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 uses[1]. The resulting list of prioritized impaired waters is known as the 303(d) list. Ohio's 2018 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. The 2016 report contained changes in how the information was organized and what data sets were used (for instance, 2015 data was included for both recreation and PDWS uses) and was amended to include new open water assessment units for Lake Erie and a new recreation assessment methodology based upon algae. In 2018, the most significant changes are to the recreation use assessments and how Lake Erie Assessment Unit are defined (increased from six to seven units). The assessment based on bacteria has been updated to comply with the new *E. coli* WQS which include a 90-day geometric mean and statistical threshold value (see Sections F1-F3). In addition, an assessment method for recreation based on algae for the western basin of Lake Erie has been added in Section F4.

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 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 TMDLs 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 (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. In 2018, a new subcategory "p" is added under Category 5 to track which impairments are based on threatened status, primarily for nutrients. 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 and public [drinking] water supply.

Table J-1 — Category definitions for the 2018 Integrated Report and 303(d) list.

Category[2]		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[3] 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
		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[4]
		M	Mercury
		d	TMDL complete; new data show the AU is not attaining WQS
		h	Historical data
		p	Protection/preservation for threatened waters
		x	Retained from 2008 IR

Figure J-1 illustrates the significance of these changes in the listing procedures. A = 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 (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 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, for example, 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).
- 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).

[2] Shading indicates categories defined by U.S. EPA; other categories and subcategories are defined by Ohio EPA.
[3] HUC means hydrologic unit code.
[4] Ohio currently has no waters that are listed under this subcategory.

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.

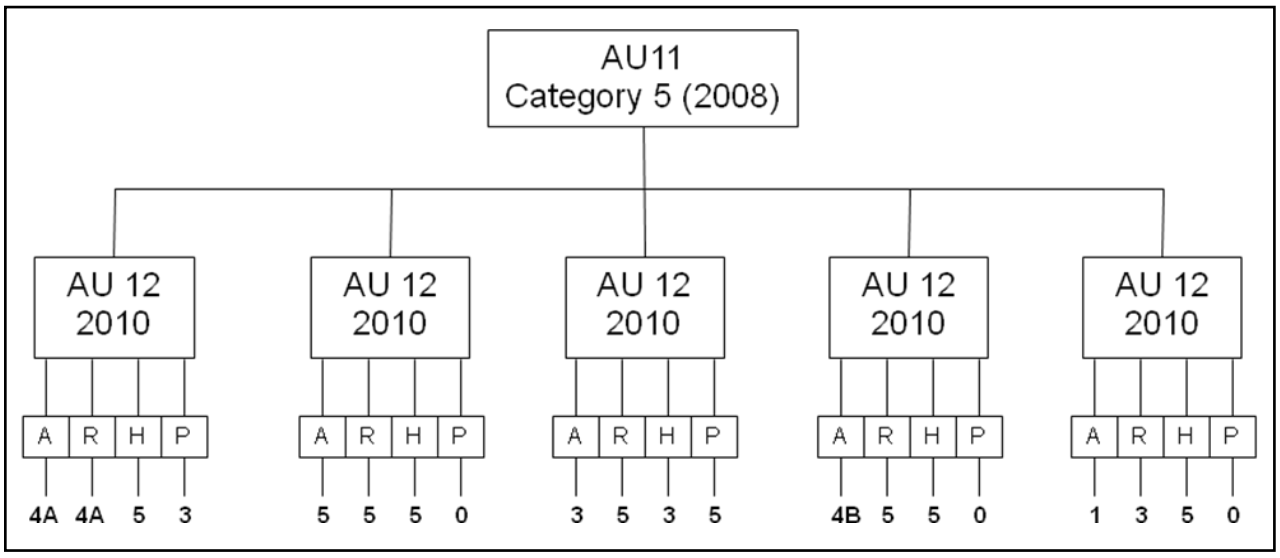

Figure J-1 — Listing by smaller AUs and individual beneficial uses.

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.

	2008 and Before			2010 and After		
AU Types	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

ORSANCO has lead responsibility for the multi-jurisdictional Ohio River water quality as outlined in Section D2. Binationally, the U.S. and Canada are working together under the GLWQA to address water quality issues in Lake Erie. Ohio EPA is actively participating in TMDLs for tributaries as well as many other actions for Lake Erie outlined in Section J3, so priority for Ohio EPA-initiated TMDLs 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-2. The priority results for specific AUs are reported in Section L and in AU summary information available on the web page.

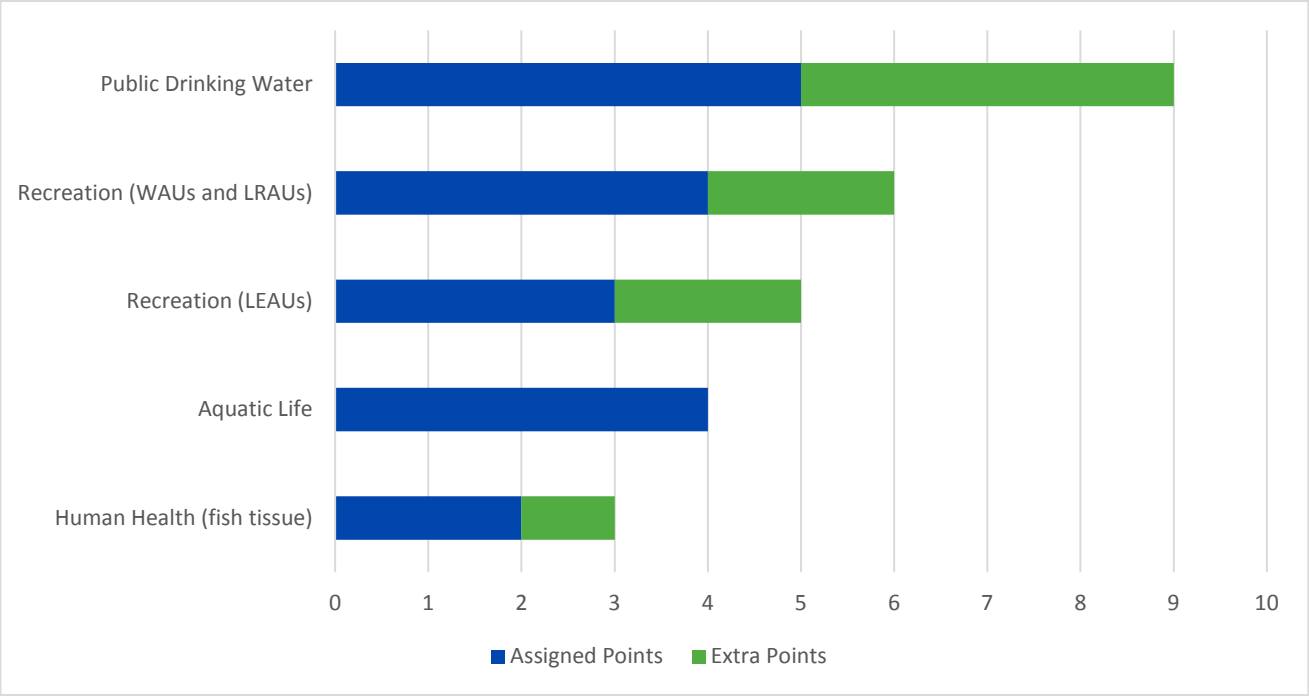

Figure J-2 — Priority points assigned based on use impairment or other factors (extra points).

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. Priority points for Lake Erie recreation use are calculated based on the bathing water geometric mean for *E. coli* and the percentage of days that the AU exceeded that criteria. An impaired AU gets one point if the percentage of days in exceedance was in the range of 0 to 10 percent; two points if in the range of 10.1 percent to 20

percent; and three points if the percentage of days in exceedance was greater than 20.1 percent. Two additional points may also be awarded to AUs that are impaired for recreation use based on algae.

Table J-3 — Priority points for impaired AUs.

