts such development can have upon water and other natural resources, there needs to be good coordination and collaboration between state agencies and local government units with authority over land use development. These two forms of coordination, coordination on water policy development and the coordination of state agency support and services to local water planning and decision-making, form the basis for many of the recommendations. Each recommendation is followed by related discussion points.

1. Examine how the Legislature can fully appraise the broad spectrum of water-related policy development. Options are to reconstitute the Legislative Water Commission or develop another mechanism to perform the functions of overarching policy formulation, and initiative and budget review.

The Legislative Water Commission was established in the 1989 Ground Water Protection Act and sunsetted in 1996. Re-establishment of the commission or a similar legislative task force would allow a group of legislators to develop deeper understanding of water management issues and to advise their legislative colleagues on water decisions. The commission or task force could also provide periodic legislative review of state water program policies, priorities and budgets. Current legislative committee makeup results in water programs being heard piecemeal by a number of committees without any overall vision from the Legislature. For example, in the House, the Environment and Natural Resources Committee hears the budgets for BWSR, PCA and DNR; the Agriculture Committee hears the MDA budget; the Health and Human Services Committee hears the MDH budget, the Higher Education Committee hears the University of Minnesota budget (including the Minnesota Geological Survey); and the State Government Committee hears the EQB budget. Because of this structure, no single group of legislators is charged with understanding the interrelationships that agencies have in the development and management of water resources.

There are significant policy issues that could be examined by a commission or task force. Four emerging issues needing more policy guidance are lake development pressures, ground water protection, drainage law conflicts with other law and the integration of local water planning with comprehensive land use planning. These issues are discussed in more detail in the section of this report immediately following the recommendations.

Another area demanding attention is the ability of state water programs to deliver the services they are statutorily required to provide, especially in the face of major budget cuts. Future study could include an

examination of all the local government units having water responsibilities, their effectiveness, funding and accountability; the changing roles for local and state government; how to increase efficiencies in the delivery of water-related services.

2. Build an effective executive branch forum for addressing critical water issues through coordinated policy development. The EQB should evaluate the structure, duties and role of the Water Resources Committee and consider options to improve the effectiveness of interagency coordination on water management issues.

The law that ordered the development of the Water Reorganization Project listed three goals for the report. The first was: "All specific plans and implementation projects should be coordinated with and relate to an overall water management plan."

The state water plan is developed every 10 years with updates prepared in the second year of each biennium. Interagency coordination in this process comes through the Environmental Quality Board and its Water Resources Committee. This effort was reaffirmed by the Ventura administration in Executive Order 99-15 which set into motion the Water Unification Initiative. The initiative brings priorities, goals and objectives from local water plans and state agency basin plans into the state water plan. Because of the interactive nature of these plans, it is best to consider the 10 year state water plan as much a process as a product. As it progresses, it will lead to better efficiencies and coordination among all contributors.

Minnesota Statutes, section 103B.151 gives the EQB broad responsibilities for coordination of public water resource management and regulation activities among state agencies, development of the state water plan, coordination of local, state and federal water planning activities with the state plan and strategies, and development of state water policy recommendations. In 1985, the EQB established the Water Resources Committee to help it carry out these duties. Participating agencies initially designated a high level representative to serve on the committee. For example, the PCA commissioner personally attended meetings while most other agencies sent a designated alternate, either a deputy or assistant commissioner. Three EQB staff were assigned to work with the agencies through this committee. Today, the typical representative is a division director and the EQB staff has been diminished to a single full-time person with some temporary assistance from time to time. In recent years, the Water Resources Committee has not been effective in providing the type of coordination for which it was originally intended. This merits review.

The committee's coordinative function needs to be reaffirmed and reinvigorated. Three options used in the past should be re-evaluated. One option is to reestablish the Water Resources Committee as a major coordinating and policy development body to address the effects of developing resource issues and suggest changes to policy and priorities. The charge, make-up and operation of the committee, its roles and responsibilities, need evaluation in order for this to be successful, including clarification of expectations from the Governor's office. An alternative is to rely on the EQB itself for this function. Ad hoc committees would be established to deal with specific issues as needed. A third option, one used by previous administrations, is formation of a Governor's Environmental Cabinet Cluster to address common concerns. Such a cluster of commissioners might also be effective in helping balance competing needs and issues during periods of extreme budget shortfalls. The three options are not mutually exclusive

and, taken together, could provide a strong system for coordination.

In a large, complex management system, it is critical that there be coordination within all levels of the system. The Water Resources Committee was intended to provide top level administrative leadership and coordination for water policy development. Without this leadership, it is difficult to achieve the appropriate priority and funding to help support and recognize the necessary coordination that is also required at operational levels. This does not detract from the many examples of effective interagency coordination and collaboration found in this report. Rather, it points to how such efforts can be enhanced, especially in the delivery of support and services to local government units where there is emerging need.

3. Provide greater support to local government units, including counties, for the implementation of comprehensive local water plans. Recommendations in a county's local water plan should be fully integrated into its comprehensive land use plan; the two plans should together help manage future development while sustaining critical resources. Counties that make this connection should be given higher priority for increased funding. Along with increased support comes greater local responsibility and a need for clear accountability to demonstrate that state dollars support appropriate state interests.

State agencies should make their technical expertise available to local units through interagency teams with local points of contact. Providing this support should be incorporated into an agency's strategic plan. Agency work plans need to include staff time for providing coordination and technical assistance; staff should be recognized for their successful efforts. State agencies should continue to seek ways in which various grants available to local government can be better coordinated and integrated. The Board of Water and Soil Resource's Natural Resources Block Grant Program is a good example of how greater coordination and integration of grants can be achieved for comprehensive local water planning.

State agencies are increasingly working with local governments on the planning and implementation of their water programs. In some cases, such as the PCA's feedlot program, state programs are delegated to local units. When this occurs, the local unit acts as an agent of the state in permitting, inspection and enforcement. In other programs, the local unit acts as a contractor. The BWSR programs delivered through the soil and water conservation districts are examples of these. Other programs give local government added responsibilities, with funding to assist them. Examples include the statewide Shoreland Management Program and the PCA's Individual Sewage Treatment Systems Program. As local units achieve more capacity and responsibility, the functions and roles of state agencies involved with the programs also change. A gradual shift from state agency regulatory activity to greater provision of technical and financial assistance at the local decision-making level has already begun.

The August 2001 Chart of State Water Programs confirmed this trend and revealed that local governments were the primary customers in 38 of the state's 101 water programs. Technical assistance is the primary role of state agencies in 34 of these programs. This assistance goes to a variety of local units, including counties, townships, soil and water conservation districts, watershed districts, water management organizations and others. BWSR is charged with coordinating some of the information flow between local units and state agencies.

Future progress will depend on the commitment of state and local governments to integrating local water planning with comprehensive land use planning. Continuing to raise expectations for outcomes and increasing participation and support of the state agencies in local planning will be critical to realizing mutual goals and objectives.

