

US EPA ARCHIVE DOCUMENT

HEWITT CREEK WATERSHED PROJECT

ABOUT HEWITT CREEK

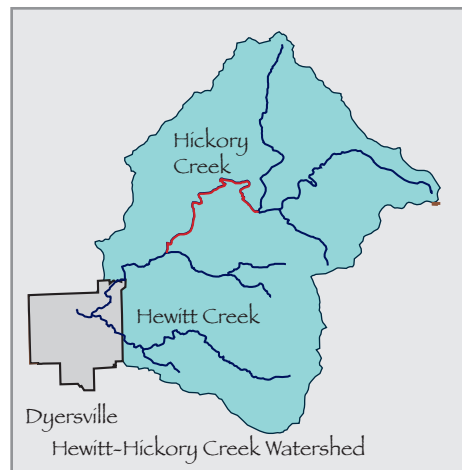
Hewitt Creek is a 23,005-acre subwatershed of the 592-square-mile North Fork and 1,879-square-mile (1.2 million acre) Maquoketa River basin.

The Hickory Creek branch originates near Bankston joining Hewitt Creek in Section 21, New Wine Township, and flows to the North Fork Maquoketa River in Dyersville. The watershed is 1.2% urban, 91.2% agricultural and 7.5% woodland.

The 2002 Iowa DNR Section 305(b) water quality assessment report identified the lower 4.4 miles of Hickory Creek as

“partially supporting” of aquatic life use based on the number and types of macro invertebrates and fish species collected. This stream segment was listed on Iowa’s EPA section 303(d) impaired waters list (Part two – one or more pollutants and Part five – biologically-impaired).

Hewitt Creek ranked sixth among 25 similar size Maquoketa River subwatersheds indexed for their delivery of sediment, total nitrogen and phosphorus. It also delivered relatively high concentrations of fecal coliform bacteria.



HISTORY, MISSION AND TARGETED ACTIVITIES

In 2004, Hewitt Creek watershed residents took part in a public meeting to address water quality issues in response to the listing of the Hickory Creek on the 2002 impaired waters list.

Two actions then led to active citizen involvement in a watershed-wide effort to address the issues.

First, Iowa Farm Bureau Federation baseline funding arrived shortly before the 2005 planting season to be used to demonstrate local development and implementation of a watershed water quality improvement plan.

At the same time, a group of watershed residents attended several meetings to discuss potential uses of the incentive funding, and to organize a watershed council as an Iowa non-profit corporation.

The council evaluated water quality and environmental management issues and worked to establish watershed performance goals.

Using the IFBF funds, the council established a set of modest incentives in 2005 to link management practices to desired environmental outcomes.

Two other activities marked that first year in the watershed project: completion of a pre-project survey of landowners by the ISU Sociology Department and a field day June 21 at the farm of John Rubly.

The first year Farm Bureau incentives were used for testing technologies that measure the environmental and economic

results ~ or performance ~ of various field and farm management practices. The first measures adopted for incentives aided in refining manure and commercial fertilizer use.

About 5 percent of the Farm Bureau grant was used to complete monthly normal flow and rain event high flow water analysis (see reverse side).

In 2005, the council submitted an application for a state funding grant of the project, through the then-new Watershed Improvement Review Board. The application was approved and the council received WIRB funding for a three-year project, 2006-2008.

Iowa Watershed Improvement Fund grant money allowed the council to assemble a BMP menu together into the science-based and state agency adopted performance indexes, P-index, Soil Conditioning Index (SCI), and the cornstalk nitrate test. The indexes are calculated on individual fields, weighted by field acreage to attain a farm index, and the

HEWITT CREEK COUNCIL MISSION

Use pro-active resident-led water quality performance management, supported by science and technology, including water monitoring.

Develop appropriate farm-level incentives that measure watershed environmental performance, reduce ambient water pollutant levels and maintain farm economic performance.

