

2024 Integrated Report to Congress on the Condition of Water Resources in Kentucky



Kentucky Energy and Environment Cabinet
Department for Environmental Protection
Division of Water
Water Quality Branch
September 13, 2024

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2024 Integrated Report to Congress on the Condition of Water Resources in Kentucky

This report has been approved for release:



Sarah Gaddis, Director
Kentucky Division of Water

September 13, 2024

Date

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List of Acronyms

- ATTAINS – Assessment TMDL Tracking and Implementation System
- AU – Assessment Unit
- BMP – Best Management Practice
- BMU – Basin Management Unit
- BIL – Bipartisan Infrastructure Law
- CAH – Cold Water Aquatic Habitat
- CSO – Combined Sewer Overflow
- CSS – Combined Sewer System
- CWA – Clean Water Act
- CWSRF – Clean Water State Revolving Fund
- DEP – Department for Environmental Protection
- DOC – Division of Conservation
- DOW – Division of Water
- DWS – Domestic Water Supply
- DWSRF – Drinking Water State Revolving Fund
- ECHO – Enforcement and Compliance History Online
- EPA – Environmental Protection Agency
- ESRI – Environmental Systems Research Institute
- GIS – Geographic Information Systems
- HAB – Harmful Algal Bloom
- HTF – Hypoxia Task Force
- IR – Integrated Report
- KATTS – Kentucky’s Assessment and TMDL Tracking System
- KPDES – Kentucky Pollutant Discharge Elimination System
- K-WADE – Kentucky Water Assessment Data for Environmental Monitoring
- KY-WRAM – Kentucky Wetland Rapid Assessment Method
- LTCP – Long Term Control Plans
- NPS – Nonpoint Source
- NWIS - National Water Information System
- ORSANCO – Ohio River Valley Water Sanitation Commission
- OSRW – Outstanding State Resource Water
- PCB – Polychlorinated Biphenyl
- PCR – Primary Contact Recreation
- PFAS - Per- and polyfluoroalkyl substances
- PMP – Program Management Plan
- PSP – Project Study Plan
- REST – Representational State Transfer
- SDWA – Safe Drinking Water Act
- SCR – Secondary Contact Recreation
- SDWIS – Safe Drinking Water Information System
- SOP – Standard Operating Procedure
- SSO – Sanitary Sewer Overflow
- STP – Sewage Treatment Plant
- TDS – Total Dissolved Solid
- TMDL – Total Maximum Daily Load
- USACE – United States Army Corps of Engineers
- USGS – United States Geological Survey
- WAH – Warm Water Aquatic Habitat
- WQP – Water Quality Portal
- WWTP – Wastewater Treatment Plant
- QA – Quality Assurance
- QAPP – Quality Assurance Project Plan

Notes for the Reader

If you are reading this, thank you for taking an interest in Kentucky's water resources.

The following resources may be helpful:

1. The [assessment unit modification](#) spreadsheet can be used when reviewing assessment units that were split from their extent on the 2022 305(b) list.
2. In conjunction with this Integrated Report document, an [Integrated Report site](#) has been developed, where information can be reviewed through story maps, dashboards, and interactive maps.
3. The U.S. Environmental Protection Agency's (EPA) [How's My Waterway](#) displays data at the community, state, and national scale. On the community page, other data submitted to the EPA, such as monitoring locations, permitted dischargers, and restoration projects, are displayed.
4. New to the [305\(b\) workbook](#) is a tab highlighting implementation that has been funded by the [Section 319\(h\) Grant Program](#).
5. Alternative text is available for all figures throughout the document.

If you have any questions about this report, the 305(b) list, the 303(d) list, the assessment program, or the Total Maximum Daily Load (TMDL) program in Kentucky, please email TMDL@ky.gov.

If you are interested in being kept up to date with public notice periods for future draft 303(d) lists or TMDL activities, please email TMDL@ky.gov to be added to the TMDL information distribution list.

Acknowledgements

Many individuals and organizations contribute to the assessment process. Thank you to all those that contributed data, information, and assessment recommendations. Specifically, I would like to thank all the staff in the Water Quality Branch; your dedication to the efforts of monitoring and assessing the waters of the Commonwealth is greatly appreciated. I would also like to thank all the staff in the Watershed Management Branch for their dedication to accurate geospatial data and their contributions to improve public communication.



Executive Summary

The 2024 Integrated Report (IR) was prepared by the Kentucky Division of Water (DOW), Department for Environmental Protection (DEP), for submittal to the U.S. Environmental Protection Agency (EPA) to fulfill requirements of sections 303(d), 305(b), and 314 of the Federal Water Pollution Control Act (or Clean Water Act (CWA)) of 1972, as subsequently amended.

Section 305(b) of the CWA requires states to submit a biennial report to EPA describing the quality of the state's waters and to provide an inventory of waterbodies with water quality that supports, or fails to support, their designated uses. Section 303(d) of the CWA requires states to identify and maintain a list of impaired waters and to develop a total maximum daily load (TMDL) for each pollutant-waterbody combination that does not meet water quality criteria.

In conjunction with this IR document, an [Integrated Report site](#) has been developed to promote public engagement. To create the IR site, an Environmental Systems Research Institute (ESRI) ArcGIS (Geographic Information System) Hub was used to communicate assessments results from the 2024 305(b) using representational state transfer (REST) services, online maps, ArcGIS dashboards, and story maps. The IR site also has information on topics ranging from designated uses (e.g., swimming and fish consumption), assessment categories, monitoring programs, and methodologies used for determining designated use attainment.

Designated Uses

All waterbodies in Kentucky have uses for the management and goal of attaining a minimum level of water quality. Designated uses are promulgated in [401 KAR 10:026](#) and the implementing (enabling) criteria are in [401 KAR 10:031](#). The following are applicable designated uses:

- Cold water aquatic habitat (CAH)
- Warm water aquatic habitat (WAH)
 - CAH and WAH are commonly referred to as the aquatic life designated use, and are referenced as such throughout this IR
 - Rivers and streams are either WAH or CAH
 - Lakes and reservoirs designated as CAH are both CAH and WAH
- Primary contact recreation (PCR)
- Secondary contact recreation (SCR)
- Domestic water supply (DWS)
- Outstanding state resource water (OSRW)
- Fish consumption¹

With the exception of CAH and OSRW, the remaining designated uses apply by default to all waterbodies.

¹ Fish consumption is not a designated use but is assessed as such and therefore included in this list.

Monitoring

The DOW operates its ambient rivers monitoring program with a Watershed Management Framework Initiative implemented in 1998, where Basin Management Units (BMU) are sampled on a five-year rotation (Figure 1). Other DOW monitoring programs target the statewide scale of a particular population, or focus on specific watersheds on a small, regional scale.

The 2024 reporting cycle focuses on DOW's Ambient Rivers program from the Green and Tradewater Rivers BMU, DOW's Ambient Lakes program from 2021-2022, and DOW's Probabilistic Biological Monitoring program from 2017-2021, where a statewide approach was newly implemented. Data collected by other DOW programs and external data contributors provide updates throughout the state.

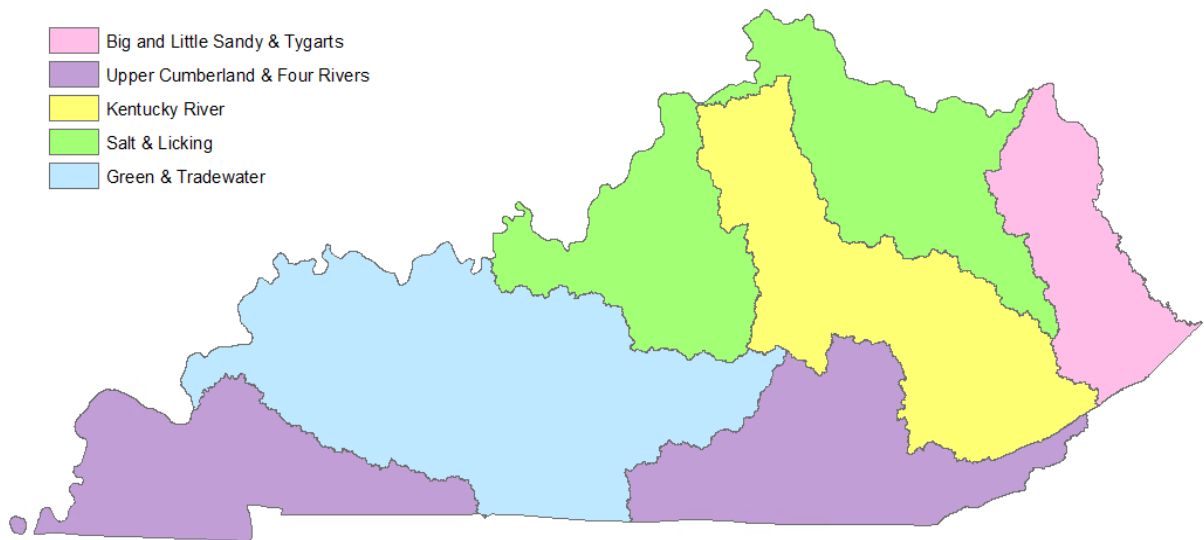


Figure 1. Basin management units of Kentucky.

Assessment

Before data are used in the assessment process, they are reviewed to ensure data are of sufficient quantity and quality to make designated use attainment decisions. In total 993 sampling locations contributed data to the 2024 cycle, and 780 assessments were completed (Table 1).

To determine if a waterbody meets its designated use(s), available data are summarized and compared to water quality standards according to Kentucky's assessment methodologies, which are developed by the state and approved by EPA. The assessment results are reported in the 305(b), the 303(d), and discussed within this IR.

All assessment results are related to a parameter, such as *E. coli*, sedimentation/siltation, habitat assessments, or flow regime modifications. When there is sufficient evidence to demonstrate that a parameter is not meeting water quality criteria, it is considered a cause of impairment, which can be attributed more generally to pollution or to a specific pollutant. Pollution is a general term that refers to degradation to an ecosystem and can include removing habitat from a streambank to littering. Pollutants are measurable substances that contribute to pollution that makes the water harmful or unsuitable for a specific purpose; examples include chemicals or waste products.

For more detailed information about Kentucky’s assessment and listing methodology, refer to the [Consolidated Assessment and Listing Methodology \(CALM\): Surface Water Quality Assessment in Kentucky, the Integrated Report](#) (KDOW 2015). In addition to this document, an update to [Kentucky’s Assessment Methodology for Fish Consumption](#) (KDOW 2020) is considered an addendum to the CALM, and should be used in place of the fish consumption method outlined in section 3.6 on page 55 of the 2015 CALM document.

Table 1. Number of samples collected and analyzed per data type where the data were used for assessment during this 2024 Integrated Reporting cycle.

PATHOGENS	CHLOROPHYLL-A	WATER CHEMISTRY	FISH TISSUE	FISH	MACRO-INVERTEBRATES
5,424	194	2,995	27	225	387

Categories and Attainment

The 305(b) list is a list of all waterbodies that have been assessed for one or more designated uses this cycle or any prior cycle. Waterbodies on the 305(b) list are put into different categories depending upon the assessment decision made for that waterbody. Categories are assigned at the parameter level, which is the level that data are collected and analyzed, the designated use level, which is the level that the water quality standards for a particular parameter apply, and the assessment unit level, which is determined from the assessed designated uses and their categories (Figure 2).

Impaired waters are those waters found to partially support or not support one or more of their designated uses due to either a pollution or a pollutant. The 303(d) list, which is a subset of the 305(b) list, is only those waters in category 5, where the cause of impairment is identified as a pollutant and a TMDL is required (Figure 2).

Results

305(b) Results

The 305(b) list is an inventory of all waterbodies that have been assessed for at least one designated use from this cycle and all prior cycles. The spatial extent of each assessment unit is identified within the list. Kentucky’s 2024 305(b) list has 3,168 assessment units representing 13,691.8 river miles, 213,075 lake/reservoir acres, and 192,514 springshed acres. The [305\(b\) workbook](#) has a tab for the 305(b) list, the 303(d) list, new listings (cycle first listed 2024), pollutants proposed to EPA for delisting, waters with an EPA approved TMDL, and impaired waters.

Designated Use Level (all waterbody types)

For all 3,168 assessment units on the 2024 305(b) list, regardless of waterbody type, attainment per designated use is displayed in Figure 3.

	Category	Category Description	
305(b) List	1	Assessment unit supports all designated uses	Meeting Water Quality Standards
	2	Assessment unit supports designated use(s), but not all designated uses assessed	
	2b	Assessment unit currently supports designated use(s), but 303(d) listed and proposed to EPA for delisting	
	2c	Assessment unit supports designated use(s), and has an EPA approved or established TMDL	
	3	Designated use(s) has/ have not been assessed (insufficient information or no data)	
	4a	Assessment unit does not support designated use(s), and has an EPA approved or established TMDL	Impaired; Not Meeting Water Quality Standards
	4b	Assessment unit does not support designated use(s), and has an approved alternative pollution control plan stringent enough to meet water quality standard(s) within a specified time.	
	4c	Assessment unit does not support designated use(s), but is not attributable to a pollutant or a combination of pollutants.	
303(d) List	5	Assessment unit does not support designated use(s), and is attributable to a pollutant or a combination of pollutants. TMDL required.	

Figure 2. Category definition at the assessment unit level.

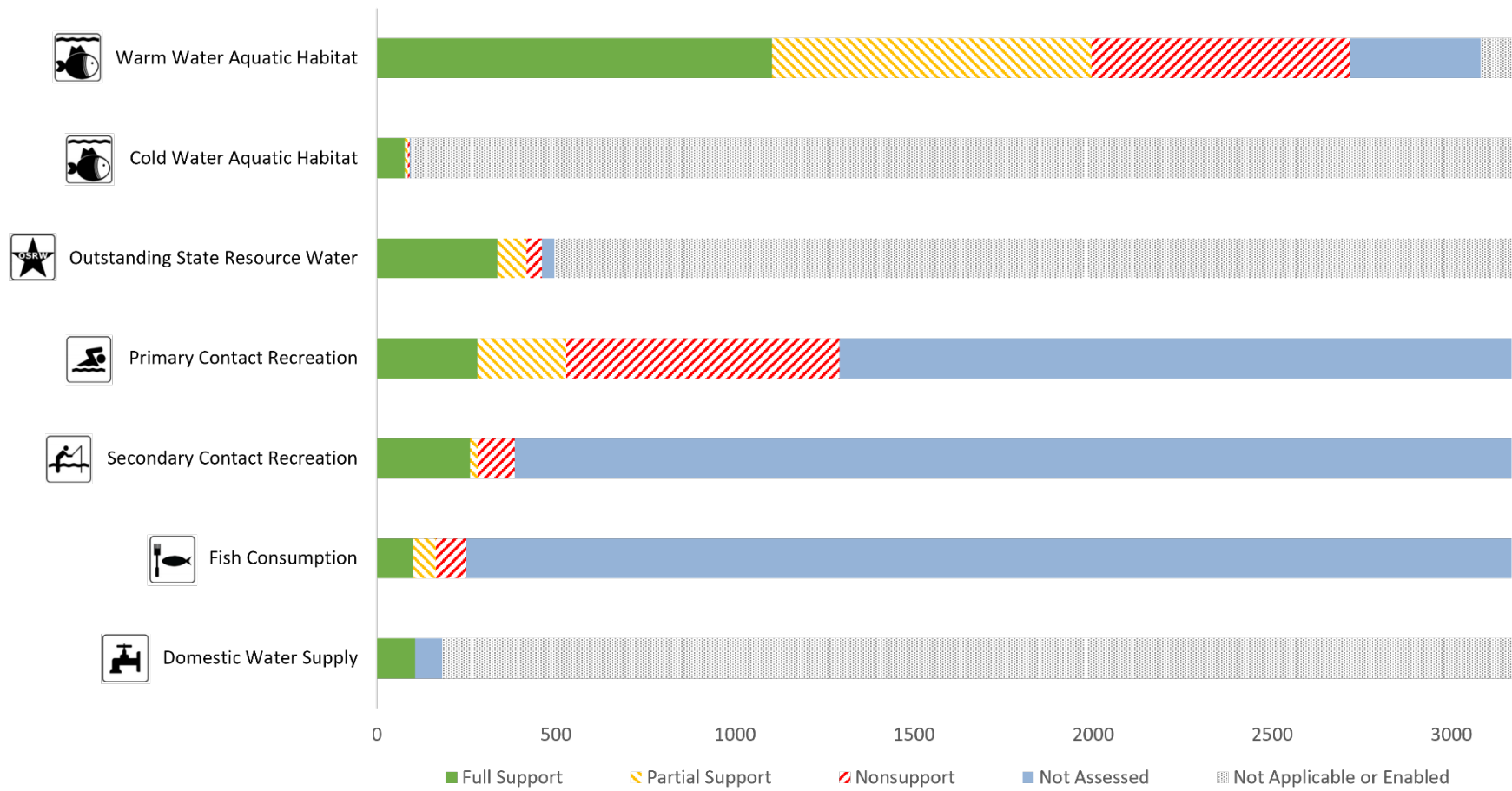


Figure 3. Assessment status and attainment for all 3,168 assessment units on the 2024 305(b) per designated use.

Warm Water Aquatic Habitat

On the 2024 305(b) list, 2,717 assessment units have been assessed for the WAH designated use, making it the most assessed designated use. Of those assessed, 1,104 fully support the WAH designated use, while 1,613 are impaired. River and stream assessment units represent 2,610 of the assessment units, of which 1,054 are meeting and 1,556 are impaired. Lake and reservoir assessment units represent 106 of the assessment units, of which 49 are meeting and 57 are impaired (Figure 4).

