

US EPA ARCHIVE DOCUMENT



# Watershed News

Office of Environmental Quality, Clermont County, Ohio

Vol. 1, No. 1

February 1998

*Welcome!*

*Watershed News was created in response to stakeholder requests for more information on the development of Clermont County's Watershed Management Plan. Watershed News is a periodic newsletter to update stakeholders and exchange information on watershed activities. Let us know what you think! Please call Paul Braasch, Clermont County OEQ, at (513) 732-7745 if you have any information you would like to include in future issues.*

**In This Issue** — *This first issue focuses on the County's collection and evaluation of monitoring data in the East Fork of the Little Miami River (EFLMR) watershed. Also included are preliminary monitoring goals for the watershed, and recommendations for future monitoring.*

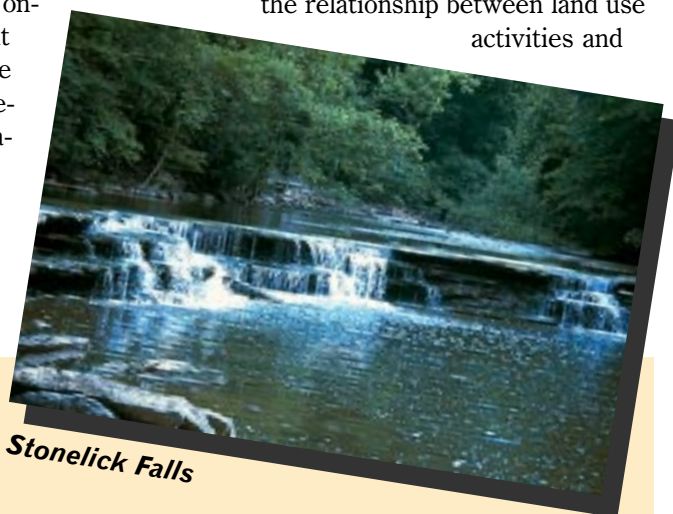
## East Fork Little Miami River Water Quality Assessment Summary

### Introduction

In 1995, Clermont County, Ohio completed a county-wide Wastewater Master Plan. The plan identified wastewater collection and treatment options for areas of the County served by the wastewater collection system and recognized the need to address concerns associated with on-site wastewater treatment and disposal systems. The development of the Wastewater Master Plan emphasized the need for a comprehensive water resources management approach for the East Fork of the Little Miami

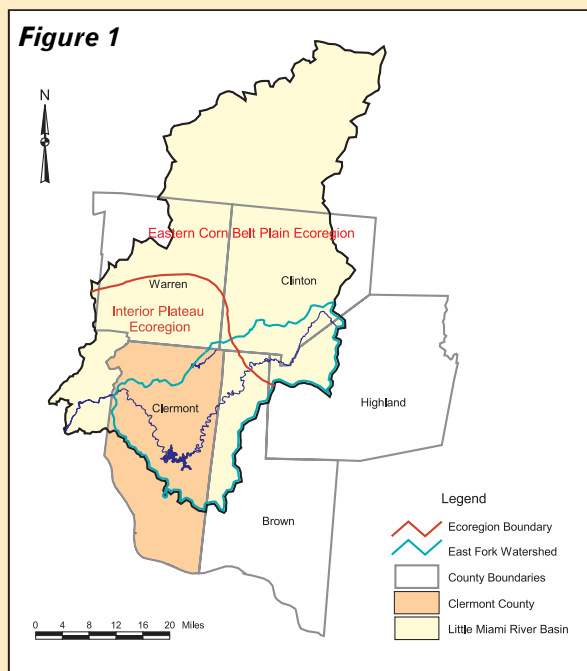
River (EFLMR) that would address all types of activities across the entire watershed.

