Measure SP-12 Watersheds

Measure SP-12

By 2012, improve water quality conditions in 250 impaired watersheds nationwide using the watershed approach.

Olentangy River

Olentangy River from Delaware Dam to below Delaware Run

HUC: 0506000110-090

Location: Delaware County

Drainage: 28,883 acres

The Olentangy River flows 93 miles from its source east of Galion, Ohio through portions of Richland, Crawford, Marion, Morrow, Delaware and Franklin counties. Upper reaches of the watershed flow through agricultural lands and small villages such as Caledonia, Waldo and others before entering the 1,159 acre flood control reservoir created by Delaware Dam. Downstream from Delaware Dam, land use is rapidly transitioning from agriculture to residential as the river flows through southern Delaware and northern Franklin counties. Continuing southward through the city of Worthington, the Olentangy reaches its confluence with the Scioto River in downtown Columbus.

The Olentangy River is home to 54 species of fish, including the state threatened Bluebreast and Spotted Darters as well as an impressive assemblage of breeding bird populations and other wildlife. 22 miles of the Olentangy, (from Delaware Dam to the city of Worthington), are designated as a State Scenic River under provisions of Section 1517 of the Ohio Revised Code. Following a watershed wide assessment conducted by Ohio EPA in 1990, the designated aquatic life use of the Olentangy is Exceptional Warmwater Habitat.

In addition to its biological diversity, the Olentangy also provides public drinking water supplies and recreational opportunities for many central Ohioans. Located within 30 minutes of more than 1.5 million Ohioans, the river is also an important socio-economic resource.

Watershed Efforts within the Olentangy Watershed

A growing partnership of citizens, local watershed groups and state, federal and local government agencies have joined together to reduce the impacts of nonpoint and other forms of pollution within the Olentangy watershed. State endorsed watershed action plans have been developed for both the upper and lower sections of the watershed by Friends of the Lower Olentangy (FLOW) and the Olentangy Watershed Alliance. Stakeholders from the cities of Delaware and Columbus, the Ohio State University, the Ohio Department of Natural Resources, Scenic Rivers Program, local soil & water conservation districts and others participated in the development of the watershed plans. These plans were developed with section 319(h) grant funding and meet all of the required elements identified by USEPA.

Ohio EPA completed a Total Maximum Daily Load Study (TMDL) for the Olentangy River in 2006 in response to growing threats to the watershed from excessive nutrients, sediment, habitat alteration, and flow alteration. The TMDL process included intensive surveys of the physical, chemical and biological characteristics of the watershed that were completed in 2005. Successful watershed planning efforts require extensive local participation. In 1998, Ohio EPA convened an external advisory group comprised of local stakeholders within the watershed. This advisory group participated extensively throughout the process and released a draft TMDL report in October 2006. Revisions and review of this study by US EPA and others is ongoing. Stakeholders who have been active in local planning efforts within the Olentangy watershed include:

1. City of Delaware
2. City of Columbus
3. Morrow County Soil & Water Conservation District
4. Delaware County Soil & Water Conservation District
5. Marion County soil & Water Conservation district
6. Delaware County Health Department
7. Friends of the Lower Olentangy Watershed (FLOW)
8. Olentangy Watershed Alliance (OWA)
9. Ohio State University
10. Ohio Environmental Protection Agency (multiple divisions)
11. Ohio Department of Natural Resources (multiple divisions)
12. U.S. Department of Agriculture
13. Natural Resources Conservation Service
14. Columbus & Franklin County Metroparks
15. Preservation Parks of Delaware County

Action Items

The primary causes of impairment in this segment (HUC unit) of the Olentangy River are identified in the Upper Olentangy Watershed Action Plan as urban runoff, failing HSTS units and habitat alteration. These are also identified in the TMDL as high magnitude causes of impairment. As a result, the endorsed watershed action plan and TMDL recommend removal and/or modification lowhead dams in and near the city of Delaware, the replacement of failing HSTS units and a variety of agricultural best management practices. Consistent with TMDL and Watershed Plan recommendations, the following action items are either recently completed, underway or will be completed by 2012.

Dam Removal Projects

- Panhandle Road Dam
- Central Avenue Dam **(Removed 2008)**
- River Street Dam **(Removed 2006)**
- Stratford Dam
- US Route 23 Dam

Photos show Central Avenue Dam in the city of Delaware before and after removal.

The River Street Dam was removed by the city of Delaware during the summer of 2006 as mitigation under Ohio's Scenic Rivers Law (Revised Code 1517). The Central Avenue dam was removed by the city of Delaware during the summer of 2008 with section 319(h) funding provided under project #05(h) L662. Each of the remaining dams (except for Main Road) are slated for removal summer 2007 and/or 2008. Due to the proximity of the Main Road dam to the city of Delaware's Drinking Water Intake it is unlikely to be a candidate for removal anytime soon. Sources of funding for each project are listed below:

- Panhandle Dam—Ohio Department of Transportation
- Central Avenue Dam—Ohio EPA via subgrant to the city of Delaware
- Stratford Dam—ODNR via SEP funding from Ohio EPA
- US Route 23 Dam—ODNR via SEP funding from Ohio EPA

Replacement of Failing Home Septic Units

Under the provisions of project #05(h)EPA-07 the Delaware County General Health District embarked upon a project to inspect and evaluate all discharging home sewage treatment systems within the Olentangy watershed in Delaware County. This project will result in the replacement and/or repair of more than 100 failing and discharging home sewage treatment systems. To date, the county has successfully replaced and/or repaired 116 failing systems with corresponding nitrogen load reductions of 5,030 pounds/year and phosphorus reductions of 1,905 pounds/year. The number of HSTS units actually replaced and/or repaired exceeds the recommendations in the endorsed plan by more than 30%.

A significant point source project within the watershed is also expected to realize water quality improvements. The city of Delaware recently completed a $25 million upgrade to its municipal wastewater treatment facility which will improve the quality of discharges into the river.

Management of Runoff

The third high magnitude cause of impairment in this segment of the Olentangy River was identified as urban runoff. Efforts to manage runoff in general, address both urban and agricultural sources. Specifically, as a result of the recently completed and approved TMDL Ohio EPA introduced a revised Olentangy River General Construction Stormwater Permit with more stringent stormwater management requirements, including greater riparian setbacks and mitigation measures. The permit was first public noticed on March 12, 2007 with a public comment period extended to May 7, 2008. Revisions based upon public comments and concerns are currently underway. We anticipate that a final general construction stormwater permit will be issued during 2009.

