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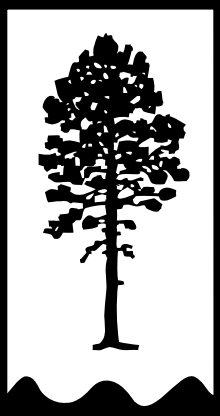

September 1996

MN PLANNING

Saving Resources: Meeting Minnesota's Water and Wastewater Needs

Typically, Minnesota's water quality is good and its drinking water systems supply safe water. Improvements in wastewater treatment during the past few decades have greatly reduced pollution in many rivers and lakes. Yet present and future water supply and wastewater treatment needs are substantial and costs are escalating. To meet rising needs, new approaches are needed to safeguard water supplies and ensure adequate wastewater treatment. *Saving Resources* documents water and wastewater treatment needs, makes the connection between land use choices and future needs, discusses available funding sources and presents recommendations for improvement.

Public water and wastewater needs could exceed $1.5 billion by 2000. While no comprehensive estimate of Minnesota's public water and wastewater treatment needs is available, recent surveys and estimates by various sources suggest more than $1.5 billion will be needed through 2000. Added to these costs, upgrading on-site wastewater systems that are not adequately treating waste could add another $1.7 billion. And, as yet, the needs for the thousands of water supplies that serve such places as restaurants, schools and campgrounds are not well understood.

Land use decisions determine future needs. Some current high cost projects reflect poor past land use practices. To prevent problems and minimize costs, water and wastewater needs should be factored into decisions about land use changes, and often that does not happen. In the Twin Cities metropolitan area, connections between land use, wastewater treatment and water supply needs are reinforced by new planning requirements. However, planning requirements for communities outside the region are minimal and fragmented, and many opportunities for cooperation are missed.

Federal funds are decreasing, leaving the state and local governments with increased burdens. From 1967 through the early 1990s local governments in Minnesota received more than $1.2 billion in state and federal funds for wastewater treatment. Federal funding has decreased substantially. In response, the 1996 legislature appropriated $17.5 million for the Wastewater Infrastructure Fund, providing grants, or forgiven loans, for wastewater treatment in Minnesota. However, many communities with

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water or wastewater needs have high poverty rates and even with grants could face difficulties building or operating adequate facilities.

Recommendations made by the Environmental Quality Board's Water Resources Committee center on prevention and correction. In anticipation of rising needs, the Water Resources Committee, working with Minnesota Planning, examined how to prevent and correct water supply and wastewater treatment problems and prudently fund needs. Based on information in *Meeting Minnesota's Water and Wastewater Needs: A Working Paper*, as well as results from a questionnaire and suggestions from workgroups, the committee's recommendations begin with an overall mission to unify efforts and provide a standard for measuring results. Sustainable development guidelines and plans as well as local water plans are envisioned to furnish the framework for managing water and wastewater issues and needs.

Communities are counseled to consider collaboration with others in the watershed, aquifer and region in order to safeguard water resources and seek economical ways to provide water and wastewater treatment to their residents. Communities are also encouraged to broaden educational efforts to ensure that public and private systems are used appropriately.

State efforts to correct problems should be focused on expanding funding alternatives and promoting research into low cost and innovative treatment options. Ultimately local governments and individuals must bear responsibility for poor development choices. After local plans are developed, the state should target its grant and loan funding to address needs identified and support the overall mission.

Water and Wastewater Systems

Public systems

- Nearly 10,000 public water systems (Includes about 965 community systems)
- Nearly 600 wastewater treatment systems

Individual systems

- 25 percent of population on private water systems
- 27 percent of population served by on-site wastewater systems

Needs are Great and Rising

Many communities are facing extensive and costly water supply and wastewater treatment needs. A better understanding of health and environmental consequences has prompted an increase in state and federal water supply and wastewater treatment requirements. In addition to upgrading to meet state and federal standards, needs are expanding as a result of growth and as systems age and malfunction.

While available information is incomplete, surveys show the cost of providing necessary public water and wastewater treatment between now and the year 2000 could exceed $1.5 billion, the price for private systems could be even higher. Federal funding, a significant source of wastewater treatment dollars, is declining putting more pressure on state and local governments. The amount of public funding and the criteria for projects will greatly affect individual and local costs. Meeting water supply and wastewater treatment needs are two of many demands facing individuals and governments.

