
Addressing Waters Not Meeting Water Quality Goals



The federal Clean Water Act (CWA) requires that states identify waters not meeting water quality goals and then prioritize them for action to restore their beneficial uses¹. The resulting list of prioritized impaired waters is known as the 303(d) list. Ohio's 2016 303(d) list is presented in Section L4 of this report.

Ohio made substantial changes to its listing process in 2010 (see Sections A and J in the 2010 Integrated Report [Ohio EPA, 2010]); Ohio's 2012 Integrated Report and 303(d) list (Ohio EPA, 2012) contained relatively few changes compared to the major adjustments made in 2010. A significant change to the 2014 report included the addition of a new indicator (algae) to the public drinking water supply (PDWS) use. This 2016 report contains changes in how the information is organized and what data sets were used (for instance, 2015 data was included for both recreation and PDWS uses), but no significant changes in the assessment methods were made. This section outlines the listing framework; lays out the prioritizing and delisting processes and results; and reports on the status of Ohio total maximum daily load (TMDL) efforts including schedules for future TMDLs and monitoring in Ohio.

J1. Ohio's 303(d) Listing Framework

The process of listing involves assigning a condition status (a category) for each of four beneficial uses for each assessment unit (AU). Data requirements, descriptions of available data, assessment methodologies and results were discussed and reported by individual beneficial use in Sections E, F, G and H.

In 2010, Ohio modified the five-category listing structure suggested by U.S. EPA to accommodate listing by beneficial use and introduced subcategories to give more information about the status of each water. In 2012, one additional subcategory, "t," was added to aid reporting the status of AUs relative to approved TMDLs² and data availability. In 2014, the "t" subcategory was altered slightly and a new category "d" was added to better reflect circumstances encountered as Ohio EPA revisits watersheds having approved TMDLs. In 2016, a new subcategory in Category 5 (i.e., 5-alternative or 5-alt) was added to report on alternative restoration approaches for CWA 303(d) listed waters. Such waters will still require TMDLs until water quality standards are achieved. Ohio does not have any AUs listed under 5-alt in this report, but anticipates using this subcategory in the future.

Table J-1 summarizes the categories and subcategories used in this report.

Also in 2010, Ohio began listing by beneficial use within each AU and reporting on a smaller AU size. Watershed AUs shifted from an average size of 130 square miles to 27 square miles. Under the old system, an impairment of one beneficial use caused the AU to be category 5 (impaired) regardless of the status of other uses.

¹ Beneficial uses include aquatic life, human health (fish contaminants), recreation (bacteria) and public [drinking] water supply.

² As discussed in Section C-1, the Ohio Supreme Court ruled in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, that Ohio EPA must follow the rulemaking procedures in Ohio Revised Code Chapter 119 before submitting a TMDL to U.S. EPA for approval. Because none of Ohio EPA's TMDLs have been adopted as rules under R.C. Chapter 119, the effect of the Ohio Supreme Court ruling is arguably invalidation of all previously approved TMDLs. Although Ohio EPA is currently evaluating alternatives for addressing both past and future TMDLs, this situation should be kept in mind while reading this section.

Table J-1. Category definitions for the 2016 Integrated Report and 303(d) list.

Category ³		Subcategory	
0	No water currently utilized for water supply		
1	Use attaining	d	TMDL complete; new data show the AU is attaining WQS
		h	Historical data
		t	TMDL complete at HUC ⁴ 11 scale; AU attaining WQS at HUC 12 scale
		x	Retained from 2008 IR
2	Not applicable in Ohio system		
3	Use attainment unknown	h	Historical data
		i	Insufficient data
		t	TMDL complete at HUC 11 scale; there may be no or not enough data to assess this AU at the HUC 12 scale
		x	Retained from 2008 IR
4	Impaired; TMDL not needed	A	TMDL complete ⁵
		B	Other required control measures will result in attainment of use
		C	Not a pollutant
		h	Historical data
		n	Natural causes and sources
		x	Retained from 2008 IR
5	Impaired; TMDL needed	alt	Alternative restoration approaches ⁶
		M	Mercury
		d	TMDL complete; new data show the AU is not attaining WQS
		h	Historical data
		x	Retained from 2008 IR

Figure J-1 illustrates the significance of these changes in the listing procedures. “A” refers to aquatic life use; “R,” recreation use; “H,” human health use; and “P,” public water supply use. The numbers refer to the categories described in Table J-1 above. In the example, an AU listed in 2008 as impaired (*i.e.*, category 5) appeared on the 2010 303(d) list as five units with four uses each; thus, reporting one piece of information changed to reporting 20 pieces of information. Whereas the 2008 list indicated only that the unit was impaired, the new listing indicates all of the following information:

- Aquatic life use is impaired (5) in one unit, not impaired (1) in one and unknown (3) in one. A TMDL to address impairments has been completed in one unit (4A) and the impairment in the remaining unit is being addressed in some other way (4B, e.g., a discharge permit).
- Recreation use is impaired (5) in three units, unknown (3) in one and a TMDL to address the impairment in one unit has been completed (4A).

³ Shading indicates categories defined by U.S. EPA; other categories and subcategories are defined by Ohio EPA.

⁴ HUC means “hydrologic unit code.”

⁵ While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that “A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act.” See Section C (page C-17) for more details.

⁶ Ohio currently has no waters that are listed under this subcategory.

- Human health results based on fish tissue analysis indicate that four of the five units are impaired (5) and one is unknown (3).
- Public drinking water supplies exist in only two of the five units and one of those is impaired (5). The status of the other is unknown (3).

For the aquatic life use, Ohio EPA continues the transition that began in 2010 of translating data evaluated at the 11-digit hydrologic unit size to the smaller 12-digit size. We expect that the few remaining relic categories will be dealt with as those areas are monitored again.

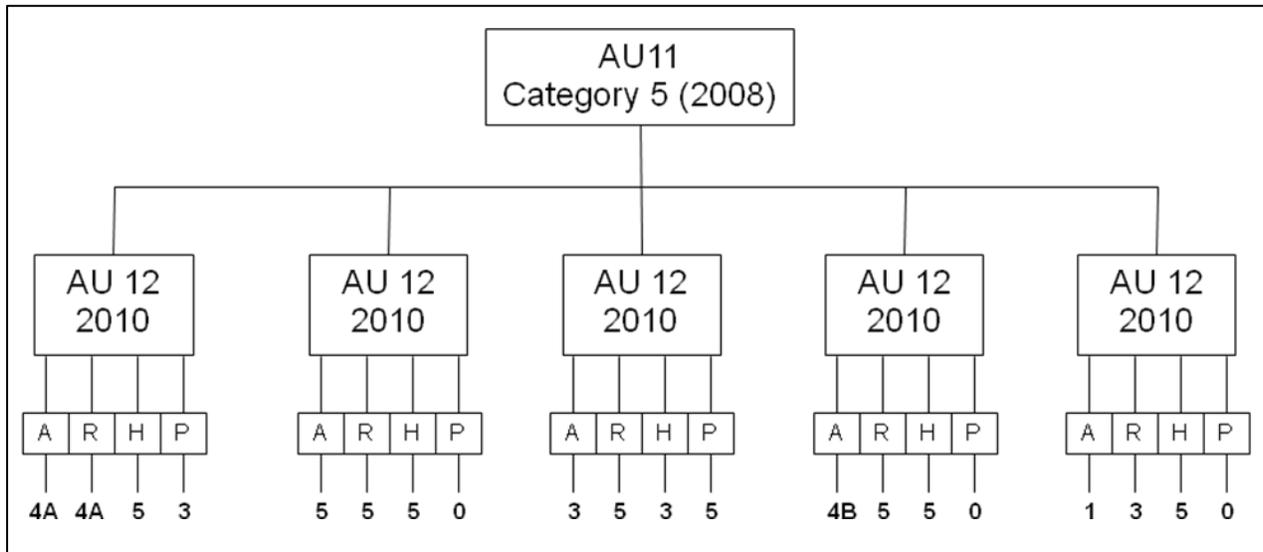


Figure J- 1. Listing by smaller AUs and individual beneficial uses.

Table J-2 shows the number of potential listings that could result from the combination of smaller AUs and listing by individual use.

Table J-2. Potential listing opportunities in Ohio’s listing framework.

AU Types	2008 and Before			2010 and After		
	Number of AUs	Status Reports per Unit	Total Number of Possible Listings	Number of AUs	Status Reports per Unit	Total Number of Possible Listings
Watershed	331	1	331	1538	4	6,152
Large river	23	1	23	38	4	152
Lake Erie shore	3	1	3	3	4	12
Totals	357	1	357	1,579	4	6,316

J2. Prioritizing the Impaired Waters: the 303(d) List

As previously stated, the impaired waters are identified and assigned a category by individual beneficial use in Sections E, F, G and H. After waters are identified as impaired and it is determined that a TMDL is required, the waters are prioritized to produce the 303(d) list (see Section L4). Because Ohio uses a highly integrated monitoring and TMDL linkage to ensure efficient use of resources, it makes sense to continue to set priorities by AU rather than by individual use.

Ohio River and Open Waters of Lake Erie

Other organizations have lead responsibility for two special waters affected by multiple jurisdictions: U.S. EPA for the open waters of Lake Erie and ORSANCO for the mainstem of the Ohio River. Ohio EPA is actively participating in TMDL and similar actions conducted by these organizations, so priority for *Ohio EPA-initiated action* is assigned a low priority for these waters. TMDLs in watersheds that drain to the Ohio River and Lake Erie will reduce the pollutant load delivered to each water.

Inland Waters and Lake Erie Shoreline

A point system is used to assign priority to impaired AUs. A total of 22 points could be assigned to an AU, distributed as shown in Figure J-3. The priority results for specific AUs are reported in Section L and in AU summary information available on the web page.

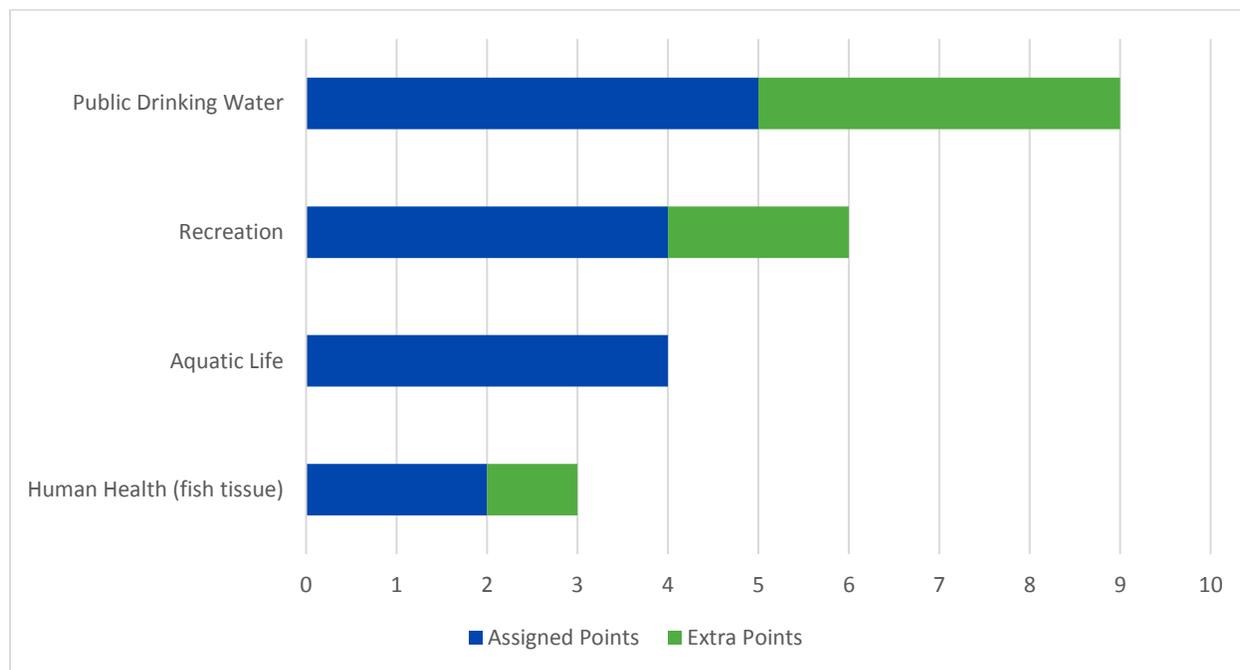


Figure J-2. Priority points assigned based on use impairment or other factors (extra points).

The AUs are assigned priority points using the guidelines in Table J-3. The points assigned to the public drinking water and human health uses are straightforward. For the recreation and aquatic life uses, points are assigned based on a computed index score (see Sections F2 and G2). The lowest quartile (scores between 0 and 25) get the fewest points because a TMDL may not be the most effective way to address the impairments. Scores in this range indicate severe basin-wide problems, comprehensive degradation that may require significant time and resources and broad-scale fixes, including, possibly, fundamental changes in land use practices. Education about the effects various practices have on water quality and encouraging stewardship may be more effective in these areas than a traditional TMDL approach. Scores in the highest quartile (between 75.1 and 100) generally indicate a localized water quality issue. Addressing the impairment may not require a complete watershed effort; rather, a targeted fix for a particular problem may be most effective. Thus, these receive the next lowest number of priority points. The most points are awarded for scores in the middle quartiles (between 25.1 and 50 and between 50.1 and 75), indicating problems of such scale that purposeful action should produce a

measurable response within a 10-year period. These waters are the best candidates for a traditional TMDL.

Two additional points may be awarded to AUs that are impaired for the recreation use and contain Class A waters. Class A waters are those most suitable for recreation, such as popular paddling streams and lakes with public access points developed, maintained and publicized by governmental entities.

Table J-3. Priority points for impaired AUs.

Points	Condition	Number of AUs	
		WAUs	LRAUs
Human Health Use impairment (fish tissue contaminants) (maximum of 3 points)			
2	Listed as impaired for Fish Contaminants (Human Health Use)	427	35
+1	Additional point in AUs that have greater than 500 ppb PCBs or mercury	1	1
Recreation Use impairment (maximum of 6 points)			
1	Listed as impaired, with AU score ⁷ between 0 and 25	77	0
2	Listed as impaired, with AU score between 75.1 and 100	92	14
3	Listed as impaired, with AU score between 25.1 and 50	248	2
4	Listed as impaired, with AU score between 50.1 and 75	272	7
+2	Additional points if AU contains Class A waters	36	23
Aquatic Life Use impairment (maximum of 4 points)			
1	Listed as impaired, with AU score between 0 and 25	172	0
2	Listed as impaired, with AU score between 75.1 and 100	29	8
3	Listed as impaired, with AU score between 25.1 and 50	121	2
4	Listed as impaired, with AU score between 50.1 and 75	112	2
Public Drinking Water Use impairment (maximum of 9 points)			
5	Listed as impaired for Public Drinking Water Use for one indicator	20	3
+2	Additional points in AUs impaired for each additional indicator	0	1
1	Not listed as impaired, but on watch list; one point for each indicator	40	4

As outlined in Section C8, the priority schedule for TMDL projects in Table J-15 was developed considering the above information, as well as the following:

- Social Factors (highly used recreational waters, drinking water supply for significant populations, ongoing/sustained involvement of any local groups or government, *etc.*)
- Value Added (is a TMDL the most efficient way to achieve improved water quality?)
- Is there an approved watershed action plan – if so how many implemented projects?
- How much regulatory authority exists over sources?
- Is there an alternative way to improve water quality more quickly than a TMDL? (*e.g.* immediate implementation of an existing plan or projects, or imposing more stringent permit limits to address a localized problem)
- Are there other factors in play? Examples include:
 - Pending enforcement for a discharger (possible 4B option)

⁷ The AU score referenced throughout this table is reported on the summary sheets in Section L and on the AU summaries on the web.

