

September 2007

# Olentangy River Watershed TMDL Report

## **What are the essential facts?**

- Ohio EPA studied the Olentangy River and found water quality problems at more than 50% of the locations measured.
- The river can be restored and protected with prudent, reasonable actions.
- Improving and preserving the river depends on the participation of the watershed's residents.

**What is the significance of this report?** The Olentangy River Watershed TMDL Report is a tool that can help to protect and maintain the Olentangy River 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 Olentangy River watershed?**

The Olentangy River is located in central Ohio, north of the Columbus metropolitan area. From its headwaters near Galion, the river flows approximately 93 miles to its confluence with the Scioto River in downtown Columbus. The watershed drains 543 square miles in Crawford, Richland, Morrow, Marion, Delaware and Franklin counties.

An estimated 250,000 citizens reside in the Olentangy watershed. The river provides drinking water for several communities and high-quality aquatic habitat for six State-listed endangered, threatened or special concern aquatic species.

Overall, the land use in the Olentangy watershed is 56% cropland, 14% urban, 14% forested, 13% pasture. However, the upper, middle and lower areas of the watershed exhibit three distinctly different characters:

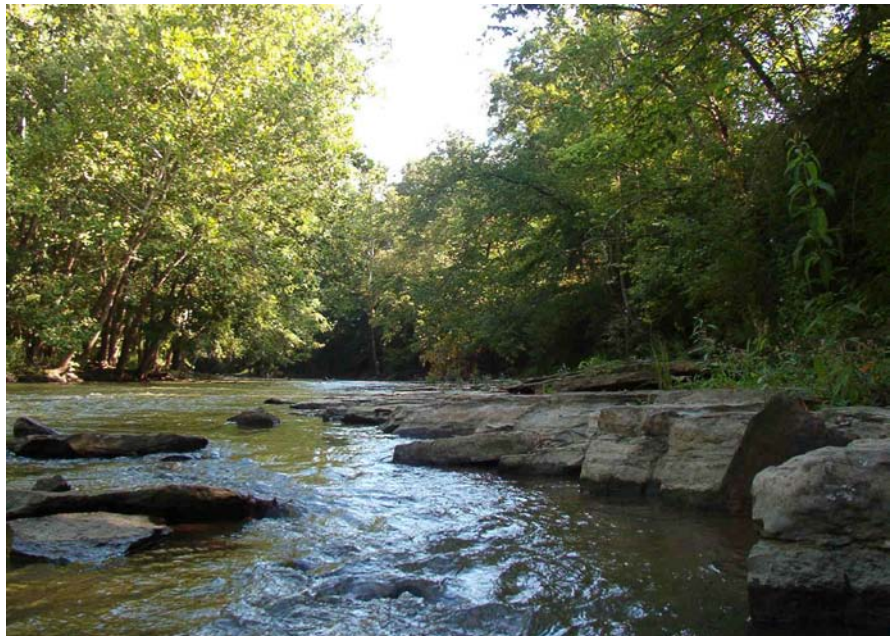
- Above the City of Delaware and Delaware Lake, agricultural land interspersed with several small communities dominates the landscape.

- Below Delaware Lake to the Delaware-Franklin county line, rapid suburban development is altering the formerly agricultural landscape.
- In Franklin County, the watershed is urban and nearly built-out.

According to the U.S. Census Bureau, Delaware County is the eleventh-fastest growing county in

the country. The areas of fastest growth coincide with the State Scenic River portion of the river.

To focus its work, Ohio EPA divided the watershed into four areas: the upper, middle, and lower areas described earlier, plus Whetstone Creek, a major tributary similar to the agricultural upper watershed (see map).



*Olentangy River, just downstream of the City of Delaware*

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## How does Ohio EPA measure water quality?