Costs for projects at 67 water systems are more than $1 billion. While there is no comprehensive list of needs for the many public water systems, some limited surveys were conducted recently that provide a snapshot of extensive needs among the relatively few systems surveyed. The Minnesota Department of Health, working with the Environmental Protection Agency, found long-term construction needs over $1 billion at five systems serving over 50,000 people and 62 systems serving populations ranging from 3,301 to 50,000. Of 44 cities outside the Twin Cities surveyed in 1994 by the Coalition of Greater Minnesota Cities, 39 reported water supply needs totaling $129 million. The Rural Utilities Service, formerly the Farmers Home Administration, identified 34 water projects estimated at $67.5 million in communities under 10,000 people.

Water treatment requirements are increasing and costs are soaring. Many of the water supply systems are 50 to 100 years old. Federal and state requirements for these systems have become more rigorous as a greater understanding has emerged regarding threats to health. The Department of Health estimates that approximately 450 systems will need to upgrade to comply with new federal requirements for such contaminants as radon and arsenic. This effort alone could cost between $250 to $405 million.

Small suppliers serving populations of 3,300 or less face enormous costs just to maintain compliance with drinking water standards. During 1995, the Department of Health identified more than $10 million in small community public drinking water projects that could not proceed without some type of financial aid. There is little information about the needs for the nearly 9,000 noncommunity systems that serve places like restaurants, businesses, schools and campgrounds. Some face

serious problems with contamination from nitrate and lead.

Unlike most other states, Minnesota pays monitoring costs averaging $4.2 million annually. The state pays for monitoring required by the federal Safe Drinking Water Act with a $5.21 water service connection fee. About $6.6 million in state and federal funds are used for monitoring, training and inspections. Treatment requirements vary depending upon the use of the water supply, the water source and monitoring results. Results of testing in 1995 showed little evidence of contamination in community water systems.

Good quality water saves millions. Approximately 50 percent of the municipal community systems using ground water do not need treatment because of the water's good quality. If water quality degrades, costs rise. The Department of Health studied costs incurred during a ten year period in places where drinking water exceeded standards due to contamination, and found 26 community water suppliers spent more than $44 million for lasting solutions.

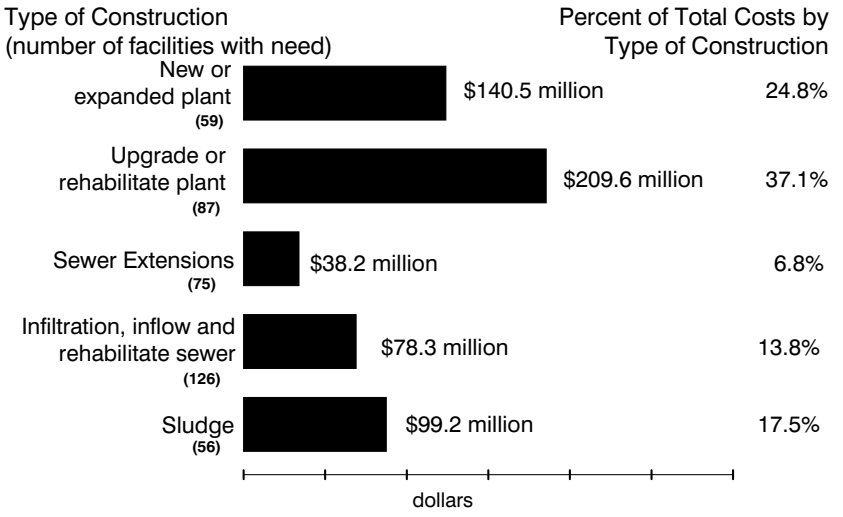
Community wastewater treatment needs could reach $600 million. As threats from water pollution are understood, requirements seek to reduce pollution from pathogens, toxic waste and other contaminants in waste treatment systems. Today, costs to maintain, improve or build wastewater systems are considerable. A recent Pollution Control Agency survey of the nearly 550 municipalities with wastewater treatment systems, shows costs for improvements at nearly $600 million. Information gathered on system performance indicates numerous situations where wastewater flows exceeded the system's design capacity and where facilities are expected to exceed design capacity within five years. Yet some of these same communities have no plans for improvements.

Fifty-three projects totaling more than $432 million are on the state's 1996 intended use plan. Federal and state laws govern the collection, treatment and discharge of wastewater. The Minnesota Pollution Control Agency is required to develop and maintain a project priority list of municipalities needing new or upgraded wastewater treatment systems. Priority points are assigned to projects based on such factors as impact on receiving waters and the type or current quality of the water body affected. There are 153 projects on the 1996 priority list. From this list, the agency prepares the annual intended use plan that identifies and describes wastewater projects proposed to receive loans through the state's Revolving Loan Fund and Wastewater Infrastructure Fund. The 1996 plan contains 53 projects totaling more than $432 million. To be included in the plan, municipalities seeking construction loans must have preliminary agency approval of plans for their facilities.