- U.S. Army Corps of Engineers modeling of reservoir discharge to improve downstream water quality
- Local or statewide strategy or requirements in place to address a particular issue/pollutant (e.g. new health department rules for home sewage treatment systems if they are sole/primary source of impairment)

Near Term Priorities for Ohio EPA

Ohio is facing increasing problems with cyanobacteria blooms in inland lakes, including development of HABs in source waters. Many public water systems are experiencing increased treatment costs to manage the extra carbon load and cyanotoxins at their intake. The smaller conventional systems will have difficulty treating water for these problems and the expense will be very high to upgrade those plants.

In the 2014 Integrated Report, Ohio listed waters impaired by algal toxins for the first time. In the 2016 report, more waters are listed, especially lakes and reservoirs. To emphasize protection of the Public Drinking Water Supply beneficial use from HABs, Ohio is making inland lakes used for public water supply a focus for the next several years for monitoring and improving water quality through TMDLs or other approaches.

Based on a review of the inland lakes or reservoirs that were listed as impaired or on the Watch List for algae indicators in the 2014 Integrated Report, as well as the more recent data collected for algae at PDWS with intakes in inland lakes or reservoirs that led to the 303(d) listing in this report, the following inland lakes were chosen as Ohio’s priorities for the next few years:

- Tappan Lake** in Harrison county (upper Little Stillwater Creek)
- W.H. Harsha Lake** in Clermont County (Lucy Run - East Fork Little Miami River)
- Clyde/Beaver Creek Reservoir** in Seneca County (Beaver Creek, Green Creek)

The impairments (or watch list parameters) cited include nitrate, pesticides and algae indicators. Where there is a TMDL developed it is older and/or does not include the stream reaches that most impact the lake/reservoir. In most cases, there are active local parties interested and/or there is a sizable population served by these sources. Ohio EPA considers nutrients (primarily phosphorus as the TMDL parameter) to be the priority for the inland lake efforts. However, the cause of impairment in more than one area also includes pesticides and/or nitrates, so other pollutants may be added to the TMDL or alternative plan. **These waters are listed on the 303(d) Priority list in Section L4 as follows:**

AU Number	AU Name	Sq. Mi. in Ohio	Human Health	Recreation	Aquatic Life	PDW Supply	Priority Points
05040001 15 03	Upper Little Stillwater Creek	29.72	1	1	3	5	5
05090202 12 03	Lucy Run-East Fork Little Miami River	32.48	1	1	5	5	7
04100011 12 02	Beaver Creek	29.3	3i	4Ah	4A	5	5
04100011 12 03	Green Creek	30.78	1	5	4A	5	9

While they do not have the highest priority points, the AUs with higher priority points that include a PDWS impairment already have a TMDL under development or will be addressed through other means such as the Great Lakes Water Quality Agreement Annex 4 nutrient reduction efforts discussed in J3.

Tappan Lake

- Stillwater Creek basin – primarily forest with mining influences.
- 2,350 acres of water surface.
- Provides drinking water to the Village of Cadiz (*pop.* ~ 3,350).
- Lake is operated by the U.S. Army Corp of Engineers. It is a multipurpose project for flood reduction, recreation and fish and wildlife enhancement.
- Assessed by Ohio EPA in 2012-2013 and did not meet the draft lake habitat use criteria.
- 2014 Integrated Report listed the lake as impaired for PDWS based on algae indicators (microcystin).

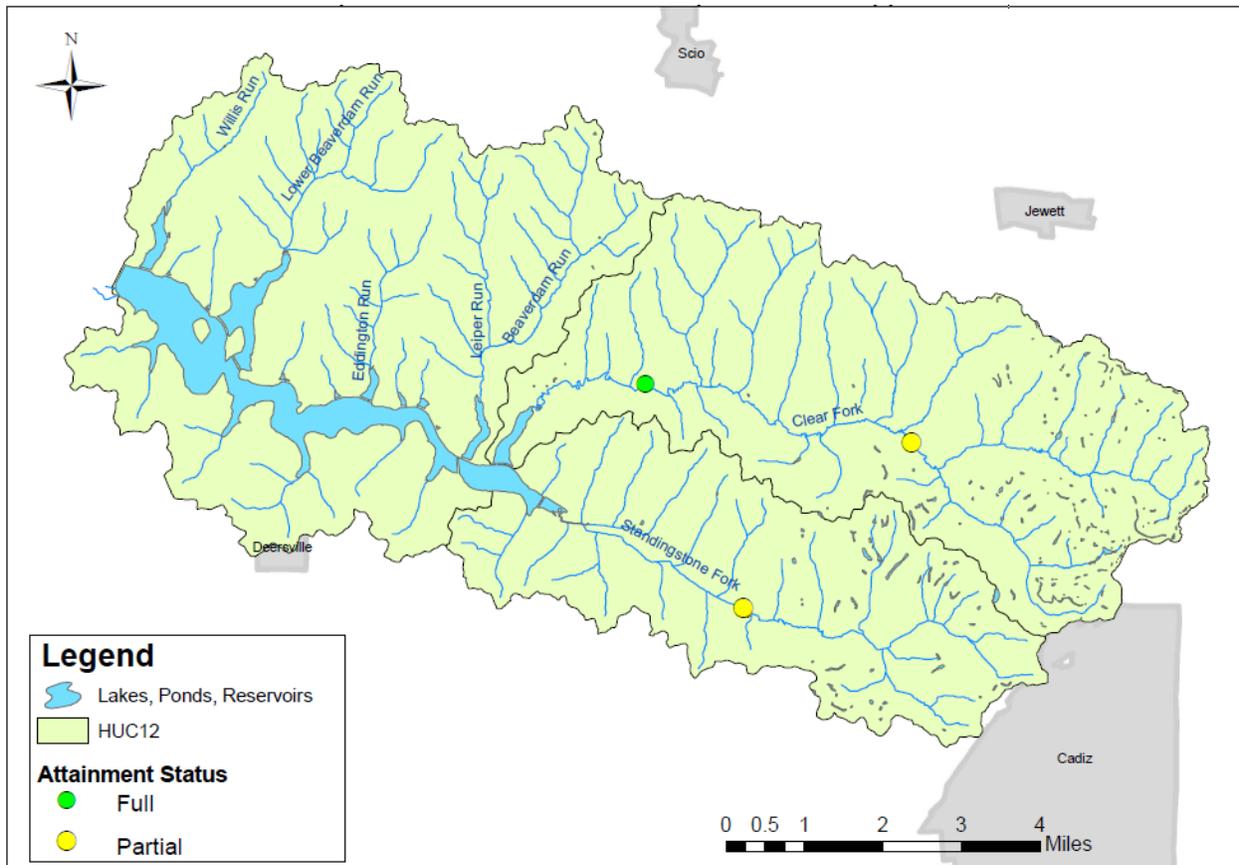


Figure J- 3. Watershed upstream from Tappan Lake and attainment status of sites from 2012 Stillwater River survey.

William H. Harsha Lake

- Located in the East Fork of the Little Miami River watershed – largely agriculture and forest with some urban influence.
- 2,160 acres of water surface.
- Lake is operated by the U.S. Army Corp of Engineers and is a multipurpose project for flood reduction, water supply, recreation and wildlife habitat.
- 2014 Integrated Report listed the lake as impaired for PDWS based on algae indicators (microcystin) and placed it on the watch list for atrazine.

From the Ohio EPA East Fork Little Miami River Technical Support Document, 2014:

- Clermont County operates a community public water system that serves a population of approximately 117,097 people. The water supply sells water to the village of Batavia, village of Williamsburg and New Richmond Robin-Grays water system. Clermont County operates two ground water plants and one surface water plant. The BMW surface water plant draws water from an intake structure on Harsha (East Fork) Lake. The system's treatment capacity is approximately 27.5 million gallons per day, but current average production is 12.5 million gallons per day.
- There are several environmental organizations active in the East Fork Little Miami River watershed. The oldest of these is Little Miami Incorporated (LMI) which has been active for 45 years. Most of LMI's activities have involved the purchase of conservation easements or property purchases in the riparian zone of the river. Clermont County and SWCDs in Clermont, Brown, Highland and Clinton counties formed the East Fork Watershed Collaborative to take advantage of ODNR's Watershed Coordinator Program.
- Several research projects have been initiated in the East Fork watershed and Harsha Lake by U.S. EPA's National Exposure Research Laboratory in Cincinnati and the U. S. Army Corps of Engineers. Among other topics research and monitoring are examining HABs and nutrients, impacts on the Clermont County water intake, carbon sequestration, methane release, nutrient trading, environmental tipping points and fish population genetics. At this time seven different projects are conducting monitoring in Harsha Lake.

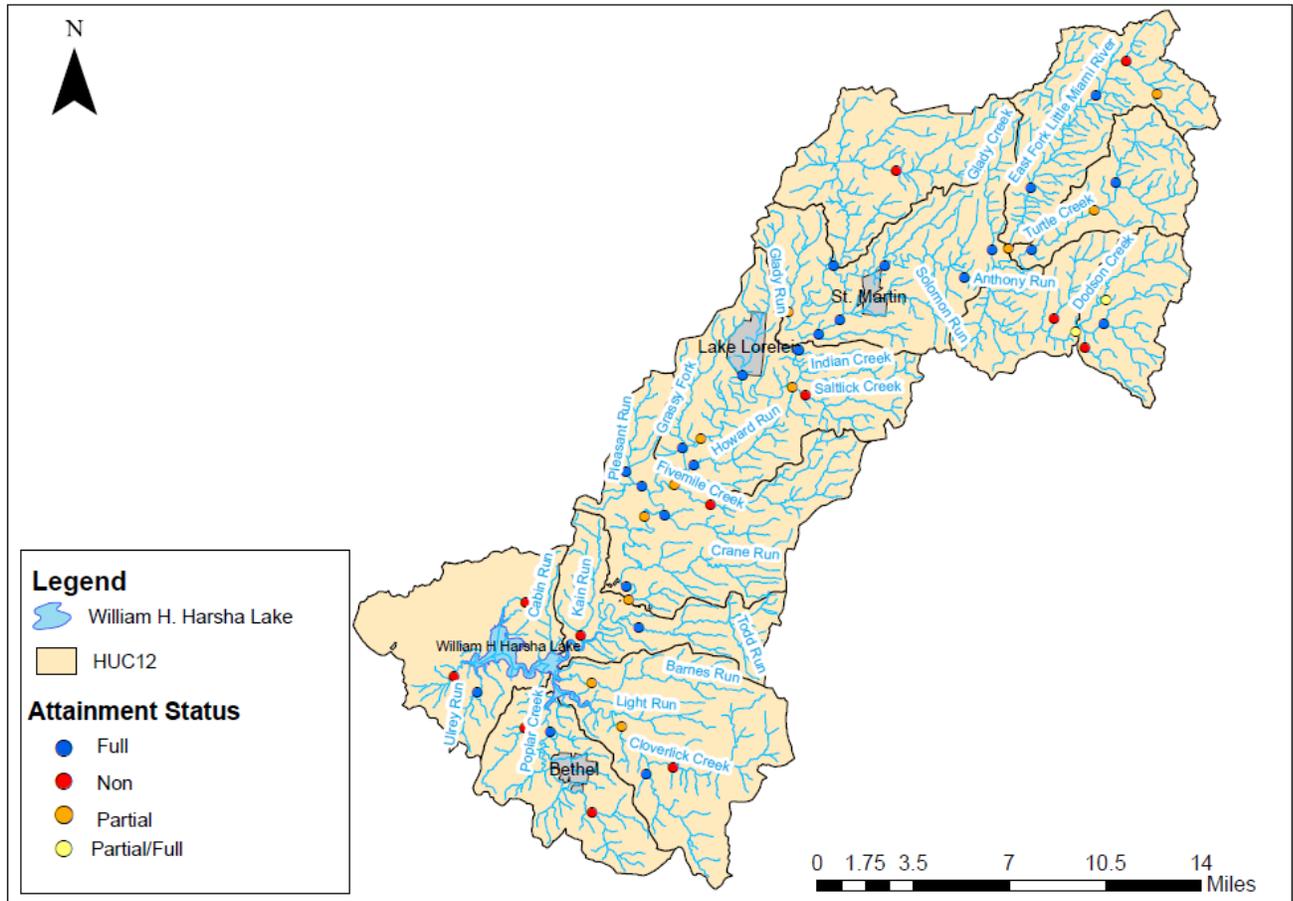


Figure J- 4. Watershed upstream from Harsha Lake and the attainment status of sites from the 2012 East Fork Little Miami River survey.

Clyde/Beaver Creek Reservoir (up-ground)

- Sandusky river watershed - primarily agricultural land use above reservoir.
- 110 acres of water surface.
- Provides drinking water to the City of Clyde (*pop.* ~6,320).
- Reservoir was assessed by Ohio EPA in 2009-2010 and did not meet the draft lake habitat use criteria.
- 2014 Integrated Report placed the lake on the watch list for PDWS based on algae indicators (microcystin) and nitrates. The 2016 Integrated Report will list it as impaired for PDWS based on algae indicators.
- The Raccoon Creek reservoir that also serves the City of Clyde is actually filled with water from Beaver Creek. The Raccoon creek reservoir was listed in the 2014 IR as impaired for PDWS based on algae indicators (microcystin).
- A TMDL for the lower Sandusky River was completed by Ohio EPA and approved by U.S. EPA, but did not set specific loads for Beaver Creek since the stream was not listed as impaired.