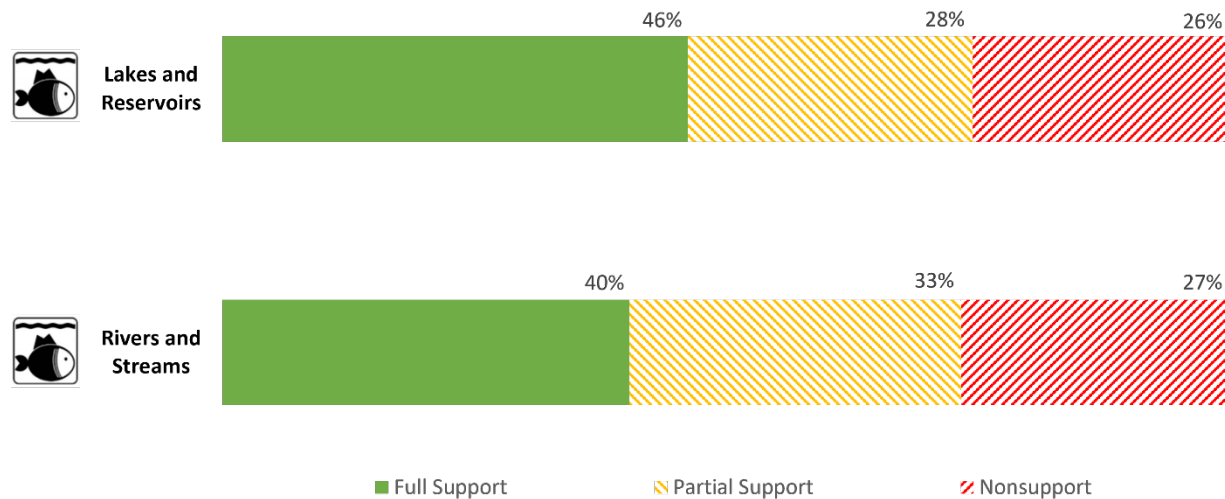


Figure 4. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **WAH** designated use.

Cold Water Aquatic Habitat

On the 2024 305(b) list, 96 assessment units have the CAH designated use, 92 of which have been assessed. River and stream assessment units represent 83 of the assessed assessment units, of which 69 are meeting and 14 are impaired (Figure 5). Lake and reservoir assessment units represent 9 of those assessment units, all of which are meeting (100%).



Figure 5. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **CAH** designated use.

Outstanding State Resource Water

On the 2024 305(b) list, 483 assessment units have the OSRW designated use, of which 460 have been assessed. Most of the waterbodies assessed for this use are rivers and streams (457 of the 460) and are meeting, with 336 assessment units found to fully support OSRW and 121 assessment units found to be impaired (Figure 6).



Figure 6. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **outstanding state resource water (OSRW)** designated use.

Primary Contact Recreation

On the 2024 305(b) list, 1,292 assessment units have been assessed for the PCR designated use. Of those assessed, 281 were found to fully support the designated use, while 1,011 were found to be impaired. River and stream assessment units represent 1,273 of the assessment units, of which 273 are meeting and 1,000 are impaired for the PCR use (Figure 7). Spring assessment units represent 12 of the assessment units, of which one is meeting and 11 are impaired for the PCR use. Lake and reservoir assessment units represent seven of the assessment units, all of which are meeting the PCR use.

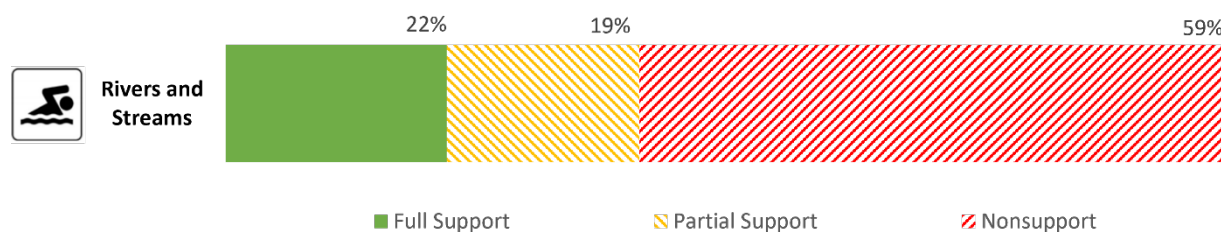


Figure 7. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **PCR** designated use.

Secondary Contact Recreation

On the 2024 305(b) list, 386 assessment units have been assessed for the SCR designated use. Of those assessed, 260 were found to fully support the designated use, while 126 were found to be impaired. River and stream assessment units represent 298 of the assessment units, of which 176 are meeting and 122 are impaired for the SCR use. Lake and reservoir assessment units represent 87 of the assessment units, of which 83 are meeting and four are impaired for the SCR use (Figure 8). One spring has been assessed, which is full support.

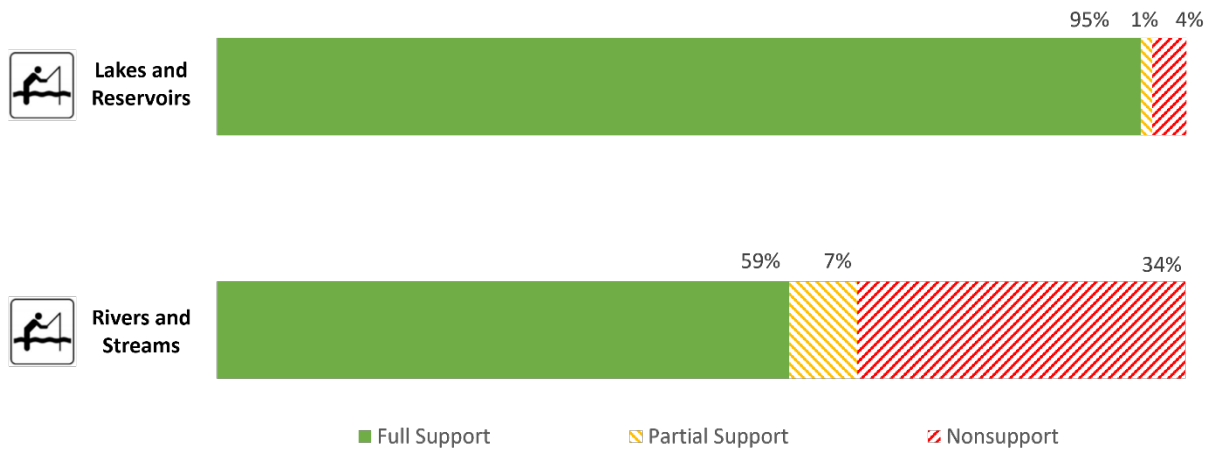


Figure 8. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **SCR** designated use.

Fish Consumption

On the 2024 305(b) list, 251 assessment units have been assessed for fish consumption. Of those assessed, 101 were found to fully support the designated use, while 150 were found to be impaired. River and stream assessment units represent 205 of the assessment units, of which 78 are meeting and 127 are impaired for fish consumption. Lake and reservoir assessment units represent 46 of the assessment units, of which 23 are meeting and 23 are impaired for fish consumption (Figure 9).

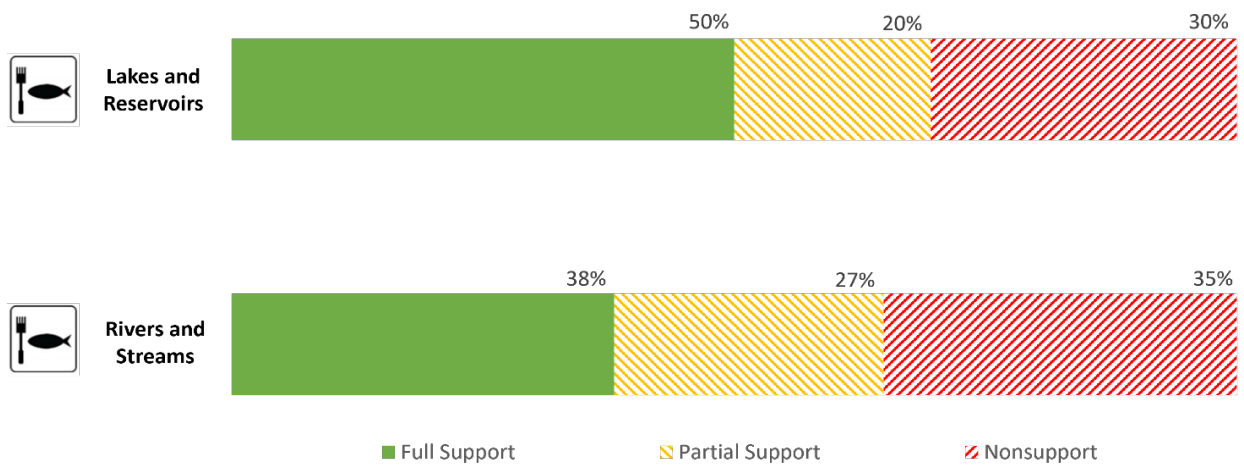


Figure 9. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for **fish consumption**.

Impaired Waters

Impaired waters are a subset of the 305(b) list and are those waterbodies where at least one designated use is not being supported, and the cause of impairment does not require a TMDL (category 4c), requires a TMDL but a TMDL has not been developed (category 5), or a requires a TMDL and a TMDL has been developed (category 4a).

Of the 3,168 assessment units on the 2024 305(b) list, 2,154 assessment units are impaired for at least one designated use. Broken down by waterbody type, 2,071 rivers/streams are impaired totaling 9,552.8 river miles, 72 lakes/reservoirs are impaired totaling 186,664 acres, and 11 springs are impaired totaling 86,073 springshaded acres.

The impaired waters tab of the [305\(b\) workbook](#) has specific information about all assessment units identified as impaired for one or more designated uses. Parameter level information for those identified as a cause of impairment is available per assessment unit, including if that parameter has a TMDL, the parameter's category, TMDL priority rank (if applicable), cycle first listed (if applicable), and suspected sources.

Causes of Impairment

There are 5,058 parameter-waterbody combinations on the impaired waters list. Those parameters fall into three reporting categories:

1. 3,070 are in category 5, meaning the parameter is a pollutant, identified as a cause of impairment, and requires a TMDL
 - a. This is the 303(d) list
2. 789 are in category 4a, meaning the parameter is a pollutant, identified as a cause of impairment, and has an EPA-approved TMDL
3. 1,199 are in category 4c, meaning the parameter is a pollution, identified as a cause of impairment, but does not require a TMDL

Parameters can be grouped to explore types of impairments throughout the Commonwealth. Figure 10 shows the parameters identified as a cause of impairment on the 2024 305(b) list grouped into the following themes and listed by order of prevalence:

1. Pathogens
2. Sedimentation
3. Biologic Integrity (Bioassessments)
4. Habitat Alterations
5. Nutrients
6. Salinity/Total Dissolved Solids (TDS)/Chlorides/Sulfates
 - a. Specific Conductivity included in this group
7. Metals (other than mercury)
8. Other (including cause unknown)
9. Organic Enrichment/Oxygen Depletion
10. Polychlorinated Biphenyls (PCBs)
11. pH/Acidity/Caustic Conditions
12. Dioxins
13. Hydrologic Alteration
14. Turbidity
15. Mercury

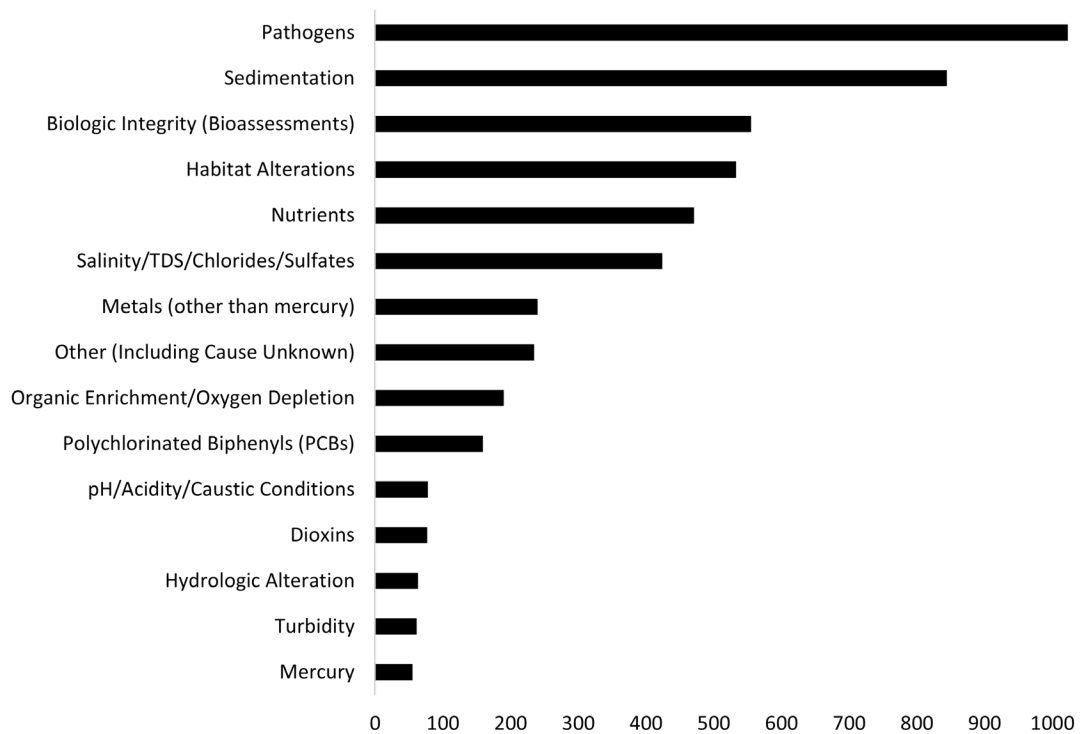


Figure 10. Types of impairments on the 2024 305(b) list where parameters have been grouped into 15 themes to better understand the number and types of impairments throughout the Commonwealth.

The 303(d) List

The 303(d) list includes all waterbodies identified as being impaired (not meeting water quality standards) by one or more pollutants where a TMDL has not yet been developed but is required. The 2024 303(d) list has 3,070 pollutant-waterbody combinations that require a TMDL. Each pollutant-waterbody combination is in category 5, has a cycle first listed, suspected sources, and a TMDL priority rank (high, medium, or low) (Table 2).

Broken down by waterbody type, 1,607 rivers/streams are on the 303(d) list totaling 7,565.0 river miles, 72 lakes/reservoirs are on the 303(d) list totaling 186,664.0 acres, and nine springs are on the 303(d) list totaling 82,988 springshed acres.

Although the 303(d) list is sometimes referred to as the “impaired waters list,” it is specifically a subset of the impaired waters where the parameter identified as a cause of impairment is a pollutant and a TMDL has not yet been developed. Figure 11 shows the number of impairments per parameter group that are in need of a TMDL, with the priority per parameter group distinguished by low (light gray), medium (dark gray), and high (black).

The 303(d) tab of the [305\(b\) workbook](#) has the official information about all pollutant-waterbody combinations that are on the 303(d) list.

Table 2. Definitions of TMDL priority ranks.

High	TMDL is in development or will be in development within the next two years and is expected to be completed during the next one to two reporting cycles (within 1-4 years). Click here for more information on the 303(d) Long Term Vision Priorities
Medium	TMDL strategies are in the planning stage for the waterbody and/or pollutant. Methodologies may be under development or data collection may be planned or ongoing. Opportunities for alternative restoration plans may be under review.
Low	A TMDL is not currently in development. This rank includes TMDLs for which methodologies may be in development for the pollutant or waterbody type. Some waters ranked as "Low" priority for TMDL development have an EPA-accepted alternative restoration plan that is being implemented or have an alternative restoration plan in development that is expected to be EPA-accepted within the next two reporting cycles. The progress of each alternative restoration plan is reviewed each cycle to ensure the plan is on track to restoring water quality. The TMDL development priority rank may be updated based on this review. See table columns in the 303(d) list related to "Actions" for information on these alternative restoration plans. Click here for more information about alternative restoration plans

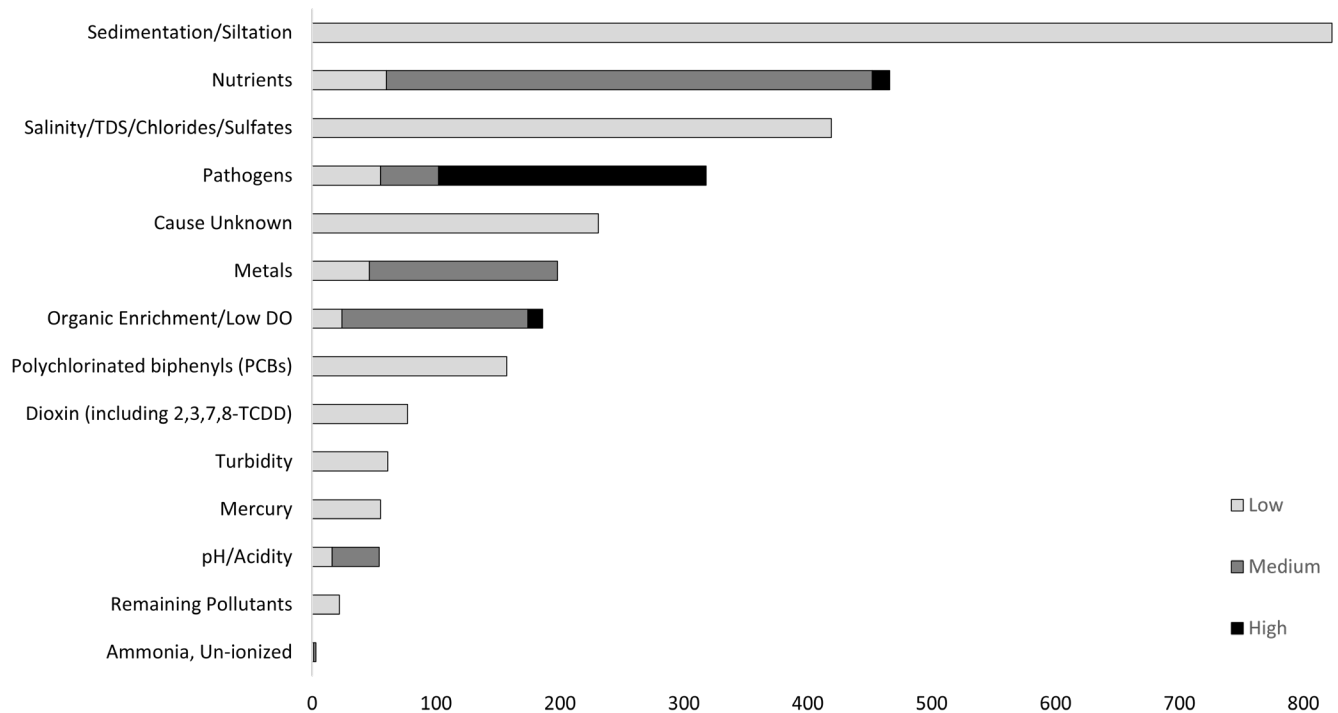


Figure 11. Number of impairments per parameter group where the parameter is on the 303(d) list because a TMDL is required but has not yet been developed. TMDL priority rank distinguished by low (light gray), medium (dark gray), and high (black).

