

# IOWA'S WATER

## Ambient Monitoring Program

## A Plan for Monitoring Iowa's Waters

All of Iowa's waters are important. With the support of Governor Vilsack and the 1999 Iowa legislature, and in cooperation with representatives from 47 different organizations, this fundamental belief prompted the Iowa Department of Natural Resources (IDNR) to develop the *Iowa Water Monitoring Plan 2000*. This plan is different from previous monitoring plans in that it is comprehensive – including all surface water and groundwater resources – and because the plan actively involved professionals and stakeholders from outside the IDNR.

**Development.** A Water Monitoring Advisory Task Force was formed to provide the IDNR with priorities for monitoring based on diverse, public needs. This group of 63 individuals determined criteria for the monitoring program's development. They first established that ambient water quality is the primary condition the monitoring program should assess. They also believed the characterization of safe and healthy water resources is equally as significant as the characterization of contaminated resources. Although monitoring is important, it is

only one component of a larger

water resources program that should include broad goals, research, education, problem assessment, pollution prevention, regulation, cleanup and local watershed activities.

**Mission.** The mission of the Ambient Water Monitoring Program is to conduct an ongoing assessment of the condition of Iowa's surface water and groundwater resources and report the results to the public, so that appropriate information is available to guide resource management policies and decisions.



*Otter Creek Marsh State Wildlife Refuge, Tama County.*

### Goals of the Ambient Water Monitoring Program

- Define the condition of Iowa's water resources.
- Measure changes and identify trends in water resource quality.
- Provide information for designing and implementing abatement, control and management programs.
- Characterize existing and emerging problems by type, magnitude and geographic extent.
- Provide information to evaluate the effectiveness of natural resource programs.
- Report information in useful formats to inform Iowa's citizens about their water resources.
- Involve Iowa citizens in monitoring to increase their appreciation and understanding of their water resources.

Priority	Resource	Program Elements
Very High	Interior Rivers	Coordination Data Collection Database Management
High	Border Rivers Groundwater Lakes Small Streams	Access to Data Interpretation Public Information Verification and Follow-up
Moderate	Beaches Precipitation Wetlands	Citizen/Volunteer Monitoring Emerging Issues/New Chemicals Fish Tissue Impaired Waters Permitted Facilities Targeted Pollution Sources

**Table 1.** Water resource and monitoring program element priorities as defined by the Iowa Water Monitoring Plan 2000.

Agency's water quality database. An annual monitoring conference was proposed, along with establishment of an advisory board.

**Data Collection.** The acquisition of reliable, objective data is required to meet each program goal. Data acquisition is the single most important and expensive portion of the program. It is a vital component because it is a building block that serves the needs of other components, and can be used to evaluate needs and measure successes or failures.

**Database Management.** Proper management of data is key to the success of the program. The data system must document field and lab information completely to ensure high-quality data, produce reports in usable forms, and be available to the public. STORET is used to store chemical and biological data; the Web will allow universal access to the data. The plan urges the IDNR to encourage other agencies to add their information to STORET so that data searches may be enhanced and simplified. Iowa STORET data can be accessed at [www.igsb.uiowa.edu/water](http://www.igsb.uiowa.edu/water).

**Interpretation.** Sound scientific interpretation of data is critical. Measuring change, trends, geographic variability and water quality problems are open for interpretation. Once data acquisition and management are improved, interpretation will begin in earnest.

**Public Information.** Keeping Iowans informed is vital to the success of monitoring in Iowa. Resource managers, elected officials, special interest groups and the public must be aware of what is being accomplished and learned. Elements of public information that have already been implemented are the ambient program's Web site, the annual water monitoring conference, program fact sheets and press releases.

**Citizen Monitoring.** The IOWATER program educates the public and increases citizen involvement in Iowa's water resources. A total of 524 volunteers have been trained as citizen monitors, and they have identified 370 sites across the state to monitor.

## Program Elements

**Coordination.** Table 1 shows the monitoring program elements and priorities as identified by the task force. It is vital that the IDNR coordinate its programs with other organizations that monitor water quality to gain efficiency, minimize redundancy, enhance credibility and ensure that all data is accessible. A common database was encouraged, and is being implemented using STORET, the Environmental Protection

## Water Resource Activities

**Rivers and Streams.** Chemical, physical and biological parameters will be measured at stations located across the state, including nutrients, pesticides and priority pollutants, metals, sediment, and newly identified compounds. Stream gaging is a critical component of this program. Random biological sampling, rapid biological assessment, fish tissue sampling, targeted sampling of watersheds with special issues, maintenance of biological reference sites and development of interstate and federal partnerships to monitor our border rivers are also identified as essential elements of monitoring.



