

February 2010

Walnut Creek Watershed TMDL Report

What are the essential facts?

- *Ohio EPA studied the Walnut Creek watershed and found water quality problems at several locations.*
- *Water quality improvements can be made with practical, economical actions.*
- *Making water quality improvement depends on the participation of the watershed's residents.*

What is the significance of this report? *The Walnut Creek Watershed TMDL Report is a tool to help improve and maintain water quality and habitat in the watershed.*

What is a watershed? *A watershed is the land area from which surface runoff drains into a specific body of water.*

Where is the Walnut Creek watershed?

The Walnut Creek watershed in central Ohio covers all or part of five counties. Beginning in Perry County just to the southwest of Thornville, Walnut Creek flows west for 58 miles to join the Scioto River in Pickaway County. The creek flows just south and east of the City of Columbus.

The Walnut Creek watershed drains 286 square miles. Among its tributary streams are Pawpaw, Poplar, Sycamore, Georges, and Little Walnut Creeks and Turkey Run and Mud Run (see the map on page 2).

What is the Walnut Creek watershed like?

Overall, row crops are the predominant land use amounting to 58 percent of the watershed while forest and pasture occupy 14 and 13 percent, respectively. About 15 percent of the watershed is developed.

The northern area of the watershed is more urban, containing the communities of Pickerington, Canal Winchester,

Groveport, Obetz and some parts of Columbus. Already the most densely populated area of the watershed, new residential and commercial development is also most rapid in this area.

In the southern portion of the watershed, land use is a fairly homogenous mix of row crop, pasture and forest with smaller rural towns interspersed, including Baltimore, Thurston, Pleasantville, Carroll, Lithopolis, and Ashville.

How does Ohio EPA measure water quality?

Ohio is one of the few states to measure the health of its streams by examining the number and types of fish and aquatic insects in the water. An abundance of fish and insects that tolerate pollution is an indicator of an unhealthy stream. A large number of insects and fish that are sensitive to pollution indicate a healthy stream. In 2005, comprehensive biological,



Walnut Creek at Bader Road in Fairfield County

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chemical, and physical data were collected by Ohio EPA scientists.

The watershed's conditions were compared with state water quality goals to determine which stream segments are impaired, and how much needs to be done to restore good stream habitat and water quality.

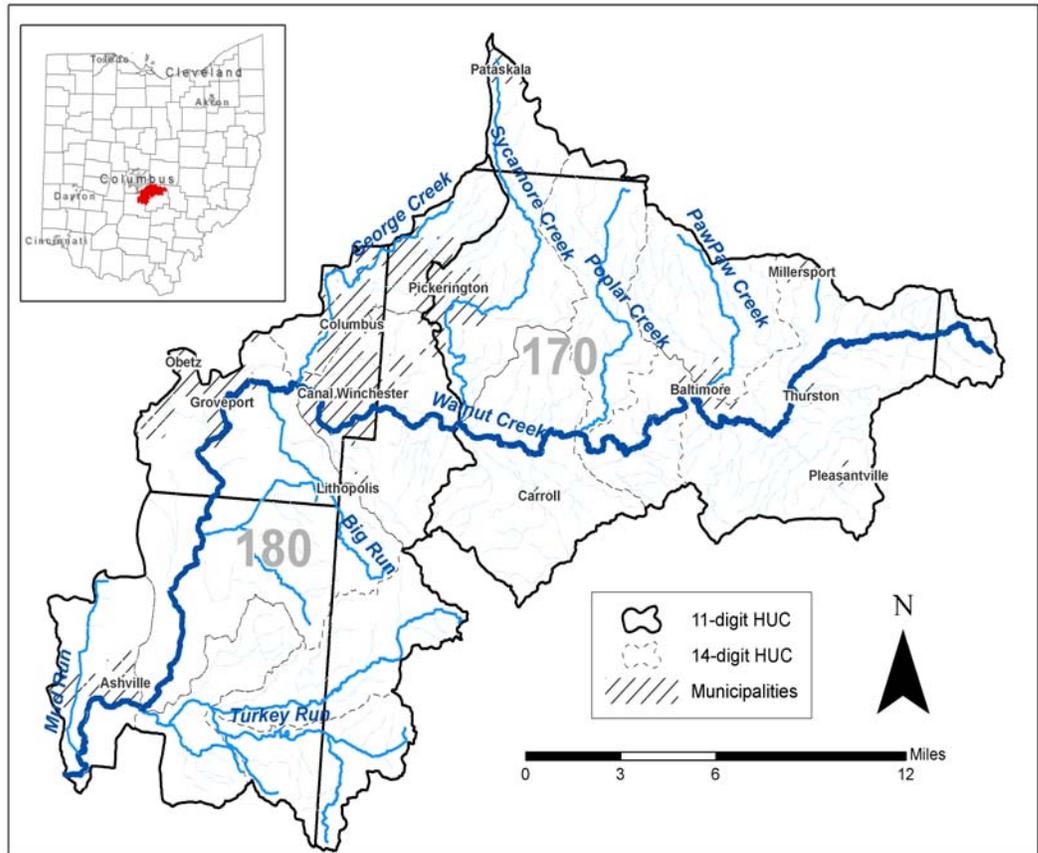
What is the condition of the Walnut Creek watershed?