Waters with TMDLs or TMDL Alternatives

On the 2024 305(b) list there are 834 pollutant-waterbody combinations with an EPA-approved TMDL. There are 44 PWCs with a TMDL Alternative that is either in development (draft) or being implemented (EPA final). The 'TMDL' tab of the [305\(b\) workbook](#) has the official information about all pollutant-waterbody combinations with an EPA-approved TMDL, while the '303(d)' tab of the [305\(b\) workbook](#) has information about impairments being addressed by TMDL Alternatives. The [Approved TMDL Reports webpage](#) has all EPA-approved TMDLs, with a link to each report. The [TMDL Alternative Approaches webpage](#) has all EPA-Accepted TMDL Alternative Plans, with a link to each plan or report.

Total Maximum Daily Load Program

The Kentucky DOW is implementing the [National Clean Water Act 303\(d\) Program Vision](#), which calls for states, territories, and authorized tribes to prioritize impaired waters for TMDL development and to develop TMDL Alternative Approaches where appropriate in the context of a long-term planning framework.

Under the [2013 Program Vision](#), the [DOW outlined priorities](#) for TMDLs and [TMDL Alternative Plans](#) for the 2014-2022 planning period. The close of that planning period brought the [2022 Program Vision](#) and initiated a new long term planning period. The DOW has created a [2022-2032 303\(d\) and Impaired Waters Prioritization Framework](#), which was at public notice with the 2024 draft 303(d) list. The Prioritization Framework summarizes the accomplishments of the 2013 Program Vision period, communicates the goals of Kentucky's 303(d) program, summarizes the top priorities for restoration and protection plan development for the 2022-2032 planning period, and outlines a strategy for achieving these goals and priorities. All updates can be found on the [TMDL priorities webpage](#).

If you have questions about the TMDL program, the vision, or alternative restoration approaches, email TMDL@ky.gov.



Introduction

The 2024 Integrated Report (IR) was prepared by the Kentucky Division of Water (DOW), Department for Environmental Protection (DEP), for submittal to the U.S. Environmental Protection Agency (EPA) to fulfill requirements of sections 303(d), 305(b), and 314 of the Federal Water Pollution Control Act (or Clean Water Act (CWA)) of 1972, as subsequently amended. Section 305(b) of the CWA requires states to assess and report current water quality conditions to EPA every two years.

In conjunction with this IR document, an [Integrated Report site](#) has been developed to promote public engagement. To create the IR site, an ESRI ArcGIS Hub was used to communicate assessments results from the 2024 305(b) using REST services, online maps, ArcGIS dashboards, and story maps. The IR site also has information on topics ranging from designated uses (e.g., swimming and fish consumption), assessment categories, monitoring programs, and methodologies used for determining designated use attainment.

Designated Uses

All waterbodies in Kentucky have uses for the management and goal of attaining a minimum level of water quality. Designated uses are promulgated in [401 KAR 10:026](#) and the implementing (enabling) criteria are in [401 KAR 10:031](#). The following are applicable designated uses:

- Cold water aquatic habitat (CAH)
- Warm water aquatic habitat (WAH)
 - CAH and WAH are commonly referred to as the aquatic life designated use, and are referenced as such throughout this IR
 - Rivers and streams are either WAH or CAH
 - Lakes and reservoirs designated as CAH are both CAH and WAH
- Primary contact recreation (PCR)
- Secondary contact recreation (SCR)
- Domestic water supply (DWS)
- Outstanding state resource water (OSRW)
- Fish consumption²

With the exception of CAH and OSRW, the remaining designated uses apply by default to all waterbodies. View the [designated use story map](#) or read below for a description of each designated use.



Cold Water Aquatic Habitat (CAH)

As defined in [401 KAR 10:001](#), CAH means surface waters and associated substrate that are able to support indigenous aquatic life or self-sustaining or reproducing trout populations on a year-round basis. All waterbodies designated as CAH are listed in [401 KAR 10:026](#), Table C entitled 'Waters with Added Designated Uses.' There are implementing criteria specific to CAHs; however, where there are no criteria specific to CAH, those criteria promulgated for WAH apply.

² Fish consumption is not a designated use but is assessed as such and therefore included in this list.



Warm Water Aquatic Habitat (WAH)

WAH applies to the majority of waterbodies in the Commonwealth, and are those not designated as CAH (with the exception of lakes or reservoirs that are designated as both CAH and WAH). As defined in [401 KAR 10:001](#), WAH means a surface water and associated substrate capable of supporting indigenous warm water aquatic life.



Outstanding State Resource Water (OSRW)

This designated use provides additional measures for maintenance of habitat quality, including water quality, for the protection of federally threatened or endangered species that inhabit the OSRW. Additionally, select waterbodies that have water quality and habitat that support a diverse fish or macroinvertebrate community and rate excellent on either the fish (Compton et al. 2003) or macroinvertebrate (Pond et al. 2003) biological community multimetric index may be proposed for designation as an OSRW. Other attributes that qualify a waterbody for OSRW designation can be found in [401 KAR 10:031](#), Surface Water Standards, Section 8.

All waterbodies designated as OSRW are listed in [401 KAR 10:026](#), Table C entitled 'Waters with Added Designated Uses.' There are implementing criteria specific to OSRWs; however, where there are no criteria specific to OSRW, those criteria promulgated for WAH apply. Both designated and candidate OSRWs are published on the DOW's [special waters](#) webpage, so this is often the most up-to-date source of OSRW listings that include candidate waterbodies or segments.



Primary Contact Recreation (PCR) – "Swimming"

PCR is the designated use for waterbodies in the Commonwealth with the implementing criteria to manage water quality for the protection of human health against pathogenic-induced gastrointestinal illnesses during the recreation season of May 1 through October 31. The bacterium *Escherichia coli* (*E. coli*) is a commonly used indicator organism to monitor water quality for safe swimming conditions, where full-body immersion is likely. *E. coli* are bacteria found in the guts of warm-blooded organisms, including humans. The presence of *E. coli* indicate there is likely waste from warm-blooded organisms present in the waterbody and with it the expectation of various pathogenic viruses, parasites, and pathogenic strains of bacteria, including *E. coli*. A criterion for pH applies to this designated use during the recreation season. This criterion provides protection to the bather from extremes of both acidic and basic conditions.



Secondary Contact Recreation (SCR) – "Boating and Wading"

SCR is the designated use for waterbodies in the Commonwealth with the implementing criteria to manage water quality for the protection of human health against pathogenic gastrointestinal illnesses and maintain a safe range for pH. These criteria apply to this designated use year-round. Fecal coliforms are bacteria found in the guts of warm-blooded organisms and are the indicator used to monitor the water quality for safe boating and wading, or any form of recreation that does not include full-body immersion. The pH criterion protects against extremes of water quality regarding acidic and basic conditions. Additional criteria exist to protect the designated use from such conditions including nuisance algal blooms, nuisance aquatic macrophytes, or other forms of pollutions that may deter from the aesthetic qualities of a waterbody.



Domestic Water Supply (DWS)

As defined in [401 KAR 10:001](#), DWS means surface waters that, with conventional domestic water supply treatment, are suitable for human consumption through a public water system as defined by 40 CFR 141.2, for culinary purposes, or for use in a food or beverage processing industry; and meet state and federal regulations promulgated pursuant to the Safe Drinking Water Act, as amended, 42 U.S.C. 300f - 300j-26.

The DWS designated use applies to all waters in the Commonwealth; however, the enabling criteria that implement this designated use are only applied at the point of withdrawal by a public treatment facility. Public water systems are defined as those systems that have at least 15 service connections or regularly serve an average of 25 or more individuals (40 CFR 141.2). The human health criteria that apply are found in [401 KAR 10:031](#) (Section 6, Table 1, column entitled 'DWS').



Fish Consumption

Fish consumption is not a designated use per state regulation. However, there exist human health criteria in water quality standards for the protection of the population should they choose to catch local fish for consumption. Applicable criteria can be found in [401 KAR 10:031](#), Surface Water Standards, Sections 2 and 6. As such, the U.S. EPA agrees and requires the assessment results of fish tissue monitoring be reported in Section 305(b) of the CWA under the fish consumption designated use.



Monitoring & Data Acquisition

The DOW began monitoring the water quality of Kentucky's rivers, streams, and reservoirs over 40 years ago. Early monitoring consisted of 45 stations spread across the state. Since then, the number of monitoring locations has grown considerably. DOW's surface water monitoring programs are designed to meet the following federal Clean Water Act and state objectives:

- Determining if the water quality of the Commonwealth's rivers, streams, and reservoirs is protective of human health while supporting healthy aquatic communities;
- Identifying waters that are not meeting water quality standards, and the causes and sources of the water quality impairments;
- Supporting the development, review, and revision of state water quality standards;
- Aiding in the development and implementation of water quality management programs;
- Evaluating the effectiveness of water quality management programs; and
- Providing data to inform public health advisories for recreation and fish consumption.

Visit [DOW's surface water monitoring webpage](#) to learn more about each program within DOW.

The DOW operates its ambient rivers monitoring program with a Watershed Management Framework Initiative implemented in 1998, where Basin Management Units (BMU) are sampled on a five-year rotation. Other DOW monitoring programs target the statewide scale of a particular population (e.g. ambient lakes and fish tissue), or focus on specific watersheds on a small, regional scale (e.g. intensive surveys). All data generated by the DOW is housed in the Kentucky Water Assessment Data for Environmental Monitoring (K-WADE) application, a web-based oracle database.

The DOW also uses data collected by outside agencies, such as Louisville Metropolitan Sewer District (MSD), United States Geological Survey (USGS), and West Virginia DEP. External data is acquired through a data solicitation process, or through routine communication and collaboration with data partners.

Lastly, facility data is gathered via the Safe Drinking Water Information System (SDWIS) or EPA's Enforcement and Compliance History Online (ECHO) website. Where appropriate, facility data from the cycle's sampling timeframe is reviewed in conjunction with instream data as supplementary information.

The follow monitoring programs provided data that was of sufficient quantity and quality for assessment in the 2024 cycle (view this [monitoring program dashboard](#) for a more interactive approach):

- DOW's Ambient Rivers program sampled 43 locations in the Green and Tradewater Rivers Basin Management Unit
 - Data Source: K-WADE
- DOW's Ambient Lakes program sampled 87 locations across 32 waterbodies.
 - Data Source: K-WADE
- DOW's Intensive Survey program monitored 92 locations across the state.
 - Data Source: K-WADE
- DOW's Probabilistic program monitored 206 locations across the state.
 - Data Source: K-WADE
- DOW's Reference Reach program monitored 48 locations across the state.

- Date Source: K-WADE
- DOW's Fish Tissue Contaminant Monitoring program sampled 27 locations across 18 waterbodies.
 - Data Source: K-WADE
- External Agency
 - Louisville MSD contributed data from 29 locations as part of their Municipal Separate Storm Sewer System (MS4) program
 - Data Source: Submitted to DOW through the data solicitation process.
 - USGS gage data was utilized from 28 locations across the state.
 - Data Source: National Water Information System (NWIS)
 - 2013 – 2021: Continuous data reviewed
 - 2017 – 2021: Continuous data summarized and compared to water quality standards
 - WV DEP contributed data from 7 locations from Kentucky's portion of the Tug Fork watershed.
 - Data Source: Submitted to DOW through the data solicitation process.

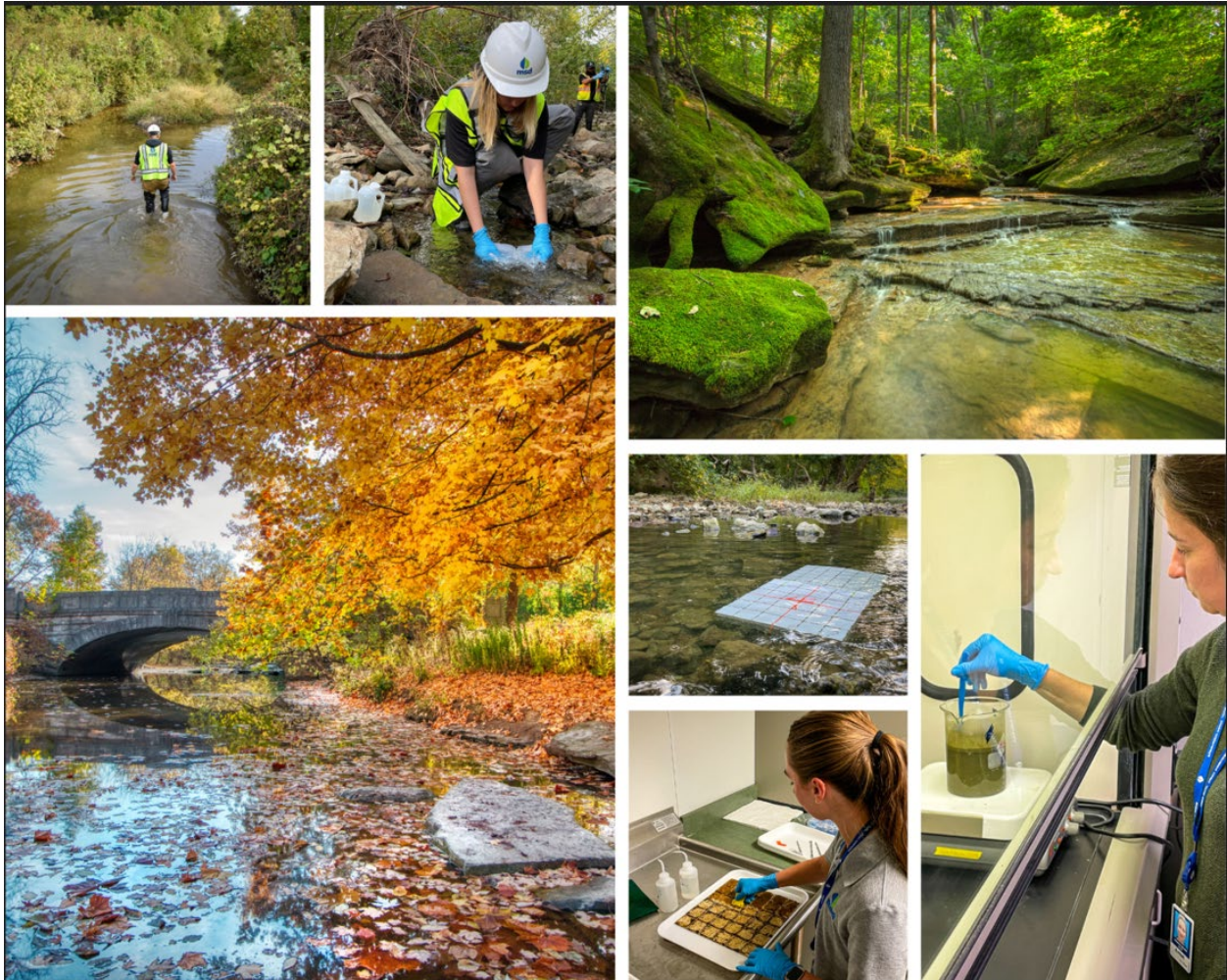


Photo Credit: Louisville MSD

In total, 993 locations contributed data and/or information to assessments for this 2024 IR cycle. Those locations represent streams, rivers, lakes, reservoirs, springs, and facilities. Table 3 shows the number of samples collected and analyzed per data type per program for this cycle, where continuous data (USGS gages) and facility data have been excluded (view this [data type dashboard](#) for a more interactive approach).

Table 3. Number of samples collected and analyzed per data type per program where the data were used for assessment during this 2024 Integrated Reporting cycle.

PROGRAM	PATHOGENS	CHLOROPHYLL-A	WATER CHEMISTRY	FISH TISSUE	FISH	MACRO-INVERTEBRATES
DOW Ambient Lakes	0	194	212	0	0	0
DOW Ambient Rivers	448	0	904	0	0	0
DOW Fish Tissue	0	0	0	27	0	0
DOW Intensive Survey	610	0	685	0	0	42
DOW Probabilistic Program	0	0	216	0	126	202
DOW Reference Reach	0	0	538	0	72	107
External Agency	4,366	0	440	0	27	36

Assessment

Before data are used in the assessment process, they are reviewed to ensure data are of sufficient quantity and quality to make designated use attainment decisions. This review process includes a primary and secondary quality assurance (QA) of the data collected. The following are considered when determining a data's usability, recognizing that not all points of consideration are applicable depending on the data type and source:

- Data were collected in accordance with any applicable Quality Assurance Project Plan (QAPP), Program Management Plan (PMP), or Project Study Plan (PSP)
- Applicable Standard Operating Procedures (SOP) were followed
- Appropriate site(s) visited with necessary field forms and documentation (e.g., Chain of Custody)
- Meters calibrated appropriately and calibration trackable to an instrument and site visit
- Data quality objectives were met as supported by QA samples
- Any other project specific details in need of verification

All decisions to use, or not use, readily available data were tracked in either K-WADE, where DOW houses its monitoring data, or Kentucky's Assessment and TMDL Tracking System (KATTS), where DOW houses its assessment data before submittal to EPA's Assessment and Total Maximum Daily Load Tracking and Implementation System (ATTAINS).

To complete assessments, available data of sufficient quantity and quality are summarized and evaluated against applicable water quality criteria according to Kentucky assessment methodologies. DOW uses a programming script to automate how the data are summarized and compared to water quality criteria. This approach allows large amounts of data to be evaluated consistently and transparently, while avoiding issues associated with manual data processing.

The summarized data are reviewed to make final attainment decisions, which are stored in KATTS and reported in the 305(b), the 303(d), and discussed within this IR. All assessment results are related to a parameter, such as *E. coli*, sedimentation/siltation, habitat assessments, or flow regime modifications. When there is sufficient evidence to demonstrate that a parameter is not meeting water quality criteria, it is considered a cause of impairment, which can be attributed more generally to pollution or to a specific pollutant. Pollution is a general term that refers to degradation to an ecosystem and can include removing habitat from a streambank to littering. Pollutants are measurable substances that contribute to pollution that makes the water harmful or unsuitable for a specific purpose; examples include chemicals or waste products.

When sampling occurs, specific information is gathered for each designated use.

- To assess PCR - bacteria levels are examined during the recreation season (May – October)
- To assess aquatic life for streams - water chemistry, habitat, and biological communities are examined; USGS gage data is examined if available
- To assess aquatic life for lakes - profile data, chlorophyll-a, and water chemistry data are examined
- To assess fish consumption – fish are collected and their tissue (usually fillet) is examined for pollutants of concern, such as mercury and PCBs

For more detailed information about Kentucky’s assessment and listing methodology, refer to the [Consolidated Assessment and Listing Methodology \(CALM\): Surface Water Quality Assessment in Kentucky, the Integrated Report](#) (KDOW 2015). In addition to this document, an update to [Kentucky’s Assessment Methodology for Fish Consumption](#) (KDOW 2020) is considered an addendum to the CALM, and should be used in place of the fish consumption method outlined in section 3.6 on page 55 of the 2015 CALM document. The reader may also find [EPA’s factsheets on water quality parameters](#) a helpful resource.

