Water Watch

A newsletter for the Maquoketa River Watershed

Monitoring data gathered in the Maquoketa River watershed

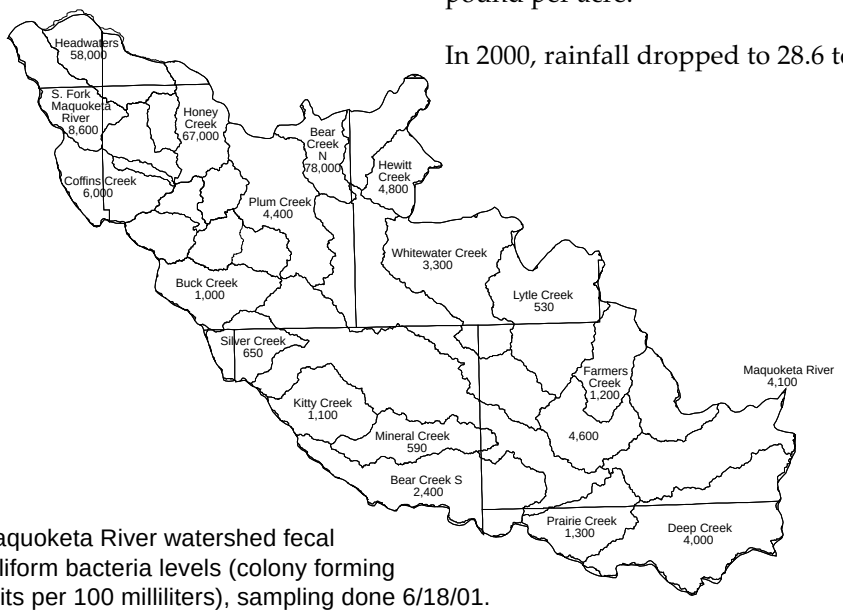
by Charles Wittman, communication specialist, MWP

In recent years much additional monitoring data have become available for the Maquoketa River watershed water quality projects to use when focusing on issues, making decisions and evaluating the effect of those decisions.

Monitoring in the Maquoketa headwaters started in late 1998, when the Texas Institute for Applied Environmental Research (TIAER) and Iowa State University began a cooperative program. TIAER supplied equipment for four monitoring stations that ISU staff continue to supervise. Data collection combines automatic sampling and recording of water levels and nutrient flow at four sites in the watershed with grab samples taken at least once a week. This year, ISU began collecting bacterial counts.

In 1999, rainfall in the watershed ranged from 31.8 to 33 inches at the four sites. Sediment loss was 520 pounds per acre from the 39,000-acre headwaters watershed. The 35 pounds-per-acre nitrate nitrogen (N) loss in the watershed was valued at $275,000. Phosphorus (P) loss was approximately one-half pound per acre.

In 2000, rainfall dropped to 28.6 to 29.25 inches but sediment loss increased to 1,100 pounds per acre, due to a couple of flash rainfall events. Nitrate N loss was measured at 62.6 pounds per acre (nearly $500,000 in value) and P loss was 1.3 pounds per acre.



Maquoketa River watershed fecal coliform bacteria levels (colony forming units per 100 milliliters), sampling done 6/18/01. Another sampling at low flow is planned for mid-August 2001.

On June 18, 2001, the Iowa Department of Natural Resources and Limestone Bluffs Resource Conservation and Development sampled 18 subwatersheds in the Maquoketa River basin for fecal coliform bacteria (see map at left). The results ranged from 530 colony forming units per 100 milliliters (CFU/100 mL) in Lytle Creek, Dubuque and Jackson counties, to 78,000 CFU/100 mL in Bear Creek North, northeast Delaware County. High readings were registered in the Headwaters watershed, 58,000 CFU/100 mL, and Honey Creek, 67,000 CFU/100 mL, in north central Delaware County. At the mouth of the Maquoketa the reading was 4,100 CFU/100 mL. The highest bacteria counts occurred in watersheds that had heavy rainfall in the 24 hours prior to sampling.

This year, ISU sampled for fecal coliform and Escherichia coli bacteria at its four monitoring sites

continued next page

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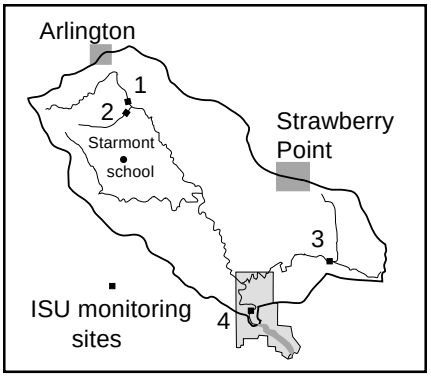
Monitoring, cont.

in the headwaters (see map at right). Results from these samples vary widely. June 5 and 6 produced the highest readings for all four sites. At site 1, near Arlington, fecal coliform peaked at 136,000 CFU/100 mL the afternoon of June 6, then dropped back to 567 CFU/100 mL the next afternoon. At site 2, also near Arlington, the peak was 305 CFU/100 mL a little later on June 6, but fluctuated during the next 24 hours.