Point Values	Condition	Number of AUs WAUs	LRAUs	LEAUs
Human Health Use impairment (fish tissue contaminants) (maximum of 3 points)				
2	Listed as impaired for Fish Contaminants (Human Health Use)	436	32	4
1	Additional point in AUs that exceed 500 ppb for PCBs or Hg	3	0	0
Recreation Use impairment – WAUs and LRAUs (maximum of 6 points)				
1	Listed as impaired with AU score between 0 and 25	108	0	
2	Listed as impaired with AU score between 75.1 and 100	92	17	
3	Listed as impaired with AU score between 25.1 and 50	271	2	
4	Listed as impaired, with AU score between 50.1 and 75	279	7	
2 extra	Additional points if AU contains Class A waters	74	26	
Recreation Use impairment - LEAUs (maximum of 5 points)				
1	Listed as impaired with 0 to 10% of season exceeding *E. coli* criteria			1
2	Listed as impaired with 10.1% to 20% of season exceeding *E. coli* criteria			1
3	Listed as impaired with > 20.1% of season exceeding *E. coli* criteria			2
2 extra	Additional points if AU is impaired for algae			3
Aquatic Life Use impairment (maximum of 4 points)				
1	Listed as impaired, with AU score between 0 and 25	161	0	2
2	Listed as impaired, with AU score between 75.1 and 100	35	8	0
3	Listed as impaired, with AU score between 25.1 and 50	119	2	2
4	Listed as impaired, with AU score between 50.1 and 75	93	2	0
Public Drinking Water Use impairment (maximum of 9 points)				
5	Listed as impaired for Public Drinking Water Use for one indicator	33	5	6
2 extra	Additional points in AUs impaired for each additional indicator	1	3	0
1	Not listed as impaired, but on watch list; one point for each indicator	33	3	0

As outlined in Section C3, 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? (for example, 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)
    - 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 an issue/pollutant (for example, 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).

2018 IR Update

The Tappan Lake Nutrient Reduction Initiative (TLNRI) was formed at the end of 2017 by the Muskingum Watershed Conservancy District and the Village of Cadiz. TLNRI's goal is to eliminate the presence of harmful algal blooms and their resultant water-borne toxins in Tappan Lake within the next decade. The TLNRI has outlined the following steps toward achieving their goal:

- Phase 1: Comprehensive study of existing water quality data for the watershed and identification of gaps (year one)
- Phase 2: Collection of data to fill gaps, evaluation and selection of remedial actions for the watershed (years two through four)
- Phase 3: Implementation of action plan for the watershed (years five through 10)

Ohio EPA is an active partner in the initiative and will provide support through participation in the four subgroups. The Stillwater Creek watershed is a high priority project for either a TMDL or an alternative plan. The Agency will continue to participate in the TLNRI efforts and determine which approach is most appropriate as that work unfolds.

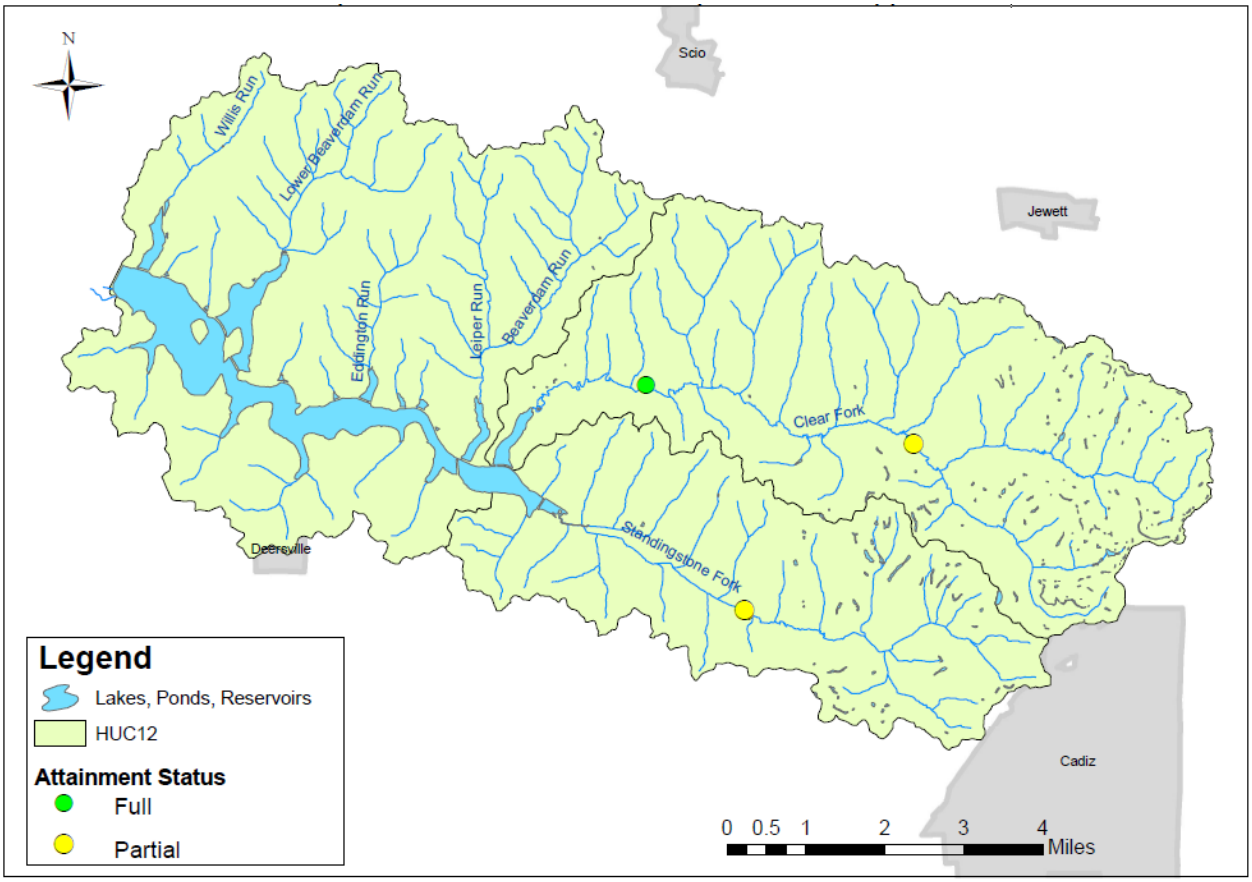

Figure J-3 — Watershed upstream from Tappan Lake and attainment status of sites from 2012 Stillwater River survey.

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. Currently, seven different projects are conducting monitoring in Harsha Lake.

2018 IR Update

The East Fork Watershed Cooperative, formed in 2001, continues to be active in addressing water quality issues in the East Fork Little Miami River watershed. The Cooperative is in the process of updating watershed action plans into Nine Element Nonpoint Source Implementation Strategy Plans. The first updated plan for the Fivemile Creek HUC 12, approved by Ohio EPA on July 31, 2017, is located upstream of Harsha Lake. The East Fork Little Miami River watershed is a high priority TMDL project for TMDL development. The Agency plans to initiate the next steps in the TMDL development process by the 2020 IR.