Consequently, Clermont County has initiated a process to develop a comprehensive watershed management plan for the EFLMR by using the watershed approach; that is, by looking at the entire drainage area to recognize the relationship between land use activities and



*Stonelick Falls*

**Figure 1**



### Overview of the East Fork Little Miami River Watershed

**Size:** 320,000 acres (500 square miles)

**Ecoregions:** Interior Plateau, Eastern Corn Belt Plain

**Features:** Approximately 46 miles of main stem length, numerous tributaries, Harsha Reservoir (2,160 acres), and Stonelick Reservoir (160 acres)

**Population:** Approximately 150,000 predominantly situated in the western portion within Clermont County

**Land Use:** Agriculture (80%), forest (11%), urban (7%); In Clermont County - Agriculture (66%), forest (20%), urban (12%)

## Ongoing Sampling Efforts by Clermont County in the EFLMR Include...

32 monitoring stations sampling bi-weekly to monthly for a suite of over 20 parameters; specialized studies in biological indices, nutrients, and reservoir drinking water supplies.

the quality of water resources. Maintaining and improving water quality and optimizing the use of the County's water resources are goals that the County management, residents, and other stakeholders have expressed. The watershed management plan will be developed based upon the water

quality data summarized in this newsletter along with issues identified by stakeholders. These data and other sources of information will be used to create watershed analyses to predict future water quality conditions and to guide management actions.

## Preliminary Monitoring Goals

Monitoring data are collected according to a sampling program designed to achieve specific water quality management goals and objectives such as fulfilling regulatory requirements, estimating pollutant loads to a downstream water body, evaluating the effectiveness of management actions, or identifying sources of problems. To evaluate the design and adequacy of the current sampling program in Clermont County, the specific goals of the program must be clarified and understood. Clermont County has developed a preliminary set of monitoring goals that will be refined through a series of stakeholder meetings, surveys, and technical review by the Science Advisory Committee (SAC). The SAC is a group of experts from the stakeholder community. The preliminary goals are based on a review of current issues identified by the County stakeholders, an understanding of the regulatory requirements, the physical characteristics of the watershed, and the distribution of existing and potential future land use activities. The preliminary goals developed by Clermont County include:

- Goal 1:** *Extend current permits of wastewater treatment plants and assess plant operations to support protection and uses of water resources*
- Goal 2:** *Evaluate and assess known or suspected impairments to water quality associated with on-site disposal systems and agricultural runoff and develop management solutions for identified problems*
- Goal 3:** *Evaluate and assess water quality impacts associated with development and storm water discharge concerns and investigate potential mitigation strategies*
- Goal 4:** *Research and develop a viable pollutant trading program*
- Goal 5:** *Implement a comprehensive ambient water quality monitoring program*
- Goal 6:** *Develop a source water protection program appropriate for the County's needs*
- Goal 7:** *Identify and evaluate water quality impacts associated with special or localized concerns*



## Background on Monitoring

Clermont County has embarked on an ambitious program to manage and protect the natural and environmental resources of the EFLMR. The evaluation and management of the County's resources are organized within the watershed or drainage basin framework. The County has sponsored the collection and evaluation of monitoring data to assess the historical and current conditions of water quality within the watershed.

This evaluation is based on a compilation of available data from a variety of sources. The evaluation of available information is being used by Clermont County to guide future efforts in monitoring, analysis, and management of watershed resources.

The EFLMR basin is the largest watershed within Clermont County, comprising over half of the County's land area and extending into Warren, Clinton, Highland, and Brown Counties (Figure 1). The EFLMR is a major tributary to the Little Miami River (LMR), a designated State and National Scenic River, that flows to the Ohio River. The EFLMR is the largest stream in the state to have been assigned the Ohio Environmental Protection Agency's (Ohio EPA) most protective aquatic use designation for warmwater streams; the Exceptional Warmwater Habitat (EWH) designation. All but the headwater sections of the EFLMR are designated as EWH, and the headwater regions have been assigned the Warmwater Habitat (WWH) designation.

The designations assist in the protection of the aquatic communities found within the waters of the EFLMR and its tributaries. In addition to providing viability for aquatic communities, water uses in the EFLMR watershed include public drinking water supply, agricultural and industrial water supply, and recreation such as fishing and boating.