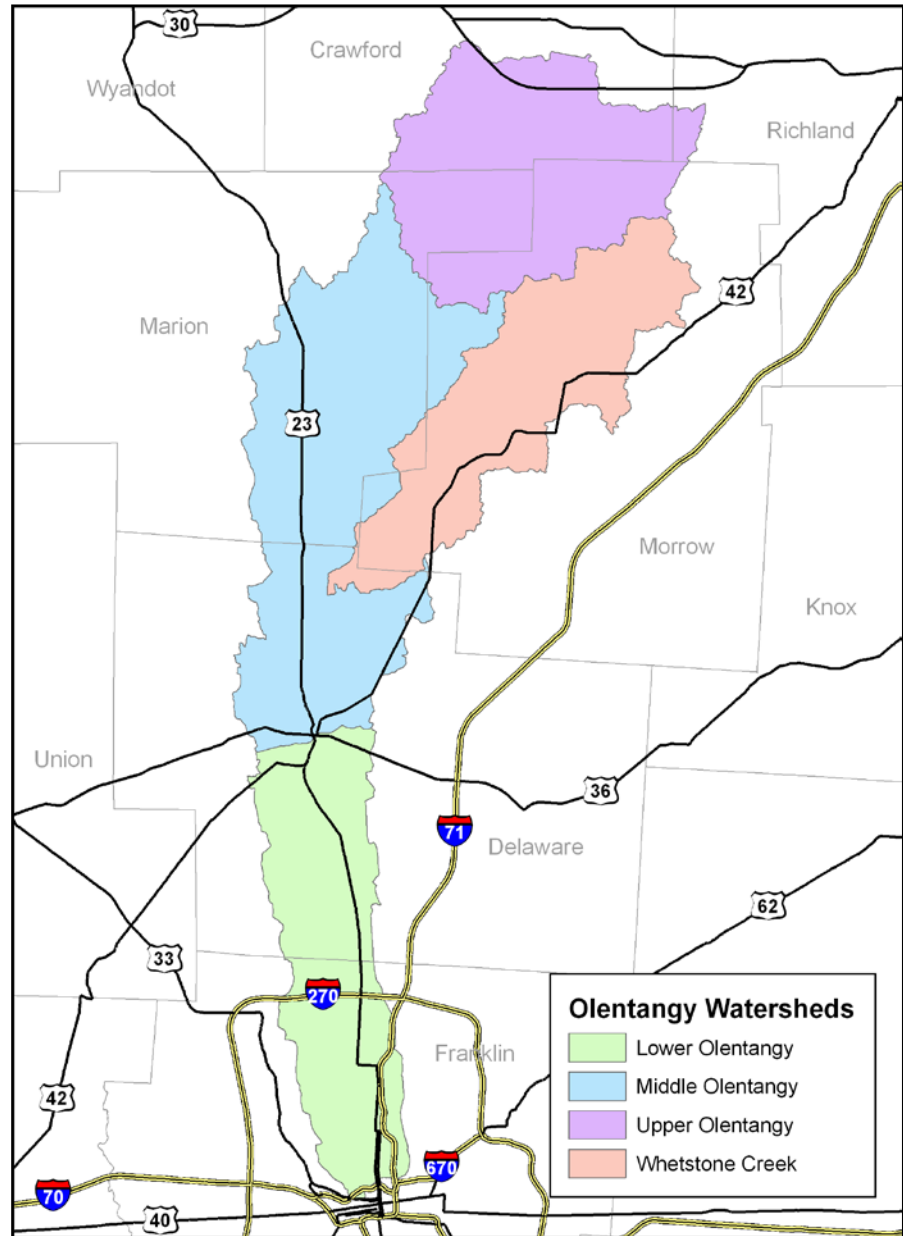
Ohio is one of the few states that measures the health of its streams by examining the number and types of fish and aquatic insects in the water. An abundance of fish and insects that tolerate pollution is an indicator of an unhealthy stream. A large number of insects and fish that are sensitive to pollution indicates a healthy stream. In 2003 and 2004, comprehensive biological, chemical, and physical data were collected by Ohio EPA scientists.

The conditions of the watershed 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. The survey results were published in December 2005.

## What is the condition of the Olentangy River watershed?

Unique and diverse communities of fish, mussels and aquatic insects live in the streams of the Olentangy watershed, but the recent studies confirm slight declines in water quality and stream habitat. Point source pollution (from pipes), runoff from urban areas and agricultural land, and poor stream bank land management are degrading some stream segments. Among the most visible and widely publicized threats to the Olentangy is the conversion of farm and forest acreage to suburban and commercial uses, especially in Delaware County.

Ohio EPA's study of 74 sites in the watershed showed that 46% were meeting water quality goals, 31% were partially meeting the goals, and 23% were not meeting the goals.



In the agricultural upper watershed and Whetstone Creek, the straightening and deepening of stream channels (for drainage improvement), sewage treatment facilities, row crop and livestock production, and failing home sewage treatment systems have resulted in habitat degradation, sedimentation, and high nutrient and pathogen loadings.

The suburbanizing middle watershed exhibits signs of high levels of nutrients, pathogens and

sediments; altered hydrology and poor habitat caused by changing land cover and land disturbance; failing home sewage treatment systems; and low-head dam impoundments.

In the lower, urban portion of the watershed, combined and sanitary sewer overflows, urban runoff, and low-head dam impoundments result in high nutrient and pathogen loads, poor habitat, siltation, low dissolved

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oxygen concentrations and elevated stream discharges.

## How will water quality improve?

The Olentangy River 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 numeric goals for reducing pollutants, including pathogens, phosphorus, sediment, and habitat. Ohio EPA can address some of the Olentangy's problems through regulatory actions, such as permits for wastewater and stormwater dischargers. Other actions, such as committing to adequately-sized stream corridors and flood plains, will be up to local authorities and private property owners.