Effective management of stormwater runoff in rapidly developing areas such as the Olentangy also requires the protection of existing high quality riparian habitat. Land conservation and preservation initiatives within the Olentangy have been ongoing. Following are two significant acquisitions that have been completed within the Olentangy River watershed:

- **Camp Lazarus**: Ohio EPA's Water Resources Restoration Sponsor Program (WRRSP) provided Preservation Parks of Delaware County $2,389,000 to acquire a conservation easement on 175 acres of property owned by the Boy Scouts of America. This project protects property that otherwise was scheduled for development.
- **Big Run Preserve:** Ohio EPA's WRRSP program provided $3.9 million to Preservation Parks of Delaware County for the purchase of 60 acres within the Big Run subwatershed. This important high quality parcel was scheduled to be converted to residential developments at the time of acquisition. As a result, more than 8,500 linear feet of headwater tributary streams within the SP-12 HUC segment are permanently protected.

Agricultural runoff is also contributing to nonpoint source causes of impairment in the Olentangy River. Currently, the Scioto River Watershed Conservation Reserve Enhancement Program (CREP) is enrolling vulnerable riparian corridor and marginal farmlands into 10-year Conservation Reserve Program set-asides under a program administered by the Farm Service Agency (FSA). As of 9/5/08 more than 9,300 acres within the watershed have been enrolled in the Scioto CREP. Marion County alone has enrolled more than 8,000 acres within the Olentangy Watershed.

Monitoring Plans

Comprehensive monitoring and bio-assessment of the Olentangy River was most recently completed in 2005 as part of the TMDL process. Additionally, Ohio EPA's Ecological Assessment Unit (EAU) completed additional highly targeted baseline monitoring in 2006 in anticipation of the dam removal projects scheduled within the city of Delaware. Follow-up monitoring is scheduled in the summer of 2009 within the vicinity of the Central Avenue dam site. This dam was removed by the city of Delaware under provisions of section 319 project #05(h)-L662.

Ohio EPA employs a multiple lines of evidence method of assessing water quality improvements within the Olentangy River. A fully array of bio-indicators are used, including the Index of Biological Integrity (IBI), Qualitative Habitat Evaluation Index (QHEI) and Invertebrate Community Index (ICI) as well as commonly employed water chemistry parameters. Using Option B: Watershed Wide Improvement, Ohio EPA expects to clearly demonstrate that High Magnitude Causes of impairments resulting from habitat alteration, runoff and failing HSTS units will be eliminated and/or dramatically reduced in this HUC unit of the Olentangy River.

Watershed Contacts—Ohio EPA & Local

Local and state personnel involved or familiar with this watershed and the various projects identified include:

Local Contacts

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State of Ohio—Measure SP-12 Watershed

Olentangy River—HUC 05060001l0-090

Delaware Dam below Delaware Run

Updated through 09/01/08

Program Area	Action Items	Progress	Funding	Schedule
NonPoint Source	Removed River Street Dam	Removed	Mitigation	2005
	Removed Central Avenue Dam	Contracted	#05(h) L662	2007
	Remove Panhandle Road Dam	Ongoing	ODOT Mitigation	2008
	Remove Stratford Dam	Contracted	SEP Funds	2007
	Remove US Route 23 Dam	Contracted	SEP Funds	2007
	Removed Dennison Dam	Removed	Scenic Rivers	2004
	Acquired Big Run Preserve	Complete	WRRSP	2006
	Acquired Camp Lazarus Easement	Complete	WRRSP	2006
Point Source	#05(h)EPA-07 Delaware County HSTS	116 HSTS Replaced	#05(h)EPA-07	2008
	Upgrade the city of Delaware WWTP	Completed	DEFA	2007
	General Construction Stormwater Permit	Public Noticed	OEPA	2009
Monitoring/Assessment	Baseline Bio-Assessment	Completed	OEPA	2005
	Post Project Bio-Assessment EPA	Scheduled	OEPA	2009
Other Programs	Scioto River CREP Enrollment w/in Olentangy Watershed	9,391 Acres Enrolled	USDA	Ongoing
	Olentangy Watershed Action Plan	Completed	319	2006
	Total Maximum Daily Load Study	Approved	OEPA	2007

Cuyahoga River

Cuyahoga River below Breakneck Creek to above Little Cuyahoga River

HUC: 041100020-305

Location: Portage and Summit Counties

Drainage: 23,340 acres

The Cuyahoga River is located in northeastern Ohio, flowing southward from its source in Burton Township to Cuyahoga Falls before turning northward through Akron and emptying into Lake Erie in downtown Cleveland. The river is 100 miles long and drains 813 square miles in Geauga, Portage, Summit, Medina and Cuyahoga counties. More than 1.6 million Ohioans live within the watershed resulting in widely varied land use. The most recent assessments identify 16% of the watershed as urban; 22% agricultural; 56% wooded; and 6% is wetland area.

25 miles of the upper Cuyahoga is designated a state scenic river from Geauga County downstream to State Route 14 in Portage County. Above Hiram Rapids, extensive wetland complexes contribute to excellent water quality and high quality habitat. Such conditions support a rich and diverse biology, including more than 85 state-threatened and 59 state-endangered plants and animals. The river itself supports more than 50 species of fish, including many pollution-intolerant species such as darters, redhorse and others, especially in upper reaches of the watershed.

The Cuyahoga River derived its name from the Iroquois—"crooked river". One simply needs to look at a map of the river to see how appropriately the river is named. In recognition of the rich heritage and culture throughout the watershed, the Cuyahoga was designated as one of only fourteen American Heritage Rivers.

In 1969, the Cuyahoga was known as the "river that burned" and environmentalists and policy makers adopted the river as a rallying symbol for the Clean Water Act and other environmental regulations. Today, the river serves as a testament to the effectiveness of the legislation it helped spawn. Effective regulation of point source dischargers, innovative restoration practices, and a growing commitment to address nonpoint sources of pollution all have contributed to allowing the Cuyahoga to stand as a model of private/public collaboration united together to improve water quality.

Watershed Efforts within the Cuyahoga Watershed

Various forms of the watershed approach have been used to address water quality problems in the Cuyahoga watershed since 1988 when Ohio EPA established the Cuyahoga Remedial Action Plan (RAP) Coordinating Committee to address impairments in the lower Cuyahoga between Akron and Cleveland. The RAP is successfully implementing projects that continue to improve water quality throughout the designated Area of Concern (AOC).

Ohio EPA completed a Total Maximum Daily Load (TMDL) study for the Middle Cuyahoga River in 1999 after determining that sections of the river were not attaining its designated warmwater habitat aquatic life-use. Results of the TMDL identified that the causes of impairments were low dissolved oxygen and poor habitat conditions resulting from dams, flow alterations and municipal discharges within the watershed. Full attainment of the Middle Cuyahoga River's designated warmwater habitat aquatic life use is the goal of the TMDL and due to the nature of the causes and sources of impairment in the river, it was determined that full attainment would not be met simply by further regulation of point-source discharges.