The 2005 study found that several streams in the watershed displayed exceptional quality especially the lower several miles of Walnut Creek.

Overall, aquatic communities met water quality goals at 78% of the sites surveyed. Of the remainder, 11% met at least some of the water quality standards while 11% did not meet any of the quality goals.

Water quality problems were concentrated around the urban areas where polluted runoff and waste water effluent degraded water quality. Other impacts were more widely distributed, including cropland runoff, livestock with stream access and ditch maintenance.

Slightly less than half the sites (45%) failed to meet water quality standards for recreation uses due to high levels of bacteria. Sites demonstrating high bacteria concentrations tended to be located in the upper portion of the Walnut Creek watershed where 19



of 27 sites were impaired compared to 7 of 28 in the lower watershed.

Livestock with access to streams deposit manure in and around streams. Inadequately treated sewage from home septic systems is another significant source of bacteria in the watershed.

Insufficient waste water treatment and collection degraded water quality in two discrete areas of the watershed; however actions are underway to correct these problems

How will water quality get better?

The Walnut Creek watershed is included on Ohio's list of impaired waters. Under the Clean Water Act, a cleanup plan is required for each impaired

watershed. This cleanup plan, known as a total maximum daily load (TMDL) report, calculates the maximum amount of pollutants a water body can receive and still meet standards (goals). The TMDL report specifies how much pollution must be reduced from various sources and recommends specific actions to achieve these reductions.

The TMDL report provides specific goals for reducing pollutants, including bacteria, sediment, and improving habitat. Ohio EPA can address some of the water quality problems through regulatory actions, such as permits for wastewater and storm water dischargers. Other actions, such as proper maintenance of home sewage system and appropriate management of livestock and manure will depend on local residents.

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What actions are needed to improve water quality?

There are a number of reasons why streams in the Walnut Creek watershed fail to meet water quality goals, so several types of actions are needed to improve and protect the watershed.

The recommendations focus on reducing pollutant loads and/or increasing the capacity of the streams to better handle the remaining pollutant loads. Sources of water quality problems that should be focused on in making water quality improvements include:

- Continued infrastructure and treatment improvements to waste water collection and treatment systems in the Sycamore Creek and Pleasantville Creek areas. This will ultimately correct the water quality problems that had been occurring. Specifically, Pickerington's and the Walnut Creek Sewer District's waste water treatment plants are increasing collection and treatment capacity.
- Poorly functioning home sewage treatment systems (HSTS)



The photo on the left shows degraded stream banks due to livestock use on Mud Run. Manure dropped in and around the stream also severely degrades water quality. The photo on the right shows livestock exclusion fence and alternative watering, common conservation practices that largely eliminate water quality problems of this sort.