Categories and Attainment

The 305(b) list is a list of all waterbodies that have been assessed for one or more designated uses. Waterbodies on the 305(b) list are put into different categories depending upon the assessment decision made for that waterbody. Categories are assigned at the parameter level, which is the level that data are collected and analyzed, the designated use level, which is the level that the water quality standards for a particular parameter apply, and the assessment unit level, which is determined from the assessed designated uses and their categories (Figure 12).

Impaired waters are those waters found to partially support or not support one or more of their designated uses due to either a pollution or a pollutant. The 303(d) list, which is a subset of the 305(b) list, are those waters identified as impaired where the cause of impairment is a pollutant and a TMDL is required. All pollutant-waterbody combinations on the 303(d) list are in category 5 (Figure 12).

The 305(b) list is a cumulative list; once a waterbody is on this list, it remains. A waterbody may change categories depending upon the use attainment(s), but it is always accounted for on the 305(b) list. This IR focuses on waters that had available data (of sufficient quantity and quality) to make an assessment decision for the 2024 IR. Any historic assessment from the 2022 305(b) list that did not have new data collected was passed forward to the 2024 305(b) list unchanged. View this [category story map](#) for a more interactive approach to view and learn about reporting categories in Kentucky.

	Category	Assessment Unit Category Definition	Designated Use Category Definition	Parameter Category Definition	
305(b)	1	Assessment unit supports all designated uses, and all applicable designated uses assessed			Meeting
	2	Assessment unit supports designated use(s), but not all designated uses assessed	Designated use is supported	Parameter meets water quality standard	
	2b	Assessment unit currently supports designated use(s), but previously impaired and proposed for delisting	Designated use is supported, but previously impaired and proposed for delisting	Parameter meets water quality standard, but previously identified as a cause of impairment and proposed for delisting	
	2c	Assessment unit supports designated use(s), and has an EPA approved or established TMDL	Designated use is supported, and has an EPA approved or established TMDL	Parameter meets water quality standard, and has an EPA approved or established TMDL	
	3	Designated use(s) has/have not been assessed (insufficient information or no data)	Designated use has not been assessed (insufficient information or no data)	Parameter level attainment has not been assessed (insufficient information or no data)	Impaired
	4a	Assessment Unit does not support designated use(s), and has an EPA approved or established TMDL	Designated use is impaired, and has an EPA approved or established TMDL	Parameter does not meet water quality standards, and has an EPA approved or established TMDL	
	4b	Assessment unit does not support designated use(s), and has an approved alternative pollution control plan stringent enough to meet water quality standard(s) within a specified time	Designated use is impaired, and has an approved alternative pollution control plan stringent enough to meet water quality standard(s) within a specified time	Parameter does not meet water quality standards, and has an approved alternative pollution control plan stringent enough to meet water quality standard(s) within a specified time	
	4c	Assessment unit does not support designated use(s), but is not attributable to a pollutant or a combination of pollutants	Designated use is impaired, but is not attributable to a pollutant or a combination of pollutants	Parameter does not meet water quality standards, and that parameter is a pollution	
303(d)	5	Assessment unit does not support designated use(s), and is attributable to a pollutant or a combination of pollutants; TMDL required	Designated use is impaired, and is attributable to a pollutant or a combination of pollutants; TMDL required	Parameter does not meet water quality standards, and that parameter is a pollutant; TMDL required	

Figure 12. Definition of each category at the assessment unit level, the designated use level, and the parameter level; the figure demonstrates how these categories relate to the 305(b), meeting versus impaired, and the 303(d).

Results

Statewide Scale Results

The following sections discuss the 305(b) list, the 303(d) list, new listings, delistings submitted to EPA, and waters with an EPA-approved TMDL. This same information can be found in the [305\(b\) workbook](#). For a more interactive approach to these results, visit the [assessment results page](#) of the IR site.

The 305(b) List

The 305(b) list is an inventory of all waterbodies that have been assessed for at least one designated use from this cycle and all prior cycles. The spatial extent of each assessment unit is identified within the list. Kentucky's 2024 305(b) list has 3,168 assessment units representing 13,691.8 river miles, 213,075 lake/reservoir acres, and 192,514 springshed acres.

Table 4 shows how many assessment units are in each category at the designated use level and at the assessment unit level. Categories 2, 2b, and 2c relate to the assessment unit or designated use being met (full support), category 3 is unassessed, and categories 4a, 4c, and 5 relate to the assessment unit or designated use being impaired (partial support or nonsupport). Category 1 is only applicable at the assessment unit level and means all applicable designated uses have been assessed and all are meeting, of which there are seven (Table 4).

Table 4. Number of assessment units (AU) in each category per designated use and per assessment unit for all assessment units on Kentucky's 2024 305(b) list.

Category	WAH	CAH	OSRW	PCR	SCR	FC	DWS	AU
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7
2	1095	77	336	250	249	100	98	944
2b	3	1	0	2	0	1	1	9
2c	6	0	0	29	11	0	0	11
3	365	3	36	1876	2782	2917	2855	5
4a	18	1	2	659	78	1	0	358
4c	141	2	15	0	5	0	0	80
5	1454	11	106	352	43	149	0	1541

The 305(b) list tab of the [305\(b\) workbook](#) has the official information about all assessment units that are on the 305(b) list, or the 305(b) tab of the [305\(b\) dashboard](#) can be explored for a more interactive approach.

The 303(d) List

The 303(d) list is a subset of the 305(b) list and includes all waterbodies identified as being impaired (not meeting water quality standards) by one or more pollutants where a TMDL is required. Each pollutant-waterbody combination is in category 5, has a cycle first listed, suspected sources, and a TMDL priority rank (high, medium, or low) (Table 5).

Table 5. Definitions of TMDL priority ranks.

High	TMDL is in development or will be in development within the next two years and is expected to be completed during the next one to two reporting cycles (within 1-4 years). Click here for more information on the 303(d) Long Term Vision Priorities.
Medium	TMDL strategies are in the planning stage for the waterbody and/or pollutant. Methodologies may be under development or data collection may be planned or ongoing. Opportunities for alternative restoration plans may be under review.
Low	A TMDL is not currently in development. This rank includes TMDLs for which methodologies may be in development for the pollutant or waterbody type. Some waters ranked as "Low" priority for TMDL development have an EPA-accepted alternative restoration plan that is being implemented or have an alternative restoration plan in development that is expected to be EPA-accepted within the next two reporting cycles. The progress of each alternative restoration plan is reviewed each cycle to ensure the plan is on track to restoring water quality. The TMDL development priority rank may be updated based on this review. See table columns in the 303(d) list related to "Actions" for information on these alternative restoration plans. Click here for more information about alternative restoration plans.

On the 2024 303(d) list, there are 3,070 pollutant-waterbody combinations that require a TMDL. Broken down by waterbody type, 1,607 rivers/streams are on the 303(d) list totaling 7,565.0 river miles, 72 lakes/reservoirs are on the 303(d) list totaling 186,664.0 acres, and nine springs are on the 303(d) list totaling 82,988 springshed acres.

Although the 303(d) list is sometimes referred to as the "impaired waters list," it is specifically a subset of the impaired waters where the parameter identified as a cause of impairment is a pollutant and a TMDL has not yet been developed. Figure 13 shows the number of impairments per parameter group that are in need of a TMDL, with the priority per parameter group distinguished by low (light gray), medium (dark gray), and high (black).

The 303(d) tab of the [305\(b\) workbook](#) has the official information about all pollutant-waterbody combinations that are on the 303(d) list, or the 303(d) tab of the [305\(b\) dashboard](#) can be explored for a more interactive approach.

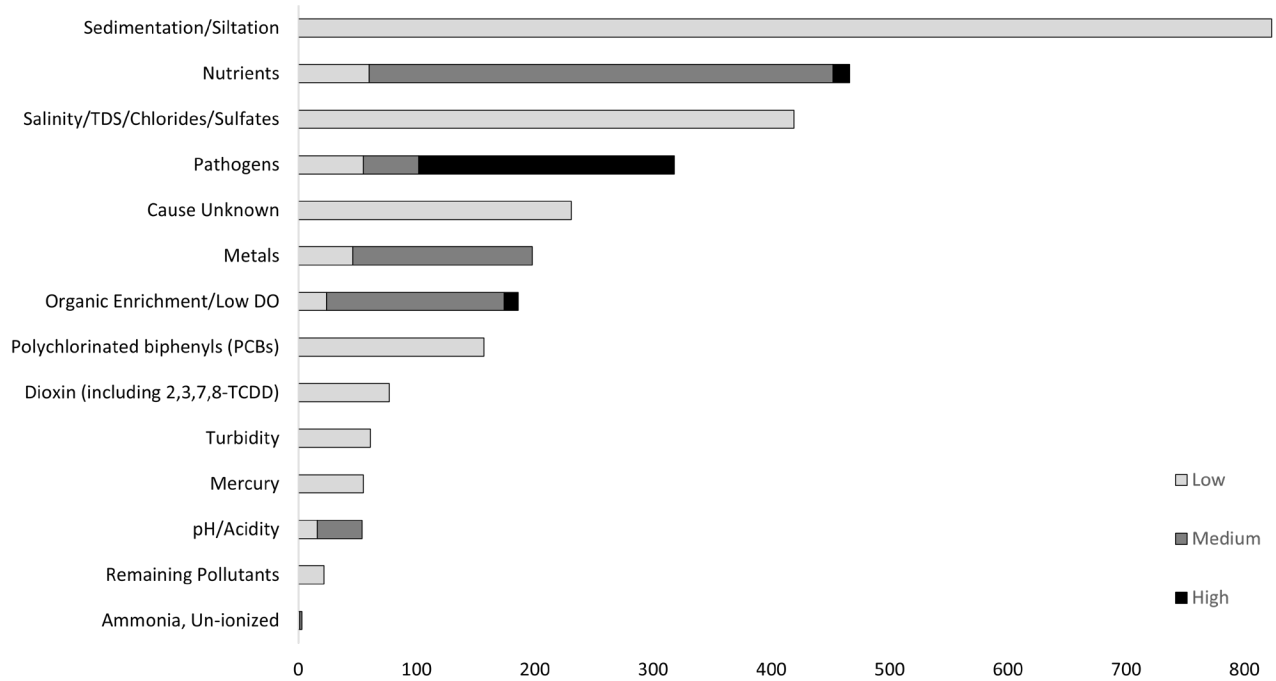


Figure 13. Number of impairments per parameter group where the parameter is on the 303(d) list because it is a pollutant and a TMDL is required but has not yet been developed. TMDL priority rank distinguished by low (light gray), medium (dark gray), and high (black).

New Listings

New listings are a subset of the 303(d) and are those pollutants that are newly listed on the 2024 303(d) as causes of impairment (not meeting water quality standards) and require a TMDL. Each pollutant-waterbody combination is in category 5 and has a cycle first listed of 2024. On the 2024 303(d), there are 267 new listings (Figure 14).

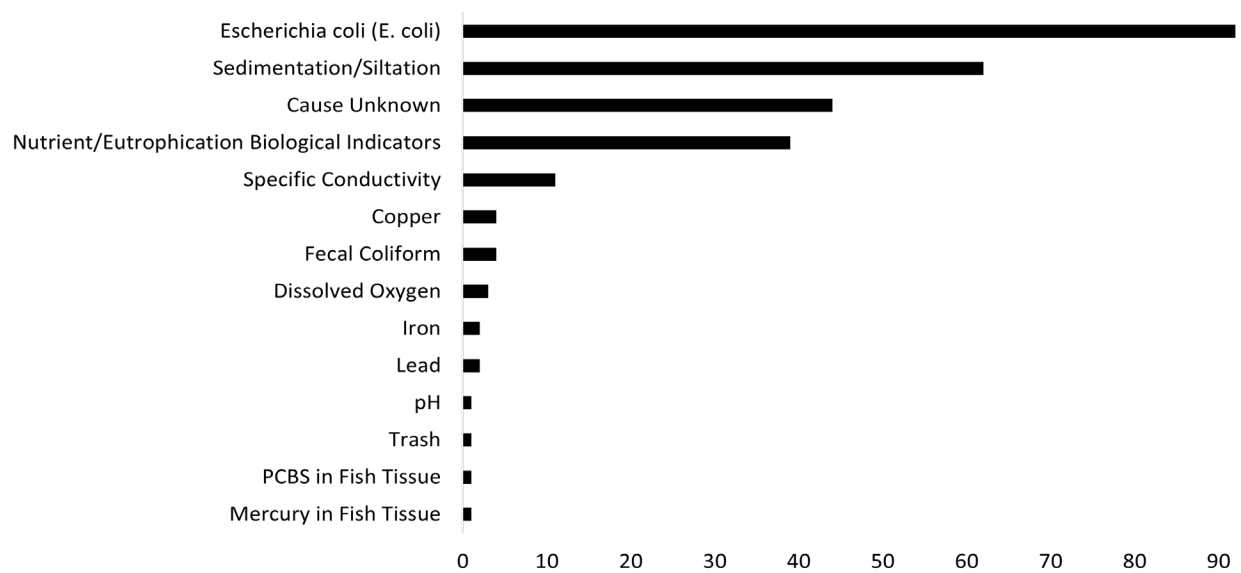


Figure 14. New listings on the 2024 303(d) list per parameter.

The new listings tab of the [305\(b\) workbook](#) has the official information about all pollutant-waterbody combinations that are newly listed during this cycle, or the new listings tab of the [305\(b\) dashboard](#) can be explored for a more interactive approach.

Delistings

The delistings are those pollutants that were previously listed as impaired (not meeting water quality standards) and have been proposed for delisting as part of the 2024 reporting cycle.

For this cycle, DOW has requested EPA approval to remove 135 pollutant-waterbody combinations from the 303(d) list (Figure 15). Of these, 32 have been attributed to the applicable water quality standard being attained based on new data. The other 103 delistings are due to a clarification of listing cause or address prior listings where the original basis for listing was incorrect.

The delisted waters tab of the [305\(b\) workbook](#) has the official information about all pollutant-waterbody combinations that are proposed for delisting as part of this cycle, or the delistings tab of the [305\(b\) dashboard](#) can be explored for a more interactive approach.

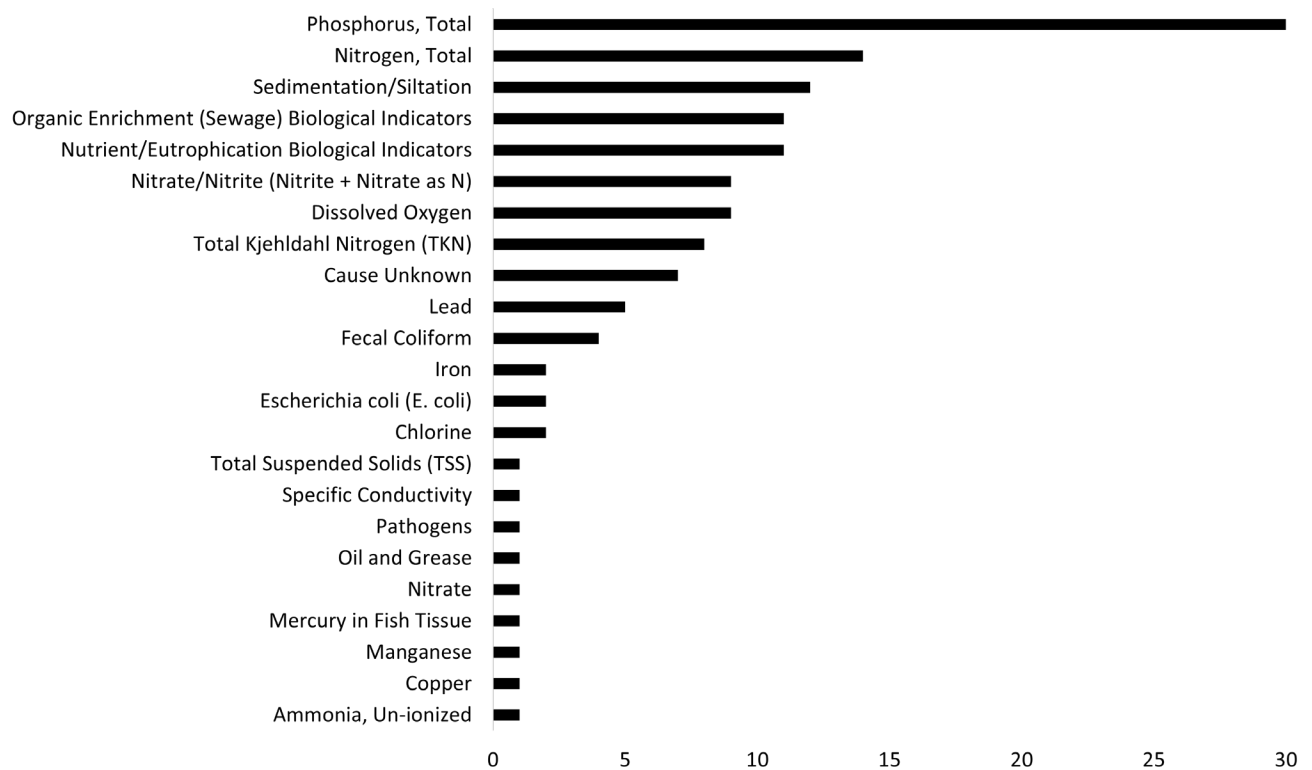


Figure 15. Parameters proposed for delisting as part of the 2024 305(b).

Waters with TMDLs or TMDL Alternatives

Waters with a TMDL are those waterbodies with an EPA-approved TMDL for one or more pollutant-waterbody combination(s). The official list of [Waters with an Approved TMDL Report](#) is located on the DOW's [Approved TMDL Reports webpage](#).

As of the 2024 305(b) list there are 834 pollutant-waterbody combinations (PWCs) with an EPA-approved TMDL. There are 44 PWCs with a TMDL Alternative that is either in development (draft) or being implemented (EPA final).

The Kentucky DOW is implementing the [National Clean Water Act 303\(d\) Program Vision](#), which calls for states, territories, and authorized tribes to prioritize impaired waters for TMDL development and to develop TMDL Alternative Approaches where appropriate in the context of a long-term planning framework.

The DOW has created a [2022-2032 303\(d\) and Impaired Waters Prioritization Framework](#), which was included in the public notice of the 2024 draft 303(d) list. The Prioritization Framework summarizes the accomplishments of the earlier 2013 Program Vision period (2014-2022), communicates the goals of Kentucky's 303(d) program, summarizes the top priorities for restoration and protection plan development for the 2022-2032 planning period, and outlines a strategy for achieving these goals and priorities. All updates can be found on the [TMDL priorities webpage](#).