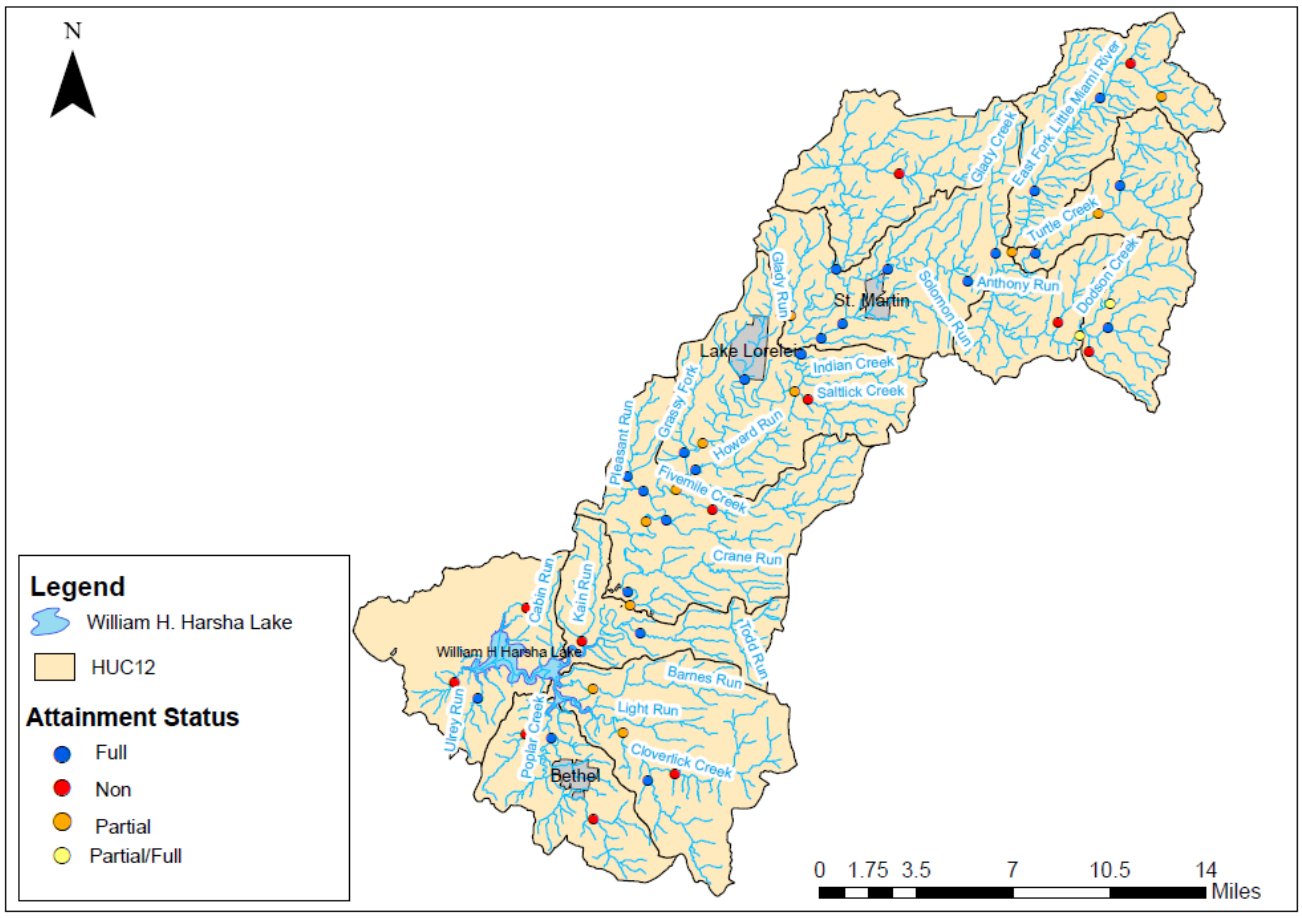

Figure J-4 — Watershed upstream from Harsha Lake and the attainment status of sites from the 2012 East Fork Little Miami River survey.

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 use based on algae indicators (microcystin) and nitrates. In the *2016 Integrated Report* it was listed as impaired for PDWS use based on algae indicators.
- The Raccoon Creek reservoir that also serves the City of Clyde is 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.

2018 IR Update

Sampling of Raccoon Creek reservoir was completed in 2016 and 2017 as part of Ohio EPA's inland lakes sampling program. The results of this sampling will be included in the 2020 IR and will be used to direct the next steps in the restoration process for this watershed.

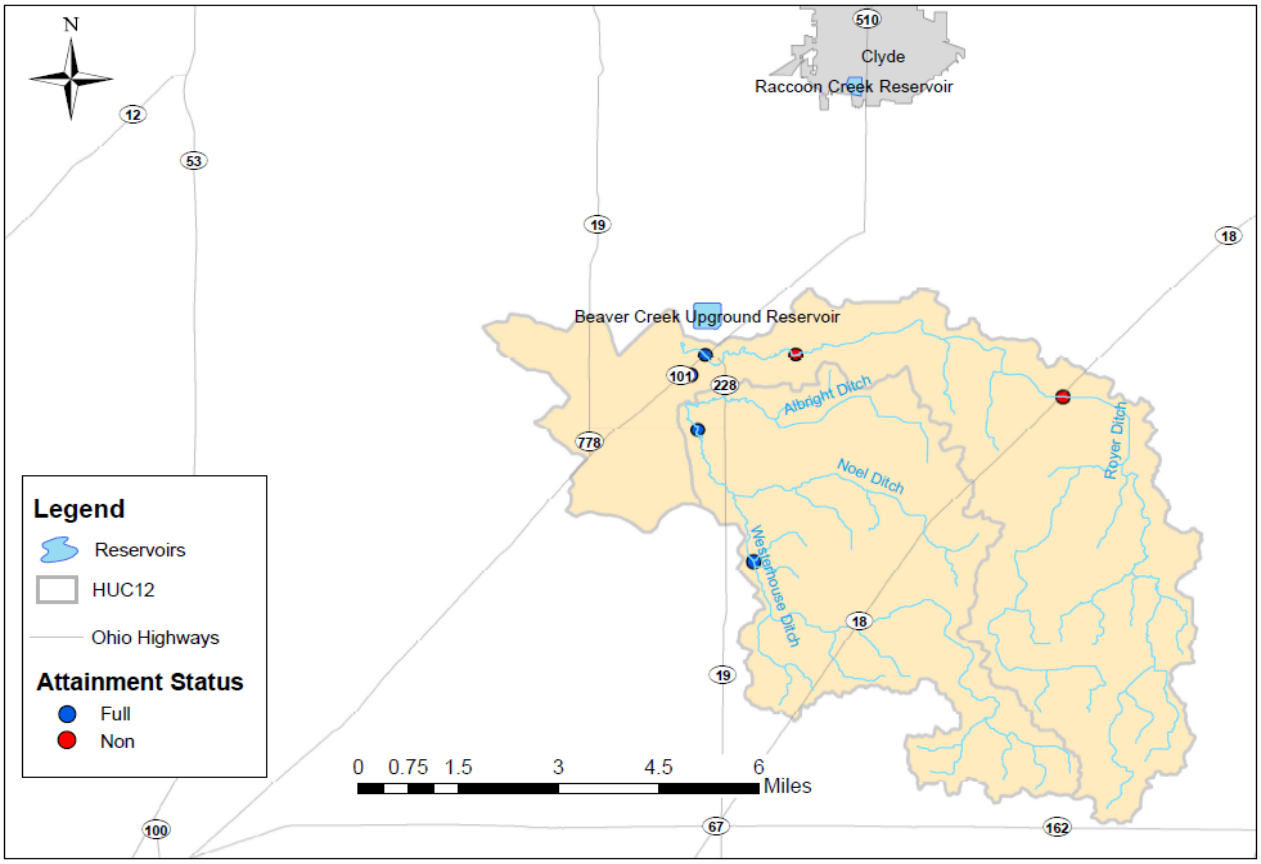

Figure J-5 — Watershed contributing to Beaver Creek Reservoir and the attainment status of sites sampled in 2009.

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 in accordance with the Domestic Action Plan; 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 many parallel planning and management efforts ongoing at the state, federal and binational level. For 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.

Great Lakes Water Quality Agreement

Binationally, the U.S. and Canada are working together under the GLWQA to develop nutrient reduction strategies; 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. The U.S. and Canada formally adopted new phosphorus targets for the western and central basins of Lake Erie in February 2016. These targets have been incorporated into Ohio's Domestic Action Plan and are the goals for all the state's efforts to reduce phosphorus loading to the lake.

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, as well as a Nutrient Mass Balance Study completed by Ohio EPA in December 2016, 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 compliment the 40 percent phosphorus reduction goals set forth by the Annex 4 committee, a separate analysis is being done to set seasonal/annual load reductions targets for the smaller tributaries (for example, within the Maumee basin). Ohio is directly involved in developing these goals and reduction targets needed for Lake Erie while moving forward on developing implementation strategies and acting to reduce nutrient contributions to the lake.

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.

Lake Erie Collaborative Agreement

The Lake Erie Collaborative Agreement was another state/province led-initiative; it was signed in June 2015 by Ohio, Michigan and Ontario (***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. One of the goals spelled out in the Collaborative Agreement was to reduce nutrient levels going into Lake Erie by 40 percent. The other was to develop a strategic plan to manage dredge material 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.

Ohio's Domestic Action Plan for Lake Erie

The State of Ohio's Domestic Action Plan expanded upon the *Collaborative Implementation Plan* and was submitted to U.S. EPA on Feb. 7, 2018. The commitment to meet the Collaborative Agreement phosphorus reduction goals of 20 percent by 2020 and 40 percent by 2025 was also incorporated into this plan. The plan is not intended to static but to be revised following the adaptive management philosophy. (***lakeerie.ohio.gov/Portals/0/Ohio DAP/DAP 1-0 Final for USEPA 2018-02-07.pdf***).

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 continue utilizing this tool to target implementation in Ohio's Lake Erie watersheds as it works to meet the Annex 4 phosphorus targets and allocations.

The TMDL document 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 TMDLs 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 nutrients and algae and have established phosphorus 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. However, Ohio is working with U.S. EPA, Tetratech (the contractor), Indiana and Michigan to develop a method for setting load reduction goals for the smaller tributaries to Lake Erie (for example, the tributaries to the Maumee river) and evaluate whether the tributary TMDLs will provide the load reductions needed to protect the lake. Where the local TMDL reductions are not sufficient to protect the lake, Ohio will be working with U.S. EPA and other partners to determine next steps.