Action Items

As a result of the TMDL study, it was clear that impairments within this segment of the Cuyahoga River could be eliminated with several specific action items. In addition to identifying pollutant load limits for dissolved oxygen consuming pollutants from existing wastewater treatment facilities, several nonpoint source measures were also identified. Specifically, the removal and/or modification of dams at the cities of Kent and Munroe Falls are identified in the TMDL as action items that will improve water quality. Increasing base flows from Lake Rockwell was also recognized as a critical action. The

following activities are either recently completed, underway or will be completed prior to 2012.

Dam Removal Projects

Ohio EPA determined that dams on the Cuyahoga River in the cities of Kent and Munroe Falls were contributing to water quality problems due to stagnant flows and eutrophication within the dam pools, causing dissolved oxygen levels to fall well below water quality standards during periods of low flow. The dam pools also altered aquatic habitat, impairing both the health and diversity of indigenous fish species. Removal and/or modification of the dams would eliminate dissolved oxygen problems by restoring the river a free-flowing condition. As a result, removal of both dams was recommended in the approved TMDL. Following are summaries of progress to date with implementing these recommendations:

Kent Dam Modification—Section 319(h) Project #03(h) EPA-07

Modification of the 14 feet high arched sandstone dam within the city of Kent was completed in 2005 after nearly five years of collaboration between the public and local, state and federal agencies. Because of the important local history associated with the structure, the city of Kent established a 19-member Kent Dam Advisory Council in March, 2000. Following several years of meetings and discussions the Kent Dam Advisory Council presented an alternative to Kent City Council in 2002 that appeared to have the support of residents of Kent, local and state officials and that retained the historic characteristics of the Kent Dam while restoring the river to free-flowing conditions.

Prior to completion of this project, the Index of Biological Integrity (IBI)—an objective measure of the diversity of the fish community—indicated that fish life within the river failed to meet warmwater habitat (WWH) standards. Physical habitat conditions within and along the river were measured using the Qualitative Habitat Evaluation Index (QHEI) and also failed to meet WWH standards. Following completion of this project both IBI and QHEI scores in the area improved from non-attaining to fully attaining WWH designated aquatic life uses.

Funding for this project was provided by a partnership including the cities of Kent, Ravenna & Massillon, Ohio EPA Divisions of Surface Water (DSW) and Environmental &

Financial Assistance (DEFA), and the Ohio Department of Natural Resources. Total project costs were $5,013,150. $500,000 in Section 319(h) Clean Water funds was awarded to complete stream restoration work associated with the dam removal under Project #03(h) EPA-07[1].

Munroe Falls Dam Removal—Section 319(h) Project #02(h) EPA-14

The highlight of this project was the successful removal of the 12-foot high Munroe Falls dam which restored natural stream flow throughout the area, increased dissolved oxygen levels during periods of low flow and improved aquatic habitat and fish migration throughout the area. Accompanying the dam removal was the successful restoration of nearly three miles of streambank and riparian areas, as well as stabilization of several tributaries flowing into the former impoundment caused by the dam.

Funding for this project was provided by a partnership including the cities of Munroe Falls, Kent, & Stow, Portage County, and Ohio EPA through the Divisions of Surface Water and the Division of Environmental & Financial Assistance. Total project costs were $1.37 million. Section 319(h) Clean Water funds in the amount of $500,000 were awarded for this project under #02(h) EPA-14 to complete stream restoration work following removal of the dam.

Munroe Falls Stream Restoration—Section 319(h) Project #05(h)EPA-27

This ongoing project is being completed subsequent to the removal of the Munroe Falls dam in 2006. Elimination of the dam pool following removal resulted in significant erosion and head-cutting by small tributaries that previously discharged at the higher elevation of the impoundment behind the dam. Original TMDL recommendations called for lowering the Munroe Falls dam by 6 feet. When the dam was removed entirely, restoration and bank stabilization needs within the former dam pool increased. This project is being implemented to meet these needs.

The project is a collaborative effort between NEFCO (a four county regional organization) and the summit County Department of Environmental Services. Total project costs of $166,666 are covered by a Section 319(h) Clean Water Act grant

[1] A detailed summary of this project is included in Ohio's Annual Nonpoint Source Program Report.

provided by Ohio EPA, Division of Surface Water. This project is expected to be completed in December, 2007.

Cuyahoga Falls Dams

Two additional dams downstream in the city of Cuyahoga Falls are also recommended for removal. Recent discussions between Ohio EPA and city officials indicate that the city has interest in exploring the removal of these two structures. Removal of these structures would extend free-flowing conditions and contribute to additional improvements to water quality in the area.

A third dam, the largest on the Middle Cuyahoga River is also recommended for removal. The Gorge Dam is a 70-feet high structure and impounds approximately two miles of the river. First Energy Corporation (the dam's owner) and Ohio EPA's Northeast District Office have been discussing the possibility of removing this structure. While discussions are still preliminary, First Energy has demonstrated an interest in removing the structure. However, we do not anticipate removal of this structure prior to 2012 due to the regulatory complexities that would be required with a structure of this size.

City officials in Cuyahoga Falls have expressed interest in removing the dam shown in this photo of the Middle Cuyahoga River.

Point Source Action Items

Several needed point source actions were also recognized during the TMDL process. The most significant action needed was to work with the city of Akron to increase base flows from Lake Rockwell, a city water reservoir upstream from Kent, Ohio. Increased discharges from Lake Rockwell resulted in almost immediate improvements in both the quantity and quality of water within downstream portions of the Cuyahoga River. This was successfully implemented and allowed for updated modeling to be performed to

account for improvements in the river resulting from the dam removal and/or modification projects in Kent and Munroe Falls.

Major NPDES permits were renewed for the city of Kent and Summit County wastewater treatment facilities during 2007 with updated load requirements to comply with the approved TMDL recommendations. All future permitting actions will also comply with the pollutant load limitations identified in the TMDL.

Monitoring & Results

Baseline monitoring for this segment (14-digit HUC) of the Cuyahoga River was completed during the 2004-05 monitoring seasons and occurred prior to completion of the projects identified. Based on results of the Kent Dam Modification project, Ohio EPA anticipates dramatic water quality improvements resulting from this project. Following modification of the Kent Dam, fish diversity and QHEI (physical habitat) measures increased from non-attaining WWH standards to full attainment within a matter of six months. We expect similar results at Munroe Falls.