Minnesota's approach to water planning provides an orderly way of communicating water management goals and objectives between local and state government, and also provides an integrated look at natural resources that crosses political boundaries. The tiered approach (statewide water plan, basin plans, local water plans) recognizes the strengths of both a statewide water plan and its regional differences, and capitalizes on the expertise of individuals at all levels of government. This is particularly evident in the area of resource assessments. In many instances, agency staff at the regional or state level are best equipped to assess resource conditions, rather than each local government on its own.

The framework, in its purest sense, allows each level to do what it is best at doing:

- Statewide plans with broad goals, objectives and indicators help to integrate and coordinate activities.
- Basin plans identify resource values and functions, specific pollutants, reduction targets and problem areas (including water quantity problems and loss of habitat).
- Local plans focus on local implementation and decision-making.

This framework supports what local government is best equipped to do: make local land use decisions and implement actions that work toward achieving specific water-related objectives and standards set by the local water plan and reflected in the basin and state water plans.

In some instances, local and state agency staff who responded to the questionnaire noted a potential for duplication resulting from state and local water planning efforts. There is confusion over how the plans relate to each other. The Governor's Water Unification Initiative should help to resolve remaining issues, roles and relationships. The plans are intended to be interactive. That is, they are neither "top down" nor "bottom up," but a reflection of their interdependence. This framework is intended to optimize the use of human resources, fiscal resources, programs and authorities that exist at each level.

4. Establish a comprehensive and effective water monitoring and data management strategy for Minnesota's surface and ground water resources that is broader than that which can be provided by any one agency or program. This requires the development of integrated long-term, resource-based policies for monitoring and data management that are coordinated across agencies and levels of government and that include volunteer monitoring.

Because all state agencies involved with water have developed mechanisms for meeting their own water monitoring and data management needs, it is critical that this issue be carefully addressed. Otherwise, it might cause unforeseen negative impacts to established water programs. This report has just touched the surface of the need for resource-based monitoring and management.

A coordinative water monitoring and data management body should be assembled to scope out the issues that an independent investigator might then address. This recommendation would require additional time and money to achieve, but the resulting report should guide the development and implementation of a

comprehensive water monitoring and data management strategy.

This report offers the following questions for consideration in such a study:

- Should the Minnesota Geological Survey be expanded to perform basic research and water monitoring for both Minnesota's ground and surface waters similar to what the U.S. Geological Survey provides at the national level? If so, how could this function be elevated to obtain the needed funding?
- Is it better for such a water monitoring and data management function to stand alone in the executive branch, be associated with the University of Minnesota or be housed within an existing agency?
- What other alternatives should be considered? What are their costs?
- How could local and volunteer monitoring initiatives be enhanced and supported so that they contribute to Minnesota's scientific body of water knowledge and also draw from it to meet local needs and interests?
- If the status quo is to be maintained without expansion of the Minnesota Geological Survey or the creation of a new water survey agency, how could both the Legislature and existing state agencies ensure that these needs are met?

Monitoring needs coordination around resources, not agency programs. Many federal and state agencies, local governments and citizen groups are collecting water data. Therefore, a more integrated system of monitoring that involves all levels of government, including citizen volunteers, is required. This system should build on basin monitoring plans now being developed statewide. A good example is the St. Croix basin monitoring plan. Monitoring by federal, state and local groups is conducted in accordance with the plan, and a much better picture of the resource is gained for all participants.

New tools for monitoring surface water quality that will provide much broader coverage are being developed. For example, satellite imagery is being used to determine trophic status of lakes or changes in land cover. Coupled with water quality data gathered by local or citizen groups, this monitoring information can be used to target public information efforts and provide information to local governments in making appropriate land management decisions. Such work has already begun in certain areas of Minnesota.

Baseline data and ambient monitoring are critical gaps, particularly in the area of ground water. Without them, it is impossible to determine trends in water availability and water quality. Recently, the PCA significantly reduced its ground water monitoring program. It was the only "ambient" ground water quality monitoring program operating at the state level. This leaves a gap in Minnesota's ability to determine ground water quality trends and the impacts of human activities on ground water.

Because of the fundamental importance of monitoring to the management of both surface and ground water, agencies should establish a formal mechanism for the coordination of statewide monitoring efforts including the development of a monitoring handbook for standardized methods. Development of a comprehensive monitoring strategy similar to the 1992 *Minnesota Water Monitoring Plan* would help to sort out the information needs and develop strategies to meet them. The state should also consider the establishment of a water monitoring organization that is separate from any agency's regulatory functions.

State agency water data is not easily consolidated because of the different data management systems involved. Such information needs to be easily accessed by local government units and others who require it for their decision making. Most agencies are working at refining their data into more user-friendly forms using geographic references. The Legislature has identified the need to make water data accessible, coordinated and easily integrated at least three times during the last three decades.

Minnesota Statutes, section 103A.401 directs the Department of Natural Resources to work in cooperation with other state agencies to establish and maintain a statewide water information system to gather, process and distribute information on the availability, distribution, quality and use of waters of the state. This provision of law was adopted by the Legislature in the mid-1970's.

With support from the Legislative Commission on Minnesota Resources, the Minnesota Water Planning Board devoted much time and effort to addressing information systems needs during its existence, from 1977 to 1983. As a result of its efforts, valuable information was automated by several agencies and the Land Management Information Center was able to develop a Systems for Water Information Management (SWIM) program. This program included interagency coordination activities, development of water data standards and a water data catalog, and early attempts to integrate water databases – steps intended to connect and integrate water information and make it accessible. In 1989, the Legislature formally charged the Land Management Information Center at Minnesota Planning with the responsibility of managing ground water quality data *(Minnesota Statutes*, section 103H.175).

Each of these efforts eventually fell short due to a lack of sustained focus and funding.

At a minimum, Water Resources Committee members could work through their agency webmasters to provide appropriate links to other agency Web sites in order to simplify the gathering and use of data by anyone having need of it. An example of such linkage is Lake Finder on the DNR website, www.dnr.state.mn.us. Since such information often is not readily found through an agency's Web site, it may also be beneficial to consider developing a separate Web site like the Office of Environmental Assistance's environmental education site. SEEK (Seeking Environmental Education Knowledge, www.seek.state.mn.us) draws together information provided by a wide number of environmental education programs and parties, both public and private, in one convenient place. It has been highly successful in providing easy access to a wide variety of information for a variety of users. Another promising alternative would be to see if Bridges, an environmental information search engine on the state's Northstar Web site, (www.bridges.state.mn.us) could be modified to provide this function.

5. Evaluate the rationale of providing all state water regulatory agencies uniform measures for enforcement.

Often, state agencies are criticized for lack of enforcement in their regulatory programs. Considered by some as a conflict of interest, the reality is that fiscally tight budgets and escalating costs of legal services are forcing agencies to cut back on their enforcement responsibilities. One partial remedy would be to authorize administrative penalty orders for all state agencies having regulatory programs. The departments of Agriculture and Health and the PCA currently have this authority. An administrative penalty order allows a regulating authority to issue a penalty and/or

request for corrective action without having to resort to a citation under criminal law. For example, DNR currently lacks this authority for its waters permits. A violation of permit rules is handled as a misdemeanor through the local court and county attorney. Administrative penalty orders are often more efficient than either an administrative hearing or criminal proceeding and less costly in legal fees for either side. They do not reduce the full due process under law to which anyone is entitled.