The Annex 4 process of developing loading targets and Domestic Action Plans are very similar 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

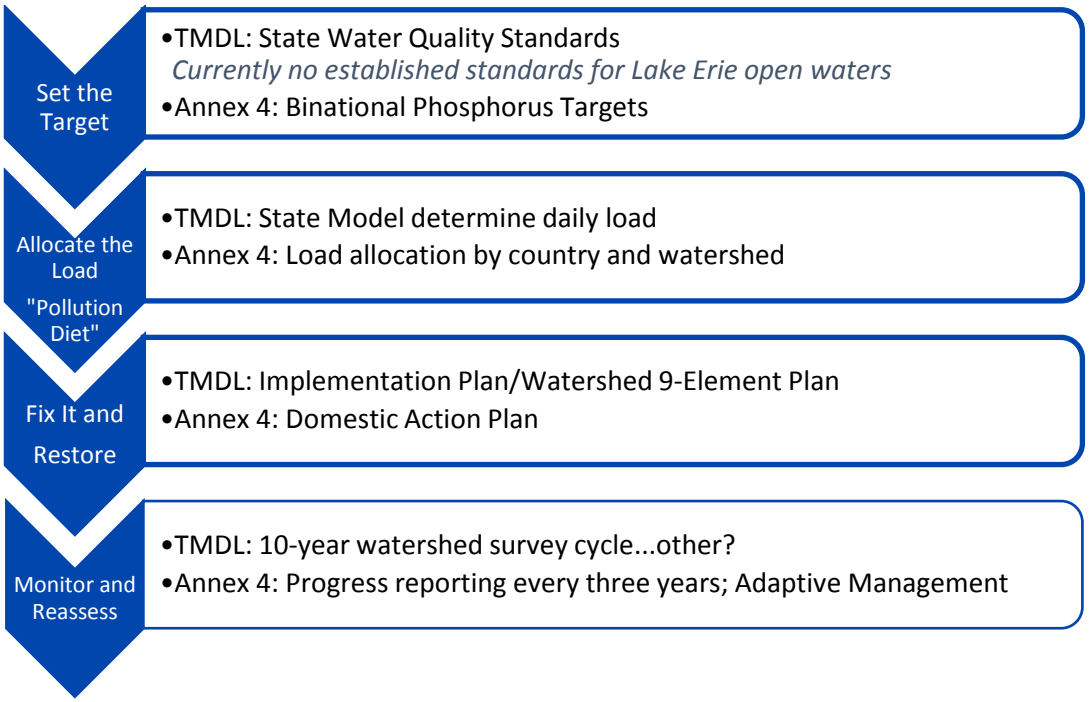

Figure J-6 — Key steps in the state TMDL and binational Annex 4 processes.

Ohio-based Nutrient Reduction 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 were 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 ***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 in 2010 and has expanded the scope and scale of implementation, developed a statewide strategy, targeted funding and undertaken legislative action to address the problem. As part of the more than $3 billion Ohio has invested comprehensively in the Lake Erie watershed, more than $150 million was made available starting in 2014 to help to public water systems keep drinking water safe and wastewater facilities reduce the amount of phosphorus they discharge into the Lake Erie watershed. In addition, Ohio continues to target millions of dollars to support local health departments to find and fix faulty residential septic systems that are contributing nutrients to Ohio waters.

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

- 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 ***epa.ohio.gov/dsw/wqs/NutrientReduction.aspx***.
- GLRI Demonstration and Nutrient Reduction Projects — Nine grants totaling more than $13.9 million were awarded to Ohio. Highlights include: installation of the first two saturated buffers installed in Ohio; installation of approximately 70 controlled drainage structures; development of 52 whole farm conservation plans; planting of more than 9,000 acres of cover crops; installation and planting of 50 acres of reconstructed or restored wetlands; restoration of 3,500 linear feet of stream and 500 feet of streambank stabilization; installation of 4,400 feet of two-stage ditches; installation of rain gardens and vegetated infiltration basins in the Toledo area; and completion of 29 storm water, wetland and stream restoration projects in Cuyahoga County.
- 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 basin[5]; 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.
- Ohio Senate Bill 150 — This bill, effective Aug. 21, 2014, requires, among other things, that beginning Sept. 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.
- Ohio HB 64 — This bill, effective June 30, 2015, required 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 ***legislature.ohio.gov/legislation/legislation-summary?id=GA131-HB-64***.
- 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.
- 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.
- 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 several recommendations to be implemented during the next several years. For example,

[5] "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.

the report recommends ways for farmers to better manage fertilizers and animal manure and 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 ***agri.ohio.gov/topnews/waterquality/docs/FINAL_REPORT_03-09-12.pdf***.

- 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 ***lakeerie.ohio.gov/Portals/0/Reports/Task_Force_Report_October_2013.pdf***.
- 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 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 ***epa.ohio.gov/portals/35/documents/point_source_workgroup_report.pdf***.

J4. Summary of Results

The consolidated results of the 2018 analysis are shown in Table J-4 and Figure J-7 — Summary of 2018 IR results for watershed AUs by beneficial use. through Figure J-9.

Table J-4 — Summary of results for each beneficial use[6]

	Human Health (fish tissue)	Recreation	Aquatic Life	Public Drinking Water Supply
Watershed assessment units				
Not being used for PDWS	0	0	0	1434
Attains	230	157	500	31
Unknown	872	186	109	39
Impaired, needs TMDL	436	750	411	33
Impaired, TMDL complete	0	445	408	1
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	14	0
Impaired, natural condition	0	0	96	0
Total watersheds considered	**1538**	**1538**	**1538**	**1538**
Large river assessment units				
Not being used for PDWS	0	0	0	29
Attains	6	3	18	0
Unknown	0	3	0	4
Impaired, needs TMDL	32	26	12	5
Impaired, TMDL complete	0	6	5	0
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	3	0
Impaired, natural condition	0	0	0	0
Total large rivers considered	**38**	**38**	**38**	**38**
Lake Erie assessment units				
Not being used for PDWS	0	0	0	1
Attains	0	0	0	0
Unknown	3	2	3	0
Impaired, needs TMDL	4	5	4	6
Impaired, TMDL complete	0	0	0	0
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	0	0
Impaired, natural condition	0	0	0	0
Total Lake Erie considered	**7**	**7**	**7**	**7**

[6] 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.