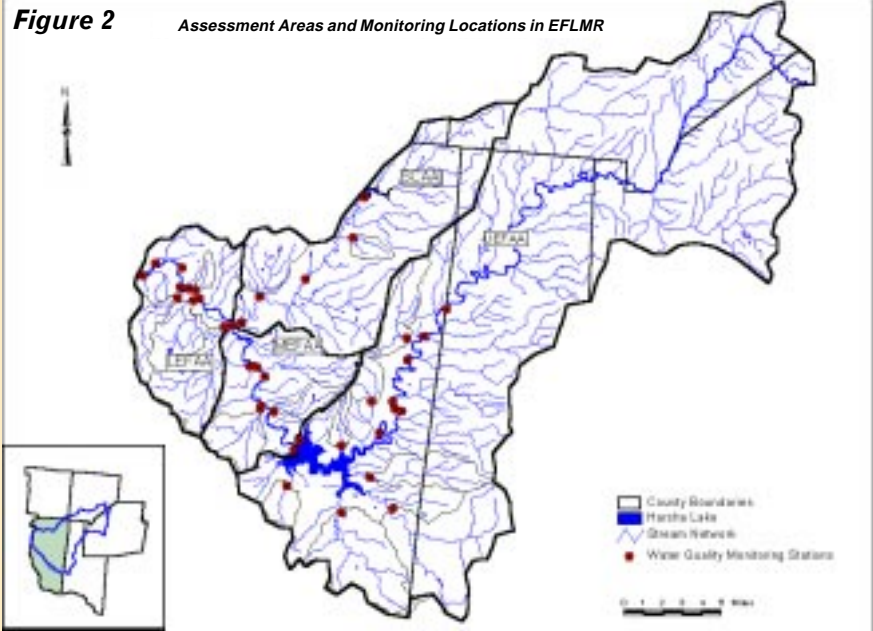


# Review of Available Monitoring Data

Surface water quality data used for the assessment of water quality conditions in the EFLMR watershed were obtained from the recent surface water quality monitoring efforts of Clermont County as well as from historical sources.

## County Monitoring Program

The County's current monitoring program was initiated in January 1996. It includes the collection of both water chemistry and biological data in the County's portion of the EFLMR watershed in the river main stem and its tributaries. The surface water quality monitoring program currently includes the collection of water chemistry data from 32 station sites in the EFLMR and the collection of biological data from 6 to 9 sites (Figure 2). The stations are distributed throughout the watershed to address a multitude of environmental management goals and regulatory requirements. Sampling at County chemical monitoring stations generally includes year-round weekly sampling for nutrients, fecal coliform bacteria, and selected other variables at main stem and tributary stations and biweekly to monthly sampling at certain main stem and tributary stations for selected



## Assessment Areas of the EFLMR Watershed

**Lower East Fork Assessment Area (LEFAA):** Includes the EFLMR main stem and tributaries below Stonelick Creek to the confluence of the EFLMR with the LMR.

**Middle East Fork Assessment Area (MEFAA):** Includes the EFLMR main stem and the tributaries below the Harsha Reservoir and above the confluence of the EFLMR with Stonelick Creek.

**Stonelick Creek Assessment Area (SCAA):** Includes Stonelick Creek, its associated tributaries and Stonelick Reservoir.

**Upper East Fork Assessment Area (UEFAA):** Includes the Harsha Reservoir, several tributaries, and the remaining headwater regions of the EFLMR.

## OVERVIEW OF EFLMR WATERSHED ASSESSMENT AREAS

Assessment Area (Size)	Goals Addressed	Key Features	Land Uses	Tributaries Monitored
Lower East Fork (43 Square Miles)	1,2,3,4	Town of Milford, LEF WWTP, Milford WWTP	Agriculture- 37% Forest- 32% Urban- 30%	Wolfpen Run, Hall Run, Shayler Run
Middle East Fork (37 Square Miles)	1,2,3,4,6	Village of Batavia, MEF WWTP, Batavia WWTP	Agriculture- 58% Forest- 30% Urban- 11%	Four Mile Run, Lucy Run
Stonelick Creek (77 Square Miles)	2,4,5,6	Villages of Newtonsville and Owensville, Stonelick Reservoir	Agriculture- 83% Forest- 13% Urban- 5%	Lickfork Creek, Unnamed Creek at Newtonsville
Upper East Fork (344 Square Miles)	1,2,3,4,5,6	Harsha Reservoir, Villages of Williamsburg and Bethel, closed CECOS landfill	Agriculture- 88% Forest- 6% Urban- 5% Water- 1%	Ulrey Run, Poplar Creek, Cloverlick Creek, Barnes Run, Cabin Run, Kain Run, Pleasant Run