Follow-up monitoring was completed during the 2007 monitoring season with final assessment in 2008. This assessment was completed and is available at: http://www.epa.state.oh.us/dsw/documents/MiddleCuyahoga2007final-amended2.pdf. Results identify that macroinvertebrate communities in all segments of the stream in the former dam pools in Kent and Munroe Falls **have improved dramatically**. All sites attained the established aquatic macroinvertebrate ICI index criterion and one site in the former Munroe Falls dam pool exceeded the exceptional criterion.

Fish community scores within the former Kent Dam pool are achieving WWH criterion, however IBI and Modified Index of Well Being (MIwb) scores in the former Munroe Falls dam pool are not yet meeting established WWH criteria. Study results identified that all elements for a full recovery of the aquatic communities to WWH standards were present and full attainment is expected within the next few years.

Watershed Contacts—Ohio EPA & Local

Local and state personnel involved or familiar with this watershed and the various projects identified include:

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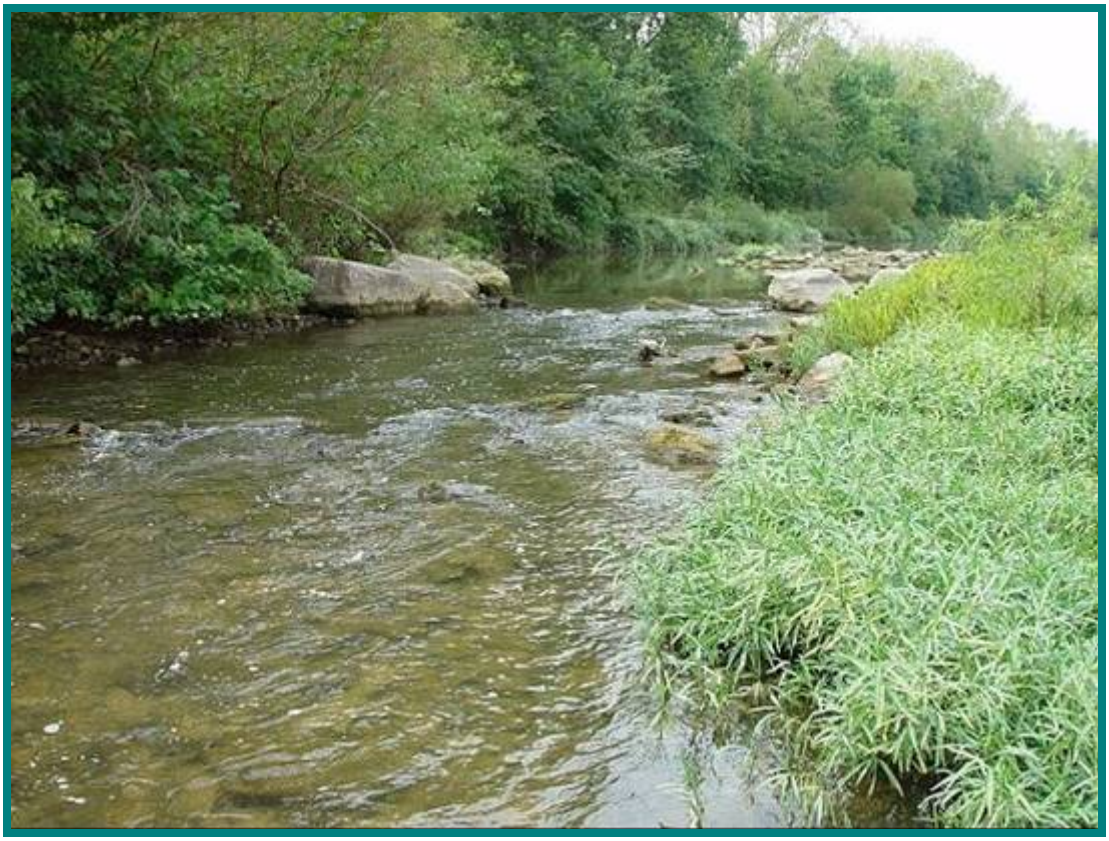
State of Ohio—Measure SP-12 Watershed

Cuyahoga River—HUC 04110002O-305

Below Breakneck Creek to above Little Cuyahoga River

Updated through 09/01/08

Program Area	Recent Actions	Progress	Funding	Schedule
NonPoint Source	Modify Kent Dam	Completed	#03(h)EPA-07	2005
	Remove Munroe Falls Dam	Completed	#02(h)EPA-14	2006
	Stabilize 15,000 linear feet of Streambank	Completed	#03(h)EPA-07 #02(h)EPA-14	2005
	Re-naturalize 8 tributary areas	Completed	#05(h)EPA-27	2006
	Restore 580 linear feet of Streambank	Completed	#05(h)EPA-27	2007
	Re-naturalize 10 tributary areas	Completed	#05(h)EPA-27	2007
	Remove Gorge Dam	Preliminary Planning	Not Funded	2012
	Remove Cuyahoga Falls Dams	Preliminary Planning	Not Funded	2010
Point Source	Renew Kent WWTP NPDES Permit	Completed	OEPA	2007
	Renew Summit WWTP NPDES Permit	Completed	OEPA	2007
	Increase Base Flow from Lake Rockwell	Completed	OEPA	2007
Monitoring/Assessment	Baseline Bio-Assessment	Completed	OEPA	2004-05
	Post Project Bio-Assessment	Completed	OEPA	2008
	Final Bio-Assessment Reporting	Scheduled	OEPA	2010



Big Darby Creek

Big Darby Creek Headwaters to below Flat Branch

HUC: 05060001-190

Location: Union County

Drainage: 12,471 acres

The Big Darby Creek watershed is located in central Ohio, flowing south from its source in Logan county and draining agricultural areas and suburbs to the northwest and west of Columbus before joining with the Scioto River in Pickaway County. The watershed covers 555 square miles and flows for a length of 80 miles. Land use in the in the watershed is predominately row crop agricultural, except for the watershed's suburbanizing eastern edge along the border of Madison and Franklin counties, and in Union County. Coarse glacial deposits (gravel and cobbles) are common in the valleys of lower Big Darby Creek and its tributaries. This material, combined with the natural stream gradient, creates excellent stream bed habitat for a wide diversity of plants and animals. The watershed is home to 86 species of fish, five of which are endangered in Ohio including the federally endangered Scioto Madtom. Additionally, more than forty

species of freshwater mollusks live in these waters, eight of which are on the Ohio endangered species list. As a result of the creek's high quality, Big Darby Creek has been designated as both a state and national scenic river.