What are the three most important "fixes" in the watershed?

◆ Eliminate pervasive bacteria problems

- Restrict livestock access to streams and improve manure management
- Eliminate sanitary sewer overflows and inadequate sludge management
- Reduce number of home sewage treatment system failures

◆ Improve erosion and sediment control in all areas

- Storm water controls in developing areas and construction sites
- Establish and protect riparian buffers on streams
- Practice conservation cover and tillage on row crop fields
- Use better construction design and maintenance practices on drainage ditches

◆ Manage storm water quantity & quality in suburban areas

- Preserve natural stream function through channel protection
- Store or detain storm water on the land where the rain falls rather than concentrating it into centralized systems

should be addressed in rural, urban and developing areas by the county health departments. All HSTS should be treating household sewage to their fullest extent through proper placement, installation, and maintenance of these systems.

- Livestock can be restricted

from having direct access to streams. Although stream access may have benefits for the operation, it is extremely damaging to water quality. Installation of fencing and alternatives to watering are very effective ways of abating this problem and are eligible for cost share and other financial assistance under federal Farm Bill programs.



- Sediment delivery to streams from cropland can be reduced through various conservation practices. Cover crops and reduced tillage will make fields less likely to erode while buffer areas, wetlands and settling ponds can remove sediment from runoff before it reaches streams.

- Ditches, which are important elements of agricultural drainage systems, can be reconstructed and maintained to function more like streams. Ditches that are constructed to be wider than their typical design specifications gain some floodplain function. This reduces cropland flooding and

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channel erosion, which benefits both crop production and water quality. This also allows streams to be better at processing pollution. Woody vegetation along the banks in many instances is beneficial since it tends to stabilize eroding banks.

➤ Storm water in urban, commercial and light residential areas can be managed in a less centralized manner. Directing more runoff to areas where rain water can infiltrate in to the soil will improve the hydrology of the local stream network and lessen water quality problems associated with urban land use. Specifically, the use of bio-retention, permeable pavements and reduction in curb and gutters along roadways (instead using drainage swales) would bring greater stability to watershed hydrology. Storm water treatment such as sand filters can be used in areas of the watershed where high and/or toxic concentrations of residues accumulate on surfaces prone to runoff.

Who is responsible for taking action?

Implementation of this report's recommendations will be accomplished by state and local partners, including the voluntary efforts of landowners.

Ohio EPA will issue permits to point source dischargers that are



This photo shows the use of porous pavement in Canal Winchester with the Walnut Creek watershed. Porous pavement is one means of increasing infiltration of storm water to the soil.

consistent with the findings of this TMDL report. The Ohio Department of Natural Resources has programs dedicated to abating pollution from certain agricultural practices; promoting soil, water, and wildlife conservation; and dealing with storm water and floodplain protection.

County agencies often work with state and federal partners in administering assistance programs to people in their counties. Staff from these offices provides information and technical assistance to the public. Soil and

Water Conservation Districts and Health Departments should have an active role in maintaining and improving water quality in the Walnut Creek watershed.

The Walnut Creek Action Group (WAG) is a watershed group whose mission is to protect water resources through public education and outreach. Currently the group meets every other month and this provides a venue to discuss and address water quality issues specific to Walnut Creek.

Where can I learn more? The Ohio EPA report containing the findings of the watershed survey, as well as general information on TMDLs, water quality standards, 208 planning, permitting and other Ohio EPA programs, is available at <http://www.epa.ohio.gov/dsw/tmdl/index.aspx>.

The draft Walnut Creek TMDL report was available for public review from November 12 through December 14, 2009. The final report was approved on May 4, 2010, and is currently available at <http://www.epa.ohio.gov/dsw/tmdl/WalnutCreekTMDL.aspx>

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