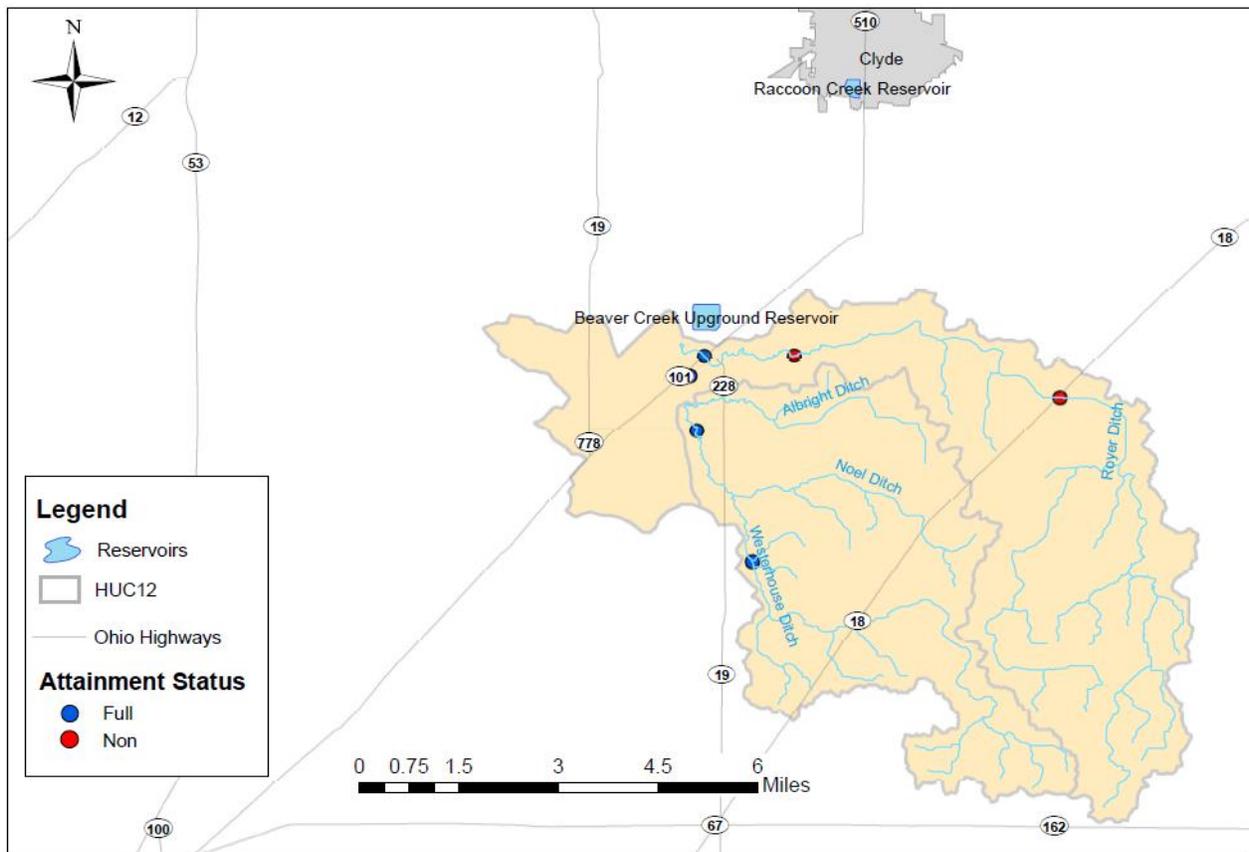


Figure J- 5. Watershed contributing to Beaver Creek Reservoir and the attainment status of sites sampled in 2009.

J3. Addressing Nutrients in Lake Erie

Ohio is working to address its contribution to the problems in Lake Erie through nutrient TMDLs on tributaries; numerous state initiatives to reduce nutrient loads from Ohio; and active participation on

Annex 4 (Nutrients) and other Great Lakes Water Quality Agreement (GLWQA) efforts. Effective lake management and coordinated implementation are needed to address the Western Basin of Lake Erie algal blooms and the Central Basin hypoxia issues, requiring a multi-state and binational effort. Currently, there are a number of parallel planning and management efforts ongoing at the state, federal and binational level. With regard to the open waters of Lake Erie, respecting and working through the binational governance framework is the appropriate process and Ohio intends to aggressively pursue state measures that complement the process and are neither duplicative nor contradictory.

As water quality has improved through the decades, Ohio EPA has addressed most of the significant point source problems and are now left with primarily nonpoint source related impairments. The current Lake Erie algal blooms and Central Basin hypoxic zone are driven by nutrient loading to the Lake. Recent assessments by the Ohio Phosphorus Task Force (Phases I and II) and Annex 4's Objectives and Targets Task team indicate nonpoint sources are the primary source. A key challenge for nutrient management is to assess and manage both in-stream (near-field) and downstream (far-field) impacts in the receiving waterbody (Lake Erie). To improve water quality in Lake Erie, a separate and independent analysis is needed to determine in-lake goals and seasonal/annual load reductions targets for the tributaries. Ohio is directly involved in developing these goals and reduction targets needed for Lake Erie while moving forward on developing implementation strategies and taking action.

Recognizing there may be confusion about the multiple initiatives and how they fit together to improve Lake Erie, an outline and explanation of linkages is provided below.

Great Lakes Water Quality Agreement

Binationally, the U.S. and Canada are working together under the GLWQA to develop nutrient reduction strategies; come to agreement on phosphorus reduction targets for Lake Erie; and create and implement action plans to meet the targets.

Annex 4 of the 2012 GLWQA specifically addresses nutrients in the Great Lakes and contains short-term requirements specific for Lake Erie. U.S. EPA has indicated to Ohio that it agrees that the Annex 4 process is the best way to protect Lake Erie for the four states and one province that share the shoreline.

Work under Annex 4 includes the following:

- Develop binational phosphorus loading targets for Lake Erie (by February 2016)
 - Released summer 2015 with public consultation and comment period
 - Final targets/objectives will be included in the binational nutrient management strategy for Lake Erie and will include allocation by country and watershed
- Develop Binational Nutrient Management Strategy (by June 2016), and
- Develop Domestic Action Plans to meet the targets (by April 2018).

Annex 2 of the GLWQA provides the framework for long-term binational management of the Lake. A comprehensive LAMP has been developed for Lake Erie and is the binational platform where whole lake management plans are developed, implemented and tracked. Ohio is a key partner in the binational partnership. For example, Annex 2 calls for creation of a new nearshore framework and the binational partnership will be responsible for implementing the framework and reporting on progress. It is also expected that the nutrient targets from Annex 4 will be incorporated in the next version of the lake-wide management plans. Working through the binational partnership is critical for developing a coordinated approach with consistent reporting across the borders.

Great Lakes Commission: Lake Erie Nutrient Targets (LENT) Working Group

The Great Lakes Commission formed the Lake Erie Nutrient Targets (LENT) Working Group as a result of a 2014 resolution that committed the Lake Erie states and the province of Ontario to develop new and refine existing practices, programs and policies to achieve pollutant reduction targets and identify additional remedies to improve water quality in Lake Erie. This is a state/province initiative that is parallel, but separate from the binational GLWQA and Annex 4 efforts. Ohio is a member of the LENT Working Group. The LENT Working Group released a Joint Action Plan for Lake Erie on September 29, 2015, available at <http://glc.org/projects/water-quality/lent/>.

Lake Erie Collaborative Agreement

The Lake Erie Collaborative Agreement is another state/province led-initiative; it was signed in June 2015 by Ohio, Michigan and Ontario (<http://www.cglslgp.org/media/1590/western-basin-of-lake-erie-collaborative-agreement-6-13-15.pdf>). The three parties in the agreement are supportive of the binational Annex 4 effort, but recognize that immediate actions can be implemented at the state and provincial levels. In order to get a head start on the Annex 4 process and hasten efforts to improve water quality in Lake Erie, Ohio released a draft Collaborative Implementation Plan in June 2016. The Annex 4 domestic action plans will build on the Collaborative's short-term goals and the implementation plans will become the long-term plans. One of the goals spelled out in the Collaborative Agreement is to reduce nutrient levels going into Lake Erie by 40 percent. The other is to develop a strategic plan to manage dredge material in order to ensure it complies with the state's recent commitment to stop open lake disposal of dredge material into Lake Erie by 2020. The GLWQA does not contain timeframes for implementation and restoration goals, but Ohio is working to meet the Collaborative Agreement phosphorus reduction goals of 20 percent by 2020 and 40 percent by 2025.

TMDLs for Lake Erie Watershed

TMDLs are conducted by the state or federal governments as required under the CWA for waters that have been formally identified as impaired. TMDLs use monitoring and modeling to identify where load reductions and restoration actions are needed. Ohio EPA plans to utilize this tool to target implementation in Ohio's Lake Erie watersheds as it works to meet the Annex 4 phosphorus targets and allocations.

TMDLs are a document that provides guidance on where to focus implementation and recommends BMPs. The TMDL process does not provide additional authority to either Ohio or U.S. EPA to regulate nonpoint sources of pollution; Ohio's regulatory tools are limited to permits and enforcement actions against point sources of pollution.

Ohio has completed TMDLs⁸ for 22 of 32 project areas (watersheds) feeding into Lake Erie and work on the remaining 10 watersheds is underway by either Ohio EPA or a contractor for U.S. EPA. All of these TMDLs employ the State's narrative water quality (WQ) criteria for phosphorus with established targets and methods to address "near field" impacts on rivers and streams. Because Ohio lacks a WQS criterion for total phosphorus concentration in Lake Erie, TMDLs were not developed to address the excessive wet weather loads delivered to Lake Erie. Ohio currently assesses the shoreline zone (shoreline out to 100-meters) of Lake Erie and the aquatic life use is designated as impaired by nutrients, among other

⁸ While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that "A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act." See Section C (page C-17) for more details.

causes.

There have been questions regarding the Chesapeake Bay approach (federally-led multi-state TMDL) and whether it would be appropriate for Lake Erie’s Western Basin. The difference is Lake Erie is bordered by another country and already has a binational governance framework (GLWQA) and implementation tool (Annex 4 Domestic Action Plans) in place. Ohio and the other Lake Erie partners are working with U.S. EPA to understand what worked well under the Chesapeake Bay TMDL and build those tools or actions into the Domestic Action Plans. The Annex 4 process of developing loading targets and Domestic Action Plans are essentially identical to the TMDL process but have the added advantage of being binationally managed according to the GLWQA. Key steps in each process are depicted in Figure J-6.

State TMDL VS Binational Annex 4

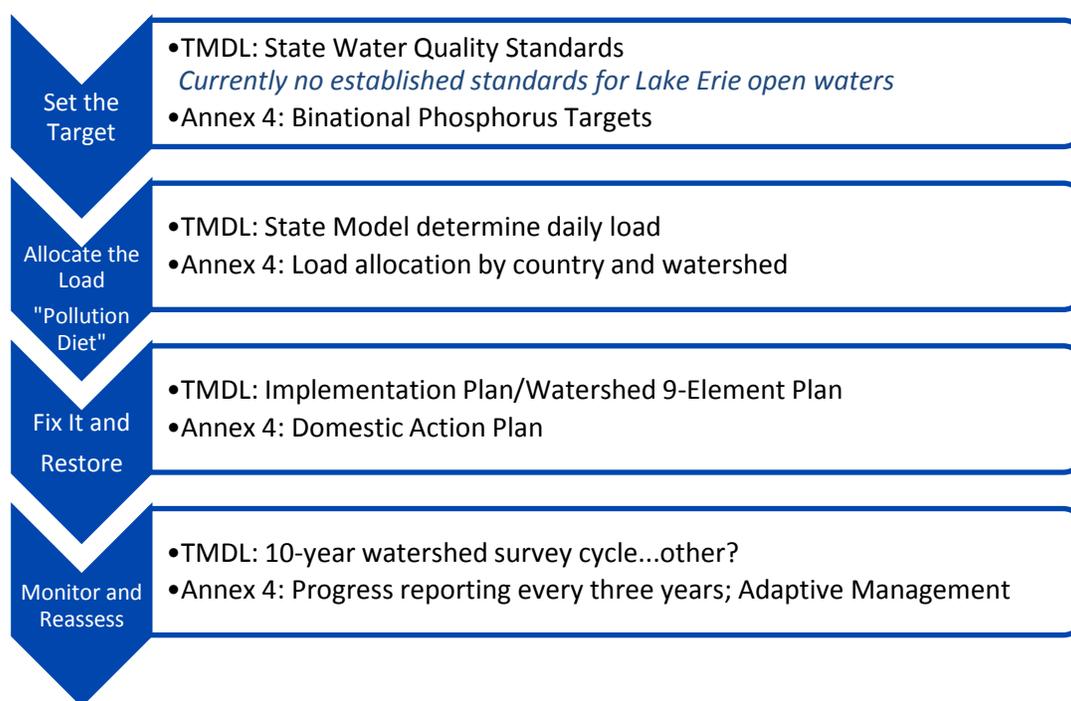


Figure J- 6. Key steps in the state TMDL and binational Annex 4 processes.

Ohio-based Efforts

Ohio EPA’s NPS Management Plan (“Plan”) is the Agency’s guiding document that outlines recommended strategies, goals and objectives for controlling nonpoint sources of water quality impairment. The Plan was most recently updated in 2014 and identifies specific management activities to be implemented by Ohio EPA’s NPS management program. The recent algal blooms on Lake Erie, the Ohio River and across the inland waters of Ohio are caused by excessive nutrients and exacerbated by changing weather patterns such as warmer temperatures and more intense storm events. The long-term solution is to reduce sources of nutrients while holistically restoring stream health and improving the waterway’s ability to assimilate and utilize nutrients. This is also known as the stream’s “assimilative capacity.” Restoring stream health will not only reduce the amounts of nutrients that reach the receiving water body, but restoration of in-stream and riparian habitat supports a healthy

ecosystem, builds resilience to climate change impacts and improves recreational opportunities. The most current version of Ohio's NPS Management Plan is available at:

http://www.epa.ohio.gov/Portals/35/nps/NPS_Mgmt_Plan.pdf.

Recognizing that Ohio's watersheds provide a significant amount of nutrients to Lake Erie and that its communities are bearing the brunt of algal bloom impacts, Ohio launched a series of initiatives at the state-level back in 2010 and has expanded the scope and scale of implementation; developed a statewide strategy; targeted funding; and undertook legislative action to address the problem. Since 2011, the Ohio has invested more than \$1 billion in the Lake Erie watershed to improve drinking water and wastewater facilities; monitor water quality; plant cover crops; recycle dredge material; install controlled drainage systems on fields; and fix failing septic systems. In addition, Ohio has received more than \$11 million from the Great Lakes Restoration Fund for water quality improvement efforts in the Lake Erie watershed.

The following is a list of several state-led and statewide water quality improvement activities.

1. **Statewide Nutrient Reduction Strategy:** Ohio's environmental, agricultural and natural resource agencies worked together to create a statewide strategy to reduce nutrient loading to streams and lakes, including Lake Erie. The strategy was submitted to U.S. EPA-Region 5 in 2013. Ohio EPA is currently updating the strategy to address gaps identified through U.S. EPA's review. The strategy and more information about the effort are available at <http://www.epa.ohio.gov/dsw/wqs/NutrientReduction.aspx>.
2. **GLRI Demonstration and Nutrient Reduction Projects:** Nine grants totaling over \$12 million were awarded to Ohio. Highlights include: first saturated buffer installed in Ohio; 53 controlled drainage structures installed; 52 whole farm conservation plans developed; 7,500 acres of cover crops planted; and 29 storm water, wetland and stream restoration projects in Cuyahoga County.
3. **Ohio Senate Bill 1:** This bill, effective July 3, 2015, requires major public-owned treatment works (POTWs) to conduct technical and financial capability studies to achieve 1.0 mg/L total phosphorus; establishes regulations for fertilizer or manure application for persons in the western basin⁹; designates the director of Ohio EPA as coordinator of harmful algae management and response and requires the director to implement actions that protect against cyanobacteria in the western basin and public water supplies; prohibits the director of Ohio EPA from issuing permits for sludge management that allow placement of sewage sludge on frozen ground; and prohibits the deposit of dredged material in Lake Erie on or after July 1, 2020, with some exceptions.

⁹ "Western basin" is defined in this Senate Bill as consisting of the following 11 watersheds: Ottawa watershed, HUC 04100001; River Raisin watershed, HUC 04100002; St. Joseph watershed, HUC 04100003; St. Mary's watershed, HUC 04100004; Upper Maumee watershed, HUC 04100005; Tiffin watershed, HUC 04100006; Auglaize watershed, HUC 04100007; Blanchard watershed, HUC 04100008; Lower Maumee watershed, HUC 04100009; Cedar-Portage watershed, HUC 04100010; and Sandusky watershed, HUC 04100011.