Coalition of Greater Minnesota Cities' identified wastewater treatment needs of more than $116 million. The Coalition's survey of 44 cities documented planned capital expenditures of $116.1 million in 36 cities over the next six years. Fourteen cities, with needs of more than $32.4 million, were not reported in Minnesota Pollution Control Agency's survey.

More than 190 communities ranging in size from 50 to 200 people, have no central wastewater treatment system. While most have on-site sewage treatment systems, many have lot sizes too small for adequate systems. More than 20 communities have collection systems but no treatment facility; some of these are adding homes to their systems.

Pollution Control Agency Survey Identifies Nearly $600 Million in Wastewater Needs



■ Costs of upgrading and rehabilitating existing plants are highest — $209.6 million or 37.1 percent of total needs.
■ More facilities —126 — had infiltration, inflow and other sewer rehabilitation needs than any other type of construction need.

Source: Minnesota Pollution Control Agency, 1995 Annual Evaluation of Planning Survey of 546 Communities

Providing conventional wastewater treatment systems in these communities or developing facilities to replace old facilities, can be very costly and often exceed a community's ability to pay.

Estimated costs to upgrade on-site wastewater systems that are not adequately treating are an additional $1.7 billion. The majority of unsewered housing units are located in small cities, rural subdivisions and unincorporated areas, but even St. Paul and Minneapolis have some.

Land Use Determines Future Needs

Changes in land use play a significant role in determining water supply and wastewater treatment needs and costs. Too often, when deciding a particular land use, water supplies or wastewater treatment systems are not adequately considered, causing high costs and environmental problems. Today Minnesotans are paying to cleanup pollution from improperly sited, designed or constructed septic systems, dumps and feedlots, and other practices that have contaminated land and water.

Local governments shape decisions about where and when growth occurs. When communities develop, many do not have a comprehensive plan that ties together estimates of available water and sewage treatment capacity with related needs such as housing or transportation. Communities locate a wet industry without examining the

Local Responsibilities for Water Supply and Wastewater Treatment Vary Greatly

In the Twin Cities area, the already extensive planning and enforcement requirements for local government recently increased further. Their comprehensive plan must now include a water supply plan and their local water management plan. In the rest of the state, many of the requirements for planning and enforcement are optional.

Nonmetropolitan Requirements	
Comprehensive Plan	■ Development optional for local governments.
Comprehensive Water Plan	■ Development voluntary for counties, but all counties developed one.
Water Supply	■ Suppliers serving more than 1,000 people must prepare conservation and contingency plans. ■ Set rates, carry out operation maintenance, and identify current and future supply needs. ■ Operate system according to state and federal regulations. ■ May form a water district.
Wastewater System	■ Set rates, carry out operation and maintenance, and identify current and future needs. ■ Operate system according to state and federal regulations. ■ May form a wastewater district. ■ Shoreland area must adopt on-site ordinance. ■ Areas with an ordinance to regulate on-site systems, bedroom or bathroom additions must comply with minimum state standards for on-site systems.
Twin Cities Metropolitan Area Requirements	
Comprehensive Plan	■ Required for all local governments.
Comprehensive Water Plan	■ Watershed plans required for watershed management organizations and local governments. ■ Ground water plans voluntary for counties.
Water Supply	■ Plan required as part of public facilities plan. Must contain water conservation/contingency plan. ■ Set rates, carry out operation maintenance, and identify current and future supply needs. ■ Operate system according to state and federal regulations.
Wastewater System	■ Develop sewer plan as part of comprehensive plan that covers extensions and private systems. ■ Set rates, carry out operation and maintenance, and identify current and future needs. ■ Operate system according to state and federal regulations. ■ Ordinance enforcement required for all on-site systems. ■ Inspection of on-site systems required if density is more than one dwelling per 10 acres.

adequacy of water supplies, or build subdivisions without planning for wastewater treatment needs. Subsequently, providing water or wastewater treatment may prove difficult or expensive.

Twin Cities metropolitan area planning has a unifying framework. In the 1960s, sewage disposal systems in the Twin Cities area were operating at maximum capacity and could not accommodate the developing suburbs. Wastewater was degrading Lake Minnetonka and other important waters. Low density development patterns were causing cities to build public facilities at tremendous expense for scattered, small pockets of development. These and other problems propelled the formation of the Metropolitan Council in 1967, and the passage of the Metropolitan Land Planning Act in 1976. Recent legislation strengthens the ties between land use and water management in the Twin Cities area. Local governments in the Twin Cities area have significantly more requirements for planning and plan implementation than the rest of the state.