Conclusions

Through a more coordinated development of water policy in both the executive and legislative branches of government, it should be possible to achieve greater integration of water programs without changing the current advocacy approach that agencies follow. This should also result in greater coordination across agency lines in the delivery of services to local governments in their comprehensive planning and decision making functions that affect water resources.

By greater participation of state agencies in local water planning, development and implementation, both the role and function of state agencies will gradually shift from regulation to the support of local government units in their decision making and regulatory functions. In time, this will lead to greater trust and recognition between state agencies and local governments, and greater understanding and appreciation by the general public of the value of Minnesota's water resources and the importance of their protection. The end result will be water management policies that are integrated into local land use decisions and stewardship and that have the following recognizable traits:

- State and local water policies, programs and decisions are transparent (no hidden agendas) and easily understood.
- Planning is integrated and coordinated between state and local interests so that all gain value and have ownership of the plans and related management actions.
- Sufficient data is routinely collected and managed to be understandable and easily used by local decision-makers and citizens.
- Local governments and citizens are empowered and accountable for the management of Minnesota's water resources. There is trust and respect among all involved parties.
- Water planning is integrated at all levels with land use and other elements of comprehensive planning.
- State and local water information, policies, programs and partnerships prevent the emergence of problems of water quality and availability (proactive resource management), and manage water and related land resources on a sustainable basis.

Critical policy development needs

Four critical issues facing the state now need to be addressed:

Minnesota's lakes. The need for a cohesive policy on lakes is more critical now than when it was identified in the 1979 state water program evaluation. Rapid growth in the central lakes area around Brainerd is comparable to the issues of sprawl in the metropolitan area. However, development pressure can occur on any lake in the state. Programs, such as shoreland management, that counties and cities have adopted into their zoning ordinances have helped to shape lake development over the past 30 years, as have voluntary lake associations, their coalitions and statewide organization. Lakes forums were held in 1991 and 2000; these brought together a wide variety of interests from local citizens to state agency officials to

discuss the need for better coordination and support for local lakes initiatives. The first forum was initiated by the Freshwater Foundation with the support of the Blandin Foundation. Although an interagency lakes coordinating committee has been formed to work on lakes issues, lack of funds, a unifying policy, and administrative priorities have prevented greater accomplishments and support for a more comprehensive lakes initiative.

This is an issue that the Water Resources Committee or the EQB should address in their policy development functions. It may be beneficial for one agency to assume leadership on policy development. Such an initiative is intended to complement and not detract from other basin or watershed-based initiatives that are ongoing.

Minnesota's ground water. Minnesota's ground water is the predominant source of water for human use and consumption. It also provides base flow to rivers and streams and is critical to maintaining healthy aquatic habitats in those areas as well as many wetlands and lakes. Over-withdrawal threatens water supply in some areas while contamination from nonpoint sources impacts others. Minnesota's growth and economic development require safe and adequate sources of water. Despite its importance, Minnesota's ground water is largely a "hidden resource," out of sight and out of mind.

Funding for baseline data and monitoring are necessary to better define water sources and identify trends in both water availability and water quality. At the local level, such information needs to be readily available for local land use decisions and plans. Basic education on ground water is also needed. Many agencies are involved in various aspects related to ground water. As John Helland, research analyst for the Minnesota House of Representatives, reported in his *Survey of the Ground Water Act of 1989* (January 2001) much still remains to be done, including the development of a comprehensive monitoring strategy. This will require the concerted effort of all state agencies involved with ground water in order to build upon the initiatives achieved by the earlier Ground Water Act. It is an appropriate issue for the Water Resources Committee or the EQB to address.

Drainage law. Minnesota's drainage laws date back to the late 1800s. The emphasis then was on draining surplus water from the landscape so it could support agriculture. Although there have been efforts to update it, the drainage law requires attention to meet the growing needs and issues of the 21st Century.

Past efforts to update the drainage law fell short because of its complexities and the competing interests of those affected by it. There are many constituencies involved in this issue and tackling it will require participation by all state water agencies. Historically, drainage law has tended to function independent of other water resource laws. That approach has begun to gradually change as both agriculture and natural resources concerns see the need to modernize the law to meet today's agricultural needs while safeguarding downstream interests and resources. Given the proper attention, such legislation should benefit both concerns.

Integrating water planning and policy into comprehensive planning. Water affects and is affected by all land use decisions. For example, the grading, filling and paving of roadways can alter both surface and subsurface flow patterns and make an area more susceptible to spills and other forms of pollution. Changes in vegetation, land use and land cover resulting from new roads and induced development can alter many local

resources, including water, and have unforeseen impacts on a community.

In similar fashion, recreational development of Minnesota's waters can help to raise both local and nationwide interest and appreciation for Minnesota's rich water resources. While the local economy, tourists and Minnesotans may benefit from enhanced water recreation activities, the increased use can place greater stress upon both natural and social systems.

Even the funding of new sewer lines in developing areas may have unexpected impacts. In helping to protect a water body from the cumulative impacts of many onsite septic systems, it may seem advantageous to support the expansion or construction of municipal sewers. However, sewer lines, like roads, can then induce even more development at or near the water. Loss of natural vegetation along shorelines, greater fertilization and other land alterations often create the perception if not the reality that the quality of both the lake and the lake experience have been degraded. Either way, the improper development of lakeshores can negatively affect a local economy, environment and community.

An appreciation and concern for water must be integrated into comprehensive planning and zoning decisions if the choices made today are to protect existing communities, the environment and future generations.

Agency missions

The following missions provided by the agencies and units of the Water Resources Committee show the diversity that exists in the management of state water programs.

Minnesota Pollution Control Agency. The purpose of the PCA is "to meet the variety and complexity of problems relating to water, air, and land pollution in the areas of the state affected thereby, and to achieve a reasonable degree of purity of water, air and land resources of the state consistent with the maximum enjoyment and use thereof in furtherance of the welfare of the people of the state (1967)." Based on enabling legislation, the PCA mission is "to help Minnesotans protect their environment;" the PCA vision is fishable and swimmable lakes and rivers, clean and clear air, uncontaminated land and ground water, and healthy ecosystems. A major function of the PCA is protection of the quality of Minnesota water resources. The PCA uses a basin management strategy for water quality protection and restoration that focuses on water resources and geography rather than on categories of pollutants.

To implement its strategies, the PCA works with federal, state and local government entities, businesses, lake and river associations, nonprofit organizations, legislators and citizens. The PCA Web site at www.pca.state.mn.us provides additional information on its water quality programs.

Department of Health and the Division of Environmental Health. The mission of the Minnesota Department of Health is to protect, maintain and improve the health of all Minnesotans. See: www.health.state.mn.us .

The mission of the Division of Environmental Health is to reduce and prevent the occurrence of environmentally and occupationally induced disease and injury. The division is the principal agency of state government charged with responsibility for protecting the public health from exposures to environmental hazards. It receives its authority through *Minnesota Statutes*, Chapter 1031 and sections 144.381 – 144.385.