The subwatershed selected as a Measure SP-12 watershed is the Big Darby Creek headwaters to below Flat Branch draining more than 12,000 acres in Union County. As referenced in the approved Big Darby TMDL Report many of the streams in the watershed are meeting their standards for aquatic life quality. However, the upper segment of Big Darby is specifically identified as a segment that is failing to meet its designated aquatic life use. Pollution issues identified include habitat alteration, excessive nutrients, low dissolved oxygen and too much sediment. Sources of pollution vary but are most often associated with wastewater treatment plans, agricultural runoff and/or industrial activities.

Watershed Efforts within the Big Darby Creek Watershed

Big Darby Creek receives a great deal of attention from state, local and national groups interested in protecting the watershed—more so perhaps than any other stream in Ohio. The Nature Conservancy has designated the Darby Creek watersheds among the "Last Great Places", a designation that heightens public awareness for the need to protect the watershed. In addition, being a "Last Great Place" means that additional resources will be applied to stream restoration and other types of projects within the watershed. Several years ago, the US Fish and Wildlife Service proposed to establish a 50,000 acre preserve within the watershed—yet another sign of the interest and support for protecting the Big Darby Creek. Most recently, all of the governmental entities within the Franklin County portion of the watershed developed the Darby Accord—a comprehensive land use and development plan that governs residential and other development activities in the watershed.

Local watershed planning efforts have been underway for several years through the Darby Joint Board. The Joint Board is comprised of representatives of all of the soil and water conservation districts within the watershed. Ohio EPA completed a TMDL Report on the Big Darby Creek that was approved by US EPA in September 2006.

Action Items

The approved TMDL identifies six categories of recommended actions that should be implemented to manage pollutants entering Big Darby Creek, especially during peak flow periods. These recommendations generally identify strategies in the following areas:

- Storm Water Management
- Point Source Dischargers
- Habitat Protection & Restoration
- Floodplain Protection and Erosion Control
- Drainage & Agricultural Practices

As a result of the TMDL specific actions were identified as being needed to restore the upper Big Darby headwaters to full attainment of their designated aquatic life use. Several recommendation action items have been implemented—others are underway and/or expected to be completed by no later than 2012. Several of these include:

Stormwater Management Activities

When not managed properly, stormwater runoff carries very large amounts of sediment and other nonpoint source pollutants into water bodies. In a rapidly developing watershed such as the Darby, this is particularly problematic. There are two primary action items that Ohio EPA (and others) are implementing to manage stormwater runoff. Specifically, the development and implementation of a general construction stormwater permit and more effective local land management and development measures are the two primary actions being employed on the Big Darby Creek. Following is a brief description of how each is being deployed in Ohio:

General Construction Stormwater Permit

Ohio EPA developed and implemented a general stormwater permit for runoff associated with construction activity in the Big Darby watershed. The general permit was issued on September 12, 2006 and includes several stringent requirements such as required construction setbacks, updated BMPs for sediment control, infiltration requirements and very strong mitigation requirements. The general construction stormwater permit is specifically crafted to protect the Darby from sediment and other pollutants resulting from construction activities.

Darby Accord Land Use Plan

In July, 2004 elected officials from jurisdictions comprising the Big Darby Watershed in Franklin County initiated the process of developing a common vision for managing development within the watershed. The result was completion and adoption of the Big Darby Accord Plan with very specific goals to preserve, protect, and improve (when possible) Big Darby's unique ecosystem. The Accord provisions specifically address only the Franklin County portion of the overall watershed, which is them ost vulnerable to the impacts of urbanization. In short, the Accord identifies the following strategies that must be in place for development activity to occur:

- Riparian buffer restrictions must be in place
- Comprehensive stormwater management planning has occurred
- Conservation development restrictions are in place
- Adequate public facilities exist or are planned to support any development

The adoption of the Darby Accord clearly identifies the conditions and standards to which any development within the watershed, including the upper reaches encompassed by the Measure SP-12 area, will be measured.

Point Source Activities

Two specific strategies have been employed in the watershed to specifically address concerns and impacts caused by wastewater treatment facilities and other point source dischargers regulated under the NPDES program administered by Ohio EPA. A description of point source activities that will contribute to watershed improvements follows:

NPDES Permit Renewals and Issuances

All permits discharging wastewater into the Big Darby Creek are being reviewed by Ohio EPA for compliance with the targets for phosphorus, ammonia and bacteria set in the TMDL. They must also ensure that sufficient dissolved oxygen is present in the stream.

Where limits need to be revised to meet the TMDL targets, Ohio EPA will require that permits are modified accordingly.

Honda of America Collaboration with Ohio EPA

In upper portions of the SP-12 stream segment, there are impacts believed to be associated with Honda. While this issue has not been clearly defined it is known that it is not due to any violations of any existing permit conditions by Honda. Ohio EPA will continue to work with Honda to identify sources of pollutant that may be contributing to impairment and determine appropriate corrective actions that may be necessary. Honda has also installed new wetlands and extensive stream buffers along Flat Branch to help address problems associated with the watershed.

Habitat Protection & Restoration Activities

In-stream habitat within this targeted segment of the Big Darby Creek has been seriously modified over the years. Channelization and relocation of the stream channel have occurred in conjunction with road construction and other development activities. Recent efforts to undo the damage that has been done have been energized by partners and stakeholders such as the Nature Conservancy, Columbus & Franklin County Metroparks and others throughout the watershed. Following is a summary of efforts that have been recently completed, started and/or are likely to be completed by 2012.

Upper Headwaters Stream Restoration Section 319(h) Project #07(h) EPA-08

$500,000 in section 319(h) Clean Water Act grant funding was awarded to the Nature Conservancy (TNC) to restore 3,622 linear feet of headwater areas of the Big Darby Creek in Logan County. The project site is located between river miles 81.4 and 80.8 on 166 acres of riparian farmland that was recently acquired by TNC. The designated Exceptional Warmwater Habitat aquatic life use is impaired due to habitat alteration and hydro-modification. This project will also restore 3.5 acres of Category 3 riparian wetlands and more than 14 acres of riparian habitat. (This grant recently went to contract and will be implemented in 2008.

Big Darby Headwaters Stream & Wetland Restoration—Project #08(h) EPA-19

$464,259 in section 319(h) Clean Water Act grant funding was awarded to the Nature Conservancy to restore an additional 2,600 linear feet of Big Darby creek and to increase the size of existing wetlands from 0.27 acres to 1.7 acres. Additional meanders, riffle/pool complexes and other in-stream habitat features will be added to this previously channelized segment of Big Darby Creek. (This grant is currently pending. The project is expected to be completed during the summer of 2010).