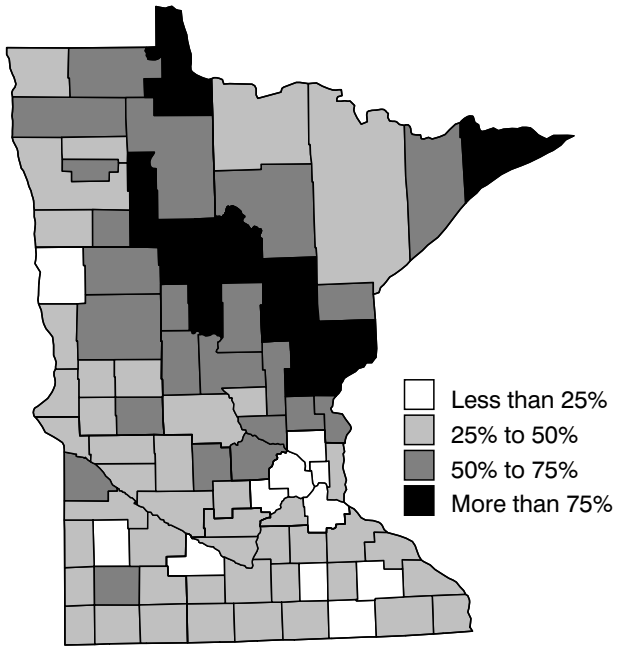
Comprehensive land use plans outside the Twin Cities area are optional. Each city, county or township has the authority to develop comprehensive plans and adopt implementation measures, such as zoning or subdivision ordinances. Township regulations must be as restrictive as those in their county, but there is no requirement that the county have a plan or that a county and its cities work together. While the state provides guidance for some types of local plans, it provides little guidance on the contents of local comprehensive plans.

Of the 80 counties outside the Twin Cities, 63 have adopted comprehensive land use plans and zoning ordinances. Many cities do not have comprehensive or land use plans. The majority of city and county plans were developed in the 1970s and do not fit existing conditions. In counties without planning and zoning, townships often take the initiative, which can result in a larger number of uncoordinated plans. Plans for school districts or special purpose districts — set up for wastewater or water supply — are usually left out of comprehensive planning, creating information gaps. The current decision-making structure fragments responsibility for problems, thus making preventing and correcting water problems and protecting water supplies difficult.

On-site wastewater systems increasing; many lack local regulations. Between 1980 and 1990 the state had a 13 percent increase in housing units, but a 22 percent increase in housing with on-site wastewater systems. Considerable growth is occurring in areas sensitive to ground water pollution. Local regulation of the more than 480,000 individual sewage treatment systems varies. Counties and cities must enforce the standards in limited areas such as shoreland. However, outside these areas enforcement is variable and at least 16 counties lack controls. Thirty-three percent responding to PCA's survey indicated plans to connect unsewered homes in their service area. However, annexation and other issues can make connecting unsewered areas very contentious.

Local water plans often do not address water supply and wastewater treatment needs. All counties outside the Twin Cities area have voluntarily prepared a local water plan using state guidelines. These plans identify water problems and opportunities and have objectives to protect and manage water. They are to use existing water and related land resource plans and cover conditions in watersheds, aquifers and the region. However, cities have not generally participated in the planning, though they usually provide for water supply and wastewater treatment needs, and local water plans are often not incorporated into a local comprehensive plan. Since it is the

Percent of Housing Units Using Individual Treatment Systems Is High in Many Northern Counties



Source: 1990 Census

comprehensive plan that should provide overall direction for change, and the authority for official controls, unintegrated plans reduce the ability of water plans to affect land use decisions.

Mechanisms exist for local cooperation, but may not be used. There are many mechanisms, such as joint powers authorities, for local governments to cooperate for comprehensively managing water supply and wastewater treatment needs. In Cass county, townships are working with the county and Crow Wing Rural Electric Cooperative to build and operate a wastewater treatment system. However, in many places local governments compete rather than cooperate for growth, precluding integrating plans for water, sewers and land use.

Funding Amount and Mix are Changing

Thirteen programs provide funding for municipal water or wastewater projects. Use of funds, criteria for projects and amount of available grant and loan money vary greatly among programs. Only five are available for water systems.