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4. **Ohio Senate Bill 150:** This bill, effective August 21, 2014, requires, among other things, that beginning September 31, 2017, fertilizer applicators must be certified and educated on the handling and application of fertilizer; and authorizes a person who owns or operates agricultural land to develop a voluntary nutrient management plan or request that one be developed for him or her.
 5. **Ohio HB 64:** This bill, effective June 30, 2015, requires the development of a biennial report by spring 2016 on mass loading of nutrients delivered to Lake Erie and the Ohio River from Ohio's point and nonpoint sources. A summary of the bill is available at <https://www.legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-64>.
 6. **Ohio Clean Lakes Initiative:** The Ohio General Assembly provided more than \$3.5 million for projects to reduce nutrient runoff in the Western Lake Erie Basin.
 7. **Healthy Lake Erie Initiative:** The Ohio General Assembly provided \$10 million to the Healthy Lake Erie Initiative to reduce the open lake placement of dredge material into Lake Erie. These sediments often contain high levels of nutrients or other contaminants so finding alternative use or disposal options is a priority.
 8. **Targeted Funding to Ohio Drinking Water and WWTPs:** More than \$150 million was made available starting in 2014 to help public water systems keep drinking water safe and to help wastewater treatment plants reduce the amount of phosphorus they discharge into the Lake Erie watershed. As of June 2016, over \$61 million had been awarded for this work and most of the remainder has been allocated for specific projects.
 9. **Directors' Agricultural Nutrients and Water Quality Working Group:** This is a collaborative working group that consists of participants from Ohio EPA, ODA and ODNR. The group's report contains a number of recommendations to be implemented during the next several years. For example, the report recommends ways for farmers to better manage fertilizers and animal manure and also provides the state with the means to assist farmers in the development of nutrient management plans and to exert more regulatory authority over the farmers who are not following the rules. The report is available at http://www.agri.ohio.gov/topnews/waterquality/docs/FINAL_REPORT_03-09-12.pdf.
 10. **Ohio Lake Erie Phosphorus Task Force Phase 2:** The Task Force, which includes participants from Ohio EPA, ODA and ODNR, originally met back in 2009 and was brought back together in 2012 to build on its previous work and make recommendations for improving water quality in the Lake Erie watershed. The taskforce finalized the latest report in 2014 and it is available at http://lakeerie.ohio.gov/Portals/0/Reports/Task_Force_Report_October_2013.pdf.
 11. **Ohio Point Source and Urban Runoff Workgroup:** Businesses, municipalities and Ohio EPA came together to initiate the "Point Source and Urban Runoff Workgroup" in 2012 in order to identify actions that can be taken immediately to reduce phosphorus loadings from WWTPs, industrial discharges and urban storm water. The group's full report is available at http://epa.ohio.gov/portals/35/documents/point_source_workgroup_report.pdf.

J4. Summary of Results

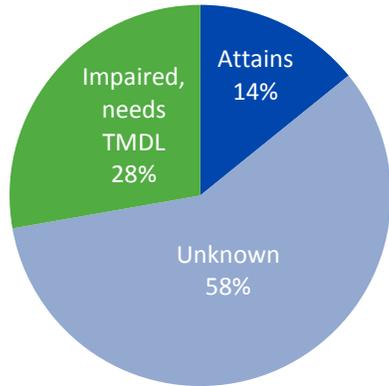
The consolidated results of the 2016 analysis are shown in Table J-4 and Figures J-7 through J-9. Compared with past reports, the number of TMDLs continues to rise and the number of units with an “unknown” condition continues to decrease.

Table J-4. Summary of results for each beneficial use¹⁰

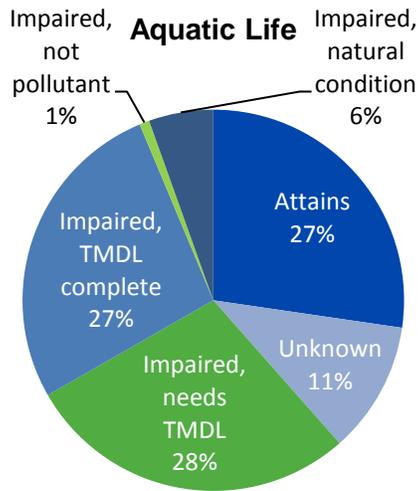
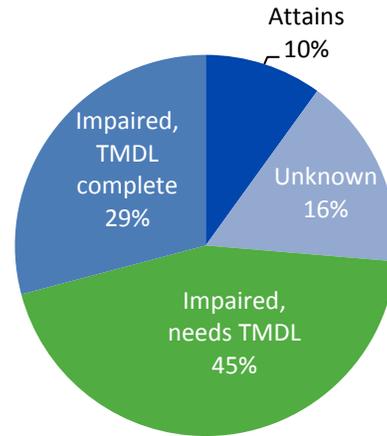
	Human Health (Fish Contaminants)	Recreation	Aquatic Life	Public Drinking Water Supply
Watershed assessment units				
Not being used for public water supply	0	0	0	1427
Attains	218	153	420	39
Unknown	893	252	172	51
Impaired, needs TMDL	427	685	434	20
Impaired, TMDL complete	0	448	415	1
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	13	0
Impaired, natural condition	0	0	84	0
Total watershed units evaluated	1538	1538	1538	1538
Large river assessment units				
Not being used for public water supply	0	0	0	29
Attains	1	4	18	1
Unknown	2	6	0	4
Impaired, needs TMDL	35	23	12	4
Impaired, TMDL complete	0	5	5	0
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	3	0
Total large river units evaluated	38	38	38	38
Lake Erie assessment units				
Attains	0	1	0	0
Unknown	0	0	0	0
Impaired, needs TMDL	3	2	3	3
Total Lake Erie units evaluated	3	3	3	3

¹⁰ Reported using federally-defined categories (see Table J-1), except for two defined by Ohio [category 0 (not being used for public water supply) and subcategory 4n (impaired due to natural condition)]. Other Ohio-defined subcategories are included in federal categories

Human Health (fish contaminants)



Recreation



Public Drinking Water Supply

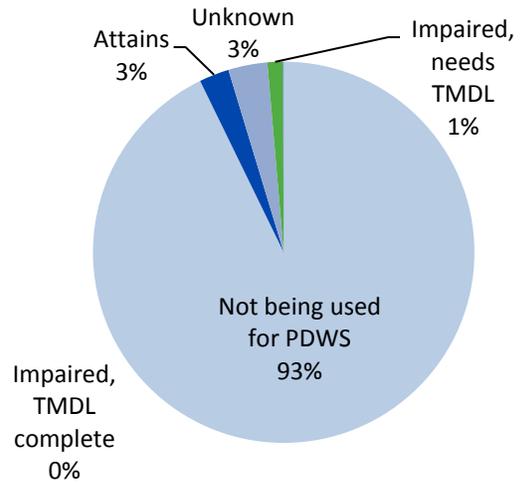


Figure J-7. Summary of 2016 IR results for watershed AUs by beneficial use.

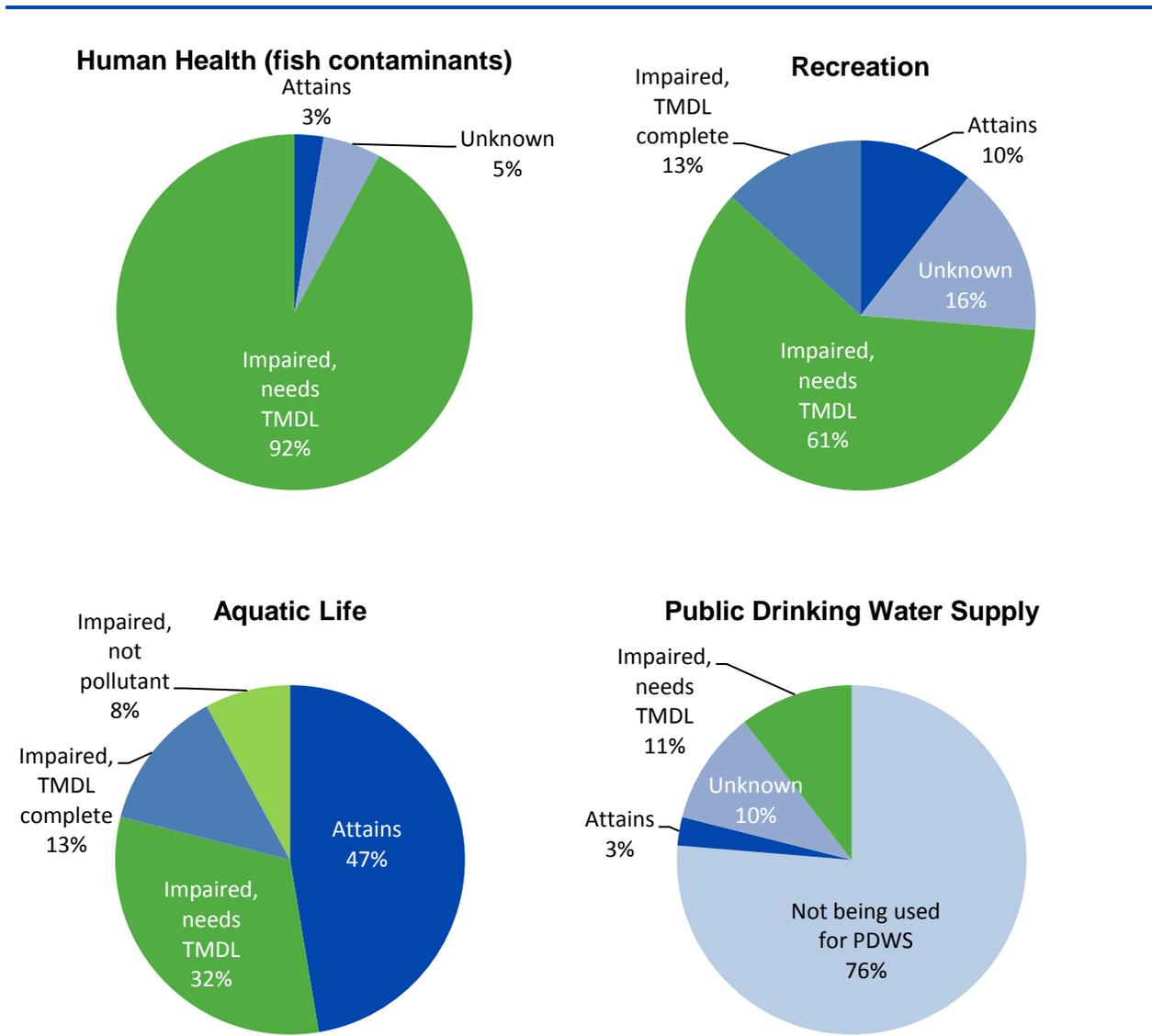


Figure J-8. Summary of 2016 IR results for large river AUs by beneficial use.

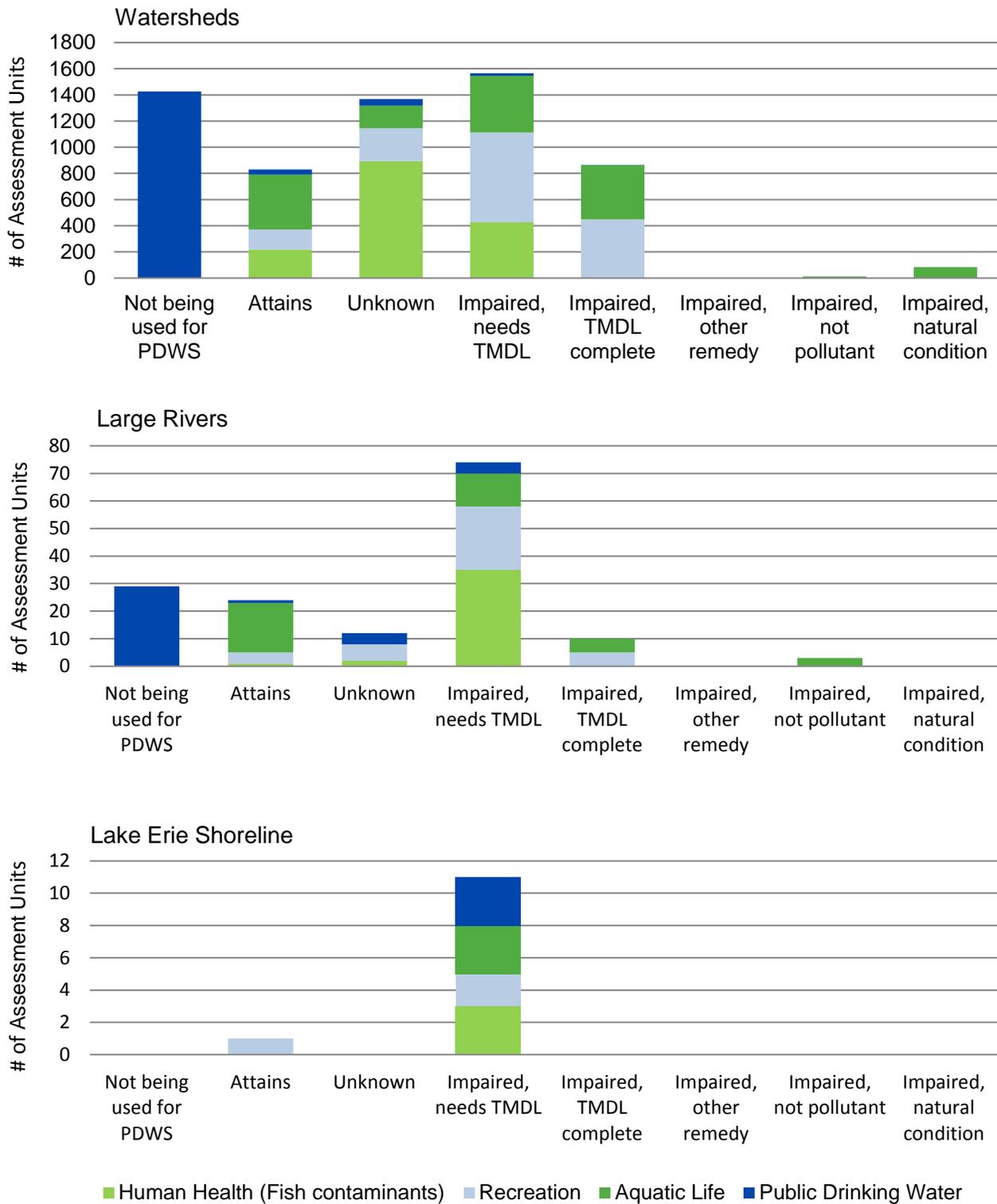


Figure J-9. Summary of 2016 results by AU type.

J5. Changes to the 2014 303(d) List

Federal regulations require a demonstration of good cause for not including water bodies on the Section 303(d) list that were included on previous 303(d) lists (40 CFR 130.7(b)(6)(iv)). Over time, U.S. EPA has modified the wording of reasons for delisting in guidance (U.S. EPA 2005, 2006, 2009, 2011, 2013) to be used in preparing this report. Ohio is removing 132 AUs and adding 329 AUs based on one of these three reasons:

- Flaw in original listing: reason noted for each change. Most of the changes are for the aquatic life use and are due to a reevaluation of the AU and lack of data (sampling and historical) in order to make an assessment. In one instance, an AU (Chapman Creek – 05080001 16 06) was assigned a Category 5 ranking under “flaw in original listing” because the impairment was documented due to an unknown cause and source even though a TMDL had been completed and approved by U.S. EPA
- New data: the assessment and interpretation of more recent data
- TMDL approved¹¹: approval by U.S. EPA of a TMDL.

Table J-5 summarizes the number of watershed, large river and Lake Erie shoreline AUs being removed from the 2014 303(d) list. Table J-6 and Figure J-6 summarize the number of AUs being changed for each of the three reasons. Each AU removed or added for each reason is presented in Tables J-7 through J-12.