Department of Natural Resources. The mission of the Minnesota Department of Natural Resources' is to work with citizens to protect and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life. The goal of the Division of Waters is to promote water resource conservation and sustainability by working with others to develop a common understanding of water resources and improve its programs and decision-making. The primary role of the Division of Waters is to manage the conservation and use of Minnesota water resources in the best interests of its people (*Minnesota Statutes*, section 103A.201). Its programs are directed more towards quantity than quality, but many programs have water quality benefits. The division's role is met through a number of regulatory and management programs. See: www.dnr.state.mn.us/water .

Department of Agriculture. The Minnesota Department of Agriculture's original authority, found in *Minnesota Statutes*, Chapter 17, has been significantly augmented since the creation of the department in 1919. The MDA's mission statement reflects current and diverse responsibilities: "To work toward a diverse agriculture industry that is profitable as well as environmentally sound; to protect the public health and safety with regard to food and agricultural products; and to ensure orderly commerce in agricultural food and products."

Two divisions of the MDA have significant roles in water-related programs: Agronomy and Plant Protection and Agricultural Development. Agronomy and Plant Protection is largely a regulatory division with responsibilities of regulating all farm inputs such as pesticides and fertilizers in rural and urban regions of the state. Its mission statement is to: "Serve and protect the citizens of Minnesota and the agricultural industry, environment and economy through education, technical assistance, certification and regulation. This is accomplished through comprehensive regulatory and nonregulatory programs for pesticides, fertilizer, seed, noxious weed, commercial feed, nursery inspection, export certification of plant materials and the management of unwanted agricultural pests."

The Agricultural Development Division's mission is to work toward enhancing the economic potential of Minnesota agriculture now and in the future to produce food, fiber, and other products profitably while protecting the environment. More information is available on the MDA Web site at: www.mda.state.mn.us .

Board of Water and Soil Resources. The mission of BWSR is to provide leadership in assisting local governments to manage and conserve irreplaceable water and soil resources under their stewardship with an emphasis on private lands. BWSR believes that management is best implemented locally, voluntarily, comprehensively, and collaboratively.

The state's role carried out through BWSR is to help ensure that soil and water resources, and the citizens who benefit from them, are well-served by all levels of government. This board provides the tools and coordination necessary for local governments to prioritize and implement conservation on the landscape.

BWSR coordinates resource planning activities of local governments through plan approvals, grant administration, outreach, state-local coordination, and as a forum for discussion among all levels of government (*Minnesota Statutes*, sections 103B.101 subd. 9 and 103A.206). The state has made a significant investment in local government delivery of programs over the years that is achieving an impressive return. As devolution continues, having a solid foundation from which local governments can operate will be critical for achieving the state's conservation goals. BWSR's job is to optimize the transition. See www.bwsr.state.mn.us .

Environmental Quality Board and the Water Resources Committee. The Environmental Quality Board draws together five citizens and the heads of 10 state agencies that play a vital role in Minnesota's environment and development. The board develops policy, creates long-range plans and reviews proposed projects that would significantly influence Minnesota's environment.

The EQB directs the work of the Water Resources Committee through its approval of the EQB work plan. The committee brings together state agencies that have a major role in taking care of the state's waters. Each member looks at water issues from a different angle — drinking water, agriculture, recreation, pollution — and coordinates their concerns through the committee to create a unified, coherent plan for Minnesota's water. The committee leads the Governor's Water Unification Initiative, which is intended to coordinate and integrate water management in Minnesota. More information on the work of the committee can be found at the Web site: www.mnplan.state.mn.us/eqb/water

Minnesota Geological Survey. The Minnesota Geological Survey was established by legislative act on March 1, 1872. The enabling statute (General Laws of Minnesota,

1872, Chapter 30) instructed and authorized the Board of Regents of the University of Minnesota to organize a geological and natural history survey of the state. Section 2 of the 1872 statute provides that the geological survey be undertaken with a ". . . view to a complete account of the mineral kingdom as represented in the State. . ." Sections 7 and 8 provide that the geologic studies be presented in the form of maps and associated reports, and that they be transmitted as widely as possible to the general public, as well as to the Legislature. See the MGS Web site at: www.geo.umn.edu/mgs .

The mission of the Minnesota Geological Survey is to undertake and promote the scientific study of Minnesota's geology, and to make the results available to the public.

As a research and service arm of the University of Minnesota, the MGS conducts basic and applied earth sciences research to determine the geological framework of Minnesota for the benefit of its citizens. The MGS works to provide a scientifically sound geologic understanding of the geological conditions in the state that can be used to further investigations of mineral resources, water resources, engineering conditions and the environment. This objective is accomplished mainly through the preparation of reports and geologic maps at various scales, using data and interpretive insights derived from direct field study of geological phenomena and the indirect methods of geophysics, remote sensing and geochemistry.

Minnesota Extension Service. The mission of the University of Minnesota Extension Service is to make a difference by connecting community needs and University resources to address critical issues in Minnesota. MES provides research-based information about management of land and water resources affecting water quality and quantity. Research conducted at the University of Minnesota addresses management of crop nutrients and pests, tillage, agricultural drainage, irrigation, forestry practices, shoreland management, waste water treatment, hydrology, climatology, limnology, resource economics, civil engineering and many other areas affecting quality and quantity of water resources. MES works with public agencies, industry and citizen groups to determine research needs and employ research results in protecting and utilizing water resources of Minnesota.

Additional Examples of Agency Coordination

The following are examples of agency coordination that have been achieved through interagency cooperation on water issues of mutual concern.

County Well Index Database. The County Well Index is a database that stores and retrieves information related to water wells. Although the index is maintained and operated by the Minnesota Geological Survey at the University of Minnesota, it was developed over a 30-year span with the cooperation of several state agencies and private-sector groups.

The MGS has used the geologic descriptions provided by well drillers since the early 1900s. In 1975 it became mandatory for drillers to submit well construction records to the Minnesota Department of Health. LCMR augmented efforts at MGS and MDH to build a database of this information beginning in 1978, again in 1983, and through the DNR in 1989. MGS adds value to the records by interpreting the geology, and builds the database within the context of regional geologic investigations. MDH contributes database expertise, ongoing data entry and funding for data entry at MGS.

Today, the County Well Index is easily available and widely used by local, state and federal agencies in making decisions that affect land and water use and resource and health protection. Well contractors, real estate companies and environmental consulting and engineering companies also use it. Work is underway to broaden the data content and to provide Internet access to the database.

Wellhead Protection Program. The purpose for wellhead protection is to safeguard public health by preventing contamination of public water supply wells to levels that present a health concern. The focus of prevention efforts is the wellhead protection area. This is the surface and subsurface area that contributes water to a public water supply well. Potential contamination sources within the wellhead protection area are managed to offset their potential risk to the public water supply well. Management measures include working with source owners using educational materials, training, technical outreach, financial assistance and regulation. Local wellhead protection teams are formed; they involve public water suppliers, local agencies, state agencies, private organizations, schools, landowners and the general public.