An important source of funding is the U.S. Department of Agriculture Rural Utilities Service's (formerly Farmers Home Administration) grants and loans for sewer and water projects in communities with under 10,000 population.

The State Revolving Fund is a key source of loans for wastewater treatment facilities. The Wastewater Infrastructure Fund supplements loans with "grants" for low income communities.

Through this program, communities receive loans for a portion of project costs that are forgiven once a project is completed. The 1996 legislature appropriated $17.5 million for the Wastewater Infrastructure Fund.

Grants, or forgiven loans, keep the systems affordable. The amount of grant funding needed depends on how much individuals are expected to pay. For example, more than $38 million in grants per biennium will be needed to keep the cost of sanitary sewer services within 1.1 percent of median household income or $20 per month for the communities currently proposed to receive funding through the State Revolving Fund. In contrast, less than $6 million in grants per biennium is needed to keep costs within 2 percent of median household income or $35 per month.

Federal funding decreasing. From 1967 through the early 1990s, more than $1.2 billion in state and federal funds were granted to Minnesota communities for wastewater treatment projects. Until 1957, financing wastewater treatment was a local responsibility.

Federal funding, first available in 1957, escalated in the 1970s with increased concern about water quality. It peaked nationally at $7.9 billion in 1977, but dropped to $3.1 billion in 1988, with funding shifted from grants to loans. According to a report by the Congressional Budget Office this downward trend is projected to continue through the end of the decade. The Rural Utilities Service, cut by one third for federal fiscal year 1996, exemplifies this trend. There are also proposals to eliminate the U.S. Department of Commerce, also a source of water and wastewater treatment grants.

Federal funding coming for drinking water. Concerns about funding drinking water needs prompted Congress' recent passage of a Drinking Water Revolving Fund program. Minnesota is expected to receive between $12-30 million per year depending upon the amount appropriated.

Local capacity to pay may become significant issue. Demands on local government resources have been mounting and will likely continue to do so. City spending in Minnesota increased nearly 25 percent from 1970 to 1992, adjusted for inflation. Water and wastewater needs compete with rising demands in other sectors such as education, health care, transportation and public safety.

Communities' ability to pay varies greatly. Of the 158 communities identifying wastewater treatment needs and costs in Minnesota Pollution Control Agency's 1994 survey, only nine had median household incomes above the state median of $30,909.

Many communities with wastewater needs have water supply needs as well. Some of these communities also have very high poverty rates and many households could have difficulty paying their share of the costs. In addition, the high costs of construction for new facilities or to replace old facilities exceed many communities ability to pay. For example, costs for some proposed wastewater projects exceed $23,000 a household, with a couple exceeding $32,000 per household and one about $50,000 per household.

Millions Available Annually for Water Supply and Wastewater Treatment

Thirteen state and federal funding sources, some of which are slated for economic development, are available for wastewater treatment; five of these may also be used for water supply needs. Criteria and requirements vary.

	Grant	Loan	Use of Funds
Water/Sewer Program Rural Utilities Service, US Department of Agriculture	$8.1 million (FY 95) $5.7 million (FY 96)	$14.7 million (FY 95) $9.6 million (FY 96)	Water supply, wastewater treatment, storm water and solid waste
Economic Development Economic Development Administration, US Department of Commerce	$4-6 million (annual)		Funds anything except power transmission or power generation
Water Pollution Control Revolving Fund State Revolving Fund, Public Facility Authority, Department of Trade and Economic Development		$50 to $80 million per year (FY 95 — $77 million)	Wastewater treatment facilities
Wastewater Infrastructure Fund Public Facility Authority, Department of Trade and Economic Development	(loan may be forgiven)	$17.5 million (FY 96-97)	Supplemental assistance for high cost State Revolving Fund projects
Small Cities Department of Trade and Economic Development	$22 million (annual)		Mixed use — $3 to $6 million available for water, wastewater
Tourism State Revolving Fund, Department of Trade and Economic Development		$0.25 million (annual)	Septic system replacement and upgrade for existing tourism related businesses that provide lodging
Septic System SRF State Revolving Fund, Department of Trade and Economic Development		$0.75 million (annual)	Septic system replacement and upgrade
Individual Sewage Treatment Grants Public Facility Authority, Department of Trade and Economic Development	$400,000 (FY 96-97)		Individual and small cluster systems up to 5,000 gallons per day
Agriculture Best Management Practices State Revolving Fund, Minnesota Department of Agriculture		$20 million (FY 96-97)	Agriculturally-related nonpoint water quality improvement projects in rural areas, including on-site systems
Clean Water Partnership State Revolving Fund (loans), Pollution Control Agency	$1.4 million (FY 95-96)	$5 million (FY 95) $7 million (FY 96)	Available for projects relating to nonpoint pollution including wellhead protection
Homeowner Loans Minnesota Housing Finance Agency		Various loan programs	Mixed uses include on-site and water systems
Community Development Grants Iron Range Resources and Rehabilitation Board	$6.5 million (annual)		Community development and economic growth in Taconite Tax Relief Area (About 30 percent for water and wastewater treatment)
Tourism on-site Iron Range Resources and Rehabilitation Board		$150,000 (annual)	Gap financing for wastewater treatment for resorts