Fifth Third Bank Property

The Nature Conservancy received nearly $2 million in Water Resources Restoration Sponsor Program (WWRSP) funds from Ohio EPA-Division of Environmental and Financial Assistance to acquire 266 acres of riparian land and to restore more than 6,000 linear feet of Big Darby Creek headwaters. This project is being completed in conjunction with the previously mentioned 319(h) funded projects. Upon completion of all three projects, more than 13,000 linear feet of Big Darby Creek headwaters will be restored using natural channel design. It is anticipated that completion of these projects will result in the restoration of EWH life use attainment of the Big Darby Creek headwaters.

Agricultural Practices—Scioto River CREP

Big Darby Creek is a tributary to the Scioto River in central Ohio. As a result, agricultural producers within the watershed are eligible to participate in the recently implemented Scioto River Conservation Reserve Enhancement Program (CREP). Once fully implemented, the Scioto CREP will enroll more than 70,000 acres of farm land into a variety of best management practices such as grass filter strips, controlled drainage management, riparian forested buffers and others. Within Union County in the headwaters portion of the Big Darby Creek watershed, more than 3,000 acres have already been enrolled in the Scioto River CREP. Additionally, 61 farmers in the upper reaches of the Big Darby headwaters in Logan County have enrolled in the Conservation Security Program. Nearly $2 million have been provided to area agricultural producers under these two important programs.

Monitoring & Results

Baseline monitoring for this segment of the big Darby Creek was completed during the process of preparing the TMDL Report in 2006 and occurred prior to any of the previously referenced projects being completed. Results confirm that the majority of the watershed is in full attainment of the designated aquatic life-use, except for the headwater region where only partial attainment of its Exceptional Warmwater Habitat aquatic life use is evident. A high magnitude cause for impairment within this 12-digit HUC unit is habitat alteration and hydromodification. As mentioned, much of the headwater region has been previously channelized to accommodate roadway and other types of construction. Following completion of the various restoration projects identified, we anticipate considerable improvements in the stream segment, particularly with respect to habitat conditions.

Follow-up monitoring and assessment work will be conducted in the watershed in the fall of 2010, which should provide excellent opportunities to weigh the benefits of the projects that are underway, planned or likely to be completed prior to the 2012 Integrated Report. Using Option B: Watershed Wide Improvement, Ohio EPA expects to be able to clearly demonstrate that High Magnitude Causes of Impairments resulting from habitat alteration and hydro-modification will be either eliminated or vastly improved.

Watershed Contacts—Ohio EPA & Local

Local and state personnel involved or familiar with this watershed and the various projects identified include:

Nature Conservancy
Anthony Sasson **Nature Conservancy, Ohio Chapter** **6375 Riverside Drive, Suite 50** **Dublin, OH 43017** **614-717-2770**
Katherine Skalak, Watershed Coordinator **Darby Creek Joint Board** **Union County Soil & Water Conservation District** **18000 State Route 4** **Marysville, OH 43040** **937-642-5871 ext 109**

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State of Ohio—Measure SP-12 Watershed

Big Darby Creek—HUC 50600011 901

Big Darby Creek Headwaters to below Flat Branch

Updated through 09/01/08

Program Area	Recent Actions	Progress	Funding	Schedule
NonPoint Source	Acquire Fifth Third Property—166 acres	Completed	WRRSP	2006
	Restore 6,000 linear feet of Corridor	Underway	WRRSP	2008
	Restore 4,600 linear feet of Stream	Underway	#07(h)EPA-08	2010
	Stabilize 900 linear feet of Streambank	Underway	#07(h)EPA-08	2010
	Re-vegetate 14 acres of Corridor	Underway	#07(h)EPA-08	2010
	Restore 3,622 linear feet of Stream	Proposed	#08(h)EPA-19	2011
	Install 36 in-stream Habitat Structures	Proposed	#08(h)EPA-19	2011
	Plant 14,466 native Trees & Shrubs	Proposed	#08(h)EPA-19	2011
Point Source	Implement Construction Stormwater Permit	Completed	OEPA	2007
Wetland Restoration	Restore 3.5 acres of Category 3 Wetlands	Underway	#07(h)EPA-08	2010
	Restore 1.7 acres of Category 3 Wetlands	Proposed	#08(h)EPA-19	2011
Monitoring/Assessment	Baseline Bio-Assessment	Completed	OEPA	2004-05
	Post Project Bio-Assessment	Ongoing	OEPA	2007
	Final Bio-Assessment Reporting	Scheduled	OEPA	2010
Other Programs	Implement Darby Land Use Accord	Ongoing	Various	2012
	Implement Scioto River CREP	Ongoing	USDA	2010

Huff Run

HUC: 050400010-804

Location: Sandy Township, Tuscarawas County
Rose Township, Carroll County

Drainage: 9,024 acres

Length: 11.8 miles

Huff Run flows 11.8 miles through Carroll and Tuscarawas Counties before reaching its confluence with Conotton Creek just south of Mineral City, Ohio. Approximately 2/3 of the land within the watershed has been previously mined for coal, some limestone and clay. Much of this mining occurred prior to the enactment of modern mining and reclamation laws—many acres within the watershed were never properly reclaimed. As a result, Huff Run is plagued with acid mine drainage.

Since 1999 seven reclamation and/or acid mine drainage abatement projects have been completed within the Huff Run watershed. Funding has been obtained for the design and construction of 4 additional projects that will be completed within the next 2 years. In recent years water quality within Huff Run has improved—3.9 miles of the stream (approximately 25%) recently was upgraded from non supportive of warmwater habitat to partial attainment of its warmwater habitat designated aquatic life use. Monitoring at the mouth of Huff Run has measured improvements in both the pH and net acidity within the watershed. Baseline water chemistry monitoring showed ph ranging from 4.5 to 7.0 along the mainstem. As a result of the projects that have been completed thus far, pH

values are currently in the range of 6.3 to 7.3. Acid load reductions to the stream have been reduced by 83 pounds/day.