The wellhead protection program has been well received at local, state and federal levels. Generally, people believe protecting drinking water supplies is worthwhile and appreciate being involved locally rather than having state government telling them what to do. The administrative rules for the wellhead protection program were promulgated in 1996 without controversy. The Minnesota Department of Health is bringing over 1500 community and noncommunity water supply systems into the wellhead protection program. Approximately half of these systems use aquifers that are geologically sensitive. Priority is being placed on bringing these "vulnerable" systems into the wellhead protection program. MDH has set a goal to have all systems in the wellhead protection program by 2006.

Nitrate Well Water Testing Program. The Nitrate Water Testing Program provides water testing services, technical assistance and outreach to thousands of Minnesota well owners. Many of the past successes have been due to the unique partnerships between local and state organizations. The Minnesota Department of Agriculture developed the program and provides statewide coordination. However, the main strength of the program has been its local cooperators, which typically are the soil and water conservation districts, county extension educators, lake associations and environmental service offices. Additionally, regional well inspectors from the Minnesota Department of Health participate at many of the clinics and provide valuable information regarding local hydrogeology and well construction issues.

The program started receiving external funding (LCMR and currently EPA 319 funds) in 1997. Since that time, this program has provided testing services and technical assistance to approximately 4,000 to 6,000 rural homeowners each year. From 50 to 60 counties participate by hosting 80 to 100 annual clinics. Since 1993, over 33,000 water samples have been analyzed.

The overall goals of the Nitrate Well Water Testing Program are to:

- Increase the general awareness of the presence of nitrates by providing "no cost" water testing services and technical support for rural drinking water, irrigation and livestock water supplies.
- Promote best management practices for agricultural producers and urban lawn care providers.
- Identify localized problematic areas and the establishment of broad countywide baseline nitrate conditions.

- Provide the equipment, methods, educational materials and staff training so local government units can provide long-term services to the residents in their counties.

The clinic concept revolves around a number of simple principles: local participation is critical; testing is free to the public with immediate results; the overall program needs to be inexpensive; a nonregulatory atmosphere is important and well owners may remain anonymous; and, the staff's most important goal is to provide the required technical assistance across a diverse audience of well owners. The concept has proven adaptable for county fairs, field day events, public school programs and "stand alone" events.

Conservation easement programs. As of June 2000, the 14-year history of the Reinvest In Minnesota Reserve Program had acquired easements over 77,500 acres of marginal farmland and restorable wetlands. With the addition of the Conservation Reserve Enhancement Program in 1998, there will be an additional 100,000 acres of state funded conservation easements before the end of 2002. In four years Minnesota will have doubled the conservation easement acreage acquired in the first 14 years of the program. It will have done so at an administrative cost of less than 150 dollars per acre and easement acquisition costs of approximately half of the already competitive RIM-reserve rates. This is success one.

Success two will unfold over the next 3 to 5 years as 100,000 additional acres of restored wetland and native prairie vegetation begin to buffer the landscape of the Minnesota River watershed. The 20th Century was not kind to the Minnesota watershed and today it has 95 percent of its area in agricultural production in a predominantly two-crop rotation. These vegetated buffers will provide wildlife habitat for game and nongame species and much needed diversity on the landscape. The water quality benefits of each acre of conservation easement are impressive. Each acre reduces soil loss by 9.6 tons per year, sedimentation by 4.7 tons per year, and a reduction in total phosphorous reaching waterways by 5.8 pounds per year. Multiplied by 100,000 acres, these reductions are substantial.

A third success in this effort was the united efforts of multiple organizations. Federal funding and processing assistance came from the Natural Resources Conservation Service and the Farm Services Agency.

At the state level, PCA monitoring and analysis were useful in identifying the magnitude of the problem in order for BWSR to adapt RIM-reserve to fit the CREP program. BWSR then worked to gather a coalition to get the program approved and funded and put money out for SWCDs to hire "marketers." The DNR played a major role in providing forestry staff and critical "gap funding" to augment the sales force by working through local soil and water conservation districts to literally knock on front doors.

At the local level, the Minnesota River Basin Joint Powers Board was critical in motivating the early marketing efforts and attracting grant dollars from various sources. Its 37-county membership mobilized critical political support and aided efforts of the SWCDs. Without question, the workhorses of the effort were the county SWCDs in the basin. These organizations did sales, design, education and execution of real estate transactions by the thousands. They integrated CREP into their priorities and seized the opportunity to make a difference.

Heavy involvement by nongovernmental organizations such as the McKnight

Foundation, Friends of the Minnesota Valley, Pheasants Forever, the Nature Conservancy and many other groups contributed to deliver the bonding dollars necessary to fulfill the 100,000-acre goal.

***Minnesota Recovers* disaster task force.** The Minnesota Department of Public Safety, Division of Emergency Management convenes the task force following a presidential disaster declaration. Task force members include state and federal agencies that provide services in a disaster. These are Minnesota's Board of Water and Soil Resources; USDA's Natural Resources Conservation Service; the U.S. Department of Commerce's Economic Development Administration; the Federal Emergency Management Agency; Minnesota departments of Natural Resources, Trade and Economic Development and Public Safety's Division of Emergency Management; the U.S. Department of Housing & Urban Development; Minnesota Housing Finance Agency and U.S. Army Corps of Engineers. The Division of Emergency Management plays both a financial and a coordinating role in getting disaster services and financial aid to the affected communities. All work together as partners in determining how best to serve Minnesota's communities during and following a disaster.

Among all the agencies that play a role in flooding and disasters, the DNR has some distinct differences from its partners. DNR money through the Flood Damage Reduction Program is focused on mitigation, the prevention of future damages from disastrous events. It is set up to work quickly in getting the money to communities who have a plan to mitigate flood damages. The DNR does not fund any clean-up work. It focuses entirely on reducing the impacts of future flooding disasters.

Information sources for report

Analysis of the Chart of State Water Programs. The Chart of State Water Programs, completed in August 2001, formed an initial basis for outlining state water programs. Analysis of the chart revealed that local government units were the primary customer in 38 of the state's 101 water programs. Technical assistance is the primary category or function that state agencies provide in 34 of these programs. However, regulatory functions and enforcement are the dominant areas where agency staff devote over half (58 percent) of their cumulative time. These figures are somewhat misleading because of the interconnection of functions within and across agencies. For example, education and technical assistance are often either directly or indirectly associated with an agency's regulatory programs. One agency may also provide financial support or technical assistance and training that may directly or indirectly support another agency's functions. One example of this is the technical review that SWCDs provide to DNR permits which is supported through BWSR.

Through a series of meetings and follow-up discussions, staff from each agency on the Water Resources Committee were interviewed by EQB staff to gain a better understanding of their agency's water programs, roles and functions. Also considered were goals of the project and the findings of earlier reorganization studies. Notes from these meetings are available from the EQB on request.

Water program reorganization questionnaire. Local government units are the primary customer for many of the state's water programs, and they are the decision-makers for many issues concerning land uses affecting water resources. EQB staff developed a questionnaire to gather input from local government units and others based on the goals presented by the Legislature for the study. The questionnaire was distributed primarily through e-mailed organizational newsletters.