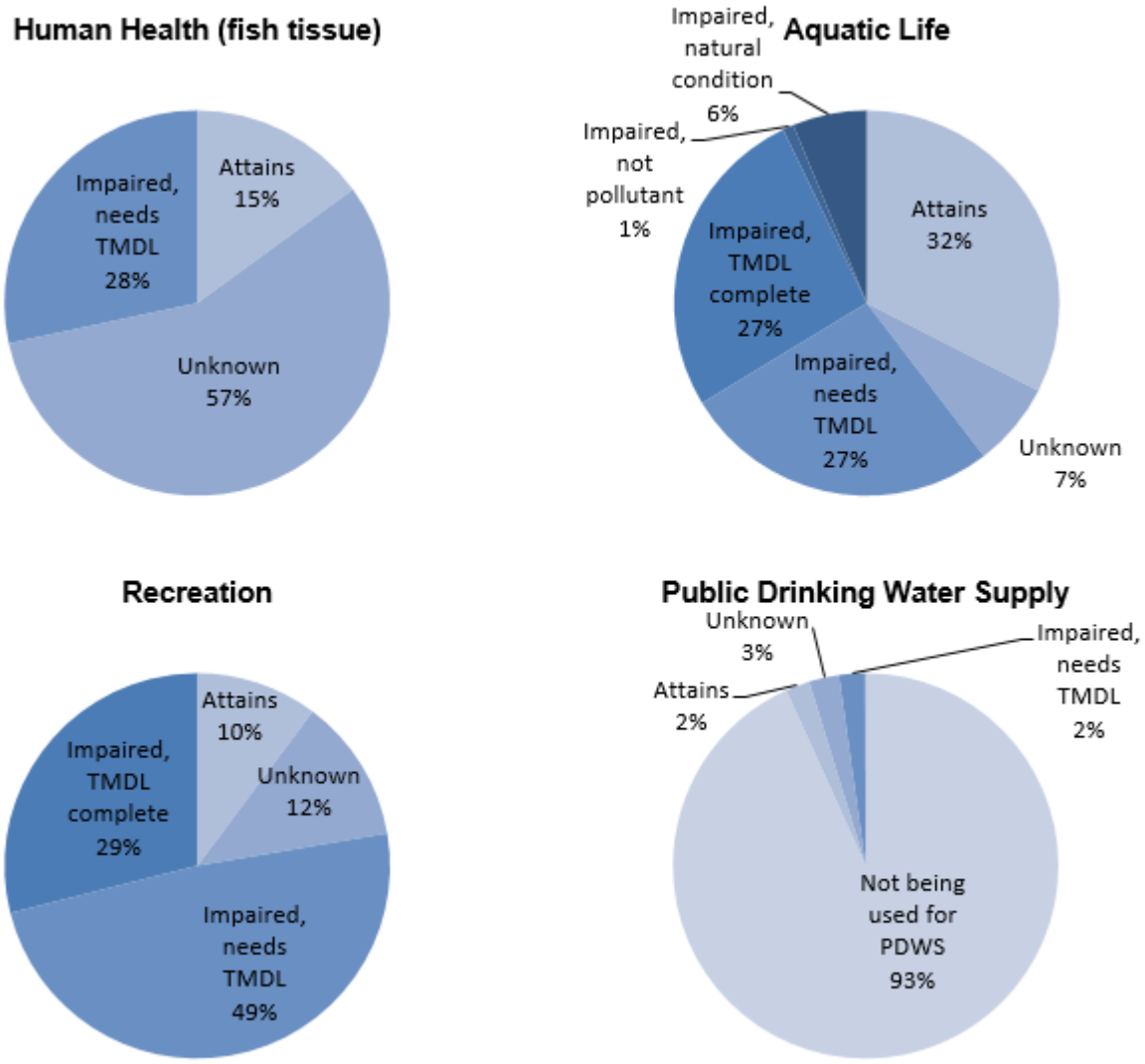

Figure J-7 — Summary of 2018 IR results for watershed AUs by beneficial use.

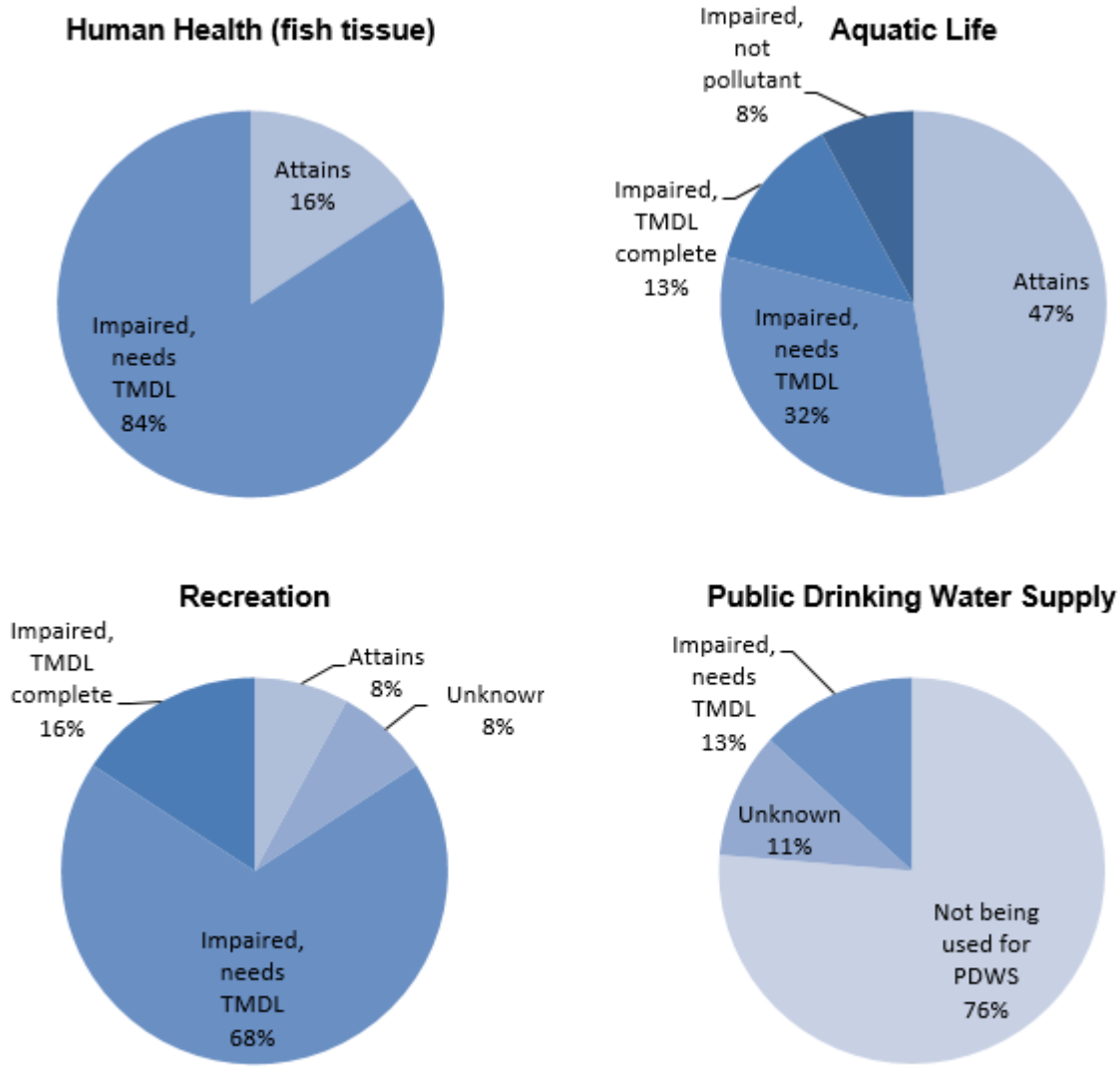

Figure J-8 — Summary of 2018 IR results for large river AUs by beneficial use.

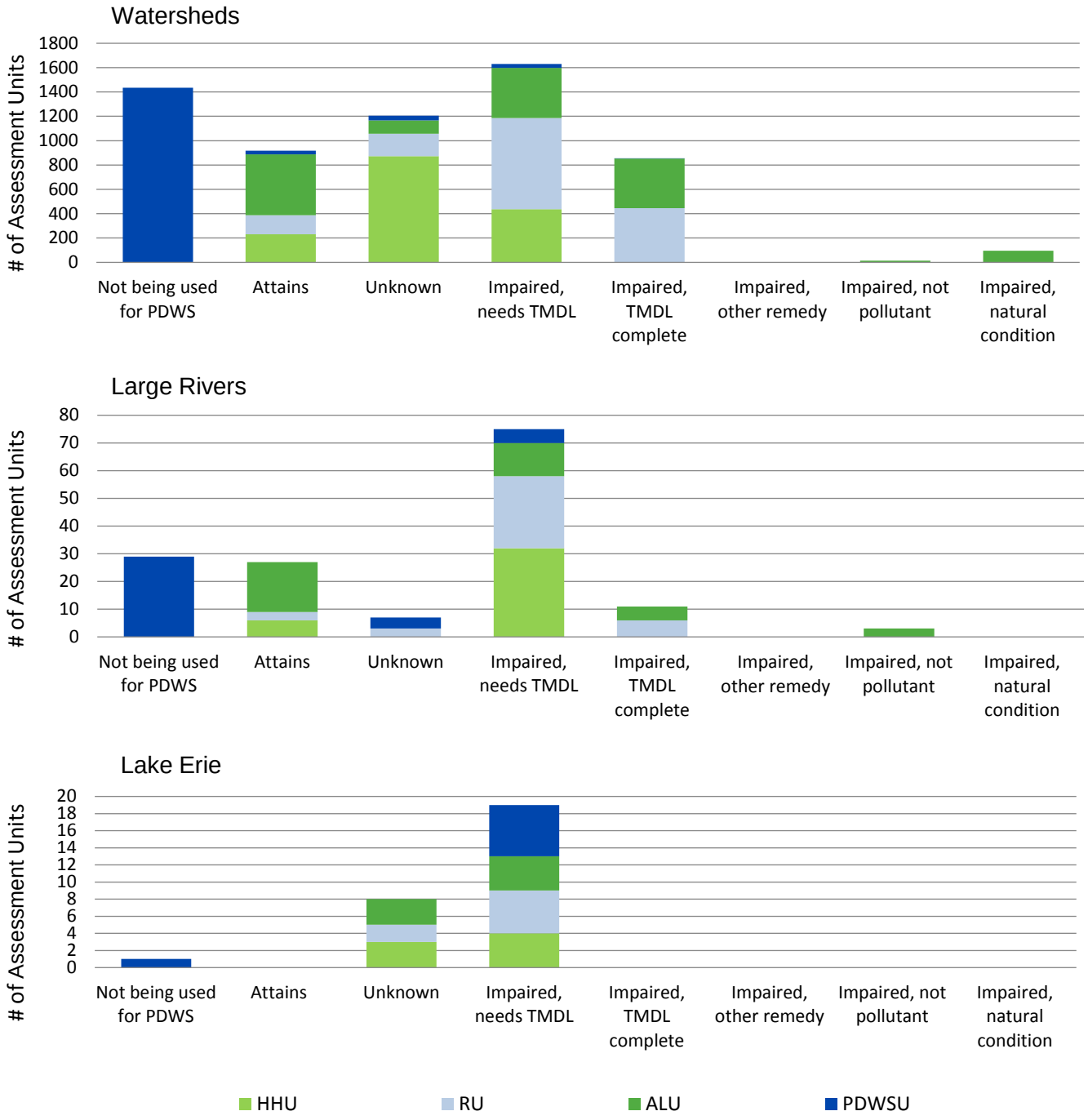

Figure J-9 — Summary of 2018 results by AU type.