Site 3 recorded a high reading of 35,000 CFU/100 mL just after noon on June 5, and dropped to 120 CFU/100 mL by 4 p.m. June 6.

Site 4, on the Maquoketa River in Backbone Park, measures flow from the entire headwaters watershed; the high reading of 38,400 CFU/100 mL was at 6 p.m. on June 5, which dropped to 813 CFU/100 mL by 7 p.m. the next day. Both days had rainfall runoff influencing water levels.

For comparison, readings at sites 2, 3 and 4 of less than 25 CFU/100 ml were recorded in January or February under low-flow conditions. Site 1 had a low reading of 30 CFU/100 mL recorded in mid-February.



Maquoketa Headwaters watershed showing four monitoring sites.

Not all low readings were recorded at the lowest flow rate at the sites, but the highest readings were at or near times of highest flow rates.

The volunteer IOWATER resident monitoring is in the second year in both the Headwaters and Mineral Creek. Surface water nitrate N levels at 12 headwaters sites ranged from below detection to 10 parts per million (ppm) this spring, while Mineral Creek findings were from below detection to 5 ppm. Transparency of the water was mostly good, except after heavy rains.

Starmont High School science and vocational agriculture students began a tile line monitoring program in the fall of 2000. In April, 15 students took samples at sites on 28 cooperator farms. Average nitrate N reading for 40 samples was 20.38 ppm, with a range of 12 to 32.5 ppm. In mid to late May, they collected 28 samples. This time, the sites averaged 17.68 ppm nitrate N, higher than the Environmental Protection Agency's recommended level but in line with tile line outlet sampling statewide.

It may take repeated samplings of the watershed to get accurate and representative data. However, increased water monitoring activity on the Maquoketa River watershed means watershed residents can make better-informed decisions.

Feedlot owners, operators have role in preventing fish kills

by Rick Lawrence, Maquoketa River Alliance

Iowa's weather and climate during July and August increase the potential for fish kills in local rivers, streams, ponds and lakes.

Summer's hot, dry weather results in reduced stream flows and increased water temperatures. Locally heavy rains can flush manure from feedlots into streams where fish are already under stress. Ammonia nitrogen (NH_3-H) in the manure can kill fish immediately and as the manure decays in the water it depletes the oxygen that fish need to survive.

In July and August of 1998, 26 fish kills were reported in northeast Iowa. Most of the situations were caused by manure runoff from small, open feedlots. Every size and type of livestock operation has the potential to cause a significant fish kill.

Our local waterways are especially susceptible due to low stream flows, high water temperatures and reduced oxygen levels in the water. Now is the time to increase maintenance activities on feedlots to prevent nutrients from reaching the streams and avoid a potential fish kill.

One misconception many people have is that clear water is clean water. What appears to be clean water coming from an open feedlot may often contain high levels of ammonia.

Feedlot operators can minimize the risk of a fish kill when they are aware of the conditions in which most incidents occur and employ sound management practices.

The preferred way to prevent fish kills from happening is to keep the manure away from the streams and waterways. Here are some manure and water management practices to help prevent fish kills from happening:

- Scrape open lots often to remove solids.
- Divert clean water around livestock waste.

continued next page

Fish kills, cont.

- Maintain a buffer of vegetation between the feedlot and the water to filter runoff.
- Avoid overloading feedlots with livestock.
- Inspect livestock areas regularly for any problems.
- Keep a few acres of land available that are away from water for manure storage/application.

Fish kills can prove to be extremely expensive to feedlot operators, if they are found at fault. The Iowa Department of Natural Resources places a dollar value on all fish and all fish are considered important to the aquatic environment. The person who is found responsible is required to pay the economic value of the dead fish, based on the number and types of fish killed. Depending on the situation, they can also be assessed further monetary penalties and be required to repair or replace facilities that led to the pollution.

Iowa's nonpoint source management program explained

Nonpoint source pollution, by its very nature, comes from a variety of sources. While agriculture is not the only source of nonpoint pollution in Iowa, it is definitely the major source and the one providing the biggest challenge due to the sheer magnitude of the industry.