*Water takes many recognizable forms, such as streams or groundwater from a well.*

**Groundwater.** To meet the goals of the plan, groundwater must be measured by sampling community wells, developing monitoring wells to measure specific aquifer conditions, and utilizing private wells to gain statewide coverage and assess rural drinking water. Proposed tests include nutrients, pesticides and other priority parameters. In addition, water table elevations must be monitored to evaluate trends in water availability. Currently, groundwater is monitored at 90 municipal Iowa wells, and 175 wells are measured quarterly for water levels to assess water level trends.

**Lakes.** About 100 Iowa lakes were sampled in 1980 and again in 1990. The plan calls for comparable sampling across Iowa's lakes to recreate these earlier studies and develop data on variability and trends using annual sampling. Sampling of a representative subset (30 lakes from all ecoregions) is proposed. Beginning in the summer of 2000, 132 Iowa lakes are being monitored as part of a five-year study. Several parameters will be assessed such as pH, water clarity, total phosphorus and total suspended solids.

**Beaches.** The plan calls for monitoring all IDNR beaches for indicator species of bacteria weekly and to gain estimates of bacteria variability from detailed monitoring of bacteria at selected beaches. In the summer of 2000, 31 Iowa beaches were monitored weekly for fecal coliform, *E. coli* and enterococci.

**Precipitation and Wetlands.** Precipitation is a significant factor in the movement of some water contaminants, and the plan identifies the need for rain and snow to be sampled for possible contaminants. However, neither precipitation nor wetlands are currently monitored.

	Plan		FY2001	
	Annual Projected Costs	Percent	Estimated Spending	Percent
<b>Data Collection</b>	<b>\$5,344,000</b>	<b>81.7%</b>	<b>\$2,161,000</b>	<b>76.2%</b>
Rivers and Streams	(\$3,614,000)		(\$1,311,000)	
Lakes	(\$735,000)		(\$444,000)	
Groundwater	(\$845,000)		(\$356,000)	
Beaches	(\$50,000)		(\$50,000)	
Precipitation	(\$50,000)		--	
Wetlands	(\$50,000)		--	
<b>Data Management</b>	<b>\$250,000</b>	<b>3.8%</b>	<b>\$140,000</b>	<b>4.9%</b>
<b>Data Coordination</b>	<b>\$100,000</b>	<b>1.5%</b>	<b>\$105,000</b>	<b>3.7%</b>
<b>Data Interpretation</b>	<b>\$250,000</b>	<b>3.8%</b>	<b>\$105,000</b>	<b>3.7%</b>
<b>Public Information</b>	<b>\$125,000</b>	<b>1.9%</b>	<b>\$105,000</b>	<b>3.7%</b>
<b>Citizen Monitoring</b>	<b>\$470,000</b>	<b>7.2%</b>	<b>\$220,000</b>	<b>7.8%</b>
<b>TOTAL</b>	<b>\$6,539,000</b>	<b>100.0%</b>	<b>\$2,836,000</b>	<b>100.0%</b>
<b>Iowa Share</b>	<b>\$4,964,000</b>	<b>75.9%</b>	<b>\$1,701,600</b>	<b>60.0%</b>
<b>Federal Share</b>	<b>\$1,575,000</b>	<b>24.1%</b>	<b>\$1,134,400</b>	<b>40.0%</b>

**Table 2.** Projected yearly budget for the Ambient Water Monitoring Program compared to estimated spending for fiscal year 2001.

## Future Endeavors

This program is a long-term investment. It must continue uninterrupted to attain its goals and maximize its usefulness to Iowa. However, the program must maintain some flexibility and adjust as experience is gained to seek more efficient monitoring techniques. It must also adapt to changing needs and cultural-economic practices. Additional monitoring needs to be added: sediment, random biological assessment, private well testing and “class C” waters (drinking water).

A copy of the Iowa Water Monitoring Plan 2000 is available at [www.igsb.uiowa.edu/water](http://www.igsb.uiowa.edu/water).

## Acknowledgements

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