Proposals Aim at Preventing and Correcting Problems

The Environmental Quality Board's Water Resources Committee developed the following recommendations to prevent and correct water supply and wastewater treatment problems. It will now develop a work plan that indicates leadership, action steps and a time frame for carrying out the recommendations.

1 Focus on a Unifying Mission

Individuals, businesses and various levels of government play important roles in water supply and wastewater treatment issues. A common mission would help unify efforts and give participants a way to measure their efforts.

Recommendation: Use an overall mission to guide water supply and wastewater treatment activities, programs and regulations. The mission would be to:

- Prevent future problems and safeguard water sources through practicing appropriate and effective land management and planning, correcting pollution problems, adequately maintaining public and private systems and innovatively designing new or expanded systems.
- Reduce water demand and use, wastewater production, use of hazardous substances, toxicity of effluent and needless costs.
- Reclaim water, nutrients and polluting substances from treatment systems.

2 Develop Sustainable Guidelines on Water

Legislation passed in Minnesota in 1996 defines sustainable development as that which maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend. The legislation calls for Minnesota Planning to prepare a planning guide and model ordinance for voluntary use by local units of government. This provides a good opportunity to organize and set priorities for water and wastewater needs. The current lack of good comprehensive planning makes it unclear if funding, enforcement or assistance is directed appropriately.

The planning guide should indicate the water and wastewater measures that should be included in local sustainable development plans. To help local government protect water resources, the state should gear its own programs toward aquifers and watersheds. The guidelines should be flexible and dynamic, since water problems may appear suddenly, requiring appropriate actions be taken quickly.

Recommendation: The state planning guide for sustainable development is a critical first step. Guidelines for sustainable development plans should cover water supply and wastewater treatment elements and help strengthen local efforts. The planning guide should:

- Provide guidance on how to coordinate land use changes and economic development within aquifer and watershed protection areas.
- Encourage collaborative arrangements with neighboring jurisdictions and among counties, cities and towns.
- Provide mechanisms to ensure communication occurs between cities and towns within a county and among other neighboring jurisdictions.
- Contain model ordinance components that offer actions to protect water resources such as on-site regulations and conservation measures.

3 Include Water in Local Sustainable Development Plans

Local sustainable development plans can be an important vehicle for examining water and wastewater needs as part of a community's overall health. Local government cannot adequately plan for water and wastewater needs without envisioning land use and population changes along with economic, environmental and social conditions and trends.

Currently, planning and coordination requirements differ across Minnesota. Yet planning — as well as coordination, education and research — is instrumental in preventing problems.

Recommendation: Sustainable development plans should include information about existing and future water and wastewater needs and priorities. Planning by counties, cities and towns should:

- Identify the availability and quality of water as part of a comprehensive assessment of the community's natural resources.
- Report the location, capacity and operating costs of existing water and wastewater facilities and the capital costs of proposed facilities. Where possible, quantify environmental effects.
- Report the number and conditions of private water and wastewater systems to the extent they are understood.

■ Include information from local water plans and activities of special purpose units, such as rural water districts, wastewater districts and school districts.

■ Develop joint plans with adjoining local units of government in sparsely populated areas to ease the difficulty of water and wastewater planning.

■ Delineate growth boundaries with adjoining communities and plan for infrastructure needs.

■ Use local authorities, such as subdivision, zoning and on-site sewage treatment ordinances, to ensure plans are carried out.

4 Include Water Supply and Wastewater Management in Local Water Plans

Water supply and wastewater management are basic elements that need to be understood to appropriately identify water-related priorities. However, while the water plan is supposed to include information about water and sewer extensions, wastewater discharges and expected changes in public utility services, it often does not. Frequently this is due to a lack of participation by cities or special purpose districts, creating gaps in important water information.

Information about water and wastewater systems is available for use in local water plans and sustainable development plans. Minnesota Pollution Control Agency has surveyed the wastewater systems for capacity, expansion plans and other needs. A needs survey and assessment of drinking water needs is under way. In addition, many water utilities are preparing water supply and contingency plans.