Designated Use Level (all waterbody types)

For all 3,168 assessment units on the 2024 305(b) list, regardless of waterbody type, attainment per designated use is displayed in Figure 16 and outlined in Table 6.

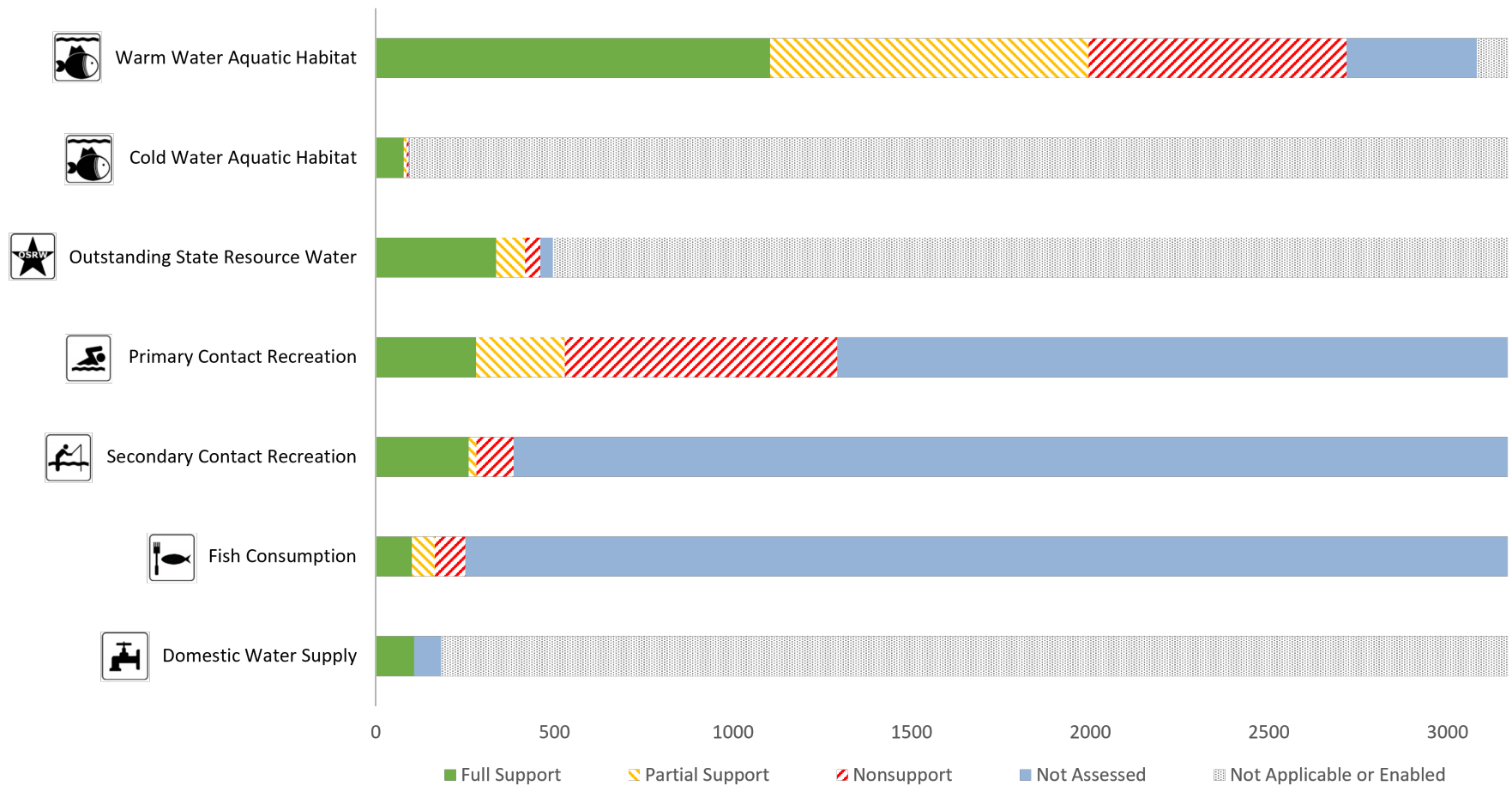


Figure 16. Assessment status and attainment for all 3,168 assessment units on the 2024 305(b) per designated use.

Table 6. Attainment per designated use for all 3,168 assessment units on the 2024 305(b) list.

Attainment	WAH	CAH	OSRW	PCR	SCR	FC	DWS
Full Support	1104	78	337	281	260	101	107
Partial Support	891	8	81	248	22	64	0
Nonsupport	722	6	42	763	104	86	0
Not Assessed	365	3	36	1876	2782	2917	76
Not Applicable or Enabled	86	3073	2672	0	0	0	3061

Aquatic Life and OSRW

On the 2024 305(b) list, 2,717 assessment units have been assessed for the WAH designated use, making it the most assessed designated use. Of those assessed, 1,104 fully support the WAH designated use, while 1,613 are impaired. River and stream assessment units represent 2,610 of the assessment units, of which 1,054 are meeting and 1,556 are impaired. Lake and reservoir assessment units represent 106 of the assessment units, of which 49 are meeting and 57 are impaired (Figure 17). One spring has been assessed, which is full support.

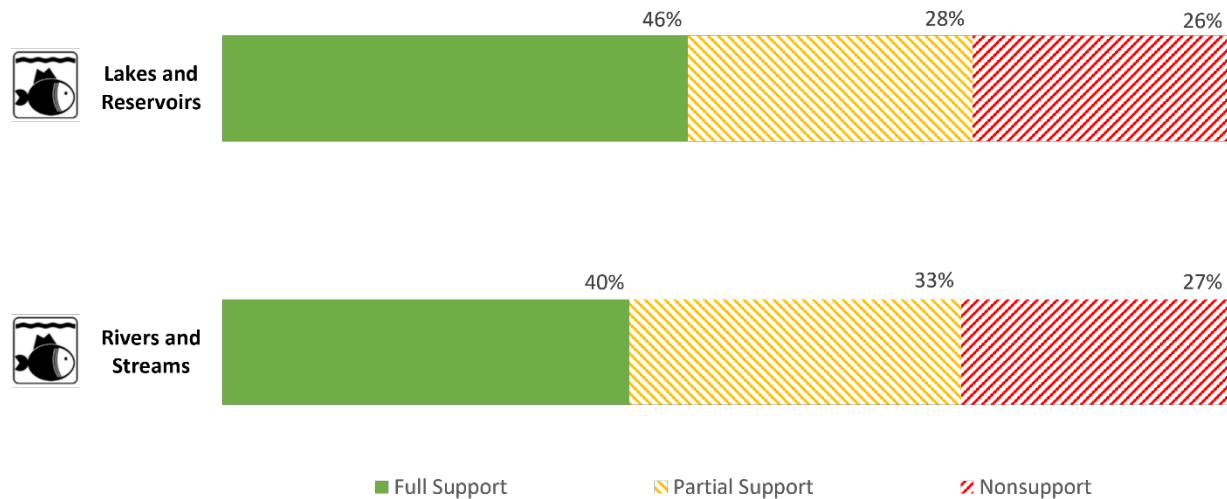


Figure 17. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for the WAH designated use.

On the 2024 305(b) list, 96 assessment units have the CAH designated use, 92 of which have been assessed. River and stream assessment units represent 83 of the assessed assessment units, of which 69 are meeting and 14 are impaired (Figure 18). Lake and reservoir assessment units represent 9 of the assessed assessment units, all of which are meeting (100%).



Figure 18. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **CAH** designated use.

On the 2024 305(b) list, 483 assessment units have the OSRW designated use, of which 460 have been assessed. Most of the waterbodies assessed for this use are rivers and streams (457 of the 460) and are meeting, with 336 assessment units found to fully support OSRW and 121 assessment units found to be impaired (Figure 19).

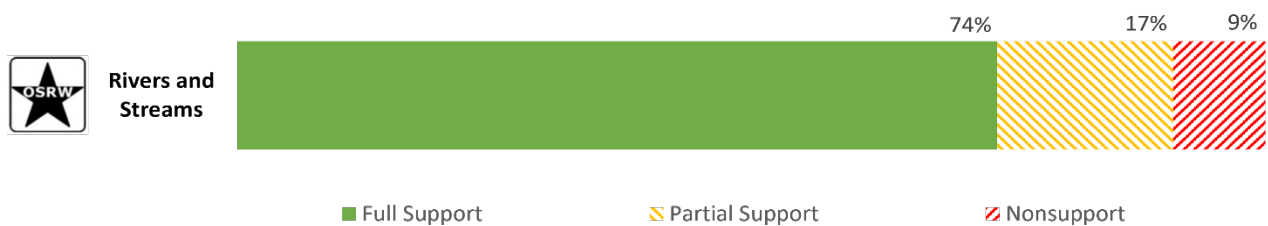


Figure 19. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the **outstanding state resource water (OSRW)** designated use.

Visit the [aquatic life dashboard](#) to explore these assessment results in a more interactive platform, which has a tab for WAH, CAH, and OSRW.

Fishing and Recreating

On the 2024 305(b) list, 1,292 assessment units have been assessed for the PCR designated use. Of those assessed, 281 were found to fully support the designated use, while 1,011 were found to be impaired. River and stream assessment units represent 1,273 of the assessment units, of which 273 are meeting and 1,000 are impaired for the PCR use (Figure 20). Spring assessment units represent 12 of the assessment units, of which one is meeting and 11 are impaired for the PCR use. Lake and reservoir assessment units represent seven of the assessment units, all of which are meeting the PCR use.

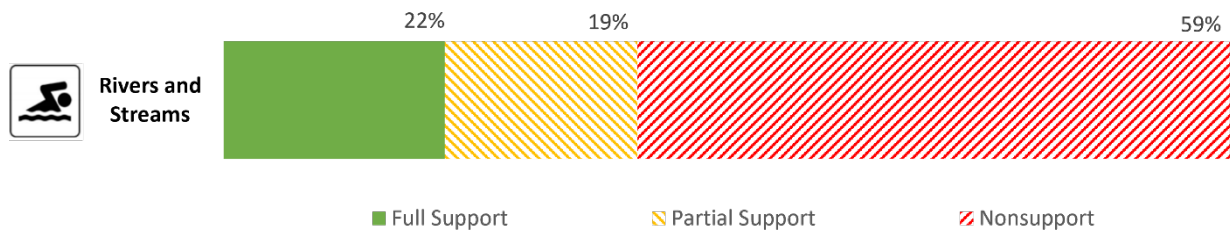


Figure 20. Proportion of rivers/streams assessed as full support, partial support, or nonsupport of those waterbodies assessed for the PCR designated use.

On the 2024 305(b) list, 386 assessment units have been assessed for the SCR designated use. Of those assessed, 260 were found to fully support the designated use, while 126 were found to be impaired. River and stream assessment units represent 298 of the assessment units, of which 176 are meeting and 122 are impaired for the SCR use. Lake and reservoir assessment units represent 87 of the assessment units, of which 83 are meeting and four are impaired for the SCR use (Figure 21). One spring has been assessed, which is full support.

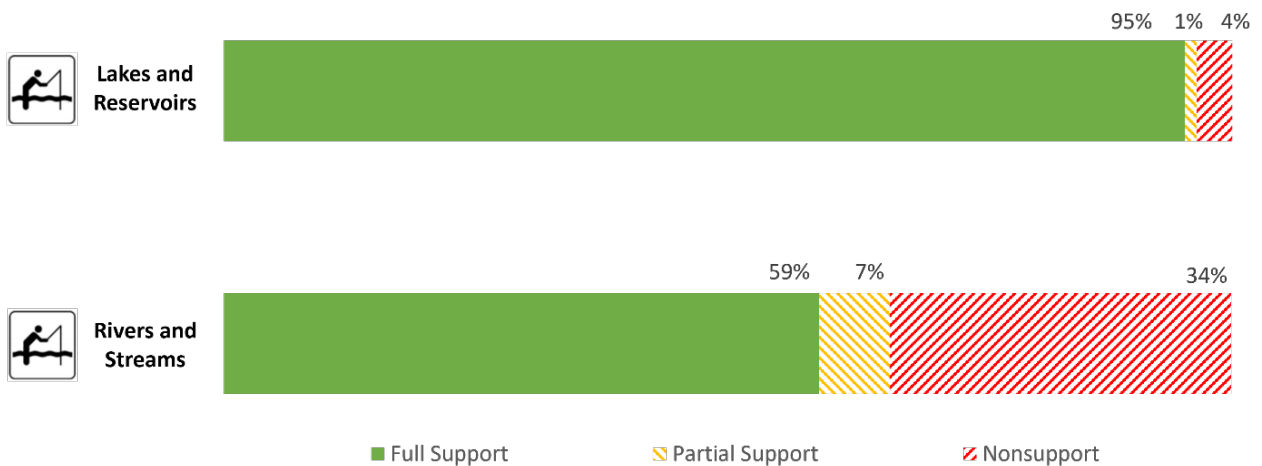


Figure 21. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for the SCR designated use.

On the 2024 305(b) list, 251 assessment units have been assessed for fish consumption. Of those assessed, 101 were found to fully support the designated use, while 150 were found to be impaired. River and stream assessment units represent 205 of the assessment units, of which 78 are meeting and 127 are impaired for fish consumption. Lake and reservoir assessment units represent 46 of the assessment units, of which 23 are meeting and 23 are impaired for fish consumption (Figure 22).

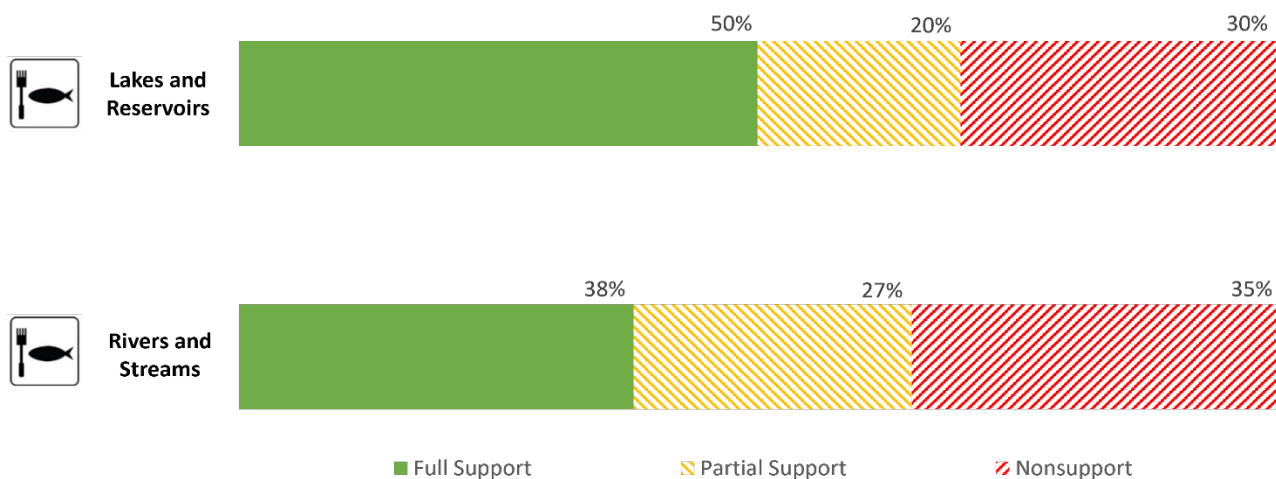


Figure 22. Proportion of rivers/streams and lakes/reservoirs assessed as full support, partial support, or nonsupport of those waterbodies assessed for **fish consumption**.

Visit the [fishing and recreating dashboard](#) to explore these assessment results in a more interactive platform, which has a tab for PCR, SCR, and fish consumption.

Impaired Waters

Impaired waters are a subset of the 305(b) list and are those waterbodies where at least one designated use is not being supported, and the cause of impairment does not require a TMDL (category 4c), requires a TMDL but a TMDL has not been developed (category 5), or a requires a TMDL and a TMDL has been developed (category 4a).

Of the 3,168 assessment units on the 2024 305(b) list, 2,154 assessment units are impaired for at least one designated use. Broken down by waterbody type, 2,071 rivers/streams are impaired totaling 9,552.8 river miles, 72 lakes/reservoirs are impaired totaling 186,664 acres, and 11 springs are impaired totaling 86,073 springshed acres.

The impaired waters tab of the [305\(b\) workbook](#) has specific information about all assessment units identified as impaired for one or more designated uses. The [impaired waters dashboard](#) has a tab for each designated use, and can be used to explore waterbodies impaired for those uses throughout the commonwealth.

Causes of Impairment

There are 5,058 parameter-waterbody combinations on the impaired waters list. Those parameters fall into three reporting categories:

1. 3,070 are in category 5, meaning the parameter is a pollutant, identified as a cause of impairment, and requires a TMDL
 - a. This is the 303(d) list

2. 789 are in category 4a, meaning the parameter is a pollutant, identified as a cause of impairment, and has an EPA-approved TMDL
3. 1,199 are in category 4c, meaning the parameter is a pollution, identified as a cause of impairment, but does not require a TMDL

Parameters can be grouped to explore types of impairments throughout the Commonwealth. Figure 23 shows the parameters identified as a cause of impairment on the 2024 305(b) list grouped into the following themes and listed by order of prevalence:

1. Pathogens
2. Sedimentation
3. Biologic Integrity (Bioassessments)
4. Habitat Alterations
5. Nutrients
6. Salinity/Total Dissolved Solids (TDS)/Chlorides/Sulfates
 - a. Specific Conductivity included in this group
7. Metals (other than mercury)
8. Other (including cause unknown)
9. Organic Enrichment/Oxygen Depletion
10. Polychlorinated Biphenyls (PCBs)
11. pH/Acidity/Caustic Conditions
12. Dioxins
13. Hydrologic Alteration
14. Turbidity
15. Mercury

The impaired waters tab of the [305\(b\) workbook](#) has specific information about all assessment units identified as impaired for one or more designated uses. Parameter level information for those identified as a cause of impairment is available per assessment unit, including if that parameter has a TMDL, the parameter's category, TMDL priority rank (if applicable), cycle first listed (if applicable), and suspected sources.

For a more interactive approach, visit the [cause of impairment dashboard](#), where a map is available to explore causes in the groups discussed above.