At the core of Iowa's nonpoint source pollution efforts is the Nonpoint Source (NPS) Management Program administered by the Iowa Department of Natural Resources (IDNR) using Section 319 funds from the federal Clean Water Act. Funding from the program is used to support and augment local commitment to watershed improvement.

Iowa's 319 nonpoint program works closely with the state's Water Protection Fund (WPF) administered by the Division of Soil Conservation (DSC), Iowa Department of Agriculture and Land Stewardship (IDALS).

The goal of the WPF program is to protect Iowa's surface water and groundwater by supporting projects developed through locally led processes initiated by Soil and Water Conservation Districts (SWCD). Iowa has 1,755 miles of streams classified as high quality or high quality resource waters.

The IDNR is designated as lead agency for the 319 program in the state. The IDNR uses 319 funds for NPS information and education programs, demonstration of innovative and alternative Best Management Practices (BMPs) for controlling NPS pollution, and implementation of NPS controls in priority lake and trout stream watersheds.

A basic philosophy of the Section 319 program is that projects be based on a strong local commitment and include local funding or support of local groups. DSC enters into agreement with SWCDs to use WPF cost share funds to support locally-developed watershed project to protect important Iowa lakes, streams and groundwaters.

Many of the watershed projects selected for funding receive a combination of Section 319 and state Water Protection Funds, as well as funds from other agency programs and from private entities. A watershed project plan must show that implementing nonpoint controls will significantly reduce pollutant levels to a waterbody and doing so will provide important public benefits.

The 1998 Iowa Unified Watershed Assessment, Restoration Priorities, and Restoration Action Strategies (UMA) was developed and submitted to Environmental Protection Agency and U.S. Department of Agriculture in response to the Clean Water Action Plan announced on Feb. 19, 1998. The Iowa UMA identifies the watersheds needing restoration and those needing preventive action to sustain water quality.

The Clean Water Action Plan encourages states to work with local communities, the public and federal environmental, natural resource and land management agencies to develop strategies to restore watersheds that are not meeting clean water and natural resource goals. Applications submitted for proposed Section 319 projects are required to include detailed information regarding the nonpoint sources of contamination affecting the water resource to be protected.

The projects are intended to be locally driven; a significant measure of success is the local support provided and a long-term commitment to the project subsequent to Section 319 funding expiring.

Total Maximum Daily Load (TMDL) Section 303(d) of the Clean Water Act requires that all waters of a state that are found to be impaired and whose impairment will not be corrected through existing pollution control programs be listed on the state's 303(d) list. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards.

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Iowa's nonpoint, cont.

This calculated maximum amount must consider all contributing point, nonpoint and natural background sources of a single pollutant, and include a margin of safety and consideration of seasonal variations among other requirements. Iowa's 1998 303(d) list identifies 157 waterbodies.

Animal Feeding Operations (AFO's). Iowa's first water pollution control programs generally considered large animal feeding operations as point sources of pollution, while smaller operations and animal waste disposal were considered to be nonpoint sources.

Iowa has recently revised the 1969 rules and the rules now generally incorporate and go beyond those adopted by EPA. They establish minimum waste control requirements for all types of animal feeding operations and require certain manure management standards be utilized if the operation is to obtain construction and/or operation permits from the IDNR. Manure disposal requirements and guidelines are included in the rules.

Maquoketa River projects update

The **Lake Delhi Water Quality Team** sponsored a Lake Delhi Festival at Turtle Creek Park on July 7; the Lake Delhi Restoration Project provided funds for construction of approximately 21,000 feet of waterways this spring; and U.S. Geological Survey staff began taking water quality samples in July and were scheduled to begin mapping the lake bed later in July.

A tour of conservation practices in the **Upper Maquoketa Watershed Project** is planned for Friday, Aug. 17, 1 p.m. The Iowa Department of Agriculture and Land Stewardship annual review for the project will be held Wednesday, Sept. 12, 1:30-3:30 p.m. at the Backbone golf course clubhouse north of the park.

The **Mineral Creek Watershed** council will meet Aug. 23 at Central Park to determine final expenditures for next fiscal year's budget.

The first sign-up for the **Lower Deep Creek Watershed** Environmental Quality Incentive Program (EQIP) priority area was held June 25 - July 6. Conservation plans currently being written will be used as the basis for contract development and approval. The EQIP Program provided $57,000 this fiscal year to address erosion and sediment concerns in the watershed.

A project development grant from IDALS Division of Soil Conservation will be used to assess the water quality issues, needs and an action plan for **Whitewater Creek** watershed in Dubuque, Jones and Jackson counties.

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E-mail: cwittman@iastate.edu; Web site: http://extension.agron.iastate.edu/waterquality/

Maquoketa Watershed Project
P.O. Box 487
201 E. Clark
Fayette, IA 52142