Watershed Efforts within the Huff Run Watershed

The Huff Run Watershed Restoration Partnership (HRWRP) was founded in 1996 by a group of local citizens interested in restoring Huff Run. Since then, HRWRP has partnered with the Ohio Department of Natural Resources, Division of Mineral Resources Management, Rural Action, Inc., Ohio EPA, Crossroads RC&D, the Office of Surface Mining and others to improve water quality within the watershed. Funding for a variety of projects has been contributed by the ODNR-Division of Mineral Resources Management, Ohio EPA Section 319(h) Program, OSM's Appalachian Clean Streams Initiative and recently USEPA through the 2005 Targeted Watershed Grant Program. To date, more than $3 million has been spent in Huff Run to complete 7 projects identified in the approved Acid Mine Drainage Abatement and Treatment Plan (AMDAT) and fully endorsed watershed plan. A listing of completed projects is provided below:

Project	Completed	Costs	Funding
Farr AMD Discharge Project	2003	$180,976	ODNR & OSM & 319
Linden Bioremediation Project	2003	$321,619	ODNR & 319
HRWRP Acid Pit #1 Project	2004	$150,000	ODNR & OSM
Lindentree Project	2005	$270,239	ODNR & 319
Lyons Reclamation Project	2005	$794,030	ODNR & 319
Harsha North	2006	$793,077	ODNR & OSM & 319

Action Items

The primary causes of impairment in Huff Run are those resulting from unreclaimed mine land and accompanying acid mine drainage. However, other sources of pollution such as illegal dumping, untreated home sewage, oil and gas well runoff and agricultural impacts also are contributing to poor biological performance and water quality problems. Existing actions are focused primarily upon addressing mining related impacts since water chemistry must be improved prior to embarking upon more traditional nonpoint source activities such as Agricultural BMPs. Consistent with the approved AMDAT Plan and endorsed Watershed Plan, the following action items are either recently completed, underway or will be completed by 2012:

Lindentree Reclamation Project—Section 319(h) Project #03(h) EPA-08

The Lindentree Project resulted in the successful reclamation of 16 acres of abandoned mine land and coal gob (waste) piles, the removal of 4 acidic impoundments and installation of 700 linear feet of open limestone channels used to passively treat acid mine drainage. Funding for this project was provided under this section 319 subgrant as well as from the state Abandoned Mine Lands (AML) fund.

Lyons Reclamation Project—Section 319(h) Project #03(h) EPA-08

Completed in 2005 using funds from project #03(h) EPA-08 and the state AML fund, the Lyons project resulted in the reclamation of a 15-acre coal gob pile, installation of 3,000 linear feet of limestone channel, 1,500 of steel slag leach bed and the reclamation of 5

surface acres. As a result of these actions, pH and net acidity have improved downstream from the project site for more than 1.5 miles. Net acidity decreased 47% and pH improved from 3.4 prior to completion of the project to 6.7 following construction.

Harsha North Project—Section 319(h) Project #03(h) EPA-08

Completion of the Harsha North Project resulted in the reclamation of 22 acres of previously unreclaimed abandoned mine land and the installation of 3,000 linear feet of passive limestone AMD treatment channel.

Thomas Reclamation Site—Section 319(h) Project #08(h) EPA-17

This site is currently comprised of 20 acres of surface mine impoundments and toxic mine spoil. These impoundments are recharging a shallow abandoned deep mine with a discharge resulting in large contributions of metals and acidity into Huff Run. This project will result in reclamation of the site including installation of limestone channels for drainage and erosion control plus regrading and re-vegetation of the toxic spools and pit impoundments. A total of 16 acres of toxic mine spoils will be reclaimed as a result of this project.

Belden Reclamation Project—2005 US EPA Targeted Watershed Grant

The Belden site will result in the reclamation of toxic mine spoil and surrounding unreclaimed mine lands. In addition, a passive treatment system will be constructed to treat remaining acid seeps with a successive alkaline producing system. This project was funded by US EPA as part of the 2005 Targeted Watershed Grants Program. Construction costs are expected to be $700,000 with completion anticipated prior to 2012.

Mineral Zoar Project—Office of Surface Mining Clean Streams Grant

The Mineral Zoar Project will be completed in 2007 or 2008 and consist of the installation of an AMD passive treatment wetland and successive alkaline producing system in the Mineral City Park. In addition to addressing significant AMD problems, this project will also more effectively manage flooding in the vicinity.

Point Source Action Items

There are no significant point source dischargers within the Huff Run watershed. As a result, no point source action items are identified and/or expected to be undertaken between now and 2012.

Monitoring Plans & Results

As mentioned previously, water quality monitoring activities in the Huff Run watershed are demonstrating watershed wide improvements. Baseline monitoring was completed in 1985 and indicated that the entirety of Huff Run was in non-attainment of its designated warmwater habitat aquatic life use. Follow up monitoring completed in 2005 identified that 3.9 miles (roughly 35% of the watershed) had improved to partial attainment of WWH designation. Follow-up monitoring and assessment work is next planned for 2010 with final reporting anticipated prior to the completion of the 2012 Integrated Report by Ohio EPA. Using Option B: Watershed Wide Improvement, Ohio EPA expects to be able to demonstrate expanded water quality improvements in Huff Run following completion of the previously referenced projects.

Watershed Contacts

Local and state personnel involved or familiar with this watershed and the various projects identified include:

Huff Run Watershed Partners
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State of Ohio—Measure SP-12 Watershed

Huff Run—HUC 05040010 804

Updated through 09/01/08

Program Area	Recent Actions	Progress	Funding	Schedule
NonPoint Source	Implement Belden Reclamation Project	Underway	US EPA	2008
	Install Bioremediation System at Linden	Completed	ODNR & 319	2003
	Reclaim 21 acres at Lyons AML Site	Completed	ODNR & 319	2005
	Install 3,000 ft of limestone channel at Lyons	Completed	ODNR & 319	2005
	Backfill 4 acidic impoundments at Lindentree	Completed	ODNR & 319	2005
	Reclaim the Thomas AML Site	Proposed	319	2010
	Reclaim the Mineral Zoar AML Site	Funded	OSM	2008
	Reclaim the Harsha North Site	Completed	ODNR & OSM	2006
Monitoring/Assessment	Baseline Water Quality Monitoring	Completed	ODNR	1998
	Post Construction Monitoring	Ongoing	ODNR	2005
	Final Post Construction Monitoring	Scheduled	ODNR	2010
Other Programs	Appalachian Clean Streams Program	Ongoing	OSM	2012
	US EPA Targeted Watershed Grant	Ongoing	USEPA	2010

Great Miami Basin—Stillwater River

Stillwater River below Brush Creek to Englewood Retarding Structure

HUC: 50800011-405

Location: Montgomery County

Drainage: 15,149 acres

The Stillwater River within the Great Miami River Basin flows 67 miles from its headwaters in Indiana and northern Darke County, Ohio to its confluence with the Great Miami River in Dayton. The Stillwater flows eastward through Darke County before turning south in western Miami County. In 1975, the Stillwater was designated as Ohio's 8th State Scenic River under provisions of Chapter 1517 of the Revised Code. Through most of its course, the river meanders with a gentle grade across the glaciated plains of western Ohio.

With generally good habitat and water quality, the mainstem of the Stillwater is inhabited by 59 fish species including pollution intolerant species such as the northern hog sucker, rainbow darters and many others. The watershed is also inhabited by numerous species of nesting songbirds and other aquatic species such as the Great Blue Heron and Wood Duck.