Table J-5. Number of AUs removed from or added to the 303(d) list.

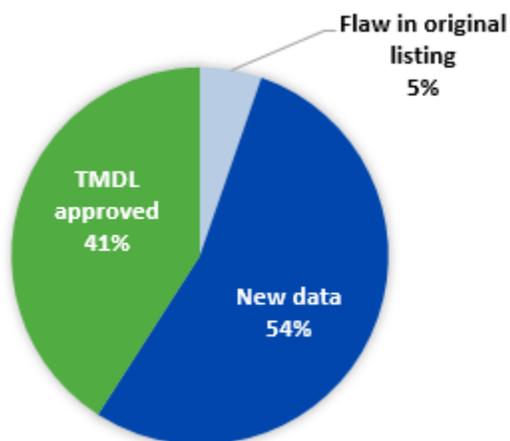
	Number of AUs			
	Watershed	Large River	Lake Erie	Total
Delistings [Remove from 303(d) list]				
Human Health (fish tissue)	15	0	0	15
Recreation	37	1	0	38
Aquatic Life	76	2	0	78
Public Drinking Water Supply	1	0	0	1
Total	130	3	0	132
New Listings [Add to 303(d) list]				
Human Health (fish tissue)	21	0	0	21
Recreation	261	3	0	264
Aquatic Life	31	0	0	31
Public Drinking Water Supply	11	0	2	13
Total	326	3	2	329

¹¹ While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that “A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act.” See Section C (page C-17) for more details.

Table J-6. Summary of reasons for changes to the 2014 303(d) list.

Reason for Change	Number of AUs	
	Removals	Additions
Flaw in original listing	7	1
New data	72	328
TMDL approved	53	--
Total	132	329

REASONS FOR REMOVAL



REASONS FOR ADDITION

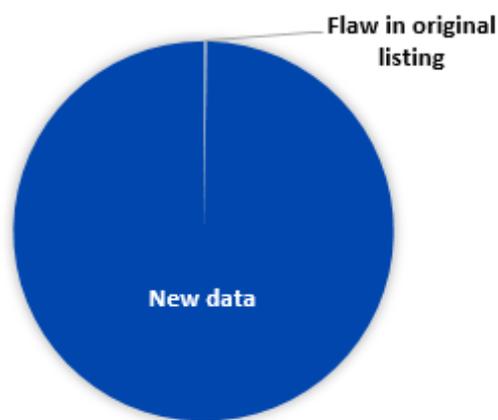


Figure J-10. Summary of reasons for changes to the 2014 303(d) list.

Table J-7. Removals from 303(d) list because of flaw in original listing.

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100003 05 06	Sol Shank Ditch-St Joseph River	5hx	3
ALU	04100006 02 01	Silver Creek-Bean Creek	5hx	3
ALU	04100007 12 04	Brown Ditch-Flatrock Creek	5hx	3
ALU	05030103 08 08	Hickory Run	5hx	3
ALU	05090203 02 01	Town of Newport-Ohio River	5hx	3
ALU	05090203 02 04	Garrison Creek-Ohio River	5hx	3
PDWS	04100007 03 06	Lima Reservoir-Ottawa River	5	3

Table J-8. Removals from the 303(d) list because of new data.

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100003 03 02	Cogswell Cemetery-St Joseph River	5hx	1
ALU	04100003 03 04	Village of Montpelier-St Joseph River	5hx	1
ALU	04100003 03 05	Bear Creek	5hx	1
ALU	04100003 03 06	West Buffalo Cemetery-St Joseph River	5hx	1
ALU	04100003 04 02	Headwaters Fish Creek	5h	1
ALU	04100003 04 06	Cornell Ditch-Fish Creek	5	1
ALU	04100003 05 01	Bluff Run-St Joseph River	5hx	1
ALU	04100003 05 02	Big Run	5hx	1

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100003 05 03	Russell Run-St Joseph River	5hx	1
ALU	04100003 05 05	Willow Run-St Joseph River	5hx	1
ALU	04100006 02 03	Old Bean Creek	5hx	1
ALU	04100006 02 05	Stag Run-Bean Creek	5hx	1
ALU	04100006 04 04	Lower Lick Creek	5hx	1
ALU	04100006 05 03	Village of Stryker-Tiffin River	5hx	1
ALU	04100006 05 04	Coon Creek-Tiffin River	5hx	4n
ALU	04100006 06 03	Webb Run	5hx	4n
ALU	04100006 06 04	Buckskin Creek-Tiffin River	5hx	4n
ALU	04100007 12 01	Headwaters Flatrock Creek	5hx	1
ALU	04100007 12 08	Sixmile Creek	5hx	1
ALU	04110001 01 04	Mallet Creek	5hx	1
ALU	04110001 01 05	City of Medina-West Branch Rocky River	5hx	1
ALU	04110001 01 06	Cossett Creek-West Branch Rocky River	5hx	4n
ALU	04110001 02 01	Headwaters East Branch Rocky River	5hx	1
ALU	05030103 05 01	Upper Mosquito Creek	5hx	4n
ALU	05030103 05 02	Middle Mosquito Creek	5hx	1
ALU	05030103 07 01	Upper Meander Creek	5	4n
ALU	05030103 07 02	Middle Meander Creek	5	4n
ALU	05030103 07 05	Little Squaw Creek-Mahoning River	5hx	4C
ALU	05030103 08 04	Crab Creek	5	1
ALU	05030103 08 07	Dry Run-Mahoning River	5hx	4n
ALU	05040004 07 01	Mans Fork	5hx	1
ALU	05040004 07 02	Headwaters Meigs Creek	5hx	1
ALU	05040004 07 03	Dyes Fork	5hx	1
ALU	05040004 07 04	Fourmile Run-Meigs Creek	5hx	1
ALU	05040004 09 01	South West Branch Wolf Creek	5x	1
ALU	05040004 10 01	Headwaters West Branch Wolf Creek	5x	4n
ALU	05040004 10 02	Aldridge Run-West Branch Wolf Creek	5x	1
ALU	05040004 10 03	Coal Run	5x	1
ALU	05040005 02 01	Yoker Creek	5hx	1
ALU	05040005 04 01	Brushy Fork	5hx	1
ALU	05040005 04 03	Clear Fork	5hx	1
ALU	05040005 04 04	Rocky Fork	5hx	1
ALU	05040005 04 05	Salt Fork Lake-Sugartree Fork	5hx	1
ALU	05090201 02 01	Headwaters Turkey Creek	5hx	4n
ALU	05090201 02 02	Odell Creek-Turkey Creek	5hx	1
ALU	05090201 12 01	Headwaters Big Indian Creek	5hx	4n
ALU	05090201 12 02	North Fork Indian Creek-Big Indian Creek	5hx	1
ALU	05090201 12 03	Boat Run-Ohio River	5hx	1
ALU	05090201 12 04	Ferguson Run-Twelve-mile Creek	5hx	4n
ALU	05090201 12 06	Tenmile Creek	5hx	1
HH	04100001 03 04	Headwaters Tenmile Creek	5h	1
HH	04100004 03 03	Yankee Run-St Marys River	5h	1
HH	04100006 03 01	Bates Creek-Tiffin River	5h	1
HH	04100010 02 02	East Branch Portage River	5h	1

Use	AU Number	AU Name	2014 Category	2016 Category
HH	04110001 01 05	City of Medina-West Branch Rocky River	5h	1
HH	04110001 02 01	Headwaters East Branch Rocky River	5h	1
HH	04110001 02 02	Baldwin Creek-East Branch Rocky River	5h	1
HH	04110001 04 01	Town of Litchfield-East Branch Black River	5h	1
HH	04110001 04 02	Salt Creek-East Branch Black River	5h	1
HH	05030101 08 01	Town Fork	5h	1
HH	05030101 10 04	McIntyre Creek	5h	1
HH	05030103 03 05	Town of Newton Falls-West Branch Mahoning River	5h	1
HH	05030103 04 05	Mouth Eagle Creek	5h	1
HH	05060001 19 02	Spain Creek-Big Darby Creek	5h	1
HH	05060001 19 05	Robinson Run-Big Darby Creek	5h	1
RU	04100011 90 02	Sandusky River Mainstem (Wolf Creek to Sandusky Bay)	5	1d
RU	05030106 03 02	Headwaters Wheeling Creek	5	1
RU	05040001 06 07	Beal Run-Sandy Creek	5	1
RU	05040001 15 03	Upper Little Stillwater Creek	5	1
RU	05040002 02 01	Village of Pavonia-Black Fork Mohican River	5	1
RU	05040003 05 02	Little Killbuck Creek-Killbuck Creek	5	1
RU	05090103 02 05	Lick Run-Pine Creek	5	1

Table J-9. Removals from the 303(d) list because of TMDL approved¹².

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100007 03 03	Little Hog Creek	5	4A
ALU	04100007 03 04	Lower Hog Creek	5	4A
ALU	04100007 03 05	Lost Creek	5	4A
ALU	04100007 04 01	Little Ottawa River	5	4A
ALU	04100007 04 03	Honey Run	5	4A
ALU	04100011 01 02	Pipe Creek-Frontal Sandusky Bay	5	4A
ALU	04100011 01 03	Mills Creek	5	4A
ALU	04100011 02 01	Frontal South Side of Sandusky Bay	5	4A
ALU	04100011 02 03	Pickrel Creek	5	4A
ALU	04100011 02 05	South Creek	5	4A
ALU	04100011 10 01	East Branch East Branch Wolf Creek	5	4A
ALU	04100011 10 02	Town of New Riegel-East Branch Wolf Creek	5	4A
ALU	04100011 10 04	Wolf Creek	5	4A
ALU	04100011 11 05	Spicer Creek-Sandusky River	5	4A
ALU	04100011 12 02	Beaver Creek	5	4A
ALU	04100011 12 03	Green Creek	5	4A
ALU	04100011 13 01	Muskellunge Creek	5	4A
ALU	04100011 13 03	Mouth Sandusky River	5	4A
ALU	04100011 14 03	Little Muddy Creek	5	4A

¹² While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that “A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act.” See Section C (page C-17) for more details.

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100011 14 04	Town of Lindsey-Muddy Creek	5	4A
ALU	04100011 90 01	Sandusky River Mainstem (Tymochtee Creek to Wolf Creek)	5	4A
ALU	04100011 90 02	Sandusky River Mainstem (Wolf Creek to Sandusky Bay)	5	4A
RU	04100007 03 02	Middle Hog Creek	5	4A
RU	04100007 03 03	Little Hog Creek	5	4A
RU	04100007 03 04	Lower Hog Creek	5	4A
RU	04100007 03 05	Lost Creek	5	1d
RU	04100007 03 06	Lima Reservoir-Ottawa River	5	4A
RU	04100007 04 01	Little Ottawa River	5	4A
RU	04100007 04 02	Dug Run-Ottawa River	5	4A
RU	04100007 04 03	Honey Run	5	4A
RU	04100007 04 04	Pike Run	5	4A
RU	04100007 04 05	Leatherwood Ditch	5	4A
RU	04100007 04 06	Beaver Run-Ottawa River	5	4A
RU	04100007 05 01	Sugar Creek	5	4A
RU	04100007 05 02	Plum Creek	5	4A
RU	04100007 05 03	Village of Kalida-Ottawa River	5	4A
RU	04100011 01 01	Sawmill Creek	5	4A
RU	04100011 01 02	Pipe Creek-Frontal Sandusky Bay	5	4A
RU	04100011 02 01	Frontal South Side of Sandusky Bay	5	4A
RU	04100011 02 02	Strong Creek	5	4A
RU	04100011 02 03	Pickereel Creek	5	4A
RU	04100011 02 04	Raccoon Creek	5	4A
RU	04100011 02 05	South Creek	5	4A
RU	04100011 10 01	East Branch East Branch Wolf Creek	5	4Ah
RU	04100011 10 02	Town of New Riegel-East Branch Wolf Creek	5	4Ah
RU	04100011 10 03	Snuff Creek-East Branch Wolf Creek	5	4Ah
RU	04100011 10 04	Wolf Creek	5	4A
RU	04100011 12 01	Westerhouse Ditch	5	4Ah
RU	04100011 12 02	Beaver Creek	5	4Ah
RU	04100011 13 01	Muskellunge Creek	5	4Ah
RU	04100011 13 02	Indian Creek-Sandusky River	5	4Ah
RU	04100011 14 02	Town of Helena-Muddy Creek	5	4Ah
RU	04100011 14 04	Town of Lindsey-Muddy Creek	5	4Ah

Table J-10. Addition to the 303(d) list because of flaw in original listing

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	05080001 16 06	Chapman Creek	4A	5

Table J-12. Additions to the 303(d) list because of new data.

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100003 02 04	West Branch St Joseph River	3x	5
ALU	04100007 08 02	Upper Town Creek	3x	5