trace metals. Biological sampling, the in-field sampling of resident biological organisms and related habitat indicators, is conducted less frequently than the sampling of water chemistry, and the frequency is dependent on the parameter sampled. Biological sampling of invertebrate organisms, for example, is usually conducted only one to two times during the required index period for that parameter.

#### Historical Data

Historical data sources within the EFLMR extend back to 1965 and include five primary sources: (1) the U.S. Environmental Protection Agency (USEPA) Storage and Retrieval (STORET) database, (2) the U.S. Army Corps of Engineers (USACE), (3) the NPDES Permit Compliance System (PCS) database, (4) Ohio EPA reports, and (5) special studies conducted by local universities and industries. These historical sources represent the collection of water quality data by various organizations at numerous locations throughout the EFLMR watershed. The data from the sources provide a

comprehensive database of water quality information for the watershed and a historical perspective of water quality conditions.

Monitoring information is analyzed through a combination of watershed drainage area characterization; an understanding of the physical, chemical, and biological processes within the area under consideration; review of the historic changes in the immediate area; and analysis and interpretation of the monitoring results. To facilitate the interpretation and discussion of the water quality data for the EFLMR watershed, the watershed was divided into four major subwatersheds or assessment areas (Figure 2). These assessment areas represent relatively homogenous areas in terms of their physical and water quality features.



#### Water Quality Issues

- ◆ *Elevated phosphorus concentrations and increased metals concentrations in the lower portions of both the LEF and the MEF assessment areas.*
- ◆ *Suspected phosphorus and sediment loadings from agricultural land uses in the Stonelick Creek watershed and upstream of the Harsha Reservoir.*
- ◆ *Eutrophic to Hyper-eutrophic trophic states of Harsha and Stonelick Reservoirs.*
- ◆ *Periodic exceedances of fecal coliform bacteria standards in some tributary watersheds.*
- ◆ *Degraded biologic habitat quality in the lower LEFAA and relatively poor biotic community conditions in the lower LEFAA, in Shayler Run, and in areas above the Stonelick Reservoir.*
- ◆ *Relatively high lead concentrations in certain tributary streams.*

#### The monitoring review shows...

*Generally good water quality throughout the EFLMR watershed with localized elevated nutrient concentrations, fecal coliform exceedances, and impairments based on biological sampling.*

#### Summary of Conditions in the EFLMR Watershed

In general, the monitoring review shows the quality of surface water throughout the EFLMR watershed to be good, with localized concerns including elevated nutrient (phosphorus, nitrogen) concentrations, levels of fecal coliform bacteria that exceed water quality criteria, and impairments based on biological sampling. Many parts of the EFLMR watershed are dominated by activities associated with rural land uses. Through runoff to streams, such land uses cause nutrient enrichment, primarily by phosphorus, and elevated levels of total suspended sediment usually occurring during wet weather periods. These characteristics are particularly evident in the Stonelick Creek watershed and in the EFLMR watershed upstream of the Harsha Reservoir.

The effects of these loadings on downstream water quality, however, is mitigated by the presence of the Harsha and Stonelick reservoirs, which trap nutrients and sediment during the growing season. Forested land uses in the lower portions of the Stonelick Creek watershed also appear to provide some water quality benefits. During the summer, the Harsha Reservoir experiences a depletion of oxygen at its bottom and a resulting release of nutrients and certain metals from sediments, which are transported downstream in the fall when the lake mixes.