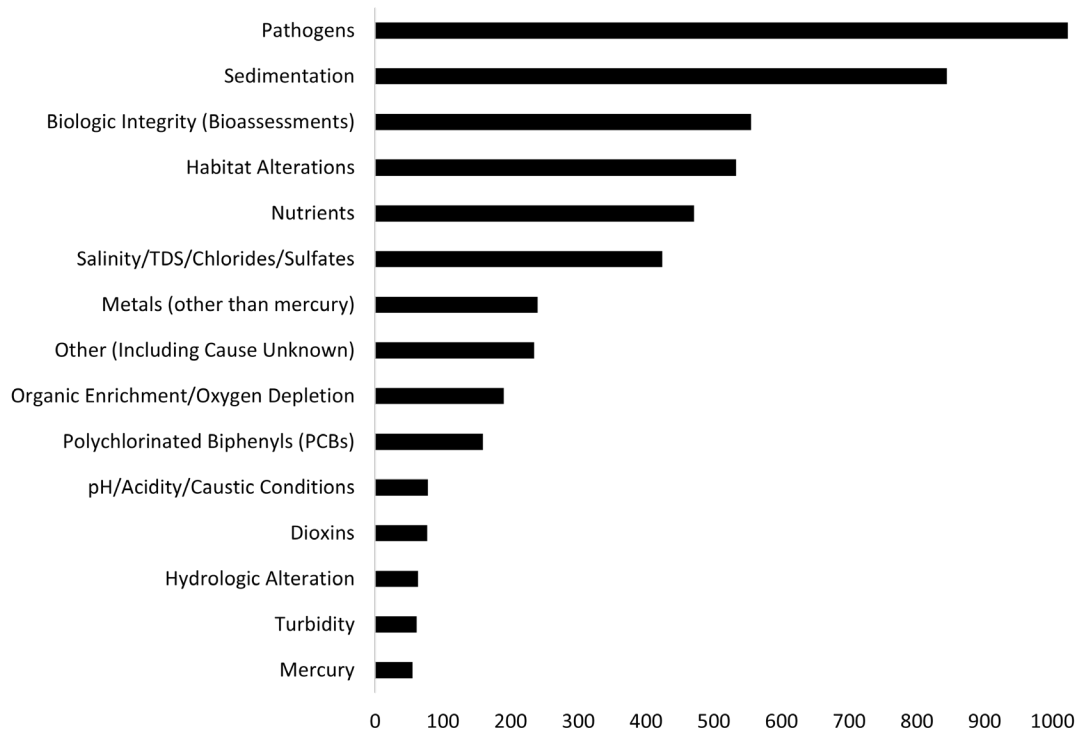


Figure 23. Types of impairments on the 2024 305(b) list where parameters have been grouped into 15 themes to better understand the number and types of impairments throughout the Commonwealth.



Waterbody Type Results

Assessment results per waterbody type per designated use, along with parameters identified as causes of impairment, are discussed in more detail in the following sections of this IR.

Rivers and Streams

River and stream assessments are the most common, which account for 3,018 of the 3,168 assessment units on Kentucky's 305(b) list. The total mileage of streams and rivers that have been assessed is 13,691.8 river miles. For those rivers and streams that have been assessed, the attainment per designated use is displayed in Figure 24.

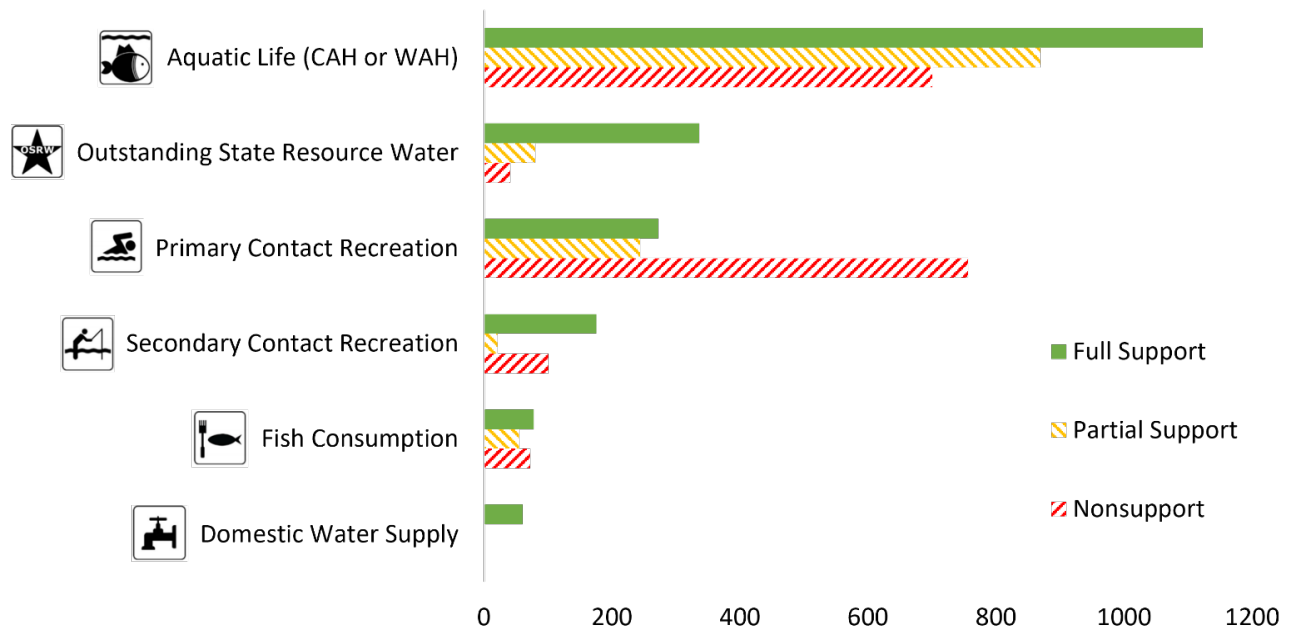


Figure 24. Number of assessment units that are full support, partial support, or nonsupport per designated use for **rivers and streams** that have been assessed for that use during this cycle or any prior cycle.

Table 7 has attainment results for rivers and streams for only those assessments units that have been assessed for a given designated use, with the results presented as a count of assessment units (number, #) and as a sum of the river miles in each attainment scenario per designated use.

The causes of impairment impacting rivers and streams per designated use are shown in Figure 25 with parameters placed into groupings, such as sedimentation, metals, and nutrients. For all listing information, refer to the [305\(b\) workbook](#).

Table 7. Attainment results for **rivers and streams** that have been assessed for each designated use on the 2024 305(b), with the results presented as a count of assessment units (number, #) and as a sum of the river miles.

<i>Rivers and Streams - Number (#)</i>							
	WAH	CAH	OSRW	PCR	SCR	FC	DWS
Assessed (#)	2610	83	457	1273	298	205	61
Full Support (#)	1054	69	336	273	176	78	61
Partial Support (#)	861	8	80	244	21	55	0
Non Support (#)	695	6	41	756	101	72	0
Impaired (#)	1556	14	121	1000	122	127	0

<i>Rivers and Streams - Miles</i>							
	WAH	CAH	OSRW	PCR	SCR	FC	DWS
Assessed (Miles)	12,077.9	434.5	2,124.0	6,830.2	2,055.8	1,804.4	66.6
Full Support (miles)	5,141.3	384.0	1571.0	1844.8	1491.6	668.7	66.6
Partial Support (miles)	3,992.5	27.0	366.7	1359.00	130.9	486.4	0.0
Non Support (miles)	2,944.1	23.6	186.3	3626.5	433.4	649.3	0.0
Impaired (miles)	6,936.6	50.6	553.0	4,985.5	564.3	1,135.7	0.0

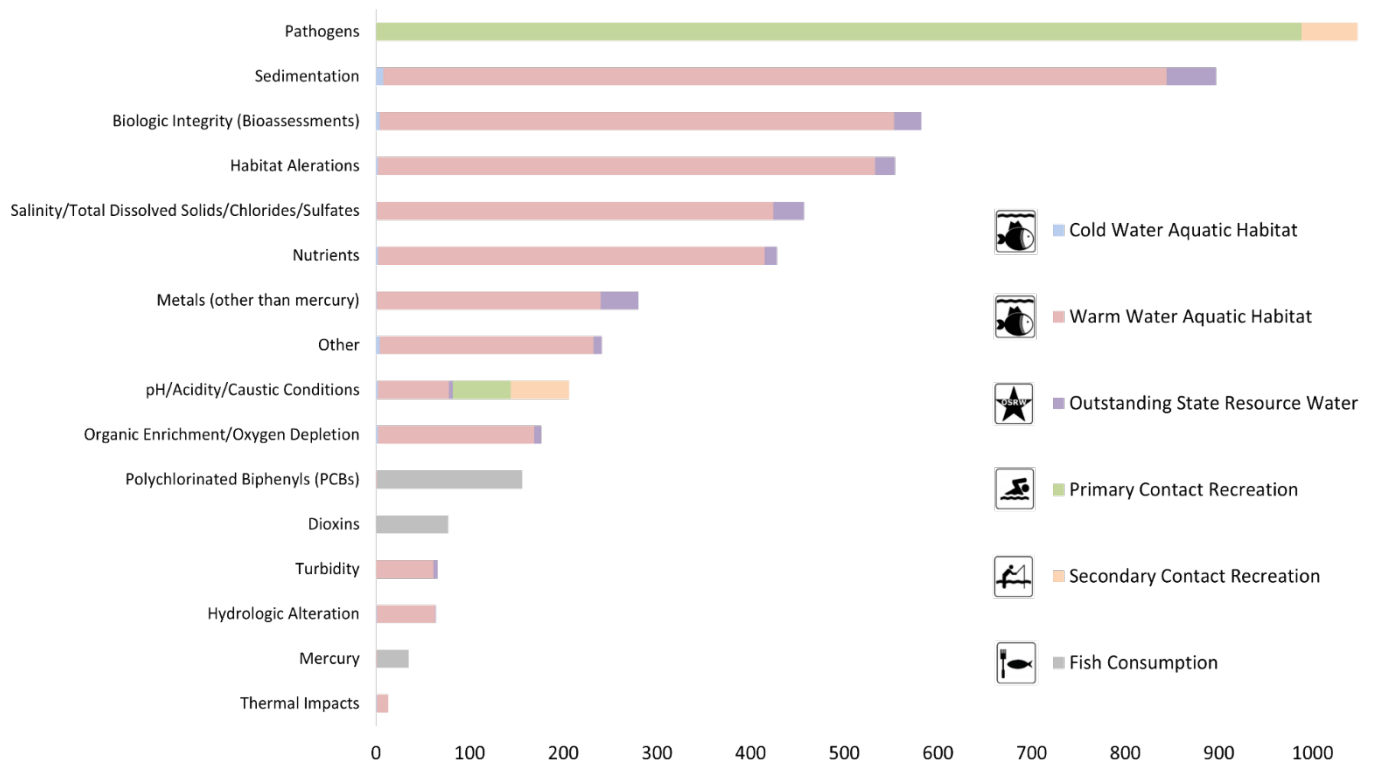


Figure 25. Number of impairments by a particular parameter group (or cause) per designated use for **rivers and streams** on the 2024 305(b).

Lakes and Reservoirs

Lake and reservoir assessments account for 129 of the 3,168 assessment units on Kentucky's 305(b) list. The total acres of lakes and reservoirs that have been assessed is 213,075 acres. For those lakes and reservoirs that have been assessed, the attainment per designated use is displayed in Figure 26.

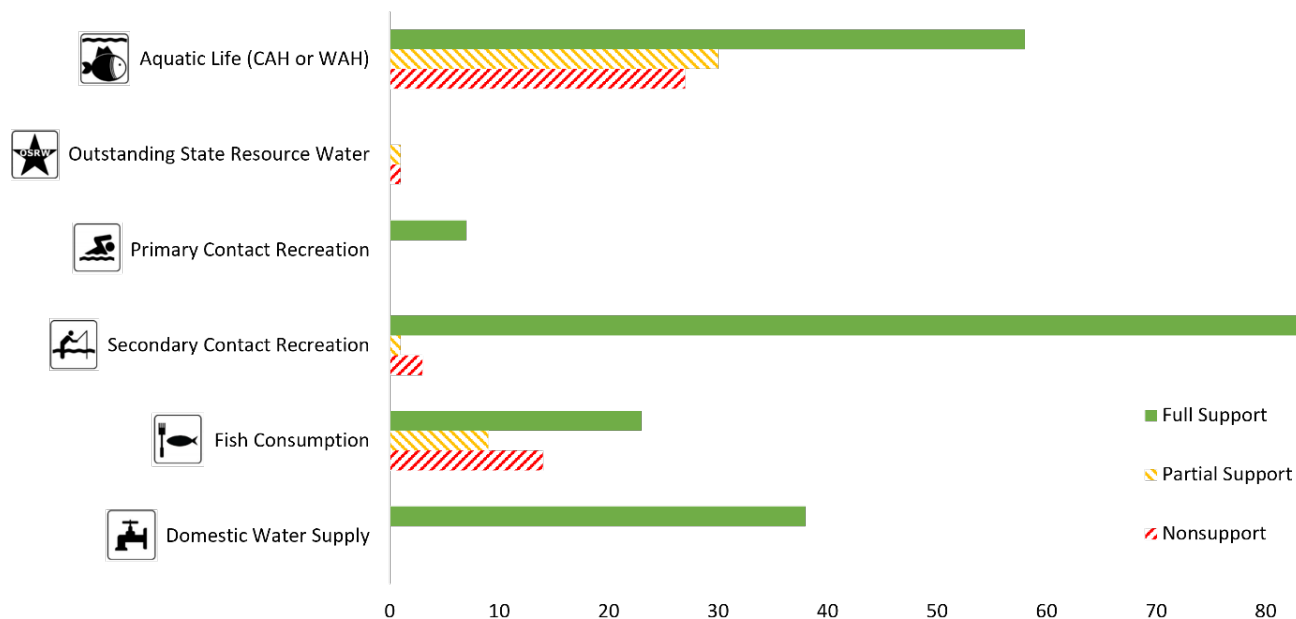


Figure 26. Number of assessment units that are full support, partial support, or nonsupport per designated use for **lakes and reservoirs** that have been assessed for that use during this cycle or any prior cycle.

Table 8 has attainment results for lakes and reservoirs for only those assessment units that have been assessed for a given designated use, with the results presented as a count of assessment units (number, #) and as a sum of the acreage in each attainment scenario per designated use.

The causes of impairment impacting lakes and reservoirs per designated use are shown in Figure 27, where nutrient/eutrophication biological indicators most often impairs WAH, and mercury in fish tissue most often impairs fish consumption. For lakes and reservoirs assessed for aquatic life, a trophic status is determined from the trophic status index score. In Kentucky, most lakes and reservoirs assessed for the aquatic life designated use are mesotrophic or eutrophic (Figure 28). Most of the lakes and reservoirs identified as oligotrophic are in the mountains.

For all trophic status narratives and listing information, refer to the [305\(b\) workbook](#).

Table 8. Attainment results for **lakes and reservoirs** that have been assessed for each designated use on the 2024 305(b), with the results presented as a count of assessment units (number, #) and as a sum of the acreage.

<i>Lakes and Reservoirs - Number (#)</i>							
	WAH	CAH	OSRW	PCR	SCR	FC	DWS
Assessed (#)	106	9	2	7	87	46	38
Full Support (#)	49	9	0	7	83	23	38
Partial Support (#)	30	0	1	0	1	9	0
Non Support (#)	27	0	1	0	3	14	0
Impaired (#)	57	0	2	0	4	23	0

<i>Lakes and Reservoirs - Acres</i>							
	WAH	CAH	OSRW	PCR	SCR	FC	DWS
Assessed (acres)	212,307	8,438	237	81,076	209,931	202,544	131,309
Full Support (acres)	150,116	8,438	0	81,076	209,529	70,986	131,309
Partial Support (acres)	53,055	0	200	0	135	8,950	0
Non Support (acres)	9,136	0	37	0	267	122,608	0
Impaired (acres)	62,191	0	237	0	402	131,558	0

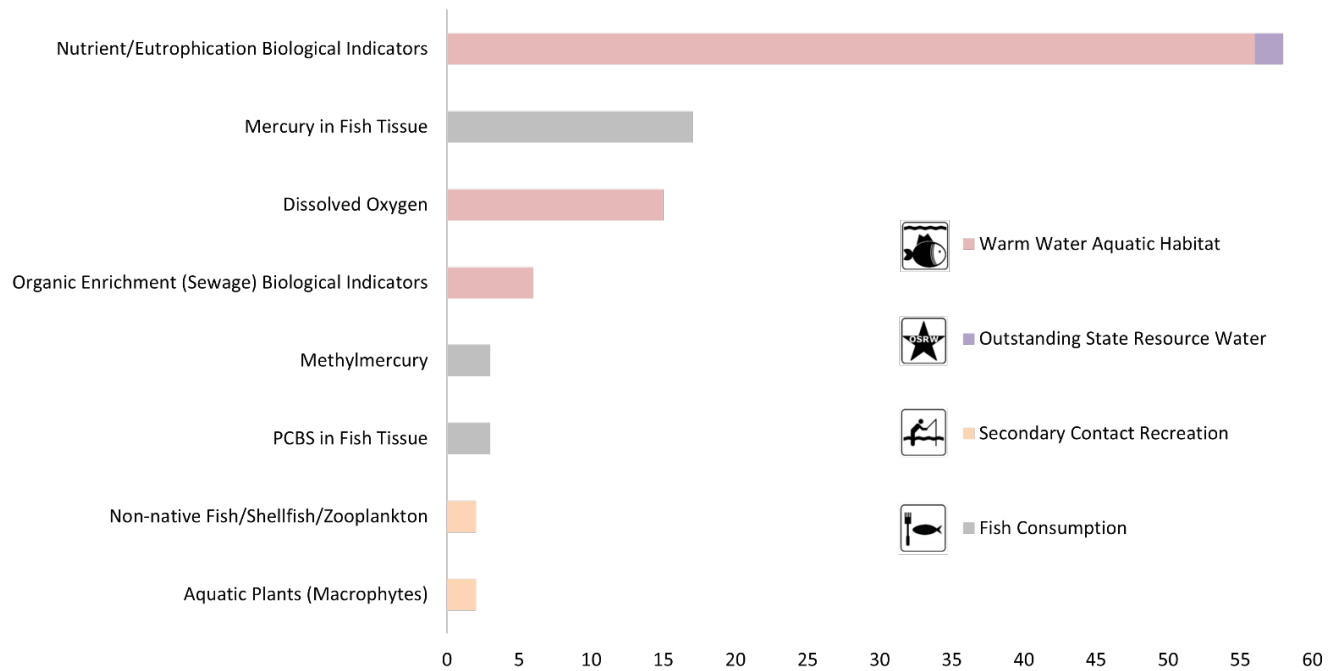


Figure 27. Number of impairments by a particular parameter (or cause) per designated use for **lakes and reservoirs** on the 2024 305(b).