Improve the water quality and quantity delivered from the Hewitt Creek watershed to Dyersville and the North Fork of the Maquoketa River.

46 cooperator farms are combined to attain a measure of watershed performance.

WIRB money allowed the council to expand its incentive program and continue with monitoring, both of which were central to the project.

NEW FUNDING FOR HEWITT PROJECT EFFORTS

After the initial WIRB grant expired the Hewitt Creek watershed council retained interest in the project mission and using incentives to removed the watershed from the 303(d) list. In 2009 the council applied for a five-year grant to continue these efforts and WIRB approved the project for 2010-2014.

In June 2010, the USDA announced that Dubuque and Delaware SWCD would receive \$5.4 million as part of the Mississippi River Basin Initiative. The funds will be used over five years for programs in Hewitt, Bear and North Fork headwaters of the Maquoketa River.

WATER MONITORING AND BENTHIC MACROINVERTEBRATE EVALUATION

Dr. Rick Klann, Upper Iowa University biology department, was contracted to evaluate water quality at three stream sites during base flow and following significant rainfall events and spring snow melt starting in spring of 2005.

In addition, macro-invertebrate evaluations were conducted in May and September at the same sites.

In his report for the first four years of the project, Dr. Klann wrote that variability in chemical analyses, nutrient concentrations and turbidity were often due to changes in stream flow resulting from significant rain events (more than 0.6 inches in a 24-hour period).

Some general trends were reported



during the sampling period, 2005-08, such as total phosphorus remaining consistent while total nitrogen levels increased slightly, but both levels of both were influenced by rainfall intensity.

Dr. Klann linked improved late-summer dissolved oxygen levels to less nutrients and organic matter decomposition. In 2008,

he identified the improved dissolved oxygen condition as the major contributor to the recolonization of and improved diversity and quantity of macro-invertebrates.

In fact, large numbers of invertebrates, five to seven times more, were collected from 2 of the 3 sites in 2008 when compared to 2005.

Related to the monitoring results were observations by the watershed residents of increases in aquatic life and birds, as well as families that were once again fishing in the creek. Also, the IDNR fishery staff during a project field day demonstration observed improved diversity and quantity of fish.

PROJECT OUTCOMES

Four primary outcomes were cited in early evaluations of project successes:

- Cooperators learned how to use performance measures
- Watershed residents participated in significant numbers.
- Cooperators realized that improving water quality is a long-term effort.
- Participants reduced sediment and nutrient delivery to Hewitt Creek but more work needs to be done.

A key to the success of the Hewitt Creek project was 67 percent participation of watershed farm operators and landowners (project goal was 60 percent).

Monthly meetings held during the winter and summer were regularly attended by 12 to 25 watershed residents and project cooperators.

Over the three years of the first project residents took ownership of impairment issues and development of remediation efforts as well as celebration of project successes. The result was the development of leadership and a large commitment of the watershed community. Neighbor to neighbor exchange of information emerged as an important source of resident information and was useful in attaining the level of participation.

Another measure of the project success is the estimated cooperator in-kind

contribution set at nearly \$81,000.

A project priority was to have an inclusive program and the council agreed to prorate incentive payments when participants exceeded budgeted claims.

Project ending survey

In a survey at the end of the three-year project in 2009, nearly all respondents said the performance index program encouraged production and environmental management changes and all of them said

the program had made a positive effect on the environment. In addition, they all said the performance program made their own farming operations more profitable.

HEWITT CREEK MODEL

The Hewitt Creek Model uses a performance-based management process (diagram below) to set goals that are environmentally sound and economically practical for the watershed. Citizens together decide on incentives for management practices and evaluation of soil condition, nitrogen and phosphorus levels. Farm operators learn to track and interpret performance measures so they can revise their goals and practices for continued improvement. Sustainability occurs as 1) citizens engage in setting common goals for their watershed, 2) commit to learning from each other and 3) support performance measures that help them get to better water outcomes.