J5. Changes for the 2018 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 69 AUs and adding 135 AUs based on one of these reasons:

- Flaw in original listing: reason noted for each change.
- New data: the assessment and interpretation of more recent data.

Table J-5 summarizes the number of watershed, large river and Lake Erie AUs being removed from or added to the 2018 303(d) list. Table J-6 and Figure J-6 summarize the number of AUs being changed for each of the reasons. Each AU removed or added for each reason is presented in Table J-7 through Table J-10.

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)	7	3	0	10
Recreation	3	0	0	3
Aquatic Life	56	0	0	56
Public Drinking Water Supply	0	1	1	2
Total	**66**	**4**	**1**	**71**
New Listings [Add to 303(d) list]				
Human Health (fish tissue)	16	0	0	16
Recreation	68	3	1	72
Aquatic Life	33	0	0	33
Public Drinking Water Supply	13	0	1	14
Total	**130**	**3**	**2**	**135**

Table J-6 — Summary of reasons for changes to the 2018 303(d) list.

	Number of AUs	
Reason for Change	Removals	Additions
Flaw in original listing	8	7
New data	61	128
Total	**69**	**135**

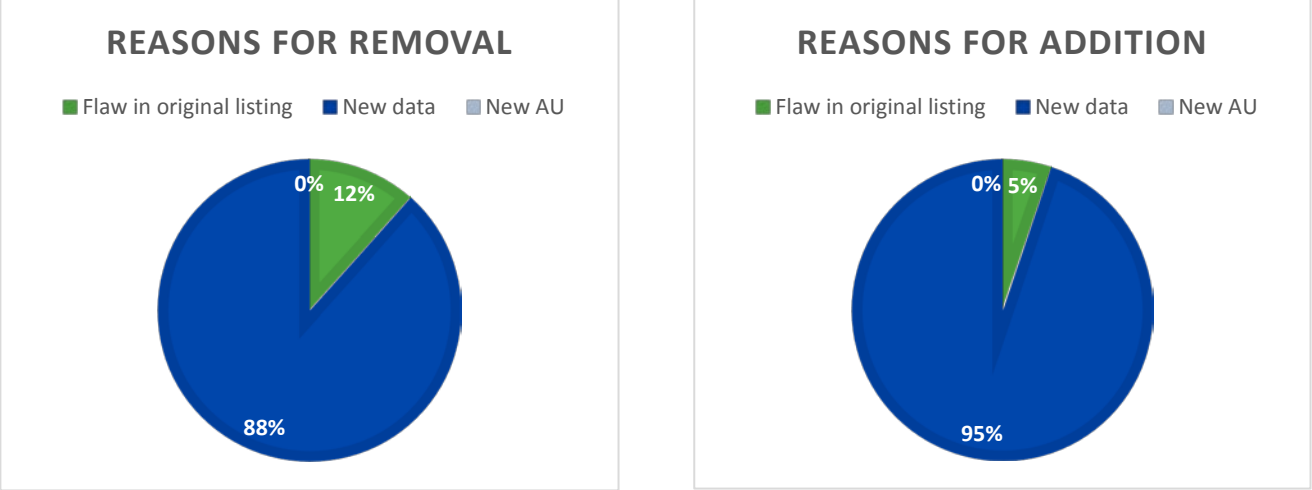

Figure J-10 — Summary of reasons for changes to the 2016 303(d) list.

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

Use	AU Number	AU Name	2016 Category	2018 Category
ALU	04100005 02 02	North Chaney Ditch-Maumee River	5hx	1
ALU	04100009 05 10	Lick Creek-Maumee River	5h	4n
ALU	04110001 03 02	Headwaters West Fork East Branch Black River	5h	1
ALU	05090101 06 02	Barren Creek-Raccoon Creek	5hx	1
HHU	05030103 02 01	Deer Creek	5	1
HHU	05040006 06 03	Dillon Lake-Licking River	5	1
HHU	05060002 02 05	Deer Creek Lake-Deer Creek	5	1
HHU	05090103 01 04	Storms Creek	5	1

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

Use	AU Number	AU Name	2016 Category	2018 Category
ALU	04100004 01 01	Muddy Creek	5hx	1
ALU	04100004 02 02	Eightmile Creek	5hx	4C
ALU	04100004 02 03	Blierdofer Ditch	5hx	1
ALU	04100005 02 03	Marie DeLarme Creek	5hx	1
ALU	04100005 02 05	Sixmile Cutoff-Maumee River	5hx	1
ALU	04100005 02 07	Sulphur Creek-Maumee River	5hx	1
ALU	04100009 01 01	West Creek	5hx	1
ALU	04100009 01 02	Upper South Turkeyfoot Creek	5hx	1
ALU	04100009 01 05	Little Turkeyfoot Creek	5hx	1
ALU	04100009 01 06	Lower South Turkeyfoot Creek	5hx	1
ALU	04100009 02 01	Preston Run-Maumee River	5hx	1
ALU	04100009 02 02	Benien Creek	5hx	1
ALU	04100009 02 03	Wade Creek-Maumee River	5hx	1
ALU	04100009 02 04	Garret Creek	5hx	1
ALU	04100009 02 05	Oberhaus Creek	5hx	1
ALU	04100009 02 06	Village of Napoleon-Maumee River	5hx	1
ALU	04100009 02 07	Creager Cemetery-Maumee River	5hx	1
ALU	04100009 03 01	Upper Bad Creek	5hx	1
ALU	04100009 03 02	Lower Bad Creek	5hx	1
ALU	04100009 04 01	Konzen Ditch	5hx	1

Use	AU Number	AU Name	2016 Category	2018 Category
ALU	04100009 04 03	Dry Creek-Maumee River	5hx	1
ALU	04100009 05 01	Big Creek	5hx	1
ALU	04100009 05 02	Hammer Creek	5hx	1
ALU	04100009 05 03	Upper Beaver Creek	5hx	1
ALU	04100009 05 04	Upper Yellow Creek	5hx	1
ALU	04100009 05 05	Brush Creek	5hx	1
ALU	04100009 05 06	Lower Yellow Creek	5hx	1
ALU	04100009 05 07	Cutoff Ditch	5hx	1
ALU	04100009 05 08	Middle Beaver Creek	5hx	1
ALU	04100009 05 09	Lower Beaver Creek	5hx	1
ALU	04110003 02 01	Indian Creek-Frontal Lake Erie	5hx	4n
ALU	05030201 06 03	Wolfpen Run-Little Muskingum River	5h	1
ALU	05030201 07 03	Wingett Run-Little Muskingum River	5h	1
ALU	05030201 07 05	Eightmile Creek-Little Muskingum River	5h	1
ALU	05030202 09 04	Crooked Creek-Ohio River	5hx	4n
ALU	05030204 04 02	Baldwin Run	5	1
ALU	05090101 05 01	Pierce Run	5	1d
ALU	05090101 06 01	Indian Creek	5hx	1
ALU	05090101 06 03	Mud Creek-Raccoon Creek	5hx	1
ALU	05090101 06 04	Bullskin Creek	5hx	1
ALU	05090201 02 03	Pond Run	5hx	1
ALU	05090201 02 04	Briery Branch-Ohio River	5hx	1
ALU	05090201 02 05	Upper Twin Creek	5hx	1
ALU	05090201 02 06	Lower Twin Creek	5hx	1
ALU	05090201 02 07	Rock Run-Ohio River	5hx	1
ALU	05090201 02 09	Stout Run	5hx	4n
ALU	05090201 02 10	Quicks Run-Ohio River	5hx	1
ALU	05090201 07 02	Headwaters East Fork Eagle Creek	5hx	1
ALU	05090201 07 03	Hills Fork-East Fork Eagle Creek	5hx	1
ALU	05090201 07 04	Rattlesnake Creek-West Fork Eagle Creek	5hx	1
ALU	05090201 08 03	Evans Run-Straight Creek	5hx	4n
ALU	05090201 08 04	Lee Creek-Ohio River	5hx	1
RU	04100009 01 02	Upper South Turkeyfoot Creek	5	1
RU	04100012 05 06	Mouth West Branch Huron River	5	1
RU	05090101 08 02	Black Fork	5	1
HHU	04100012 01 04	New London Upground Reservoir-Vermilion River	5h	1
HHU	05030103 07 03	Lower Meander Creek	5	1
HHU	05040001 03 08	Sippo Creek	5h	1
HHU	05030204 90 01	Hocking River Mainstem (Scott Creek to Margaret Creek)	5h	1
HHU	05030204 90 02	Hocking River (Margaret Creek to Ohio River)	5h	1
HHU	05040003 90 01	Walhonding River Mainstem (entire length)	5	1