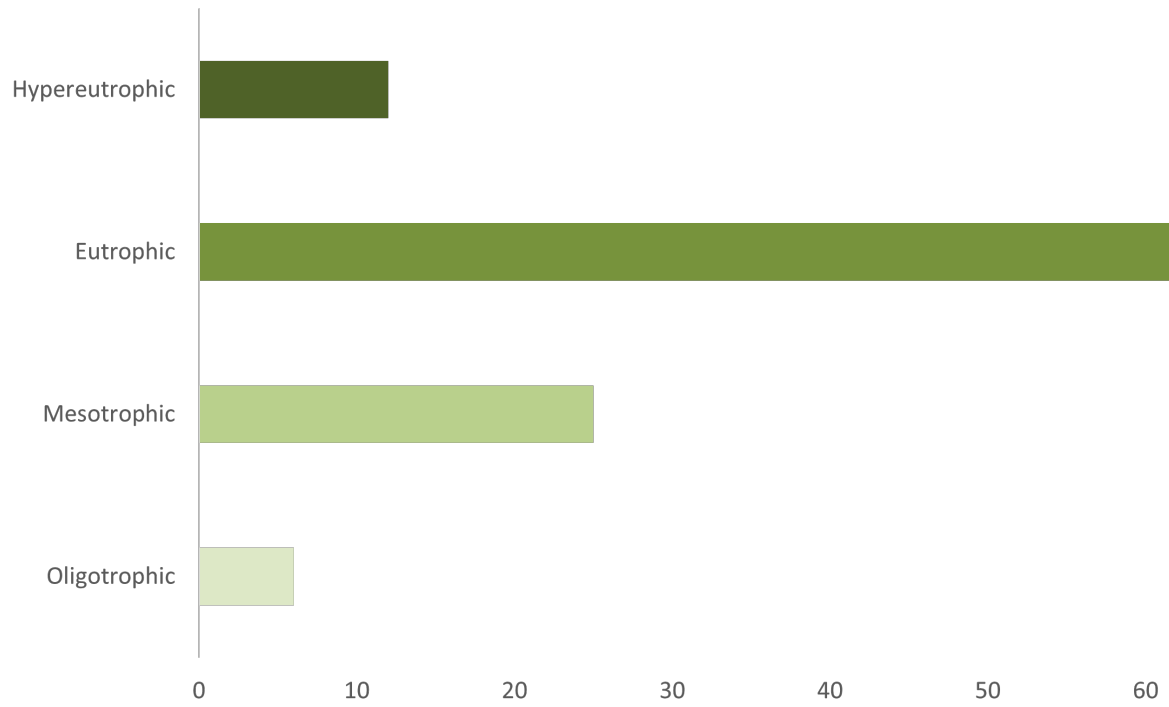


Figure 28. Trophic status for [lakes and reservoirs](#) that have been assessed for the aquatic life (CAH or WA H) designated use.



Springs

Groundwater Monitoring

Kentucky has systematically sampled ambient groundwater for more than 20 years. The statewide [Ambient Groundwater Monitoring Program](#) provides baseline groundwater data on aquifer characterization, ambient groundwater quality, and nonpoint source pollution. In Kentucky, a predominant feature of the landscape is karst, a term used to describe the landforms and groundwater flow of areas characterized by sinkholes, springs, and caves (Figure 29).

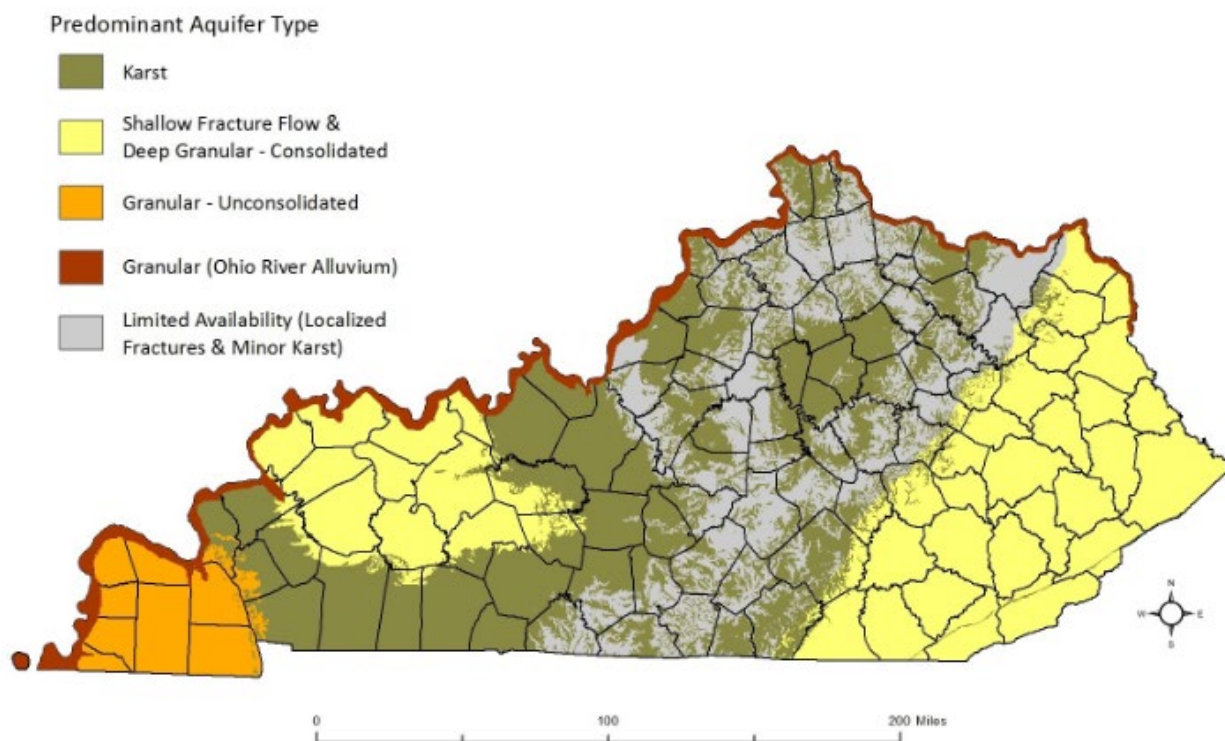


Figure 29. Map illustrating the locations of predominant aquifer types in Kentucky.

Where appropriate, groundwater data from springs is used for assessment purposes and reported on the 305(b), which is discussed below. Additionally, these data were analyzed to characterize groundwater trends in Kentucky in the 2018 publication [Report on the Condition of Ambient Groundwater in Kentucky: Analysis of the Ambient Groundwater Quality Monitoring Network Data](#) (Chan and Blair, 2018).

Springs – Primary Contact Recreation

Spring assessments account for 21 of the 3,168 assessment units on Kentucky’s 2024 305(b) list. The total size of spring assessments (as represented by the springshed) is 192,514 springshed acres.

PCR is the most commonly assessed designated use for spring assessment units. Of the 21 spring assessment units on Kentucky’s 2024 305(b) list, 12 have been assessed for PCR. Of these 12 assessment units, one spring is full support, four springs are partial support, and seven springs are nonsupport for PCR. The cause of impairment was always identified as *E. coli*. For all listing information, refer to the [305\(b\) workbook](#).

Division Programs

Total Maximum Daily Load Program

The [TMDL program](#), established under [Section 303\(d\) of the CWA](#), focuses on identifying and restoring polluted Kentucky waterbodies such as rivers, lakes and streams.

States must develop a TMDL calculation for each pollutant identified as a cause of impairment on the 303(d) list. TMDL calculations are found in [TMDL reports](#). A TMDL Report is a water quality restoration plan that describes how pollutant loads can be reduced to meet water quality standards.

Total Maximum Daily Load Program Priorities

The Kentucky DOW is implementing the [National Clean Water Act 303\(d\) Program Vision](#), which calls for states, territories, and authorized tribes to prioritize impaired waters for TMDL development and to develop TMDL Alternative Approaches where appropriate in the context of a long-term planning framework.

Under the [2013 Program Vision](#), the [DOW outlined priorities](#) for TMDLs and [TMDL Alternative Plans](#) for the 2014-2022 planning period. The close of that planning period brought the [2022 Program Vision](#) and initiated a new long term planning period. The DOW has created a [2022-2032 303\(d\) and Impaired Waters Prioritization Framework](#), which was at public notice with the 2024 draft 303(d) list. The Prioritization Framework summarizes the accomplishments of the 2013 Program Vision period, communicates the goals of Kentucky's 303(d) program, summarizes the top priorities for restoration and protection plan development for the 2022-2032 planning period, and outlines a strategy for achieving these goals and priorities. All updates can be found on the [TMDL priorities webpage](#).

If you have questions about the TMDL program, the vision, or alternative restoration approaches, email TMDL@ky.gov.

Nonpoint Source Program

The Kentucky Nonpoint Source Pollution Control Program (NPS Program) is authorized under Section 319 of the CWA amendments of 1987. The [Section 319\(h\) Grant Program](#) was established to provide funding for efforts to reduce nonpoint source pollution. Each year DOW applies to EPA to receive 319(h) funding. Funds may be used to demonstrate innovative best management practices (BMPs), support education and outreach programs, develop Watershed Based Plans (Figure 30), and to implement Watershed Based Plans.

The mission of the Kentucky NPS Program is to protect the quality of Kentucky's surface and groundwater from known NPS pollution, to abate NPS threats, and to restore degraded waters to meet water quality standards. To support this vision, the NPS Program coordinates statewide efforts to minimize nutrient, sediment, and bacteria pollution through partnerships with federal, state, and local entities.

The NPS Program Annual Reports from [2020](#), [2021](#), [2022](#), and [2023](#) provide additional information on completed nonpoint source pollution projects and monitoring in Kentucky. To facilitate new watershed projects, Kentucky's NPS Program developed resources such as the [319 Grant Program Story Map](#) and [319 Grant Reporter](#).

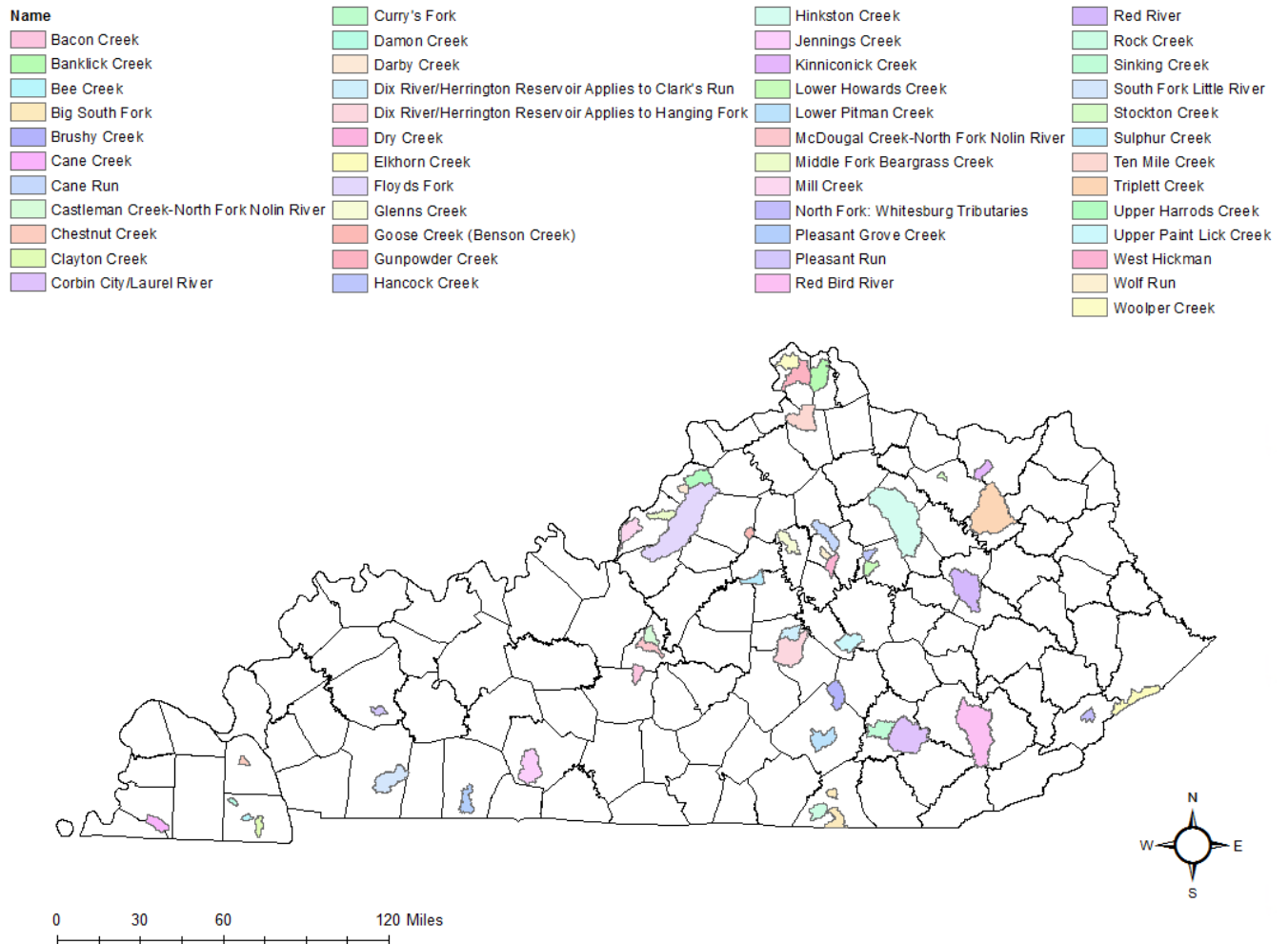


Figure 30. EPA accepted watershed planning areas.

Implementation

Looking specifically at Nonpoint Source Program implementation activities between 2020 and 2023, over 46 types of BMPs were installed in more than 58 watersheds. DOW estimates these 319-funded BMPs reduced nutrient loading to waterways by 87 tons per year of total nitrogen, 17 tons per year of total phosphorus, and 17,395 tons per year of sediment between 2020 and 2023 (Figure 31).

DOW works closely with the Division of Conservation (DOC) to estimate environmental benefits across programs. Kentucky estimates that from 2020 to 2023 the [DOW NPS Program and DOC Cost Share Program](#) reduced nitrogen loading to local waters by over 426 tons/year, reduced phosphorus loading by over 108 tons/year, and reduced sediment loading by over 148,000 tons/year (Figure 32).

New to the [305\(b\) workbook](#) is a tab highlighting implementation that has been funded by the [Section 319\(h\) Grant Program](#). Load reductions for nitrogen, phosphorus, and sediment for watersheds across the state are also available in an interactive [Nutrient Pollution Progress Mapper](#).