Recommendation: Require water supply and wastewater authorities to provide their plans and strategies for inclusion in local water plans so that local plans cover all aspects of water resource problems and needs.

5 Define Local Communities' Role

Communities need to explore the best way to provide water and wastewater service to their residents. This means examining the options of sharing facilities, using a single water source or treatment plant, having several facilities or dispersing wells throughout the system. Conservation can reduce the need for expanding water and wastewater systems as well as lessen costs for water and wastewater improvements. Protecting water sources reduces the need for water treatment.

Recommendation: Communities should protect water sources, maintain existing systems and reduce the need for expanding water supply and wastewater treatment systems through collaboration and aggressive conservation efforts, such as installing household water-saving devices, metering water use and correcting infiltration and inflow problems. Local units of government should:

■ Enter into collaborative and cooperative arrangements with neighboring jurisdictions to more efficiently solve problems.

■ Seek the most cost-effective approaches, including buyouts of nonconforming systems and low-technology solutions such as composting toilets and other innovative alternatives.

■ Adopt and enforce local controls, such as storm water, erosion control and on-site sewage treatment ordinances, to protect water supplies and ensure the prevention and correction of problems.

■ Approve only developments indicated in their sustainable development or comprehensive plan.

6 Expand the State's Ability to Correct Problems

The state plays a key role in deciding what corrective actions to pursue and how to carry them out. Some communities lack the financial resources to correct problems with their wastewater systems. Consequently, high costs delay the correction of pollution problems and drive the need for more affordable options. New approaches are needed to address needs of small water supply and wastewater treatment systems.

Recommendation: Hold all communities responsible for complying with laws. The state should:

■ Pursue interim solutions for water supply and wastewater treatment problems through compliance agreements.

■ Identify and promote lower-cost alternatives for small communities.

■ Expand the range of water supply and wastewater options funded to correct problems in small communities, including such measures as privatization, relocation or installing holding tanks.

■ Institute a limited-duration amnesty program under which small communities without adequate wastewater treatment systems can develop interim and long-term solutions.

7 Expand Local Communities' Educational Efforts

Education can help build the support needed to safeguard water resources and guarantee wise use of public and private water and wastewater systems. People often do not appropriately value water, since individual water costs generally reflect only treatment and distribution. Water and wastewater costs often are subsidized by other programs. Thus, the connection between use and cost is missing. Protecting water sources rather than having to build expensive treatment facilities has significant economic as well as environmental benefits. This means using public and private systems prudently, a goal that can be furthered through education.

Both state and local government play key roles in educational efforts. While the state can promote research and provide useful information, local government is key to getting good information to its citizens.

Recommendation: Local government should advise people about the value of Minnesota's water resources and institute best management practices for the efficient and judicious use of water and wastewater systems. Local governments and service providers should:

- Educate people about the real cost of water and then use water and wastewater rates that reflect costs and are not distorted by general subsidies from other programs.
- Inform citizens about how to maintain private and public water and wastewater systems and why doing so is critical.
- Instruct residents in how to properly use public and private systems, such as how to dispose of toxic materials.
- Provide information about the types and purpose of point-of-use water treatment devices.
- Report needs for treatment research to the state.

8 Promote State Educational and Research Efforts

The state has a role in providing information about the value of water, its availability and ways to protect it. In many places, water use is increasing while the understanding of aquifer yields and limits is lacking. Research is needed to identify a range of water and wastewater treatment options for some communities. State and local governments need to know if low-cost treatments used elsewhere in the country will work in Minnesota's climate and soil conditions. Information about appropriate low-cost or innovative systems needs to be distributed widely.

Recommendation: The state should develop informational materials about water and wastewater issues and promote research to expand options and improve water management. The state should:

- Identify the extent of aquifers and what rate of use is sustainable.
- Establish low cost or innovative water and wastewater demonstrations in places such as state parks and other accessible sites.
- Provide informational materials about low cost or innovative water and wastewater options appropriate for Minnesota to elected officials, businesses engineers and others to help decision-making.
- Foster research on the conversion of nonpotable water into a viable source.
- Promote research on the use or disposal of waste from water treatment.
- Encourage research on smaller water treatment systems and wastewater systems for residential, restaurant and commercial and industrial facilities. Particularly examine how research results and technology used in other states and countries could be used or adapted for Minnesota use.