*Several dams on the Olentangy River are being considered for removal. The upper photo shows the Dennison Dam. The photo to the right shows the free-flowing river after the dam was removed.*

## What are the three most important "fixes" in the Olentangy?

### ◆ Eliminate pervasive bacteria problems

- reduce home sewage treatment system failures
- eliminate sewer overflows, per City of Columbus plan

### ◆ Manage stormwater quantity & quantity in developing areas

- preserve natural stream function through channel protection
- store or detain stormwater on the land where the rain falls rather than concentrating it into centralized systems

### ◆ Restore stream habitat in agricultural areas

- construct over-wide or two-stage ditches
- apply natural channel design when appropriate
- establish and protect riparian buffers

## What actions are needed to improve water quality?

Because there are many reasons why streams in the Olentangy River watershed fail to meet water quality goals, several actions are required to improve the current condition and protect the watershed in the future. The recommendations focus on reducing pollutants loads and/or increasing the capacity of the streams to handle the remaining pollutant loads.

Maintaining a natural flow regime is important for protecting water quality and aquatic biological

communities. The basic principles of providing floodplain connectivity, stable stream morphology and watershed hydrology that approximates natural conditions are applicable to all areas of the watershed. Likewise, stream buffers are appropriate for all land use types in the watershed. Other actions include the following:

- Phosphorus should be reduced at seven sewage treatment facilities: Galion, Marion County, Mount Gilead, Cardington, Candlewood Lake, City of Delaware and the Olentangy Environmental Control Center.



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- Home Sewerage Treatment Systems (HSTs) must be addressed in rural, urban, and developing areas by the county health departments.
- Sediment flowing into streams is a concern in both agricultural and rapidly developing areas. Controls include reducing erosion with cover crops or conservation tillage, providing buffers along stream banks, and adopting measures that maintain stream stability during land disturbance activities such as construction.
- Nutrient loading from livestock operations and agriculture chemicals would be abated by conservation and management practices promoted by the Natural Resource Conservation Service (NRCS, part of the U.S. Department of Agriculture).
- Residential, commercial and other urban areas can reduce overland loading by reducing the application rate of fertilizers and by better timing of application.
- Controlling runoff volume via onsite stormwater management will reduce loading from urban areas and improve watershed hydrology and stream stability.

## 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.

Locally, discussion of actions to restore the watershed has occurred as two groups developed watershed action plans. The Olentangy Watershed Alliance (OWA) prepared a plan for the upper watershed, while the Friends of the Lower Olentangy River Watershed (FLOW) completed a plan for the lower watershed. OWA

and FLOW serve as community advocates for the river; they can be important forces to maintain momentum and sponsor improvement efforts. For example, FLOW has established a strong outreach program to promote voluntary adoption of residential practices that address run-off and the associated pollutant loading.

## Are any actions already underway?

In addition to the watershed action plans discussed above, several activities indicate a high interest in restoring or preserving the watershed:

- The preservation of two natural areas – the Big Run Preserve Project and the Camp Lazarus Conservation Easement – in the rapidly developing area; funded through Ohio EPA's Watershed Resource Restoration Sponsor Program (WRRSP); in cooperation with Preservation Parks District of Delaware County.
- Removal of some dams and plans to remove others by various parties, including the Ohio Department of Natural Resources (ODNR) Scenic River Program, the City of Delaware, the Ohio

Department of Transportation, and the City of Columbus; funded using various mitigation funds, Section 319 grants, and WRRSP funds.

- The Upper Olentangy Project to demonstrate alternatives to ditching headwater streams for agricultural drainage; by ODNR Division of Soil and Water Conservation and several partners using a U.S. EPA supplemental Section 319 grant.
- Expansion of conservation practices throughout the Scioto River watershed, including the Olentangy River via the Scioto Conservation Reserve Enhancement Program (CREP); by U.S. Department of Agriculture and numerous partners.
- The reduction of sewer overflows in the City of Columbus over the next 40 years with 60% of the volume eliminated by 2010; as outlined in the City's Wet Weather Management Plan.

**Where can I learn more?** *The Ohio EPA report containing the findings of the recent watershed survey is available at <http://www.epa.ohio.gov/dsw/Home.aspx>. General information on TMDLs, water quality standards, 208 planning, permitting, and other Ohio EPA programs are also available on this site.*

*The draft Olentangy River TMDL report was available for public comment from October 17 through December 1, 2006. The final TMDL report was approved by U.S. EPA on September 19, 2007. The final report is available at <http://www.epa.ohio.gov/dsw/tmdl/index.aspx>.*

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