Table J-9 — Addition to the 303(d) list because of flaw in original listing

Use	AU Number	AU Name	2016 Category	2018 Category
HHU	04110001 04 02	Salt Creek-East Branch Black River	1	5
HHU	05030103 08 09	Coffee Run-Mahoning River	3	5
HHU	05060001 18 05	Big Run-Walnut Creek	1	5
HHU	05060002 05 03	Lick Run-Scioto River	3i	5
HHU	05080002 01 03	Dry Run-Wolf Creek	1	5
PDWSU	04100007 03 05	Lost Creek	3i	5
PDWSU	04100007 03 06	Lima Reservoir-Ottawa River	3	5

Table J-10 — Additions to the 303(d) list because of new data

Use	AU Number	AU Name	2016 Category	2018 Category
ALU	04100004 03 01	Little Black Creek	3x	5
ALU	04100004 03 02	Black Creek	3x	5
ALU	04100004 03 03	Yankee Run-St Marys River	3x	5
ALU	04100004 03 04	Duck Creek	3x	5
ALU	04100012 05 05	Unnamed Creek "C"	1ht	5d
ALU	04100012 06 01	Headwaters East Branch Huron River	4Ah	5d
ALU	04110001 07 01	Headwaters Beaver Creek	3x	5
ALU	04110001 07 02	Mouth Beaver Creek	4C	5
ALU	04110001 07 03	Quarry Creek-Frontal Lake Erie	3x	5
ALU	04110003 05 01	Marsh Creek-Frontal Lake Erie	3	5
ALU	04120101 07 02	Turkey Creek-Frontal Lake Erie	1	5
ALU	04120101 07 03	Town of North Kingsville-Frontal Lake Erie	3	5
ALU	05030202 02 01	Headwaters West Branch Shade River	3x	5
ALU	05030202 02 02	Kingsbury Creek	3x	5
ALU	05030202 02 03	Headwaters Middle Branch Shade River	3x	5
ALU	05030202 02 04	Elk Run-Middle Branch Shade River	3x	5
ALU	05030202 02 05	Walker Run-West Branch Shade River	3x	5
ALU	05030202 08 05	Broad Run-Ohio River	3x	5
ALU	05040001 01 05	Portage Lakes-Tuscarawas River	4Ah	5d
ALU	05040001 07 01	Headwaters Upper Conotton Creek	3x	5
ALU	05040001 08 01	Cold Spring Run-Indian Fork	3x	5
ALU	05040001 08 02	Pleasant Valley Run-Indian Fork	3x	5
ALU	05040001 08 05	Dog Run-Conotton Creek	3x	5
ALU	05060003 05 04	Rocky Fork Lake-Rocky Fork	3	5
ALU	05080003 08 08	Howard Creek-Dry Fork Whitewater River	4n	5
ALU	05080003 08 09	Lee Creek-Dry Fork Whitewater River	1hx	5
ALU	05090101 01 01	Chickamauga Creek	3x	5
ALU	05090101 07 08	Wolf Creek-Indian Guyan Creek	3x	5
ALU	05090101 07 09	Paddy Creek-Ohio River	3x	5
ALU	05090101 08 02	Black Fork	3x	5
ALU	05090101 09 01	Sand Fork	3x	5
ALU	05090201 06 04	Big Threemile Creek	3x	5
ALU	05090201 10 03	Big Run-Whiteoak Creek	4A	5d
RU	04100010 06 02	Packer Creek	3	5
RU	04100010 06 03	Lower Toussaint Creek	3	5
RU	04100012 04 04	Holliday Lake	1t	5
RU	04100012 05 01	Mud Run	3	5
RU	04100012 05 02	Slate Run	3	5
RU	04100012 05 03	Frink Run	3	5

Use	AU Number	AU Name	2016 Category	2018 Category
RU	04100012 05 04	Seymour Creek	3	5
RU	04100012 05 05	Unnamed Creek "C"	3	5
RU	04110002 01 01	East Branch Reservoir-East Branch Cuyahoga River	1h	5
RU	04110002 01 03	Tare Creek-Cuyahoga River	1	5
RU	04110002 01 06	Sawyer Brook-Cuyahoga River	3	5
RU	05040001 07 02	Irish Creek	3	5
RU	05040001 07 03	Dining Fork	3	5
RU	05040001 07 05	North Fork McGuire Creek	3	5
RU	05040001 07 07	Headwaters Lower Conotton Creek	3	5
RU	05040001 08 01	Cold Spring Run-Indian Fork	1	5
RU	05040001 08 03	Thompson Run-Conotton Creek	3	5
RU	05040001 08 04	Huff Run	1	5
RU	05040001 08 05	Dog Run-Conotton Creek	1	5
RU	05080003 07 01	Headwaters Middle Fork East Fork Whitewater River	3	5
RU	05080003 08 07	Headwaters Dry Fork Whitewater River	3	5
RU	05080003 08 08	Howard Creek-Dry Fork Whitewater River	3	5
RU	05080003 08 09	Lee Creek-Dry Fork Whitewater River	3	5
RU	05090101 01 01	Chickamauga Creek	3	5
RU	05090101 02 01	East Branch Raccoon Creek	3	5
RU	05090101 02 02	West Branch Raccoon Creek	3	5
RU	05090101 02 03	Brushy Fork	3	5
RU	05090101 02 04	Twomile Run-Raccoon Creek	3	5
RU	05090101 02 05	Town of Zaleski-Raccoon Creek	3	5
RU	05090101 03 01	Hewett Fork	3	5
RU	05090101 03 02	Headwaters Elk Fork	3	5
RU	05090101 03 03	Flat Run-Elk Fork	3	5
RU	05090101 04 02	Dickason Run	3	5
RU	05090101 04 03	Meadow Run-Little Raccoon Creek	1	5
RU	05090101 04 04	Deer Creek-Little Raccoon Creek	3	5
RU	05090101 05 01	Pierce Run	3	5
RU	05090101 05 02	Strongs Run	3	5
RU	05090101 05 03	Flatlick Run-Raccoon Creek	3	5
RU	05090101 05 04	Robinson Run-Raccoon Creek	3	5
RU	05090101 06 01	Indian Creek	3	5
RU	05090101 06 02	Barren Creek-Raccoon Creek	3	5
RU	05090101 06 04	Bullskin Creek	3	5
RU	05090101 07 03	Swan Creek	3	5
RU	05090101 07 06	Little Indian Guyan Creek	3	5
RU	05090101 07 07	Johns Creek-Indian Guyan Creek	3	5
RU	05090101 07 08	Wolf Creek-Indian Guyan Creek	3	5
RU	05090101 08 03	Headwaters Symmes Creek	3	5
RU	05090101 09 01	Sand Fork	1h	5
RU	05090101 09 02	Buffalo Creek	3	5
RU	05090101 09 03	Camp Creek-Symmes Creek	3	5
RU	05090101 10 01	Johns Creek	3	5
RU	05090101 10 02	Long Creek	3	5
RU	05090101 10 03	Pigeon Creek-Symmes Creek	3	5
RU	05090101 10 04	Aaron Creek-Symmes Creek	3	5
RU	05090101 10 05	McKinney Creek-Symmes Creek	3	5
RU	05090101 10 07	Buffalo Creek-Ohio River	3	5
RU	05090201 02 01	Headwaters Turkey Creek	3	5