Use	AU Number	AU Name	2014 Category	2016 Category
ALU	04100007 10 01	Upper Prairie Creek	3x	5
ALU	04100007 10 04	Lower Blue Creek	3x	5
ALU	04100007 10 05	Town of Charloe-Auglaize River	3x	5
ALU	04110002 03 03	Wingfoot Lake outlet-Little Cuyahoga River	4Ah	5
ALU	04110003 04 02	Griswold Creek-Chagrin River	4A	5
ALU	05030103 06 01	Duck Creek	3x	5
ALU	05030103 06 02	Mud Creek	3x	5
ALU	05030103 06 03	City of Warren-Mahoning River	3x	5
ALU	05030204 04 02	Baldwin Run	1t	5
ALU	05040004 08 06	Oil Spring Run-Muskingum River	3x	5
ALU	05040004 09 03	Plumb Run-South Branch Wolf Creek	4n	5
ALU	05040004 11 04	Reasoners Run-Olive Green Creek	3x	5
ALU	05040004 11 05	Congress Run-Muskingum River	3x	5
ALU	05040005 01 02	Beaver Creek	3x	5
ALU	05040005 01 03	Glady Run-Seneca Fork	3x	5
ALU	05040005 01 05	Opossum Run-Seneca Fork	3x	5
ALU	05040005 03 01	Headwaters Leatherwood Creek	3x	5
ALU	05040005 05 02	Headwaters Crooked Creek	3x	5
ALU	05040005 05 03	Peters Creek-Crooked Creek	3x	5
ALU	05040005 05 07	Johnson Fork-Birds Run	3x	5
ALU	05040005 05 08	Wolf Run-Wills Creek	3x	5
ALU	05040005 06 01	Bacon Run	3x	5
ALU	05040005 06 02	Twomile Run-Wills Creek	3x	5
ALU	05060001 07 04	Moors Run-Scioto River	3t	5
ALU	05060001 15 01	Rocky Fork Creek	4Ah	5
ALU	05060001 15 04	Town of Brice-Blacklick Creek	4A	5d
ALU	05080001 11 01	Mud Creek	4Ah	5d
ALU	05090201 11 04	Bullskin Creek	3x	5
HH	04100003 02 04	West Branch St Joseph River	1h	5
HH	04100006 05 03	Village of Stryker-Tiffin River	3	5
HH	04100007 02 04	Sixmile Creek-Auglaize River	1h	5
HH	04100007 08 01	Dog Creek	3	5
HH	04100007 08 04	Lower Town Creek	1	5
HH	04100007 12 06	Big Run-Flatrock Creek	3i	5
HH	04100012 06 06	Huron River-Frontal Lake Erie	3	5
HH	04110001 01 08	Baker Creek-West Branch Rocky River	1	5
HH	04110002 01 04	Ladue Reservoir-Bridge Creek	1	5
HH	04110002 04 05	Boston Run-Cuyahoga River	3	5
HH	05030103 03 04	Kirwin Reservoir-West Branch Mahoning River	1h	5
HH	05030103 05 03	Lower Mosquito Creek	3	5
HH	05030103 07 03	Lower Meander Creek	1h	5
HH	05040006 06 03	Dillon Lake-Licking River	1h	5
HH	05060001 02 03	Dudley Run-Rush Creek	3i	5
HH	05060001 22 03	Greenbrier Creek-Big Darby Creek	1h	5
HH	05060002 02 05	Deer Creek Lake-Deer Creek	1	5
HH	05060002 16 02	Big Run-Scioto River	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
HH	05080001 11 03	Dividing Branch-Greenville Creek	3	5
HH	05090103 01 04	Storms Creek	1	5
HH	05090103 06 05	Wards Run-Little Scioto River	3	5
PDWS	04100007 04 03	Honey Run	3i	5
PDWS	04100009 03 02	Lower Bad Creek	3	5
PDWS	04100009 06 03	Haskins Road Ditch-Maumee River	3i	5
PDWS	04100011 02 04	Raccoon Creek	1	5
PDWS	04100011 12 02	Beaver Creek	1	5
PDWS	04100011 12 03	Green Creek	3i	5
PDWS	04100012 06 03	Norwalk Creek	3i	5
PDWS	05030201 01 01	Upper Sunfish Creek	3	5
PDWS	05040001 01 04	Wolf Creek	3	5
PDWS	05040001 15 03	Upper Little Stillwater Creek	1	5
PDWS	05090201 08 02	Headwaters Straight Creek	3i	5
PDWS	24001 002	Lake Erie Central Basin Shoreline	1	5
PDWS	24001 003	Lake Erie Islands Shoreline	1	5
RU	04100003 01 06	Clear Fork-East Branch St Joseph River	3	5
RU	04100003 02 04	West Branch St Joseph River	3	5
RU	04100003 03 01	Nettle Creek	3	5
RU	04100003 03 02	Cogswell Cemetery-St Joseph River	3	5
RU	04100003 03 03	Eagle Creek	3	5
RU	04100003 03 04	Village of Montpelier-St Joseph River	1	5
RU	04100003 03 06	West Buffalo Cemetery-St Joseph River	3	5
RU	04100003 04 02	Headwaters Fish Creek	3	5
RU	04100003 04 06	Cornell Ditch-Fish Creek	3	5
RU	04100003 05 01	Bluff Run-St Joseph River	3	5
RU	04100003 05 02	Big Run	3	5
RU	04100003 05 03	Russell Run-St Joseph River	3	5
RU	04100004 01 01	Muddy Creek	3	5
RU	04100004 01 02	Center Branch St Marys River	3	5
RU	04100004 01 03	East Branch St Marys River	3	5
RU	04100004 01 04	Kopp Creek	1	5
RU	04100004 01 05	Sixmile Creek	3	5
RU	04100004 02 01	Hussey Creek	3	5
RU	04100004 02 03	Blierdofer Ditch	3	5
RU	04100004 02 04	Twelvemile Creek	3i	5
RU	04100004 02 05	Prairie Creek-St Marys River	3i	5
RU	04100004 03 01	Little Black Creek	3	5
RU	04100004 03 02	Black Creek	3	5
RU	04100004 03 03	Yankee Run-St Marys River	3i	5
RU	04100004 03 04	Duck Creek	3	5
RU	04100004 03 05	Town of Willshire-St Marys River	3	5
RU	04100004 04 01	Twentyseven Mile Creek	3	5
RU	04100005 02 01	Zuber Cutoff	3	5
RU	04100005 02 03	Marie DeLarme Creek	3	5
RU	04100005 02 04	Gordon Creek	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	04100005 02 06	Platter Creek	3	5
RU	04100005 02 07	Sulphur Creek-Maumee River	3	5
RU	04100005 02 08	Snooks Run-Maumee River	3	5
RU	04100006 02 04	Mill Creek	3	5
RU	04100006 02 05	Stag Run-Bean Creek	3	5
RU	04100006 03 01	Bates Creek-Tiffin River	3	5
RU	04100006 04 01	Upper Lick Creek	3	5
RU	04100006 04 02	Middle Lick Creek	3	5
RU	04100006 04 03	Prairie Creek	3	5
RU	04100006 04 04	Lower Lick Creek	3	5
RU	04100006 05 01	Beaver Creek	3	5
RU	04100006 05 04	Coon Creek-Tiffin River	3	5
RU	04100006 06 01	Lost Creek	3	5
RU	04100006 06 02	Mud Creek	3	5
RU	04100006 06 03	Webb Run	3	5
RU	04100007 02 04	Sixmile Creek-Auglaize River	1t	5
RU	04100007 06 01	Kyle Prairie Creek	3	5
RU	04100007 06 02	Long Prairie Creek-Little Auglaize River	1	5
RU	04100007 06 03	Wolf Ditch-Little Auglaize River	3	5
RU	04100007 07 01	Hagarman Creek	3	5
RU	04100007 07 02	West Branch Prairie Creek	3	5
RU	04100007 08 01	Dog Creek	3	5
RU	04100007 08 02	Upper Town Creek	3	5
RU	04100007 08 03	Maddox Creek	3	5
RU	04100007 08 04	Lower Town Creek	3	5
RU	04100007 10 01	Upper Prairie Creek	3	5
RU	04100007 10 02	Upper Blue Creek	3	5
RU	04100007 10 03	Middle Blue Creek	3	5
RU	04100007 10 04	Lower Blue Creek	3	5
RU	04100007 10 05	Town of Charloe-Auglaize River	3	5
RU	04100007 12 01	Headwaters Flatrock Creek	3	5
RU	04100007 12 05	Wildcat Creek-Flatrock Creek	3	5
RU	04100007 12 06	Big Run-Flatrock Creek	1	5
RU	04100007 12 07	Little Flatrock Creek	3	5
RU	04100007 12 08	Sixmile Creek	3	5
RU	04100007 12 09	Eagle Creek-Auglaize River	1	5
RU	04100009 01 01	West Creek	3	5
RU	04100009 01 02	Upper South Turkeyfoot Creek	3i	5
RU	04100009 01 03	School Creek	3	5
RU	04100009 01 04	Middle South Turkeyfoot Creek	3	5
RU	04100009 01 05	Little Turkeyfoot Creek	3	5
RU	04100009 01 06	Lower South Turkeyfoot Creek	3	5
RU	04100009 02 02	Benien Creek	3	5
RU	04100009 02 03	Wade Creek-Maumee River	3	5
RU	04100009 02 04	Garret Creek	3	5
RU	04100009 02 05	Oberhaus Creek	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	04100009 02 06	Village of Napoleon-Maumee River	3	5
RU	04100009 02 07	Creager Cemetery-Maumee River	3	5
RU	04100009 03 02	Lower Bad Creek	3i	5
RU	04100009 04 03	Dry Creek-Maumee River	3i	5
RU	04100009 05 01	Big Creek	3	5
RU	04100009 05 02	Hammer Creek	3	5
RU	04100009 05 03	Upper Beaver Creek	3	5
RU	04100009 05 05	Brush Creek	3i	5
RU	04100009 05 07	Cutoff Ditch	3	5
RU	04100009 05 08	Middle Beaver Creek	3	5
RU	04100009 06 01	Tontogany Creek	3	5
RU	04100009 06 02	Sugar Creek-Maumee River	3	5
RU	04100011 06 04	Spring Run	3	5
RU	04100011 08 05	Middle Honey Creek	3	5
RU	04100011 09 03	Greasy Run-Sycamore Creek	3i	5
RU	04100012 01 03	Southwest Branch Vermilion River	3	5
RU	04110001 01 01	Plum Creek	3	5
RU	04110001 01 02	North Branch West Branch Rocky River	3	5
RU	04110001 01 03	Headwaters West Branch Rocky River	3	5
RU	04110001 01 05	City of Medina-West Branch Rocky River	3	5
RU	04110001 01 07	Plum Creek	3	5
RU	04110001 01 08	Baker Creek-West Branch Rocky River	3	5
RU	04110001 02 01	Headwaters East Branch Rocky River	3	5
RU	04110001 02 02	Baldwin Creek-East Branch Rocky River	1	5
RU	04110001 02 04	Cahoon Creek-Frontal Lake Erie	3	5
RU	04110001 07 01	Headwaters Beaver Creek	3	5
RU	04110001 07 03	Quarry Creek-Frontal Lake Erie	3	5
RU	04110002 01 02	West Branch Cuyahoga River	3	5
RU	04110002 02 01	Potter Creek-Breakneck Creek	3	5
RU	04110002 05 02	Headwaters Tinkers Creek	3	5
RU	04110003 02 01	Indian Creek-Frontal Lake Erie	3	5
RU	04110003 02 02	Wheeler Creek-Frontal Lake Erie	3	5
RU	04110003 02 03	Arcola Creek	3i	5
RU	04110003 02 04	McKinley Creek-Frontal Lake Erie	3	5
RU	04110003 05 01	Marsh Creek-Frontal Lake Erie	3	5
RU	04110003 05 03	Euclid Creek	3	5
RU	04110003 05 04	Doan Brook-Frontal Lake Erie	3	5
RU	04120101 06 05	Marsh Run-Conneaut Creek	1h	5
RU	04120101 06 06	Town of North Kingsville-Frontal Lake Erie	3	5
RU	05030101 05 02	Headwaters West Fork Little Beaver Creek	3	5
RU	05030101 05 04	Patterson Creek-West Fork Little Beaver Creek	3	5
RU	05030101 06 05	Headwaters Bull Creek	3	5
RU	05030101 08 02	Headwaters North Fork Yellow Creek	3	5
RU	05030103 05 01	Upper Mosquito Creek	3	5
RU	05030103 05 02	Middle Mosquito Creek	3	5
RU	05030103 06 01	Duck Creek	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	05030103 06 02	Mud Creek	3	5
RU	05030103 07 05	Little Squaw Creek-Mahoning River	1	5
RU	05030103 08 02	Indian Run	3	5
RU	05030103 08 03	Andersons Run-Mill Creek	3	5
RU	05030103 08 04	Crab Creek	3	5
RU	05030103 08 07	Dry Run-Mahoning River	3	5
RU	05030103 08 09	Coffee Run-Mahoning River	3	5
RU	05030106 09 01	North Fork Captina Creek	1	5
RU	05030106 09 02	South Fork Captina Creek	1	5
RU	05030106 09 03	Bend Fork	1	5
RU	05030106 09 04	Piney Creek-Captina Creek	1	5
RU	05030201 01 03	Middle Sunfish Creek	1	5
RU	05030201 06 01	Rich Fork	3	5
RU	05030201 06 02	Cranenest Fork	3	5
RU	05030201 06 03	Wolfpen Run-Little Muskingum River	3	5
RU	05030201 06 04	Witten Fork	3	5
RU	05030201 06 05	Straight Fork-Little Muskingum River	3	5
RU	05030201 07 02	Archers Fork	3	5
RU	05030201 07 03	Wingett Run-Little Muskingum River	3	5
RU	05030201 07 04	Fifteen Mile Creek	3	5
RU	05030201 07 05	Eightmile Creek-Little Muskingum River	3i	5
RU	05030201 09 01	Headwaters West Fork Duck Creek	3	5
RU	05030201 10 06	Mill Creek-Ohio River	1	5
RU	05030202 01 02	Mile Run-Ohio River	3	5
RU	05030202 01 03	Headwaters Little Hocking River	3	5
RU	05030202 01 04	West Branch Little Hocking River	3	5
RU	05030202 01 05	Little West Branch Little Hocking River-Little Hocking River	3	5
RU	05030202 01 06	Sandy Creek-Ohio River	3	5
RU	05030202 02 01	Headwaters West Branch Shade River	3	5
RU	05030202 02 02	Kingsbury Creek	3	5
RU	05030202 02 03	Headwaters Middle Branch Shade River	3	5
RU	05030202 02 04	Elk Run-Middle Branch Shade River	3	5
RU	05030202 02 05	Walker Run-West Branch Shade River	3	5
RU	05030202 03 01	Horse Cave Creek	3	5
RU	05030202 03 02	Headwaters East Branch Shade River	3	5
RU	05030202 03 03	Big Run-East Branch Shade River	3	5
RU	05030202 08 02	Groundhog Creek-Ohio River	3	5
RU	05030202 08 04	West Creek-Ohio River	3	5
RU	05030202 09 01	Kyger Creek	1	5
RU	05030202 09 02	Campaign Creek	3	5
RU	05030204 01 02	Headwaters Rush Creek	1t	5
RU	05030204 10 01	Willow Creek-Hocking River	3	5
RU	05040001 02 03	Little Chippewa Creek	1t	5
RU	05040001 07 04	Headwaters Middle Conotton Creek	3	5
RU	05040001 13 03	Boggs Fork	1	5
RU	05040002 02 04	Outlet Rocky Fork	1	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	05040002 04 01	Honey Creek-Clear Fork Mohican River	1	5
RU	05040004 07 04	Fourmile Run-Meigs Creek	3	5
RU	05040004 08 07	Bald Eagle Run	3	5
RU	05040004 08 08	Bell Creek-Muskingum River	3	5
RU	05040004 08 09	Olney Run-Muskingum River	3	5
RU	05040004 09 01	South West Branch Wolf Creek	3	5
RU	05040004 09 02	Headwaters South Branch Wolf Creek	3	5
RU	05040004 09 03	Plumb Run-South Branch Wolf Creek	1h	5
RU	05040004 10 01	Headwaters West Branch Wolf Creek	3	5
RU	05040004 10 02	Aldridge Run-West Branch Wolf Creek	3	5
RU	05040004 10 03	Coal Run	3	5
RU	05040004 10 04	Hayward Run-Wolf Creek	1h	5
RU	05040004 11 01	Headwaters Olive Green Creek	3	5
RU	05040004 11 02	Keith Fork	3	5
RU	05040004 11 03	Little Olive Green Creek	3	5
RU	05040004 11 04	Reasoners Run-Olive Green Creek	3	5
RU	05040005 01 01	Headwaters Seneca Fork	3	5
RU	05040005 01 02	Beaver Creek	3	5
RU	05040005 01 03	Glady Run-Seneca Fork	3	5
RU	05040005 01 05	Opossum Run-Seneca Fork	3	5
RU	05040005 02 01	Yoker Creek	3	5
RU	05040005 02 02	Headwaters Collins Fork	3	5
RU	05040005 02 03	South Fork Buffalo Creek-Buffalo Creek	3	5
RU	05040005 02 04	North Fork Buffalo Creek-Buffalo Creek	3	5
RU	05040005 02 05	Crane Run-Buffalo Fork	3	5
RU	05040005 02 06	Chapman Run	3	5
RU	05040005 02 07	Trail Run-Wills Creek	3	5
RU	05040005 03 01	Headwaters Leatherwood Creek	3	5
RU	05040005 03 02	Hawkins Run-Leatherwood Creek	3	5
RU	05040005 04 01	Brushy Fork	3	5
RU	05040005 04 02	Headwaters Salt Fork	3	5
RU	05040005 04 03	Clear Fork	3	5
RU	05040005 04 04	Rocky Fork	3	5
RU	05040005 04 05	Salt Fork Lake-Sugartree Fork	3	5
RU	05040005 05 01	North Crooked Creek	3	5
RU	05040005 05 02	Headwaters Crooked Creek	3	5
RU	05040005 05 03	Peters Creek-Crooked Creek	3	5
RU	05040005 05 05	Indian Camp Run	3	5
RU	05040005 05 06	Headwaters Birds Run	3	5
RU	05040005 05 07	Johnson Fork-Birds Run	3	5
RU	05040005 06 01	Bacon Run	3	5
RU	05040005 06 02	Twomile Run-Wills Creek	3	5
RU	05040005 06 03	White Eyes Creek	3	5
RU	05040006 02 03	Dog Hollow Run-North Fork Licking River	1	5
RU	05060001 07 01	Headwaters Bokes Creek	3	5
RU	05060001 07 04	Moors Run-Scioto River	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	05060001 21 01	Worthington Ditch-Big Darby Creek	3	5
RU	05060001 22 01	Hellbranch Run	3i	5
RU	05060001 22 02	Gay Run-Big Darby Creek	3	5
RU	05060001 22 03	Greenbrier Creek-Big Darby Creek	1	5
RU	05080001 04 06	Turkeyfoot Creek-Great Miami River	1	5
RU	05080001 09 01	South Fork Stillwater River	3	5
RU	05080001 09 03	North Fork Stillwater River	3	5
RU	05080001 09 04	Boyd Creek	3	5
RU	05080001 09 05	Woodington Run-Stillwater River	3	5
RU	05080001 09 06	Town of Beamsville-Stillwater River	3	5
RU	05080001 10 01	Dismal Creek	3i	5
RU	05080001 10 02	Kraut Creek	3	5
RU	05080001 10 03	West Branch Greenville Creek	3	5
RU	05080001 10 04	Headwaters Greenville Creek	3	5
RU	05080001 11 01	Mud Creek	3	5
RU	05080001 11 02	Bridge Creek-Greenville Creek	3	5
RU	05080001 11 03	Dividing Branch-Greenville Creek	3	5
RU	05080001 12 01	Indian Creek	3	5
RU	05080001 12 03	Trotters Creek	3	5
RU	05080001 12 04	Harris Creek	3	5
RU	05080001 12 05	Town of Covington-Stillwater River	3	5
RU	05080001 13 01	Little Painter Creek	3	5
RU	05080001 13 02	Painter Creek	3	5
RU	05080001 13 03	Canyon Run-Stillwater River	1	5
RU	05080001 14 01	Brush Creek	3	5
RU	05080001 14 02	Ludlow Creek	3	5
RU	05080001 14 03	Brush Creek	3	5
RU	05080001 14 04	Jones Run-Stillwater River	3	5
RU	05080001 14 05	Mill Creek-Stillwater River	3i	5
RU	05080001 15 04	Glady Creek-Mad River	1	5
RU	05080001 16 03	Nettle Creek	3	5
RU	05080001 18 05	Rock Run-Mad River	3	5
RU	05080002 05 03	Beasley Run-Sevenmile Creek	1	5
RU	05080002 06 05	Cotton Run-Four Mile Creek	1h	5
RU	05080003 07 02	Headwaters East Fork Whitewater River	3	5
RU	05080003 07 04	Rocky Fork-East Fork Whitewater River	3	5
RU	05080003 08 10	Jameson Creek-Whitewater River	3	5
RU	05090101 04 01	Headwaters Little Raccoon Creek	1h	5
RU	05090101 08 02	Black Fork	3	5
RU	05090201 11 04	Bullskin Creek	3	5
RU	05090201 12 04	Ferguson Run-Twelve-mile Creek	3	5
RU	05090201 12 06	Ten-mile Creek	3	5
RU	05090201 12 08	Nin-mile Creek-Ohio River	3	5
RU	05090202 14 02	Polk Run-Little Miami River	3	5
RU	05090203 01 03	Sharon Creek-Mill Creek	3	5
RU	05090203 02 02	Dry Creek-Ohio River	3	5