The responses are qualitative and reflect the views of those who are interested in or affected by state water programs. Four of the member agencies on the Water Resources Committee also prepared agency responses to the questionnaire. Excluding the agencies, there were a total of 41 responses: soil and water conservation districts (9), lake associations (6), watershed districts (5), no identification (5), rural water districts (4), citizens (4), county government (4), consultants (2), state agency employee (1) and township government (1). Because it was strictly a qualitative survey, the comments help to provide insight into what people think regarding the current arrangement of state water programs, but lack quantitative value. Following is a summary of survey responses. The full responses are available from the EQB on request.

Many stated that **there is not a clear and consistent vision across government on the management of Minnesota's water resources.** A number of reasons were given for this inconsistency. One noted that inconsistent positions *within* a given agency can be even more frustrating than those among agencies. These point to the complexities of the system. Others noted the need for more science-based decision-making and the development of a vision and its ownership by and for local citizens who are the ones who can implement land use changes related to water resource management.

When questioned about the **"advocacy approach" under which agencies currently operate**, the response was about evenly split between those who favored change to a more

unified system and those who preferred the current system of checks and balances. There was a fear that reorganization could lead to reduced flexibility for local governments and groups to deal with projects that they see as being a priority. It could also lead to a loss in specialties and services that agencies currently provide. However, it was also noted that state agencies need to work more with local government units through participation on water planning task forces.

Examples of good coordination on various water planning efforts included local water planning and basin planning, but others noted that there were too many agencies—each with its own plan. Monitoring was seen as an **example of poor coordination.** There should also be better coordination of education efforts among agencies. More coordinated use of GIS and its availability to local governmental units were also mentioned. One person suggested a combined agency Web site where all permit applications, databases and maps could be obtained.

As for **programs needing updating**, many called attention to the need to change the drainage law. Things lacking from current programs include greater long-term monitoring, interagency coordination and a more proactive approach to local planning which puts agency staff at the table as equal members with an attitude of providing assistance and not guidance.

The question of **conflicts of interest** was evenly divided between those who saw it as an issue and those who did not. Some noted that this is simply how the system is set up. Others stated that it is impossible to please all of the people all of the time and that agencies should use science to determine resource needs and act accordingly.

When asked about **priorities for limited funds**, the response was that there is a need for better collaboration at the state and regional levels in developing and implementing strategies. Others noted the need for improved baseline information and greater emphasis on both ground water and lakes. One noted the importance of hiring coordinators having primary training and experience in people skills since water resource management is as much a social issue as it is a technical one.

In summary, local government units want greater recognition and support for the role that they have in local land and water planning and management. For this role to grow, it will require greater participation and provision of services by the respective state agencies. Clarification of roles and functions at all levels of government and planning is also required.

Participation at association meetings and conferences. Good discussions were held with soil and water conservation district and watershed district administrators, at the annual conference of the Minnesota Association of Townships and at the annual meeting of the Minnesota Association of Watershed Districts. These helped to clarify the relationship between state and local government units in water programs and to fortify the issues identified in the questionnaires.

Review of water programs in other states. A review of other states' water programs revealed a range from a "super agency" approach to one of "cooperative resources management" through the funding of state, federal and local government partnerships. Representative examples are summarized in the appendix to this report. These lack in-depth analysis, but do provide useful information about certain management tools such as Maryland's integrated Web site and Water Monitoring Council, and Wisconsin's published standards for the collecting and processing of data.

State water reports and initiatives. This is the 17th report on state water program organization over the last 30 years. Some of these reports have led to broad changes such as the merger of the Soil and Water Conservation Board, the Water Resources Board and the Southern Minnesota Rivers Basin Council to form the current Board of Water and Soil Resources. However, other issues identified in these reports still require work. Among these are the need for better access to data by all potential users and the development of a comprehensive lake management policy within a framework of overall policy coordination.

State Water Resources Program Inventory and Problem Identification (Appendix A: Report of the Management Work Group, Minnesota Water Planning Board, March 1979) described three state roles in water resource management: protector, developer and allocator of water. It sought to identify gaps or overlaps among the various programs and issues of coordination, communication, citizen relations/participation and conflicts in priorities. There were more gaps than overlaps. At the time, there was only one pilot grant-in-aid program for Flood Damage Reduction which was administered by the Soil and Water Conservation Board. The need for a wetlands inventory was noted along with better coordination on permits between the PCA and Department of Natural Resources, better access to data, and a comprehensive lake management policy. While progress has taken place in all of these areas, many issues remain.

A Vision for the Future of Ground Water Management in Minnesota (October 1986), developed by an intragency team of the State Planning Agency, foresaw the emergence of strong comprehensive local water plans with joint powers agreements, as needed, to cover aquifer management. Costs would be shared among federal, state and local contributors with few strings attached. Water monitoring would be maintained and operated through the local water plan with much of it delegated to SWCDs for action. The state's role would be to provide technical assistance (help in setting up the monitoring network, interpreting data, trends analysis, etc.) and certifying local labs for water analysis. A water policy board would provide oversight, but the priorities and permit decisions would be made locally.

Protecting Minnesota's Waters: An Agenda for Action in the 1987-1989 Biennium (Environmental Quality Board, February 1987) provides an example of the concise way in which water resource priorities were developed and recommended when the Water Resources Committee was composed of commissioner-level representatives.

The Legislative Auditor's report, *Water Quality Monitoring* (February 1987), also reviewed the organization of Minnesota's state water programs. It concluded that many of the gaps and inefficiencies identified in the 1979 report had been markedly improved over the previous five years through increased coordination and cooperation among state agencies. Areas of potential overlap had been resolved through interagency cooperative agreements. Where there was a need, agencies often contracted services from other agencies.

The report also noted areas in need of further coordination, including the development of comprehensive lake management, nonpoint source pollution, pesticide contamination and water shortage policies, data collection and management, and local water planning assistance. It noted that the EQB, after a period of relative inactivity, had made recent progress toward fulfilling its responsibility to coordinate Minnesota's water policies and foster interagency communication through the

board's Water Resources Committee. It recommended that the Legislature make the committee's role explicit in statute and require that it submit a biennial water plan to the Governor and Legislature. It concluded that there was no need for major organizational changes, but that the affected agencies should continue to work out formal agreements for interagency cooperation.

The **Ground Water Protection Act of 1989** was a major executive and legislative initiative that established a policy framework for the protection of Minnesota's ground water. It reflected an integrated approach among state agencies and strong leadership by the Governor. The Legislative Water Commission was established to review state water policy, programs and needs. (This commission sunsetted in 1996.) The Act affirmed the role of the Environmental Quality Board for the development of state water policy and priorities and assigned it a new role in the coordination of information and education on state water resources. It recognized comprehensive local water plans as being a key part of Minnesota's water program and authorized the establishment of local water resources grants through the Board of Water and Soil Resources for the development and implementation of local water plans. Sensitive Area Mapping was assigned to the DNR. The Department of Agriculture's pesticide and fertilizer statutes were significantly rewritten and extensive new authorities were provided to the MDA including the creation of a cleanup reimbursement program funded by industry surcharges, authority to administer and access the state superfund, a permanent waste pesticide collection program, and authority to address ground and surface water issues. The PCA and MDA were assigned to develop management practices and requirements. The Department of Health was responsible for developing health risk limits. The EQB was required to identify water trends, priorities and research needs through biennial reports to the Legislature.

