



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Indiana

Implementing Best Management Practices and Educating Landowners Reduces Bacteria Levels

Waterbody Improved

Bacteria from livestock, leaking septic systems and wildlife polluted Big Walnut Creek. The Indiana Department of Environmental Management (IDEM) added three waterbody segments to Indiana’s 1998 Clean Water Act (CWA) section 303(d) list of impaired waters for *Escherichia coli* bacteria. After additional monitoring, IDEM added three more segments to the impaired waters list in 2004. Using CWA section 319 funds, project partners installed best management practices and educated stakeholders about sound agricultural management throughout the watershed. Recent monitoring data show that the Big Walnut Creek segments meet water quality standards for bacteria, prompting IDEM to propose removing all six segments from the state’s 2010 CWA section 303(d) list of impaired waters.

Problem

Big Walnut Creek is in a predominately agricultural area in west-central Indiana’s Hendricks and Boone counties. The East and West Forks of Big Walnut Creek flow south to form Big Walnut Creek, which eventually flows into the Eel River. High bacteria levels prompted IDEM to add three waterbodies in the Big Walnut Creek watershed to Indiana’s 1998 CWA section 303(d) list for *E. coli* impairment. IDEM performed more extensive water quality monitoring in 1998 and 2003, which showed that high levels of *E. coli* bacteria impaired three additional Big Walnut Creek waterbodies. IDEM then added those impaired segments to Indiana’s 2004 CWA section 303(d) list, bringing the number of impaired segments in Big Walnut Creek to six (Table 1).

IDEM identified nonpoint source runoff as the main contributor of *E. coli*. Key bacteria sources in the watershed include manure spreading, livestock pasturing, leaking and failing septic systems, and wildlife. Point sources of *E. coli* in the basins include three wastewater treatment plants and four confined feeding operations. None of these facilities has had a history of violations, bolstering IDEM’s assertion that nonpoint sources caused the *E. coli* impairments.

Project Highlights

IDEM used CWA section 319 funding to support numerous watershed restoration projects in 1999 through 2007. The projects included targeted best management practices (Figure 1) as well as outreach and coordination with other federal programs

Table 1. Impaired segments in the East and West Forks of Big Walnut Creek

12-digit HUC name	HUC	Assessment unit name	Assessment unit segments within HUC	River miles
West Fork Big Walnut Creek	051202030104	Lower West Fork Big Walnut Creek	INW0314_00	10.69
		Edlin Ditch-Grassy Branch	INW0313_00	7.01
		Edlin Ditch-Smith Ditch	INW0312_00	10.29
		Upper West Fork Big Walnut Creek	INW0311_00	6.65
East Fork Big Walnut Creek	051202030102	Ross Creek-East Fork Big Walnut Creek	INW0316_00	6.47
		Lower East Fork Big Walnut Creek	INW0317_00	9.29

that helped to increase the use of agricultural practices in the impaired watersheds. Funding for the following projects began in 1999 and continued through 2006: Putnam County Soil and Water Conservation District (SWCD) Upper Eel River Manure Management; Sycamore Trails Resource Conservation and Development (RC&D) program's Upper Eel River Manure Management; Sycamore Trails RC&D Big Walnut, Deer Creek Conservation Buffers; and Owen County SWCD's CORE 4 Initiative.

Results

In 2007 IDEM assessed the water quality in Big Walnut Creek, including its headwaters, to determine if a total maximum daily load was needed despite the extensive restoration work completed to date. Results from that survey indicated that *E. coli* levels had dropped and meet the water quality standard (Table 2). As a result, IDEM proposes to remove all six segments of Big Walnut Creek from the 2010 CWA section 303(d) list of impaired waters for *E. coli*.

Partners and Funding

The Putnam County SWCD worked closely with the Natural Resources Conservation Service (NRCS) regional staff and the affiliated Sycamore Trails RC&D, along with interested parties in the area such as DePauw University, local sportsmen and community groups. IDEM used \$163,000 in CWA section 319 funding for on-the-ground work in the watersheds, technical outreach and educational opportunities, specifically creating a conservation tillage coordinator position that focused extensively on educating landowners about sound agricultural practices from 2002 through 2007. Since 2001, project partners have spent approximately \$928,000 in the Eel River watershed, approximately \$163,000 of which has been directed specifically toward the Big Walnut Creek watershed. Partners also used other funding from NRCS conservation programs in this period, although those dollars were not officially tracked on a watershed basis.

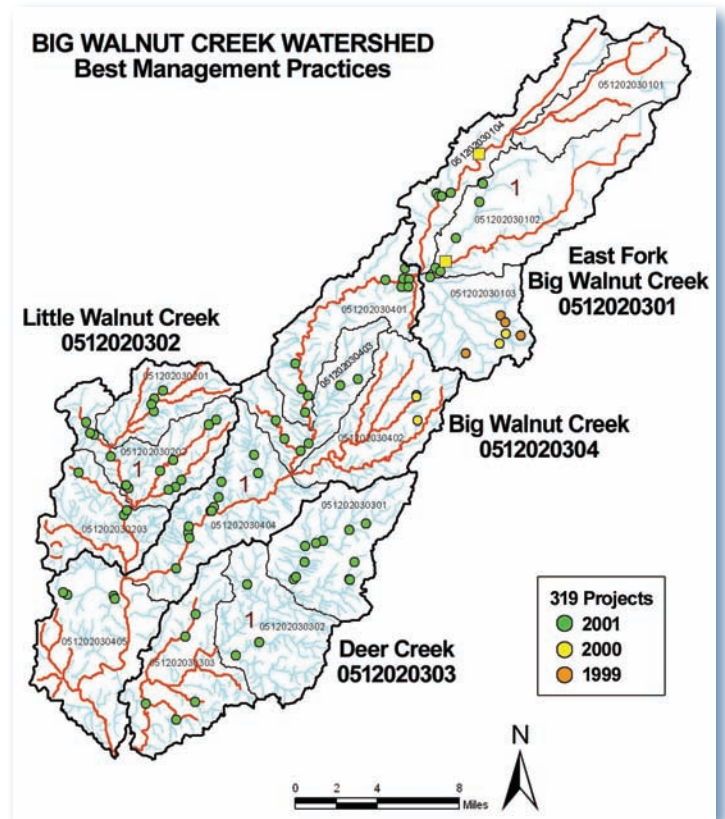


Figure 1. Locations of practices in the Big Walnut Creek watershed (dot colors indicate the year restoration efforts began).

Table 2. Bacteria monitoring data (MPN and CFU)^a collected for Big Walnut Creek in 2001 and 2007

Stream name	Water quality standard (geometric mean)	2001 average geometric mean results	2007 average geometric mean results	Percent reduction
East Fork Big Walnut Creek	< 125 MPN	1016.1 CFU	34.45 MPN	96.6%
West Fork Big Walnut Creek	< 125 MPN	152.3 CFU	27.65 MPN	81.8%

^a Colony Forming Units (CFU) and Most Probable Number (MPN) units are essentially equivalent for comparison purposes.



U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-09-001
June 2009

For additional information contact:

Andrew Peloso
Indiana Department of Environmental Management
317-233-2481
apeloso@idem.in.gov