Use	AU Number	AU Name	2014 Category	2016 Category
RU	05090203 02 03	Muddy Creek	3	5
RU	05040005 90 01	Wills Creek Mainstem (Salt Fork to mouth); excluding Wills Creek Lake	3	5
RU	05080001 90 02	Stillwater River Mainstem (Greenville Creek to mouth)	3i	5
RU	05080001 90 03	Mad River Mainstem (Donnels Creek to mouth)	3i	5

J6. Schedule for TMDL Work

Once waters are assessed and the impaired waters are prioritized, the next step is to determine a schedule to address the monitoring needs of all waters and restoration needs (including TMDLs) of the impaired ones. Various factors must be considered, including Ohio’s ongoing TMDL work; the process identified to do TMDLs; the monitoring strategy; and the resources available for the work.

Over the past few years, TMDL projects transitioned from the old HUC 11-scale watersheds to the new, smaller HUC 12-scale watersheds. Through 2009, TMDLs were completed using the HUC 11-scale AUs. Projects submitted for approval after April 1, 2010, reflect the new HUC 12-size units. Tables in Section J4 and the TMDL status map in Section K reflect current information based on the HUC 12 units.

J6.1. Ohio TMDL Status

Ohio EPA is currently working on TMDLs in about 40 project areas and has approved TMDLs in about 50 project areas. After 2016, only one project area will remain to be assessed using our current survey approach (i.e., the Whitewater River area in southwest Ohio). Table J-13 summarizes Ohio TMDLs approved by U.S. EPA at the 11-digit HUC level. Table J-14 summarizes Ohio TMDLs approved by U.S. EPA at the 12-digit HUC level. It must be noted that the Ohio Supreme Court decision arguably invalidates the approved TMDLs established by Ohio EPA, as noted in Section C on page C-17 of this report. Ohio EPA is evaluating alternatives for addressing both past and future TMDLs.

J6.2. Long-Term Schedules for Monitoring and TMDLs

Ohio’s rotating basin approach (see Section D) provides a foundation for scheduling monitoring and TMDL projects. The assessment methodology allows that, generally, aquatic life use monitoring data up to 10 years old may be considered in judging AUs, so it follows that each AU must be monitored at least once every 10 years to maintain coverage. However, resources to maintain this pace are no longer available; cycling through the entire basin rotation would take about 15 to 20 years at current resource levels.

In an effort to maintain the monitoring and TMDL schedule, Ohio EPA is committed to researching and pursuing additional resources, both in terms of funding and partnering opportunities. Ohio’s credible data law (ORC 6111.52) requires level three credible data to establish a TMDL and to identify, list and delist waters of the state for purposes of §303(d).

A map illustrating the long-term monitoring schedule is included in Section K. Detailed information for each AU is also available on the IR web site (<http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx>).

J6.3 Short-Term Schedule for TMDL Development

Ohio EPA has only scheduled a few TMDL projects during the next two years, as indicated in Table J-15. Because Ohio’s TMDL process begins with a watershed assessment, all TMDLs to be completed in the next two years are already in progress. Since the process for finalizing TMDLs is uncertain following the Ohio Supreme Court decision (see Section C, page C-17), Ohio EPA does not anticipate submitting very many TMDLs to U.S. EPA for approval in the short term. However, the agency is still committed to restoring water quality and will be exploring other alternatives to this end in both the short and long term, as outlined in the 303(d) Vision discussion in Section C8 of this report.

Table J-13. Ohio TMDLs¹³ approved by U.S. EPA at the 11-digit hydrologic unit scale¹⁴.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
04110002 020	Cuyahoga River (below Black Brook to below Breakneck Creek)	10/11/2000	dissolved oxygen
04110002 030	Cuyahoga River (below Breakneck Creek to below Little Cuyahoga River)		
04110001 070	Rocky River (below West Br. to Lake Erie [including East Br.] and Lake Erie tribs [above Porter Cr to above Cuyahoga R]): Plum Creek	12/04/2001	phosphorus, nitrogen
05090202 010	Little Miami River (headwaters to above Massies Creek)	07/02/2002 05/13/2003	phosphorus, sediment
05090202 020	Little Miami River (above Massies Creek to below Beaver Creek)		
05090202 030	Little Miami River (below Beaver Creek of above Caesar Creek)		
05090202 040	Anderson Fork Caesar Creek		
05090202 050	Caesar Creek (except Anderson Fork)		
05060001 060	Bokes Creek (Scioto River above Bokes Creek to above Mill Creek)	09/27/2002 07/31/2003	phosphorus, sediment

¹³ One or more AUs may be included in a TMDL report; the determination is made on a project-by-project basis, at the discretion of Ohio EPA.

¹⁴ While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that “A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act.” See Section C (page C-17) for more details.

¹⁵ The TMDL goal is restoration of the designated use through the attainment of applicable criteria. Pollutants listed here were specifically recognized in U.S. EPA decision documents. TMDL reports typically include such parameters for targeting, pollutant load characterization and measuring interim progress and may explore other indicators of watershed condition.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
05040001 100	Sugar Creek (headwaters to above Middle Fork Sugar Creek)	11/20/2002 07/08/2003	phosphorus, nitrogen, sediment
05040001 110	South Fork Sugar Creek		
05040001 120	Sugar Creek (upstream Middle Fork to mouth)		
05090101 020	Raccoon Creek (headwaters to above Hewett Fork)	3/20/2003	pH (acid), metals
05090101 030	Raccoon Creek (above Hewett Fork to below Elk Fork)		
05060001 070	Mill Creek (Scioto River basin)	9/02/2003	CBOD, ammonia, phosphorus, sediment, aldrin, d- BHC, dieldrin, endosulfan, endrin, heptachlor
05030201 110	East Fork Duck Creek	9/23/2003	TSS, aluminum, iron, manganese, BOD, ammonia
05030201 120	Duck Creek (except East Fork)		
04110002 040	Cuyahoga River (below Little Cuyahoga River to below Brandywine Creek)	9/26/2003	fecal coliform, phosphorus
04110002 050	Cuyahoga River (below Brandywine Creek to below Tinkers Creek)		
04110002 060	Cuyahoga River (below Tinkers Creek to Lake Erie)		
04110002	Cuyahoga River (mainstem)		
05080001 090	Stillwater River (headwaters to above Swamp Creek)	06/15/2004	nitrates, phosphorus
05080001 100	Stillwater River (above Swamp Creek to above Greenville Creek)		
05080001 110	Greenville Creek (headwaters to below West Branch)		
05080001 120	Greenville Creek (below West Branch to Stillwater River)		
05080001 130	Stillwater River (below Greenville Creek to above Ludlow Creek)		
05080001 140	Stillwater River (above Ludlow Creek to Great Miami River)		
05080001	Stillwater River (mainstem)		
04100007 010	Auglaize River (headwaters to below Pusheta Creek)	09/23/2004	ammonia, phosphorus, pathogens, sediment
04100007 020	Auglaize River (below Pusheta Creek to above Jennings Creek)		
04100007 060	Auglaize River (above Jennings Creek to above Little Auglaize River)		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
04110002 010	Cuyahoga River (headwaters to below Black Brook)	09/27/2004	phosphorus, sediment
04100011 020	Sandusky River (headwaters to above Broken Sword Creek)	09/30/2004	phosphorus, pathogens, sediment
04100011 030	Broken Sword Creek		
04100011 040	Sandusky River (below Broken Sword Creek to above Tymochtee Creek)		
04100011 050	Tymochtee Creek (headwaters to below Warpole Creek)		
04100011 060	Tymochtee Creek (downstream Warpole Creek to Sandusky River)		
04100011 070	Sandusky River (below Tymochtee Creek to above Honey Creek)		
04100011 080	Honey Creek		
05090203 010	Mill Creek	04/26/2005	phosphorus, nitrogen
04100012 040	Lake Erie Tributaries (below Huron River to above Vermilion River) [Old Woman and Chappel Creeks]	08/31/2005	nutrients, siltation, habitat alteration
05030204 060	Monday Creek	09/22/2005	pH, metals, sediment
05060001 130	Big Walnut Creek (headwaters to Hoover Dam)	09/26/2005	nutrients (phosphorus), pathogens, siltation, organic enrichment, flow, habitat alteration
05060001 140	Big Walnut Creek (below Hoover Dam to above Alum Creek)		
05060001 150	Alum Creek (headwaters to Alum Creek Dam)		
05060001 160	Big Walnut Creek (above Alum Creek [except above Alum Creek Dam] to Scioto River)		
04110003 010 (partial)	Lake Erie Tributaries (East of Cuyahoga River to West of Grand River; excluding Chagrin River) [Euclid Creek]	09/27/2005	nutrients (phosphorus), organic enrichment,
04100012 010	West Branch Huron River (headwaters to above Slate Run)	09/28/2005	nutrients (phosphorus), siltation, organic enrichment, flow, habitat alteration
04100012 020	West Branch Huron River (above Slate Run to above East Branch Huron River)		
04100012 030	Huron River (above East Branch to Lake Erie) and Lake Erie Tributaries (below Sawmill Creek to below Huron River)		
05030101 070	Middle Fork Little Beaver Creek	09/28/2005	nutrients (phosphorus), pathogens, siltation, organic enrichment, flow, habitat alteration, unionized ammonia
05030101 080	West Fork Little Beaver Creek		
05030101 090	Little Beaver Creek (downstream Middle and West Forks to mouth)		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
05030204 070	Sunday Creek	03/31/2006	sediment, bacteria, acidity
05060001 190	Big Darby Creek (headwaters to below Sugar Run)	03/31/2006 10/27/2009	phosphorus, bacteria, sediment
05060001 200	Big Darby Creek (below Sugar Run to above Little Darby Creek)		
05060001 210	Little Darby Creek		
05060001 220	Big Darby Creek (below Little Darby Creek to Scioto River)		
04100010 020	Toussaint Creek	09/22/2006	phosphorus
05040004 020	Wakatomika Creek (headwaters to downstream Brushy Fork)	09/28/2006	bacteria, manganese, iron, aluminum, total dissolved solids, alkalinity
05040004 030	Wakatomika Creek (downstream Brushy Fork to mouth)		
05040001 100	Sugar Creek (headwaters to above Middle Fork Sugar Creek)	05/08/2007	bacteria
05040001 110	South Fork Sugar Creek		
05040001 120	Sugar Creek (upstream Middle Fork to mouth)		
04110003 020	Chagrin River (headwaters to downstream Aurora Branch)	07/10/2007	nutrients (phosphorus and nitrate), bacteria, total suspended solids
04110003 030	Chagrin River (downstream Aurora Branch to mouth)		
05060001 090	Olentangy River (headwaters to downstream Flat Run)	09/19/2007	nutrients (phosphorus), bacteria, total suspended solids
05060001 100	Whetstone Creek		
05060001 110	Olentangy River (downstream Flat Run to downstream Delaware Run); excluding Whetstone Creek		
05060001 120	Olentangy River (downstream Delaware Run to mouth)		
05120101 020	Beaver Creek (Grand Lake St. Marys and tributaries)	09/28/2007	nutrients (phosphorus and nitrate), bacteria
05120101 030	Beaver Creek (downstream Grand Lake St. Marys Dam to mouth)		
05030202 090	Leading Creek	1/9/2008	total dissolved solids, total