9 Foster Responsible Choices

Infrastructure financing usually has involved a mix of federal, state, local government and individual resources. Special purpose districts and private service providers also play a role in some cases. Costs for water and wastewater treatment will continue to rise, affecting some users greatly. Individuals and local governments have the prime responsibility for paying for water and wastewater treatment.

Recommendation: Local governments and other service providers should foster responsible water and wastewater choices that protect resources by:

- Considering whether extra state or federal financial assistance based on the number of low income households should be targeted directly to low income households to help pay their share of water and wastewater costs. The state should provide communities with information on approaches to provide direct assistance to low income households.
- Ensuring that costs within communities are allocated based on use.
- Seeking partnerships with private and public sector service providers.
- Assuming responsibility for added costs arising from serving undeveloped areas or from imprudent development choices, such as expanding into places that have water and wastewater service problems.

10 Target State Grant and Loan Funding

The state provides some grants and loans for water and wastewater needs through a number of programs. A mix of grant and loan money will continue to be necessary to meet needs with more options necessary to fund water supply systems. In 1997, the Office of Environmental Assistance, could make low cost innovative wastewater treatment systems eligible for its grant program, thus fostering more options.

After the sustainable development planning guide is finalized and a process is established for local units of government to develop sustainable development plans, the state should use the funding for water supply and wastewater treatment to support the needs identified in plans. The state also should inform utilities about approaches to instituting rates that will ensure that the costs of treatment, operation and maintenance are covered.

Funding criteria must remain flexible since water emergencies could require financial assistance for quick action. Since coordinating water supply and wastewater treatment systems within a region, aquifer and watershed is critical, cooperation or even consolidation should be considered a criteria for funding projects.

Recommendation: The state should use state and federal incentives to support the overall mission. The state should:

- Seek ways to cut costs of federal requirements through more efficient monitoring, interim solutions and other approaches.

- Tie water and wastewater treatment financial assistance to needs identified and strategies proposed in a sustainable development or local water plan.

- Tie water and wastewater funding to the adoption of appropriate prevention measures, such as subdivision regulations, on-site ordinances and reducing water consumption.

- Tie water and wastewater funding to evidence of coordination and cooperation among local governments, where possible.

- Ensure that aid recipients properly operate and maintain water and wastewater systems and use a rate structure that accurately reflects costs.

Recommendation: The state should provide financial assistance to help communities meet existing and future needs in way that is fair and environmentally and economically sound. The state should:

- Provide low-interest loans as the basic level of assistance for public drinking water supplies and wastewater treatment systems.

- Provide communities with financial assistance above the basic level when the costs of water and wastewater are high relative to household income. Priorities for such funding should be based on environmental and public health needs.

- After adequate notice, base assistance on past compliance with regulations and adequate maintenance of existing systems, unless a significant environmental impact cannot be averted without financial aid.

- Use state funding to leverage federal dollars and private funds through the municipal bond market.

- Examine whether there is a need to provide financial assistance for water or wastewater services directly to low income households. If necessary, indicate approaches for such assistance and possible delivery mechanisms.

EQB Water Resources Committee

When this report was prepared the EQB Water Resources Committee was composed of Paul Toren, Chair; Carolyn Engebretson, Vice-Chair; Pat Bloomgren, Minnesota Department of Health; Pat Brezonik, University of Minnesota; Patty Burke, Minnesota Pollution Control Agency; Greg Buzicky, Minnesota Department of Agriculture; Ron Harnack, Board of Water and Soil Resources; Kent Lokkesmoe, Minnesota Department of Natural Resources; Paul Moss, Office of Environmental Assistance; Gary Oberts, Metropolitan Council; and Susan Schmidt, Legislative Water Commission.

Staff from numerous local state and federal entities assisted with this report, including a working group composed of:

Gary Englund and Linda Prail, Minnesota Department of Health; Eric Mohring, Board of Water and Soil Resources; Vicky Cook, Connie Minetor, Gretchen Sabel, Minnesota Pollution Control Agency; Mark Zabel, Minnesota Department of Agriculture; Paul Moss, Office of Environmental Assistance; Terry Kuhlman, Jeff Freeman, Department of Trade and Economic Development; Jim Japs, Sarah Tufford, Minnesota Department of Natural Resources; Gary Oberts, Metropolitan Council.

Saving Resources: Meeting Minnesota's Water and Wastewater Needs is a report of the Minnesota Environmental Quality Board Water Resources Committee. It fulfills the EQB's requirement in MS 103A.43 for the report on water policy. The cost to print this report was approximately $1,000. This report was prepared by Marilyn Lundberg, EQB Water Resources Committee and Deb Pile, Minnesota Planning.

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September 1996

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