The *Minnesota Water Plan* (Environmental Quality Board, May 1991) called attention to the emergence of comprehensive local water plans as being the key to managing water in the 1990s. It presented itself as a sounding board for evaluation of new policies needed to protect and conserve Minnesota's water into the 21st Century and called for a focus on the resource through integrated lake management and interagency river basin coordination teams. Regional monitoring cooperatives were envisioned along with citizen monitoring. State agencies were to provide technical assistance to local governmental units and a statewide GIS was envisioned to integrate data on surface water, ground water and related resources. Priority was also given to the acceleration of programs for the development of county geologic atlases and regional hydrogeologic assessments to provide the necessary hydrogeologic information for making adequate water management and protection decisions. It called for the strengthening of the well code, the sealing of abandoned wells and the development of wellhead protection plans for public and private wells.

Water Quality Program Evaluation (Minnesota Planning, October 1991) identified emerging water quality trends. With the development of effective controls for point source pollution, there was a growing recognition and emphasis on the need to control nonpoint pollution. There was a heightened focus on pollution prevention and the need for cleanup, and a change in emphasis from the construction of wastewater treatment systems to their maintenance. It recognized an evolving role for local government in water planning and management through the development of active state and local partnerships. The 1991 evaluation of agency programs revealed some common needs: improved coordination, encouraged use of local authorities, improved data management, increased educational efforts, increased

funding and more program evaluation. It saw the EQB and its Water Resources Committee as the coordinator for state actions, BWSR as coordinator for state-local actions and local water plans coordinating local actions.

Both the *Minnesota Water Monitoring Plan* (Environmental Quality Board, April 1992) and the *Assessment of Water Availability in Minnesota* (Environmental Quality Board, December 1992) addressed the need for a strategic plan for monitoring Minnesota's water resources. These reports repeated the *Minnesota Water Plan*'s call for a "focus on the resource" and "integrated water resources management," while also noting that federal and state budget cuts had significantly reduced ambient monitoring of both surface and ground water. The *Water Monitoring Plan*'s objectives included:

- Substantially expand ambient monitoring.
- Recognize trend analysis as an essential component of water management and routinely incorporate it as a key state and local government duty.
- Support data exchange and analysis across agency borders, programs and levels of government.
- Encourage and expand citizen and local government participation in the monitoring of water resources.
- Provide the basis for a coordinated and integrated water monitoring system.

The *Assessment of Water Availability in Minnesota* called for the acceleration of regional aquifer assessments and county geologic atlases and the expansion of the state's stream flow gauging stations. It recognized the important role of the Minnesota Geological Survey in providing vital information about the state's hydrogeology through its mapping and technical services and called for its full funding. Noting the local governmental authority over land use and growth management decisions and that comprehensive local water plans could address water supply and use issues, it called for new ties in administration of the state Water Well Construction Code, Water Appropriation Permit Program and local land use decisions. It recommended a pilot local-state program for several counties experiencing growth pressures to develop plans that connect these efforts.

Crosscurrents: Managing Water Resources (December 1996) was prepared by Minnesota Planning in response to the Legislature's call for a reorganization plan that would further sustainable development, improve service delivery, prevent problems, encourage citizen participation and reduce pollution. It recognized that water management efforts evolve within programs and agencies as new needs are identified. Routine review, better coordination and consolidation among agencies should result in programs that capitalize the expertise of specific agencies. Program flexibility should be enhanced to encourage cooperation between state and local governments in meeting water resource needs. "Efforts that can be better handled by local governments or the private sector should be modified and programs should be evaluated to see if they are still needed." It called for a simplification of permitting and other decision-making through the use of joint permits, better coordination among agencies and appropriate delegation to regional offices and local governments. It recognized certain barriers including funding restrictions and budget cuts that force agencies to focus on the maintenance of core programs at the expense of greater efforts in planning or coordination with others. The role and value of local partnerships and citizen monitoring were recognized, and state and local governmental units were encouraged to form "situational alliances" with communities of common interest to accomplish their goals.

Crosscurrents also presented a comprehensive survey of past water management reorganization studies and water management history that is adopted here by reference.

A brief review of the time-line of major changes in Minnesota's management structures begins with the formation of the Department of Agriculture in 1919 and the development of the Department of Conservation and Soil and Water Conservation Board in the 1930s. Through the late sixties and the seventies the PCA was created, the Water Resources Coordinating Committee was formed by the State Planning Agency, and various other boards and councils were created including the Minnesota Water Resources Council, the Environmental Quality Council and Water Planning Board. The 1980s saw the merging of many of these earlier boards with Water Planning being merged into the Environmental Quality Board and the creation of BWSR from the Water Resources Board, Soil and Water Conservation Board and Southern Minnesota Rivers Basin Council. In 1985 the EQB formed the Water Resources Committee.

Minnesota's environmental system is characterized as a "collection of advocacy agencies." Each water resource management agency has a distinct perspective. The system meets the needs of various interest groups and gives them a voice in state government decision-making that might not be possible under one inclusive agency. It forces greater public scrutiny and recognizes the complex nature of water resource issues and the legitimate interests of agencies in dealing with agriculture, health, public safety, natural resource management and pollution control. The external checks and balances of such a system can foster creative tension and diversity in dealing with complex issues. In political terms, an advocacy system promotes competition and increases public representation of each goal or interest through external checks and balances.

Growing Smart in Minnesota (Office of the Governor, October 1999) represented the Governor's goals and framework for action of a Smart Growth Initiative. Its goals:

- Maximize economic opportunity for all while protecting and enhancing the assets that make Minnesota a great place to live—healthy communities, clean air and water, and Minnesota's unique natural, cultural and historical areas.
- Manage natural resources and agricultural land to ensure they are sustained for future generations.
- Be fiscally prudent by building on existing public investments and avoiding future costs down the road.

Principles for success include **stewardship** (use land and natural resources wisely to sustain them for the future), **efficiency** (make more efficient, integrated public investments), **choice** (give communities smart growth options and choices) and **accountability** (reinforce responsibility and accountability for development decisions).

Minnesota Watermarks: Gauging the Flow of Progress 2000– 2010 (September 2000) was based on the Governor's Water Management Unification Initiative and began a 10-year process toward unifying water management in Minnesota.

A survey of the Ground Water Act of 1989 (House Research, January 2001), noted the many accomplishments that agencies had made since 1989 in attaining major goals. The protection of geologically sensitive areas has been incorporated into rules and programs and the mapping of sensitive areas is now an integral part of mapping efforts carried out in collaboration with the

Minnesota Geological Survey. Establishment of the Local Water Resources Protection and Management Program has resulted in state-approved and locally adopted local water management plans in all 80 counties outside the metropolitan area, and ground water plans in five of the seven metropolitan counties. Newly constructed wells now comply fully with all state construction standards and sellers are required to disclose the existence of all known wells. Health Risk Limits for many ground water contaminants have been developed and implemented through the rulemaking process, and the monitoring of community water supplies has been greatly expanded. Through its statutory responsibilities for agricultural chemicals (fertilizers and pesticides), the Department of Agriculture has developed programs that are both innovative and "first of a kind."