Use	AU Number	AU Name	2016 Category	2018 Category
RU	05090201 02 04	Briery Branch-Ohio River	3	5
RU	05090201 02 07	Rock Run-Ohio River	3	5
RU	05090201 02 09	Stout Run	3	5
RU	05090201 02 10	Quicks Run-Ohio River	3	5
RU	05090201 06 01	Crooked Creek-Ohio River	3	5
RU	05090201 06 05	Lawrence Creek-Ohio River	3	5
RU	05090201 07 02	Headwaters East Fork Eagle Creek	3	5
RU	05090201 07 04	Rattlesnake Creek-West Fork Eagle Creek	3	5
RU	05090201 07 05	Eagle Creek	3	5
RU	05090201 08 02	Headwaters Straight Creek	1	5
RU	05090201 08 03	Evans Run-Straight Creek	3	5
RU	05040001 90 02	Tuscarawas River Mainstem (Sandy Creek to Stillwater Creek)	3	5
RU	05080003 90 01	Whitewater River Mainstem (entire length)	3	5
RU	05090101 90 01	Raccoon Creek Mainstem (Little Raccoon Creek to mouth)	3i	5
RU	041202000101	Lake Erie Islands Shoreline (<=3m)	1	5
HHU	04100004 01 06	Fourmile Creek-St Marys River	1	5
HHU	04100004 03 03	Yankee Run-St Marys River	1	5
HHU	04100008 02 05	City of Findlay Riverside Park-Blanchard River	1	5
HHU	04100009 05 07	Cutoff Ditch	3	5
HHU	04100009 05 09	Lower Beaver Creek	3	5
HHU	04100012 05 06	Mouth West Branch Huron River	3	5
HHU	04100012 06 04	Mouth East Branch Huron River	3	5
HHU	04110004 05 02	Bronson Creek-Grand River	1h	5
HHU	05040002 08 02	Town of Perrysville-Black Fork Mohican River	3i	5
HHU	05040002 08 03	Big Run-Black Fork Mohican River	3i	5
HHU	05040003 03 04	Delano Run-Kokosing River	3i	5
PDWSU	04100007 02 03	Sims Run-Auglaize River	3i	5
PDWSU	04100007 06 04	Dry Fork-Little Auglaize River	1	5
PDWSU	04100012 04 03	Walnut Creek-West Branch Huron River	3	5
PDWSU	04110004 01 02	Headwaters Grand River	1	5
PDWSU	05030103 08 05	Headwaters Yellow Creek	1	5
PDWSU	05030103 08 06	Burgess Run-Yellow Creek	1	5
PDWSU	05040002 03 01	Headwaters Clear Fork Mohican River	1	5
PDWSU	05040004 04 07	Painter Creek-Jonathon Creek	1	5
PDWSU	05060001 06 02	Middle Mill Creek	1	5
PDWSU	05090202 04 06	Lower Caesar Creek	3i	5
PDWSU	05090202 06 04	Headwaters Cowan Creek	3i	5
PDWSU	05060001 90 01	Scioto River Mainstem (L. Scioto R. to Olentangy R.); excluding O'Shaughnessy and Griggs reservoirs	1	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 or re-assessments in about 45 project areas and has approved TMDLs in about 50 project areas. As of 2017, Ohio has assessed all our significant watershed areas using our current survey approach. 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 2015 Ohio Supreme Court decision resulted in a delay of TMDLs submitted for approval by Ohio EPA, as discussed in Section C on pages C-16 and C-17 of this report.

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. The delays caused by the 2015 Ohio Supreme Court Decision[7] and the workload resulting from the legislative changes to the process have also resulted in a larger backlog of TMDL reports. Fewer new assessments are planned for the next year or so to allow the report backlog to be reduced.

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).

J6.3 Short-Term Schedule for TMDL Development

Ohio EPA evaluated the pending TMDL projects and plans to focus on the highest priority projects during the next two years, which are 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 well in progress. In addition, the agency is 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 C7 of this report.

[7] 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."

Table J-11 — Ohio TMDLs[8] approved by U.S. EPA at the 11-digit hydrologic unit scale.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA[9]
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
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)		

[8] 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. 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.

[9] 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[9]
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)		
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, habitat alteration
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)		
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)		

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA[9]
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 suspended solids, chlorides
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[9]
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)		
04100009 070	Swan Creek (headwaters to above Blue Creek)	1/6/2010 10/25/2010	*E. coli*, 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-12 —Ohio TMDLs[10] approved by U.S. EPA at the 12-digit hydrologic unit scale.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA[11]
05080001 09 01 – 06	Headwaters Stillwater River	9/8/2009[12]	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	*E. coli*, 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	*E. coli*
05030103 01 01 – 03	Headwaters Mahoning River	9/28/2011 10/19/2011	*E. coli*, 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	*E. coli*, 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		
05060002 14 01 – 06	South Fork Scioto Brush Creek	9/30/2011	*E. coli*, phosphorus
05060002 15 01 – 07	Scioto Brush Creek		
05080001 01 01 – 03	Headwaters Great Miami River	3/26/2012	*E. coli*, sediment, nutrients, total dissolved solids
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		
04110004 04 01 – 03	Griggs Creek-Mill Creek	4/12/2012	

[10] 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.

[11] 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.

[12] The TMDL was revised for one pollutant.

AU Code	AU Name	U.S. EPA Approval Date	Pollutants Allocated, per U.S. EPA[11]
04110004 06 01 – 07	Big Creek-Grand River		*E. coli*, phosphorus, flow regime
05060003 01 01 – 03	Headwaters Paint Creek	9/18/2012	*E. coli*, sediment
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)		
04100010 07 01 – 06	Cedar Creek-Frontal Lake Erie	9/25/2012	total phosphorus, nitrate + nitrite, ammonia, total suspended solids, *E. coli*
04100009 09 01 – 04	Grassy Creek-Maumee River		
04110004 01 01 – 06	Headwaters Grand River	4/10/2013	*E. coli,* 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	*E. coli*, acidity
05040004 05 01 – 04	Moxahala Creek		
04100007 03 01 – 06	Upper Ottawa River Mid	4/15/2014	*E. coli,* 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	*E. coli,* 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-13 — Short-term schedule for TMDL development.

AU Code	AU Name
TMDLs approved by U.S. EPA after public review of 2014 303(d) list began	
None at this time	
TMDLs pending approval by U.S. EPA	
None at this time	
TMDLs expected to be submitted to U.S. EPA in FFY 2019	
05060001 01 01 – 04	Headwaters Scioto River
05060001 02 01 – 03	Rush Creek
05060001 03 01 – 04	Little Scioto River
05060001 04 01 – 06	Panther Creek-Scioto River
05060001 05 01 – 05	Fulton Creek-Scioto River
05060001 06 01 – 04	Mill Creek
05060001 90 01	Scioto River Mainstem (L. Scioto R. to Olentangy R.); excluding O'Shaughnessy and Griggs reservoirs
05040002 01 01 – 05	Headwaters Black Fork Mohican River
05040002 02 01 – 04	Rocky Fork-Black Fork Mohican River
05040002 03 01 – 03	Headwaters Clear Fork Mohican River
05040002 04 01 – 05	Possum Run-Clear Fork Mohican River
05040002 05 01 – 03	Muddy Fork Mohican River
05040002 06 01 – 06	Jerome Fork-Mohican River
05040002 07 01 – 03	Lake Fork Mohican River
05040002 08 01 – 06	Mohican River
05040002 90 01	Mohican River Mainstem (entire length)
TMDL projects that are being developed with assistance from U.S. EPA; completion expected in FFY 2019	
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
TMDLs expected to be submitted to U.S. EPA in FFY 2020	
05040001 13 01-04	Upper Stillwater Creek
05040001 14 01-03	Middle Stillwater Creek
05040001 15 01-05	Little Stillwater Creek
05040001 16 01-04	Lower Stillwater Creek
04100005 02 01-08	Gordon Creek-Maumee River
04100009 01 01-05	South Turkeyfoot Creek
04100009 02 01-07	Garret Creek-Maumee River
04100009 03 01-02	Bad Creek
04100009 04 01-03	North Turkeyfoot Creek
04100009 05 01-10	Beaver Creek -Maumee River

AU Code	AU Name
04100009 06 01-03	Tontogany Creek – Maumee River
05040003 01 01 – 03	North Branch Kokosing River
05040003 02 01 – 03	Headwaters Kokosing River
05040003 03 01 – 07	Schenck Creek-Kokosing River
05040003 04 01 – 03	Jelloway Creek-Kokosing River
05080001 07 01 – 05	Tawawa Creek-Great Miami River
05080001 08 01 – 05	Lost Creek-Great Miami River
05080001 20 01 – 05	Honey Creek-Great Miami River
05080001 90 01	Great Miami River mainstem (Tawawa Creek to Mad River)
05090202 10 01 - 06	Headwaters East Fork Little Miami River
05090202 11 01 - 03	Fivemile Creek-East Fork Little Miami River
05090202 12 01 - 04	Cloverlick Creek-East Fork Little Miami River (*includes W.H. Harsha Lake*)
05090202 13 01 - 05	Stonelick Creek-East Fork Little Miami River
04100001 03 01 - 09	Ottawa River-Frontal Lake Erie
04100002 03 01, 03, 04	Little River Raisin-River Raisin
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)