Water quality throughout the Stillwater mainstem is generally quite good, with many segments in full attainment of Exceptional Warmwater Habitat designated aquatic life use. However, lowhead dams on the mainstem are high magnitude causes of

impairment, with segments in and around the structures failing to meet the EWH designated aquatic life use. Tributaries in the Stillwater basin have been severely altered, with many small headwaters and tributary streams having been channelized for agricultural drainage. Tile drainage and channelization have decimated wetland areas within the watershed. At one time almost 1/3 of the watershed was wetland—today, less than one-half of one percent remains as wetland areas. The most pervasive problem facing streams within the Stillwater basin is habitat destruction. Resulting organic and nutrient enrichment also threatens the quality of the river. 80% of land use within the watershed is agricultural and Darke County has the second highest concentration of animal feeding operations in Ohio.

Watershed Efforts within the Stillwater River Watershed

The watershed approach has been employed in the Stillwater River in at least three forms. As a state designated scenic river, the Stillwater River Advisory Council has been active since the designation in 1975. The Stillwater Advisory Council is a group comprised of individuals appointed by the director of the Ohio Department of Natural Resources with the role of advising the Division of Natural Areas & Preserves on issues of concern to the watershed. ODNR also employs a Scenic River Coordinator who is assigned to the Stillwater serving in a capacity similar to that of a watershed coordinator. Scenic River designation carries with it regulatory authority over any publicly funded project within 1,000 feet of the river.

In the early 1990's, the Stillwater River Project was established in response to a growing number of animal feeding operations, erodible soil within the watershed and increasing nitrate alerts in the city of West Milton. The project is overseen by a 16 member Joint Board made up of landowners and governmental representatives throughout the watershed. A watershed coordinator is housed within the joint board and successfully developed a fully endorsed watershed action plan for the Stillwater.

In response to concerns about the watershed identified during the 1999 biological and water quality survey of the Stillwater basin, Ohio EPA developed the Stillwater Watershed Total Maximum Daily Load report (TMDL). This TMDL was approved by US EPA on June 15, 2004 and includes a variety of restoration and pollution prevention options needed to address emerging problems in the Stillwater. Recommendations include increasing the width and number of riparian buffers, stream habitat restoration, nutrient management and strategies to address failing home sewage treatment systems in Miami and Darke counties.

Action Items

The Measure SP-12 segment of the Stillwater River is generally a high quality stream, except for the impairments caused by lowhead dam impoundments and degraded wetland areas in and near the riparian zones. The majority of this stream segment is in attainment of its Exceptional Warmwater Habitat (EWH) designated aquatic life use, however the area immediately upstream from the Englewood retarding structure is in non-attainment due to habitat alteration and hydromodification caused by low impounding dam structures. Specific action items for this HUC unit are focused primarily on dam modification and/or removal and wetland enhancement activities. Following are projects that are expected to be completed that will restore the HUC to full attainment of its designated WWH aquatic life use.

Phase 1—Stillwater River Low Dam Modification & Restoration #06(h)EPA-23

The first of three phases in removing and/or modifying the Stillwater River Low Dam is funded by a section 319(h) subgrant awarded to Five Rivers Metroparks in the amount of $224,000. The dam is a 150-feet long arch dam constructed during the 1920's for flood control. This first phase will involve notching the dam to lower impoundment levels by 3-feet, installing cross-vanes and other grade control structures to prevent head-cutting upstream and to construct a new inlet channel to enhance the Englewood Lakes Wetland Complex. Approximately 7,000 linear feet of streambank will be restored and renaturalized as a result of this project.

Phase 2—Stillwater River Low Dam Modification & Restoration #06(h)EPA-35

$176,568 in federal section 319(h) subgrant funds are awarded to the Five Rivers Metroparks to implement phase 2 of the Englewood Low Dam Modification and Restoration project. Phase 2 will notch an additional 3-foot of the low dam, thereby further lowering the dam pool and stabilizing accumulated sediments behind the dam structure. It is anticipated that the final Phase of this project will be funded under the FFY08 grant cycle.

Phase 3—Stillwater River Low Dam Modification & Restoration #08(h)EPA-16

$499,980 in federal section 319(h) subgrant funds are awarded to the Five Rivers Metroparks to implement the final phase of the Englewood Low Dam modification project. The first two phase of this project will remove the majority of the Low Dam in the Stillwater River—phase 3 will focus on reuse of the sediments removed from the dam pool to restore approximately 7,000 linear feet of streambank and to enhance wetland areas adjacent to the project site.

Stillwater Protection Project—Water Resources Restoration Sponsorship Project #39

This project is funded through Ohio EPA's Water Resources Restoration Sponsor Program (WRRSP) and consists of fee-simple land acquisition of more than 133 acres of riparian areas of the Stillwater River immediately adjacent and downstream from the Englewood Dam. Much of the land under consideration for purchase has high quality riparian vegetation. Where riparian area restoration is required, Five Rivers Metroparks will restore the riparian zone with native plantings. More than 21,000 linear feet of riparian areas will be restored and permanently protected by this project.

Monitoring & Results

Baseline monitoring and bio-assessment for this watershed was completed by Ohio EPA during the 1999 biological and water quality survey of the Stillwater basin in preparation for completion of the TMDL Report. Follow-up monitoring and bio-assessment surveys will be completed in 2010 by Ohio EPA. We anticipate final reporting to be completed and provided to US EPA prior to submission of the 2012 Integrated Report.

Using Option B: Watershed Wide Improvement, Ohio EPA expects to be able to demonstrate that impairments caused by hydromodification and habitat alteration will be eliminated and/or substantially improved in this HUC.

Watershed Contacts

Local and state personnel involved or familiar with this watershed and the various projects identified include:

Stillwater Watershed Partners

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State of Ohio—Measure SP-12 Watershed

Great Miami Basin—Stillwater River—HUC 05080001l 405

Stillwater River below Brush Creek to Englewood Retarding Structure

Program Area	Recent Actions	Progress	Funding	Schedule
NonPoint Source	Modify Englewood Low Dam—Phase 1	Underway	319	2008
	Modify Englewood Low Dam—Phase 2	Planned	319	2009
	Modify Englewood Low Dam—Phase 3	Proposed	319	2010
	Enhance 88 acres of Riparian Wetlands	Underway	319	2009
	Install cross vanes and grade control	Underway	319	2008
Monitoring/Assessment	Baseline Water Quality Monitoring	Completed	OEPA	1999
	Final Post Construction Monitoring	Scheduled	OEPA	2010
Other Programs	WRRSP Land Acquisition Program	Ongoing	WRRSP	2010
	ODNR—Scenic Rivers Program	Ongoing	ODNR	2010