Under **unfulfilled goals of the act**, Helland noted the disconnect between surface water, ground water and land use in the current water management system which is aggravated by a lack of local educational and technical assistance. Nitrates in ground water continue to be a concern along with the over-application of pesticides and fertilizers and failure to properly account for nutrient loading as a part of manure application. Research on best management practices, ground water protection and agricultural practices has been limited. Basic information about Minnesota's aquifers is lacking and there is no systematic approach to understanding ground water quality and quantity trends. There is a need for a comprehensive monitoring strategy. Too many agencies are involved and no agency is in charge. There is a lack of leadership and vision. He noted that although counties may be the appropriate level for ground water planning, there continues to be a very poor link between county level plans and the actions of other local governmental units. The ground water quality monitoring database envisioned by State Planning has not been fully realized. Basic data needs are still unmet. He called for the increased funding of systematic ground water monitoring and for the support of local programs in water planning, inspection of on-site sewage treatment systems and well sealing.

Helland noted the value of the former **Legislative Water Commission** in providing an opportunity for continuity on coverage of issues and development of expertise on water resource problems and programs, and in providing feedback to agencies on water issues through a single forum. He noted some of the emerging threats to ground water not anticipated by the act and called for one agency to be responsible for monitoring and the development of trend information on both water quantity and water quality. "We only show real concern about water resources during crisis—drought or flood. There is little real public education about the limits of water resources."

Appendix

Examples of water management initiatives from other states

Maryland – Water Monitoring Council. The council consists of state, federal and local agency representatives, as well as members of academia, volunteer groups and private industry. The council seeks to promote collaborative and effective monitoring through communication of monitoring activities to other parties and development and promotion of quality assured procedures. The council was started by the Maryland DNR, which along with the Maryland Department of the Environment, does a majority of the state's water data collection. The council also consists of subcommittees that are specialized to deal with various topics including planning, monitoring methods, indicators, data management and assessment and reporting. A key goal of the council is to document Maryland's monitoring activities.

Michigan – Cooperative Resources Management Initiative. The Michigan departments of Agriculture and Natural Resources fund a partnership of state, federal and local governments that is designed to promote long-term natural resource health and sustainability. The program utilizes the divisions of local conservation districts which are combined into regions, and lists contact information for forestors, biologists, resource specialists and others. In some cases the person who answers a resource management question may be a state DNR employee, in other cases it may be an extension specialist. The program also lists county-specific contact information for various other specialists such as resource professionals, NRCS representatives or an extension specialist. A person can use the contact list to locate a specific person or find out who to call for a specific question for both their county or region. Although this program is aimed at providing technical expertise for land management, many aspects of it could be modified to "cooperatively manage" water resources in Minnesota.

Wisconsin – Large "super agency" structure. The state of Wisconsin is managing natural resources through large agencies with many functions. For example, the Wisconsin DNR is charged with many functions that Minnesota uses a variety of agencies to carry out. These functions in Wisconsin are spread across many divisions including: air and waste; land; forestry; water (which includes fisheries and habitat protection); customer service and external relations; administration and technology; and, enforcement and science. Many functions that are part of Minnesota's PCA, DNR and Health departments are found in Wisconsin's DNR. This management approach does not go without criticism, however. A common criticism of Wisconsin's Natural Resources Department is that they are too centralized and lack "line" management (opposite of Minnesota).

Wisconsin – Department of Natural Resources Integrated Science Services Bureau: terrestrial and aquatic data standards. The Integrated Science Services Bureau within the state of Wisconsin DNR published a document that describes the standards for collecting and processing data gathered by the agency and its contractors. Among the processes described are data collection methods, recording guidelines, locational data standards for everything from plant and animal communities to aquatic biology and chemical and multimedia samples. Wisconsin is still working on getting everyone in the agency to use the standards.

The Wisconsin DNR as one agency collects much of the same data that several agencies would have the responsibility for collecting in Minnesota. While they cannot make everyone

collecting data everywhere in the state adhere to the standards, all parties the Wisconsin DNR contracts with or funds to collect data must adhere to the standards. However, in most cases, data is stored and maintained separately by each program.

Wisconsin – Land conservation districts. The Wisconsin equivalent of a soil and water conservation district is a land conservation district. As in Minnesota, Wisconsin's conservation districts are divided by county. However, LCD staff are county employees, who often sit next to planning and zoning and environmental services staff. In Wisconsin, each county must develop a Land and Water Resource Management Plan. The plans are developed by LCD staff in response to a redesigning of the state's nonpoint programs. State agencies "develop minimum statewide performance standards and prohibitions for nonpoint pollution and soil erosion control" that are ultimately used as a basis to distribute local grants. The plans outline how each county will meet state standards as well as local concerns with state and federal grant assistance (as well as other funds), and also describe how each county will lead the local implementation efforts (with rewards for innovative methods). A Local Conservation Committee, consisting of locally elected county board members, oversees the operation and helps to set direction. Locating LCD staff with planning and zoning and environmental services staff also allows land and water management plans to be developed cooperatively.

Nebraska – Natural resources districts. Nebraska's conservation districts are loosely organized by basin or similar landscape features. NRDs perform many of the same functions as Minnesota's watershed districts, SWCDs and local water planning combined. However, because so much of Nebraska relies on ground water for drinking water supplies, NRDs have a unique power to designate Ground Water Management Areas in their jurisdictions. The GWMA program, administered by Nebraska's Department of Environmental Quality, focuses assessment on areas where nonpoint sources of contamination may be a problem. The NDEQ then conducts detailed field surveys to determine relationships between land use practices and contamination sources.

Iowa – Iowa Water Quality Initiative. The Iowa Water Quality Initiative is a package of roughly 15 programs that have a role in improving Iowa's water resources. Overall, the initiative is designed to focus the water quality efforts on the programs that are thought to be the most effective. Most of the programs such as CREP and ISTS are not unique to Iowa, yet they have been identified as key factors in protecting and improving Iowa's waters. Because they have been identified as priorities, they receive special funding. Most programs are administered by the Iowa DNR or Department of Agriculture. Note: The Iowa DNR handles many of the programs that Minnesota's PCA manages (for example, setting total maximum daily loads, or TMDLs, for contaminants).

Maryland – Surf Your Watershed. "The Surf Your Watershed project is a cooperative effort involving the Maryland departments of the Environment and Natural Resources to 'catalog' important environmental, socioeconomic and programmatic information on a watershed basis. The project provides a database in which natural resources and biological information (including hydrologic, hydraulic, and water quality); bibliographic references; contacts, programs and activity descriptions; and other data can coexist and be easily obtained for watershed management, planning and natural resource conservation programs and projects." — excerpts from the Maryland DNR Web site at: www.dnr.state.md.us/watersheds/surf .

Although the water quality and quantity data Maryland lists is limited, the model they use could probably work here for data that is important to Minnesota. In addition, their Web site lists very specific metadata that could be used by resource professionals to determine if the data will work for their needs.