Limited sampling of metals detected relatively high lead concentrations in Lickfork Creek, Four Mile Creek, and Hall Run, and an exceedance of the state copper criterion at one



location in the lower portion of the LEFAA, although additional sampling is needed to confirm the levels. Certain tributaries were noted to be problem areas because of fecal coliform bacteria levels. Fecal coliform bacteria are used as indicators of the potential presence of pathogens. State criteria for fecal coliform bacteria were exceeded most frequently in tributary watersheds (Wolfpen Run, Four Mile Run, Lickfork Creek, and Ulrey Run), indicating the potential impact of on-site residential waste disposal systems. In the EFLMR main stem, an increasing trend of fecal coliform bacteria concentrations was noted in the lower portion of the LEFAA, although no violations of fecal coliform criteria occurred.

Biological sampling suggests degraded habitat conditions and relatively poor biologic integrity in the

lower portion of the LEFAA and low biologic integrity in Shayler Run and the lower portion of the MEFAA. Additionally, biologic sampling in and above the Stonelick Reservoir in 1993 showed nonattainment with biologic community criteria.



### **RECOMMENDATIONS FOR FUTURE MONITORING IN THE EFLMR WATERSHED**

- ✓ *Modify the current water chemistry sampling program to reflect data needs at selected sampling locations throughout the watershed.*
- ✓ *Expand biologic monitoring efforts throughout the EFLMR watershed in order to further investigate biotic community and habitat quality issues.*
- ✓ *Establish an automated sampling station in an urbanized tributary watershed to better assess the impact of development and storm water (rainfall driven) impacts on the water quality in tributary watersheds.*
- ✓ *Increase sampling efforts in tributary watersheds in the vicinity of known or suspected sources of pollution such as on-site disposal systems and storm water discharge points to better assess their impact on water quality, especially during and after rainfall events.*
- ✓ *Automate sampling procedures at key locations to obtain data necessary to estimate nutrient loadings from certain sections of the watershed (e.g. reservoir).*
- ✓ *Supplement sampling activities for the Harsha Reservoir to better assess water quality conditions and to support the development of a reservoir computer model.*
- ✓ *Establish an automated monitoring station in a small, agricultural tributary watershed typical of the Interior Plateau ecoregion, which would assist in the evaluation of agricultural characteristics and support the development of an analysis system.*

### **Next Steps**

Data gathering continues to provide new information and build a better understanding of the watershed dynamics. The development of a longer term monitoring record will allow for further examination of trends and changes over time, and the expansion of the monitoring program to address specific concerns related to runoff from developed areas and

agricultural areas will provide valuable supplemental information.

The following next steps are under consideration for the development and interpretation of monitoring in the EFLMR watershed:

- Continued refinement of the preliminary goals through stakeholder review and input.
- Compilation of the goals and specific monitoring recommendations into a basinwide monitoring strategy that would be implemented in phases as deemed appropriate by Clermont County and cooperating agencies.
- Continued collection and review of monitoring data with periodic reports provided (via technical reports, newsletter, and the Internet) as significant observations are made and remedial actions are taken.
- Annual water quality data reviews that characterize conditions in each of the assessment areas, update the community of changes in the monitoring program, and provide an opportunity for stakeholder input.

### Future issues of *Watershed News* will include:

- ◆ *Updates on Monitoring Activities in the Watershed*
- ◆ *Analysis of New Monitoring Results*
- ◆ *Status Reports Associated with Attainment of Goals*
- ◆ *Results of Analyses and Computer Models*
- ◆ *Summaries of Stakeholder Meetings and Activities*



## Stay Informed... *It's your watershed to protect!*

Please check off the items below that you are interested in and provide your address, telephone and fax numbers, and fax this page to (513) 732-7163. Check out Clermont County's web page for information on the Watershed Management Plan at <http://ww2.co.clermont.oh.us/clermont/xl.htm>

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

- ☐ Add me to the stakeholder mailing list.
- ☐ Send me a copy of the most recent summary of monitoring results in the East Fork of the Little Miami River (EFLMR) watershed.
- ☐ Send me a copy of the Summary of Stakeholder Questionnaires
- ☐ Send me a copy of the Summary of Focus Group Discussions

For more information on the stakeholder involvement program and the watershed management plan, please contact Paul Braasch, Clermont County Office of Environmental Quality, 2275 Bauer Road  
Batavia, OH 45103  
Phone: (513) 732-7745  
Fax: (513) 732-7163