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
04110001 020	West Branch Black River (headwaters to Black River)	8/20/2008	phosphorus, nitrate, bacteria, total suspended solids
04110001 030	East Branch Black River (headwaters to below Coon Creek)		
04110001 040	East Branch Black River (below Coon Creek to Black River)		
04110001 050	Black River (below East Branch to Lake Erie) and Lake Erie tribs (below Black R. to above Porter Cr)		
05040001 050	Nimishillen Creek	9/25/2008 12/16/2009	sediment, bacteria, phosphorus
04100007 110	Powell Creek	6/18/2009	phosphorus, nitrate- nitrogen, total suspended solids, biological oxygen
04100008 010	Blanchard River (headwaters to downstream Potato Run)	7/2/2009	phosphorus, bacteria, sediment
04100008 020	Blanchard River (downstream Potato Run to upstream Eagle Creek)		
04100008 030	Blanchard River (upstream Eagle Creek to upstream Ottawa Creek)		
04100008 040	Blanchard River (upstream Ottawa Creek to upstream Riley Creek); excluding Blanchard R.		
04100008 050	Riley Creek		
04100008 060	Blanchard River (downstream Riley Creek to mouth); excluding Blanchard R. mainstem		
04100008	Blanchard River (mainstem)		
05060002 070	Salt Creek (headwaters to upstream Queer Creek)	8/12/2009	sediment (bedload), habitat
05060002 080	Middle Fork Salt Creek		
05060002 090	Salt Lick Creek (excluding Middle Fork)		
05060002 100	Salt Creek (upstream Queer Creek to mouth); excluding Little Salt Creek and Middle Fork Salt Creek		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
05040001 010	Tuscarawas River (headwaters to downstream Wolf Creek)	9/15/2009	fecal coliform, sediment, phosphorus
05040001 020	Chippewa Creek		
05040001 030	Tuscarawas River (downstream Wolf Creek to downstream Sippo Creek); excluding Chippewa Creek		
05040001 090	Tuscarawas River (downstream Sippo Creek to upstream Sugar Creek); excluding Tuscarawas R. mainstem		
05040001 130	Tuscarawas River (downstream Sugar Cr. to upstream Stillwater Cr.); excluding Tuscarawas R. mainstem		
05040001 180	Tuscarawas River (downstream Stillwater Cr. to upstream Evans Cr.); excluding Tuscarawas R. mainstem		
05040001 190	Tuscarawas River (upstream Evans Creek to mouth); excluding Tuscarawas R. mainstem		
05040001	Tuscarawas River (mainstem)		
05030204 010	Hocking River (headwaters to Enterprise); excluding Rush Creek and Clear Creek	9/25/2009	fecal coliform, total phosphorus, sediment (bedload)
05030204 020	Rush Creek (headwaters to upstream Little Rush Creek)		
05030204 030	Rush Creek (upstream Little Rush Creek to mouth)		
05030204 040	Clear Creek		
05030204 050	Hocking River (Enterprise to upstream Monday Creek); excluding Hocking R. mainstem dst. Duck Creek		
05030204 080	Hocking River (downstream Monday Creek to Athens/RM 33.1); excluding Hocking R. mainstem		
05030204 090	Federal Creek		
05030204 100	Hocking River (downstream Athens/RM 33.1 to mouth); excluding Federal Creek and Hocking R. mainstem		
05030204	Hocking River (mainstem)		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁵
04100009 070	Swan Creek (headwaters to above Blue Creek)	1/6/2010 10/25/2010	<i>E. coli</i> , total phosphorus, nitrate- nitrogen, total suspended solids, total aluminum, total copper, ammonia, total dissolved solids, dieldrin, strontium, benzo(a)pyrene
04100009 080	Swan Creek (above Blue Creek to Maumee River)		
05080001 150	Mad River (headwaters to below Kings Creek)	1/26/2010	fecal coliform, sediment (bedload), nitrate
05080001 160	Mad River (below Kings Creek to below Chapman Creek)		
05080001 170	Buck Creek		
05080001 180	Mad River (below Chapman Cr. to above Mud Cr. [except Buck Cr.])		
05080001 190	Mad River (above Mud Cr. to Great Miami River)		
05080002 030	Twin Creek (headwaters to above Bantas Fork)	3/4/2010	fecal coliform, sediment
05080002 040	Twin Creek (above Bantas Fork to Great Miami River)		
05030101 100	Ohio River (downstream Little Beaver Cr to upstream Yellow Creek) (Little Yellow Cr)	3/18/2010	fecal coliform, total phosphorus
05030101 180	Yellow Creek (headwaters to upstream Town Fork)		
05030101 190	Yellow creek (upstream Town Fork to mouth)		
05060001 170	Walnut Creek (headwaters to below Sycamore Creek)	5/4/2010	fecal coliform, sediment
05060001 180	Walnut Creek (below Sycamore Creek to Scioto River)		

Table J-14. Ohio TMDLs¹⁶ approved by U.S. EPA at the 12-digit hydrologic unit scale.¹⁷

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁸
05080001 09 01 – 06	Headwaters Stillwater River	9/8/2009 ¹⁹	phosphorus
05080001 10 01 – 04	Headwaters Greenville Creek		
05080001 11 01 – 03	Mud Creek-Greenville Creek		
05080001 12 01 – 05	Swamp Creek-Stillwater River		
05080001 13 01 – 03	Painter Creek-Stillwater River		
05080001 14 01 – 06	Ludlow Creek-Stillwater River		
05080001 90 02	Stillwater River Mainstem (Greenville Creek to mouth)		
05090201 09 01 – 04	Headwaters White Oak Creek	2/25/2010	fecal coliform, ammonia, total phosphorus, habitat/ total suspended solids, dissolved oxygen, nitrate + nitrite, atrazine
05090201 10 01 – 03	Sterling Run-White Oak Creek		
05090202 06 01 – 06	Headwaters Todd Fork	3/28/2011	<i>E. coli</i> , total phosphorus, chemical oxygen demand, sediment, total suspended solids, carbonaceous biochemical oxygen demand
05090202 07 01 – 04	East Fork Todd Fork-Todd Fork		
05090202 08 01 – 04	Turtle Creek-Little Miami River		
05090202 09 01 – 03	O'Bannon Creek-Little Miami River		
05090202 14 01 – 06	Sycamore Creek-Little Miami River		
05090202 90 01	Little Miami River Mainstem (Caesar Creek to O'Bannon Creek)		
05090202 90 02	Little Miami River Mainstem (O'Bannon Creek to Ohio River)		
05040004 06 01 – 06	Salt Creek (Muskingum River watershed)	6/6/2011	<i>E. coli</i>

¹⁶ One or more AUs may be included in a TMDL report. The determination is made on a project-by- project basis, at the discretion of Ohio EPA.

¹⁷ While Ohio has completed these TMDLs and they were approved by U.S. EPA, in March 2015 in *Fairfield Cty. Bd. of Commrs. v. Nally*, 143 Ohio St. 3d 93, 2015-Ohio-991, the Ohio Supreme Court determined that “A TMDL established by Ohio EPA pursuant to the Clean Water Act is a rule that is subject to the requirements of R.C. Chapter 119, the Ohio Administrative Procedure Act.” See Section C (page C-17) for more details.

¹⁸ The TMDL goal is restoration of the designated use through the attainment of applicable criteria; pollutants listed here were specifically recognized in U.S. EPA decision documents. TMDL reports typically include such parameters for targeting, pollutant load characterization and measuring interim progress and may explore other indicators of watershed condition.

¹⁹ The TMDL was revised for one pollutant.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁸
05030103 01 01 – 03	Headwaters Mahoning River	9/28/2011 10/19/2011	<i>E. coli</i> , sediment, phosphorus
05030101 02 01 – 04	Deer Creek-Mahoning River		
05030101 03 01 – 06	West Branch Mahoning River-Mahoning River		
05030101 04 01 – 06	Eagle Creek-Mahoning River		
04100010 01 01 – 04	Rocky Ford-Middle Branch Portage River	9/30/2011	<i>E. coli</i> , total phosphorus, carbonaceous biochemical oxygen demand, sediment
04100010 02 01 – 05	South Branch Portage River-Middle Branch Portage River		
04100010 03 01 – 02	Upper Portage River		
04100010 04 01 – 02	Middle Portage River		
04100010 05 01 – 02	Lower Portage River-Frontal Lake Erie	9/30/2011	<i>E. coli</i> , phosphorus
05060002 14 01 – 06	South Fork Scioto Brush Creek		
05060002 15 01 – 07	Scioto Brush Creek	3/26/2012	<i>E. coli</i> , sediment, nutrients, total dissolved solids
05080001 01 01 – 03	Headwaters Great Miami River		
05080001 02 01 – 04	Muchinippi Creek		
05080001 03 01 – 06	Bokengehalas Creek-Great Miami River		
05080001 04 01 – 06	Stoney Creek-Great Miami River		
05080001 05 01 – 03	Headwaters Loramie Creek		
05080001 06 01 – 04	Turtle Creek-Loramie Creek	4/12/2012	<i>E. coli</i> , phosphorus, flow regime
04110004 04 01 – 03	Griggs Creek-Mill Creek		
04110004 06 01 – 07	Big Creek-Grand River	9/18/2012	<i>E. coli</i> , sediment
05060003 01 01 – 03	Headwaters Paint Creek		
05060003 02 01 – 02	Sugar Creek		
05060003 03 01 – 05	Headwaters Rattlesnake Creek		
05060003 04 01 – 07	Lees Creek-Rattlesnake Creek		
05060003 05 01 – 05	Rocky Fork		
05060003 06 01 – 03	Indian Creek-Paint Creek		
05060003 07 01 – 04	Buckskin Creek-Paint Creek		
05060003 08 01 – 05	Headwaters North Fork Paint Creek		
05060003 09 01 – 04	Little Creek-North Fork Paint Creek		
05060003 10 01 – 03	Ralston Run-Paint Creek		
05060003 90 01	Paint Creek Mainstem (Paint Creek Lake dam to mouth)		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA ¹⁸
04100010 07 01 – 06	Cedar Creek-Frontal Lake Erie	9/25/2012	total phosphorus, nitrate + nitrite, ammonia, total suspended solids, <i>E. coli</i>
04100009 09 01 – 04	Grassy Creek-Maumee River		
04110004 01 01 – 06	Headwaters Grand River	4/10/2013	<i>E. coli</i> , total phosphorus, total kjeldahl nitrogen, ammonia, total dissolved solids,
04110004 02 01 – 03	Rock Creek		
04110004 03 01 – 05	Phelps Creek-Grand River		
04110004 05 01 – 02	Three Brothers Creek-Grand River		
05040004 04 01 – 07	Jonathan Creek	7/10/2013	<i>E. coli</i> , acidity
05040004 05 01 – 04	Moxahala Creek		
04100007 03 01 – 06	Upper Ottawa River Mid	4/15/2014	<i>E. coli</i> , total phosphorus, sediment
04100007 04 01 – 06	Middle Ottawa River		
04100007 05 01 – 03	Lower Ottawa River		
04100011 01 01 – 03	Lower Sandusky	8/11/2014	<i>E. coli</i> , total phosphorus, total suspended solids, nitrate+nitrite
04100011 01 02 – 05	Pickeral Creek-Frontal Sandusky Bay		
04100011 10 01 – 04	Wolf Creek		
04100011 11 01 – 05	Rock Creek - Sandusky River		
04100011 90 01 – 02	Sandusky Mainsteam (Tymochtee Creek to Sandusky Bay)		
04100011 12 01 – 03	Green Creek		
04100011 13 01 – 03	Muskellunge Creek-Sandusky River		
04100011 14 01 – 05	Muddy Creek-Frontal Sandusky Bay		

Table J-15. Short-term schedule for TMDL development.

AU Code	AU Name
<i>TMDLs approved by U.S. EPA after public review of 2014 303(d) list began</i>	
None at this time	
<i>TMDLs pending approval by U.S. EPA</i>	
None at this time	
<i>TMDLs expected to be submitted to U.S. EPA in FFY 2017</i>	
05060001 01 01 – 04 05060001 02 01 – 03 05060001 03 01 – 04 05060001 04 01 – 06 05060001 05 01 – 05 05060001 06 01 – 04 05060001 90 01	Headwaters Scioto River Rush Creek Little Scioto River Panther Creek-Scioto River Fulton Creek-Scioto River Mill Creek Scioto River Mainstem (L. Scioto R. to Olentangy R.); excluding O'Shaughnessy and Griggs reservoirs
05040002 01 01 – 05 05040002 02 01 – 04 05040002 03 01 – 03 05040002 04 01 – 05 05040002 05 01 – 03 05040002 06 01 – 06 05040002 07 01 – 03 05040002 08 01 – 06 05040002 90 01	Headwaters Black Fork Mohican River Rocky Fork-Black Fork Mohican River Headwaters Clear Fork Mohican River Possum Run-Clear Fork Mohican River Muddy Fork Mohican River Jerome Fork-Mohican River Lake Fork Mohican River Mohican River Mohican River Mainstem (entire length)
<i>TMDLs expected to be submitted to U.S. EPA in FFY 2018</i>	
05040006 01 01 – 04 05040006 02 01 – 05 05040006 03 01 – 04 05040006 04 01 – 09 05040006 05 01 – 04 05040006 06 01 – 04	Headwaters North Fork Licking River Lake Fork Licking River-North Fork Licking River Raccoon Creek South Fork Licking River Rocky Fork-Licking River Big Run-Licking River
05040003 01 01 – 03 05040003 02 01 – 03 05040003 03 01 – 07 05040003 04 01 – 03	North Branch Kokosing River Headwaters Kokosing River Schenck Creek-Kokosing River Jelloway Creek-Kokosing River
05080001 07 01 – 05 05080001 08 01 – 05 05080001 20 01 – 05 05080001 90 01	Tawawa Creek-Great Miami River Lost Creek-Great Miami River Honey Creek-Great Miami River Great Miami River mainstem (Tawawa Creek to Mad River)
05090202 10 01 - 06 05090202 11 01 - 03 05090202 12 01 - 04 05090202 13 01 - 05	Headwaters East Fork Little Miami River Fivemile Creek-East Fork Little Miami River Cloverlick Creek-East Fork Little Miami River <i>(includes W.H. Harsha Lake)</i> Stonelick Creek-East Fork Little Miami River
04100001 03 01 - 09 04100002 03 01, 03, 04	Ottawa River-Frontal Lake Erie Little River Raisin-River Raisin

AU Code	AU Name
05080002 01 01 – 07	Wolf Creek-Great Miami River
05080002 04 01 – 04	Bear Creek-Great Miami River
05080002 07 01 – 06	Dicks Creek-Great Miami River
05080002 09 01 – 07	Taylor Creek-Great Miami River
05080002 90 01	Great Miami River Mainstem (Mad River to Four Mile Creek)
05080002 90 02	Great Miami River Mainstem (Four Mile Creek to Ohio River)
<i>TMDL projects that are being developed with assistance from U.S. EPA; completion expected by FFY 2017.</i>	
04100005 90 01	Maumee River Mainstem (IN border to Tiffin River)
04100009 90 01	Maumee River Mainstem (Tiffin River to Beaver Creek)
04100009 90 02	Maumee River Mainstem (Beaver Creek to Maumee Bay)
04100003 01 04, 06	East Branch St Joseph River
04100003 02 04	West Branch St Joseph River
04100003 03 01-06	Nettle Creek-St Joseph River
04100003 04 02, 05, 06	Fish Creek
04100003 05 01-03,05,06	Sol Shank Ditch-St Joseph River
04110001 03 01 - 03	Headwaters East Branch Black River
04110001 04 01 - 04	East Branch Black River
04110001 05 01 - 06	West Branch Black River
04110001 06 01 - 03	Black River
04100006 02 01-05	Mill Creek-Bean Creek
04100006 03 01-03	Upper Tiffin River
04100006 04 01-04	Lick Creek
04100006 05 01-04	Middle Tiffin River
04100006 06 01-04	Lower Tiffin River