IOWA'S WATER
Ambient Monitoring Program

Year 3 Accomplishments

The Importance of Monitoring

Frost and ice form a beautiful snowscape in a conservation buffer along Bear Creek in central Iowa, in Story County.

The Ambient Water Monitoring program entered into its third year of monitoring on July 1, 2001. While this program continues to grow and provide insights on the current status of Iowa's waters, it is also important to recognize the future benefits created by developing a legacy of information. The most basic question we ask is, "Are Iowa's waters better or worse than they were 10 years ago (or 20 or 50 or 100 years ago)." The water samples collected and analyzed today are the foundation for making solid decisions tomorrow and interpreting how Iowa's water quality has changed through time. Comprehensive monitoring programs can also detect trends or problems before they become critical issues in the future and give us a head start on addressing potential solutions. For decision makers and managers, a sound water monitoring program helps us assess whether our management tools or pollution prevention programs are working.

Stream Monitoring

Streams continue to be the focal point for the water-monitoring program. Monitoring upstream and downstream of Iowa's ten largest cities provides valuable information on the impact of urban areas. This monitoring has expanded to include the first examination of antibiotics and pharmaceuticals in Iowa's waters downstream of municipal wastewater treatment plants. These samples will reveal whether over-the-counter or prescription medications are found in our waters as a result of wastewater discharges. Testing will also show if the compounds in antibacterial soaps and lotions are in our waters. Another new component to the stream monitoring near large cities was the addition of tests for gasoline by-products. Several other states have reported levels of these compounds in their streams as a result of leaking underground storage tanks or accidental spills. This monitoring will help us determine the potential scope and magnitude of this problem in Iowa.

Citizen Volunteer Monitoring

The fast-paced growth of the citizen-monitoring program continues to demonstrate the motivation of Iowans to improve the state's water quality. By July of 2002, more than 1,300 citizen volunteers had been trained in the basic elements of water quality monitoring (Level 1). An additional 250 volunteers went on to Level 2 training, which provides a more in-depth look at Iowa's water quality protection programs. Two additional modules, or shorter workshops, were added during 2002: the Secondary Educator's Module and the Water Ecology Module. The secondary educator's workshop was added in response to the large number of teachers who were beginning to include IOWATER testing as part of their classroom activities. The Water Ecology Module demonstrates the linkage between water quality and the health of water ecosystems. Topics such as how nutrients move and cycle within the natural world and the influence water quality has on aquatic organisms are addressed within this module.

A watershed dam and upland terraces in a small watershed project in western Iowa.

Lakes

The summer and early fall of 2001 marked the second year of the lake-monitoring program. The objective of this program is to characterize the water quality in 132 of Iowa's principle recreational lakes. Measurements of water chemistry, nutrient levels, and water clarity provide valuable information on the health of each lake. Additionally, each lake is sampled three times during the spring and summer to assess the changes that occur in water quality during the growing season. In 2001, all Iowa lakes were tested for the presence of pesticides that are commonly used to control weeds. While testing for pesticides has become a routine part of stream monitoring, this was the first time that Iowa lakes have been included. This data will yield valuable information regarding the fate of pesticides in the environment and the impacts of pesticides on lake ecosystems.

Beach Monitoring

For the third year, the number of beaches monitored by DNR staff increased from 31 to 35 of the state-owned beaches. During the summer of 2001, beaches were monitored on a weekly basis from May 21st through September 10th. A beach was closed to swimmers if the number of bacteria exceeded guidelines established by the U.S. Environmental Protec-

Farm po

nd in Benton County.

tion Agency. Results from the beach-monitoring program, for the first two years, show that levels of bacteria at Iowa's state-owned beaches are acceptable for swimming more than 95% of the time.

Groundwater

Since 1992, the Iowa Department of Natural Resources, the United States Geological Survey, and the University of Iowa Hygienic Laboratory have cooperated in a groundwater-monitoring program to test 90 municipal wells from across the state. While these wells provide a good basis for determining long-term trends in groundwater quality, they lack the ability to provide in-depth information on a particular groundwater source. To enhance that aspect of the program, an additional 60 wells will be randomly selected from the various groundwater sources and added to the annual monitoring regime. This intensive monitoring will provide a more regional picture of the groundwater quality for the state. The first groundwater source to be sampled more intensively was the Mississippian Aquifer. The Mississippian groundwater source is widely used in the north-central part of the state for drinking water. It may be locally impacted by drainage wells that inject surface water to the underlying rock. Additionally, in order to better understand the quality of water in specific groundwater layers, new wells must be drilled to isolate the groundwater for sampling. The second of these specialized wells was drilled in Rutland Marsh in Humboldt County. This monitoring well was located in an area of several known drainage wells and will help to detect potential impacts from these drainage wells and potential improvements should the wells be closed. Through time, the development of more monitoring wells will fill in gaps in our knowledge regarding Iowa's groundwater resources.

Drilling the Rutland Marsh monitoring well in Humboldt County. Close-up shows fractures and pores within the rock.

Data Management

One of the highest priorities for the water-monitoring program is improving the data management of and access to water quality information in the state. During the third year of monitoring activities, more than 100,000 pieces of data were entered into the

New homes replace farmland in Dallas County, as Clive and Waukee grow on the west side of Des Moines.

Department's water quality database called STORET. To make this data quickly and easily accessible to decision makers, agency staff, and the public, a web interface was created to streamline the delivery of data. All newly collected information goes directly in the database and efforts to migrate historical data from paper format into the database are ongoing.

Public Information

In creating the new water-monitoring program in 1999, the Iowa General Assembly (SF2371) called for the Department of Natural Resources to "provide for activities supporting the analysis of water quality monitoring data for trends and for the preparation and presentation of data to the public." Development of public information, therefore, is one of the central responsibilities of the program. It is essential to create a program that not only generates numbers, but one that also generates useful information. To help accomplish this goal, the Second Annual Water Monitoring Conference was held on March 28, 2002 in Cedar Rapids, Iowa. While development of information to support the analysis of trends from the new program will take years of monitoring, the conference highlighted other long-term studies from around the state. These historical studies help focus and define the types of issues that the monitoring program will need to address in the future.

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Water Monitoring Program Web Site – www.igsb.uiowa.edu/water

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