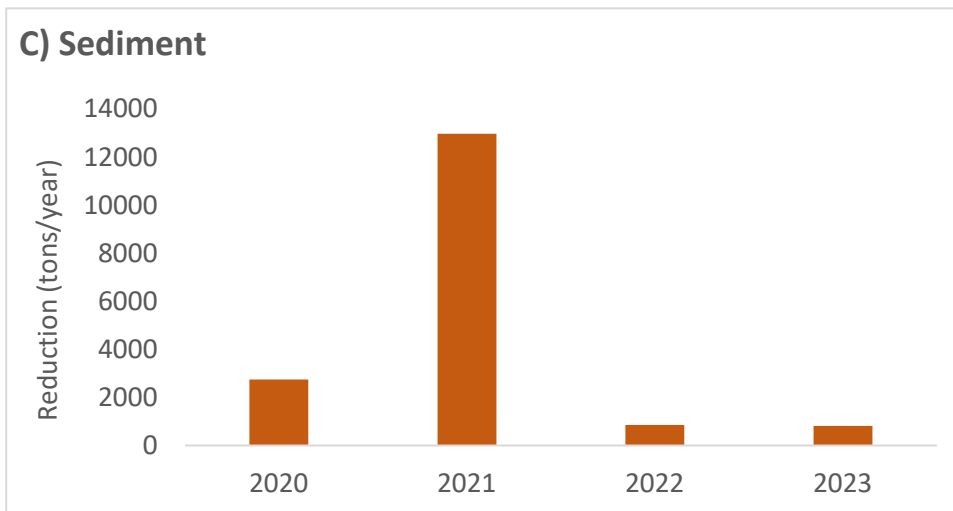
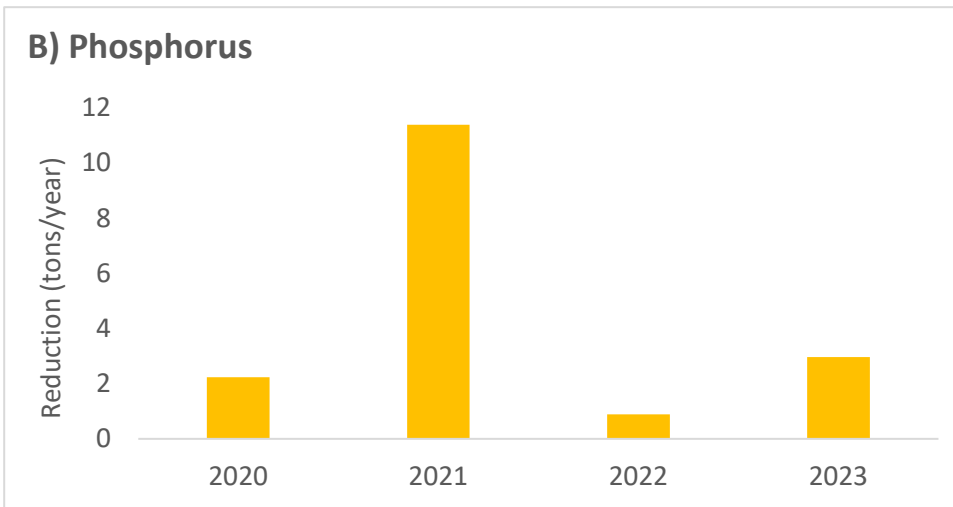
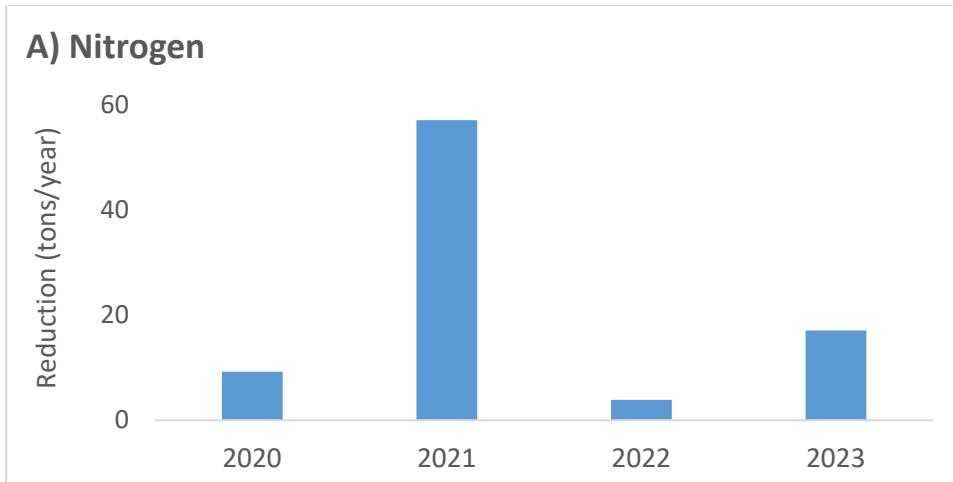
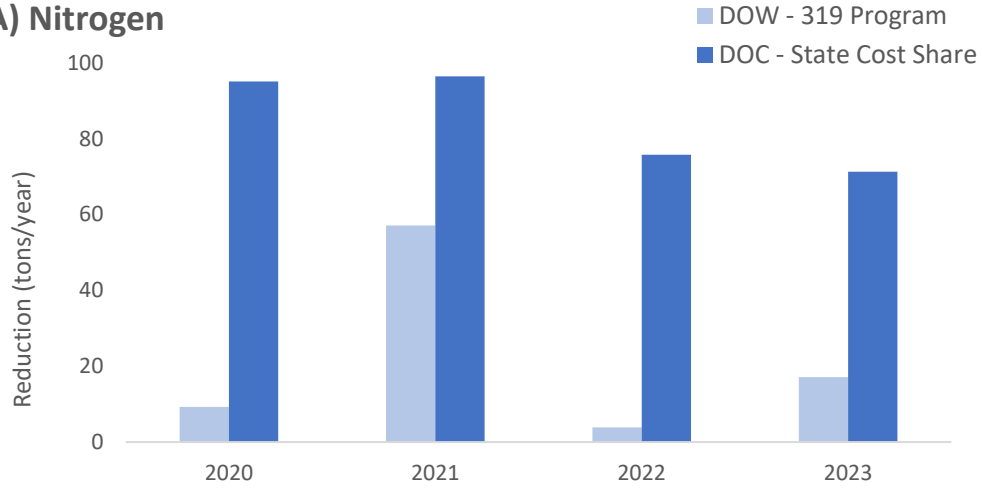
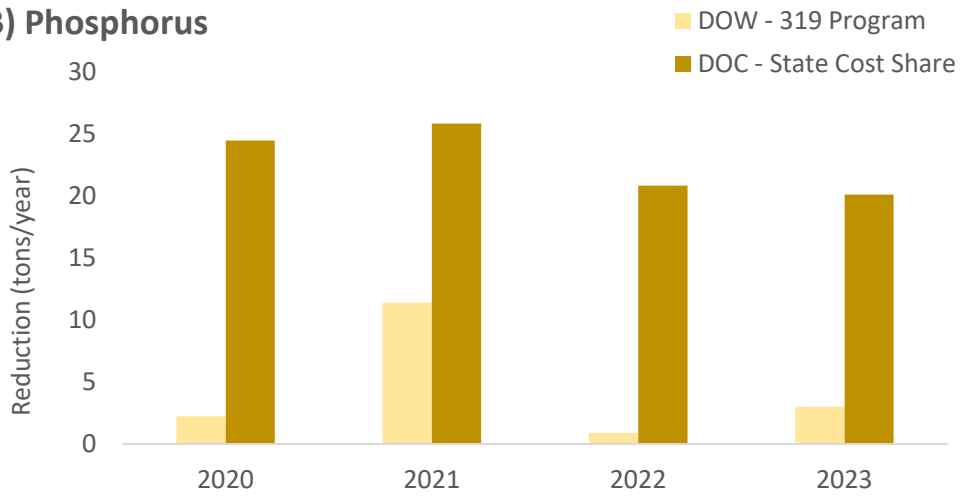


Figure 31. NPS Program Pollution Load Reductions for A) nitrogen (tons/year), B) phosphorus (tons/year), and C) sediment (tons/year) per year from 2020 to 2023.

A) Nitrogen



B) Phosphorus



C) Sediment

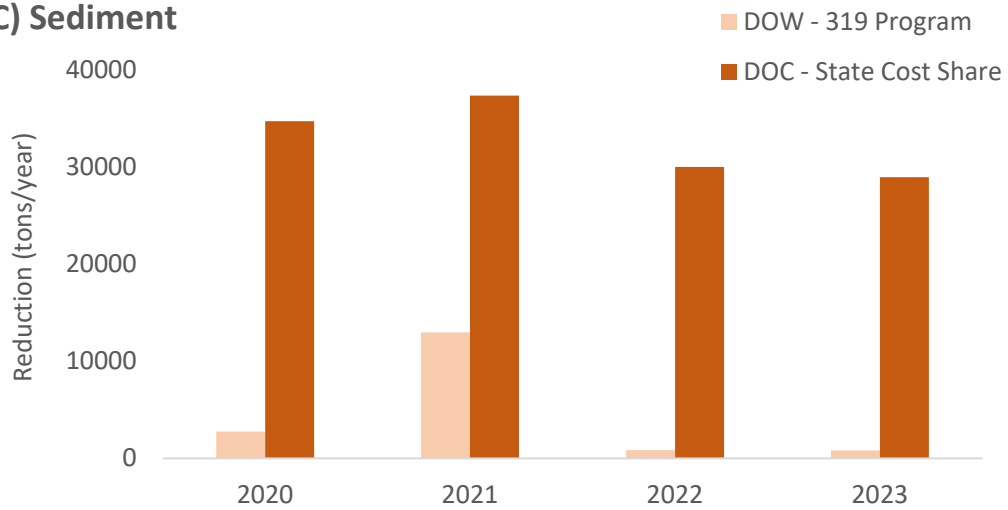


Figure 32. Estimated Kentucky Annual Load Reductions (tons per year) by program for A) nitrogen, B) phosphorus, and C) sediment from 2020 to 2023.

Success Stories

DOW works with partners to track and monitor water quality where implemented BMPs are anticipated to reduce nonpoint source pollution. Water quality improvements that result in a pollutant-waterbody delisting in the biennial IR are reported as Clean Water Act 319 nonpoint source pollution success stories to EPA. The following success stories were reported between 2020 and 2023.

- In 2020, DOW highlighted [Floyds Fork as a 319 Program success story](#) where watershed planning, stream restoration, and agriculture BMPs improved sedimentation. As a result, a segment of Floyds Fork Creek was delisted in the 2016 IR.
- In 2021, DOW identified [Clarks River as a 319 Program success story](#) where wastewater and agricultural BMPs reduced bacteria pollution. These actions improved stream quality to the point that a segment of Clarks River was delisted in the 2018/2020 IR.
- In 2022, DOW identified [Gunpowder Creek as a 319 Program success story](#) where stormwater controls and watershed planning improved siltation, and led to delisting a segment of Gunpowder Creek in the 2018/2020 IR.
- In 2023, DOW identified [Red Bird River as a 319 Program success story](#) where wastewater improvements and watershed planning reduced bacteria pollution, and led to delisting a segment of Red Bird River in the 2022 IR.

For more information about Clean Water Act 319 nonpoint source pollution success stories please go to the [EPA's NPS Program Success Story website](#).



Water Pollution Control Program

There are four Kentucky communities under federal Consent Decrees and 15 that are under state consent judgements to eliminate sanitary sewer overflows (SSO) and to repair systems to reduce combined sewer overflows (CSO). Communities implement projects to manage wastewater capacity and develop long-term control plans (LTCPs). The projects often include repairing sewer lines and increasing the storage capacity in the sewer system. Completion dates of these projects vary depending on the scope of work and financial considerations (Table 9).

There are 235 Kentucky communities that have varying degrees of aging infrastructure that cause bypasses and overflows at wastewater treatment plants. DOW personnel inspect approximately 20% of CSO communities and 5% of SSO communities (not including MS4 inspections or pretreatment inspections that are not related to the CSO/SSO aspects of the systems), focusing on systems with

frequent and recurring incidents and complaints. During inspections, DOW staff educate communities on identifying causes of overflows, prioritizing corrective actions, finding funding resources, and returning collection systems to compliance with the CWA.

Table 9. Combined Sewer Overflows (CSO) and Sanitary Sewer Overflows (SSO) mitigation projects in Kentucky (STP = Sewage Treatment Plant; WWTP = Wastewater Treatment Plant).

Community	Expected Completion Date
Ashland STP	12/31/2025
Catlettsburg STP	Completed 1/31/2019
Frankfort Municipal STP	12/31/2023, pending approval of new date
Harlan STP	2020, pending new date 12/31/2025
Henderson STP	Completed 3/31/2015
Lexington-Fayette Urban County Government (LFUCG): Lexington Town Branch STP; Lexington West Hickman. Not CSOs	12/31/2026
Louisville MSD: Morris Forman WQTC	12/31/2024, pending approval of new date
Loyall STP	2020, pending new date 12/27/2025
Maysville STP	September 2033
Morganfield WWTP	2018, pending new date
Northern KY Sanitation District No. 1 (SD1)	12/31/2025
Owensboro Regional Water Resource Agency (RWRA): Max Rhoads WWTP	12/31/2026
Paducah/McCracken County Joint Sewer Agency (JSA)	12/31/2038
Pikeville WWTP was CSO	Completed 7/01/2014
Pineville STP	2017, pending new date
Prestonsburg STP (was CSO)	Completed 10/1/2015
Vanceburg STP (was CSO)	Completed 12/31/2015
Winchester Municipal Utilities (not CSO)	12/31/2025
Worthington WWTP	12/31/2015

Nutrients

Excess nutrients impair water quality by causing adverse effects on natural water chemistry and the indigenous aquatic community. DOW is pursuing facility specific nutrient reduction actions at Publicly-Owned Treatment Works (POTW) dischargers to address sewage point sources. Specifically, major POTW facilities that expand (i.e. POTW facilities with a design flow of 1.0 million gallons per day [MGD]) are required to meet a numeric phosphorus limit. DOW is also developing facility-specific permit requirements for major POTW facilities renewing their Kentucky Pollutant Discharge Elimination System (KPDES) permit that lack numeric nutrient limits. These facility-specific permit requirements can include numeric nutrient limitations or a study of optimization methods to reduce nutrient discharge.

State Revolving Fund Loan Programs

The [Clean Water State Revolving Fund](#) (CWSRF) and the Drinking Water State Revolving Fund ([DWSRF](#)) are water infrastructure loan programs administered by the states with support from EPA. These programs provide funding to eligible communities to improve water related infrastructure, which has benefits of improving human health and the environment. Many times, without these federally subsidized funds, improvements of infrastructure in small communities may not be possible.

The CWSRF program was created in 1988 to establish a water pollution control revolving fund that would provide financial assistance for construction of publicly owned treatment works under section 212 of the CWA, implementation of watershed management plans under section 319 of the CWA, and development and implementation of conservation and management plans under section 320 of the CWA. Every year Kentucky identifies water pollution control priorities and ranks infrastructure projects based on these priorities. These projects are funded through the CWSRF in the form of low interest loans. The funds are provided by EPA in the form of capitalization grants to all states annually.

The DWSRF was created in 1996 to further the goals of the Safe Drinking Water Act (SDWA). Like the CWSRF, every year Kentucky identifies its drinking water priorities and ranks infrastructure projects based on these priorities. Kentucky receives a capitalization grant and then these projects are funded through the DWSRF in the form of low interest loans.

In November of 2021, Congress passed the Bipartisan Infrastructure Law (BIL) which, over the next five years, will provide additional funding to supplement the CWSRF and the DWSRF. In addition to increases in the base-funding, the BIL also addresses emerging contaminants, such as per- and polyfluoroalkyl substances (PFAS), in both drinking water and wastewater. The BIL also funds projects to remove lead in drinking water, primarily a human health benefit. Since a very small portion of these funds have currently been awarded, the extra grants will be included in the next triennial cycle.

Table 10 lists the dollar amounts spent each year since the inception of both programs. As of April 2023, Kentucky's CWSRF program has funded 451 clean water infrastructure projects, totaling more than \$1.87 billion, since the inception of the program. Kentucky has funded 258 drinking water projects, totaling more than \$644 million, since the inception of the program.

In the past two years (2022-2024), the CWSRF has funded the following projects:

- One project, in Paducah, was funded to further reduce combined sewer system (CSS) impacts in their community. This project is part of ongoing phased work in Long Term Control Plans, greatly improving the ability to control combined sewage releases.
- Replacement, upgrade, or expansion of at least 15 aging wastewater treatment systems that were polluting the waterways across the Commonwealth of Kentucky.
- 19 projects that reduced inflow and infiltration and reduced potentially recurring SSOs; all these projects helped systems achieve compliance, resulting in improved water quality.
- Seven failing package treatment plants are in the process of being eliminated through regionalization. Regionalization of these plants has resulted in the reduction of system operation costs and the reduction nutrient loadings into the waters of the Commonwealth.
- Several projects provided services to areas that were served by failing septic systems, thus reducing the nutrient and pollutant loading into the waters of the Commonwealth.
- Kentucky, like other states, has been facing algal blooms that have impacted drinking water treatment plants and increased their costs. As projects funded through the state revolving fund reduce the amount of nutrients and pollutants in Kentucky's waterways, treatment plants will see a decline in operational costs.
- The funding through the state revolving fund is also being invested in new, green, energy-efficient technologies. This is increasing the long-term sustainability of Kentucky's water infrastructure.

In the past two years (2022 – 2024) the DWSRF with the BIL Funding has funded the following projects:

- With the acceptance of the BIL funding, several lead service line projects were funded including 21 lead service line inventories and 2 lead service line replacements for a total of \$6,050,327 for the lead service line inventories and \$34,455,124 for lead service line replacements.
- Also included in the BIL funding was funding to eliminate PFAS contamination in source water, which included funding a project for the City of South Shore to extend a new waterline and install a new interconnect with the neighboring City of Portsmouth, OH.
- The DWSRF funded three new water treatment plants due to aging equipment and under capacity.
- Several distribution lines and water storage tanks rehabilitation were also funded by the DWSRF due to under capacity, water age, and low pressure.

Overall, these programs are geared towards improving the quality of Kentucky’s natural resources, resulting in long-term benefits including diverse ecosystems, increased tourism, and economic development. In the past the programs focused primarily on unserved areas. Since the end of useful life has been reached on much of Kentucky’s infrastructure, there is a move to more sustainable solutions when upgrading aging equipment.

Table 10. Funds spent using the Clean Water State Revolving Fund and Drinking Water State Revolving Fund in Kentucky.

	Clean Water State Revolving Fund	Drinking Water State Revolving Fund
2007 and prior	\$479,991,442	\$98,011,339
2008	\$250,499,329	\$53,702,151
2009	\$67,267,880	\$6,519,566
2010	\$82,000,089	\$36,227,115
2011	\$81,162,663	\$20,791,942
2012	\$99,156,727	\$23,670,604
2013	\$73,950,436	\$46,847,806
2014	\$21,816,396	\$10,083,876
2015	\$155,169,099	\$39,181,612
2016	\$38,482,790	\$25,545,760
2017	\$46,734,571	\$20,864,004
2018	\$46,690,984	\$18,277,845
2019	\$94,377,569	\$65,738,921
2020	\$76,142,831	\$36,656,506
2021	\$69,537,288	\$32,019,918
2022	\$9,666,385	\$21,648,963
2023	\$8,660,000	\$19,454,716
2024	\$123,274,679	\$50,213,972
Since 2008	\$1,270,108,519	\$496,517,236
Cumulative	\$1,873,374,641	\$644,742,547

Wetland Program

In 2023, the Wetlands Program initiated the development of a network of reference floodplain wetlands. This Reference Wetland Network will be surveyed by bioregion on a five-year rotation. Data collection for the Reference Wetland Network began in February 2024 at six stations within the Pennyroyal bioregion. Sampling included bimonthly water chemistry measurements and field observations. Vegetation, avian, and Kentucky Wetland Rapid Assessment Method (KY-WRAM) surveys were also performed at each station. The results of this effort will be used to evaluate each candidate reference station for inclusion in the Reference Wetland Network. Once stations in the Reference Wetland Network have been vetted, the data will be used as the standard upon which other wetland stations will be compared. For example, water chemistry data may be examined to determine water quality criteria that are appropriate for floodplain wetlands in Kentucky.

From 2023-2024, the Wetlands Program also verified the accuracy of a wetland mapping model developed by the Division of Water's Geographic and Data Analysis section staff. This project involved field verification of points modeled as low-, moderate-, and high-probability of wetland presence. A total of 49 points were evaluated using the United States Army Corps of Engineers (USACE) wetland delineation protocols. Of these points, three were determined to be wetland and were delineated in their entirety. The data will be used to further refine the mapping model.

In 2024, the Wetlands Program performed vegetation, avian, and KY-WRAM surveys at two stream restoration projects where wetland habitat established on its own. This was done to evaluate the ability of these tools to characterize wetland condition at compensatory mitigation sites. Vegetation surveys were conducted once early in the summer and once late in the summer to evaluate whether seasonality affects the narrative rating produced using the Kentucky Vegetation Index of Biological Integrity.



Special State Concerns and Recommendations

Nutrient Reduction Strategy

Kentucky joins 11 other states in the Mississippi River Basin in consolidating efforts to address nutrient problems in waterways. As members of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force, these states, along with five federal agencies, are working to develop nutrient reduction strategies and protocols to improve water quality at home and downstream.

In 2022, DOW released Kentucky's [Nutrient Reduction Strategy Update](#) that provides a framework for prioritizing investments where watershed nutrient concentrations are highest, drinking water sources merit enhanced assistance, and where harmful algal blooms have been documented in lakes or reservoirs. Kentucky held a [Nutrient Reduction Strategy kick-off meeting](#) in June 2023 (Figure 33) to provide a forum for partner engagement, set up workgroups, and outline goals of the [Gulf Hypoxia Program](#). Nutrient investments and progress can be tracked locally in DOW's new [Success Tracking Mapper](#).

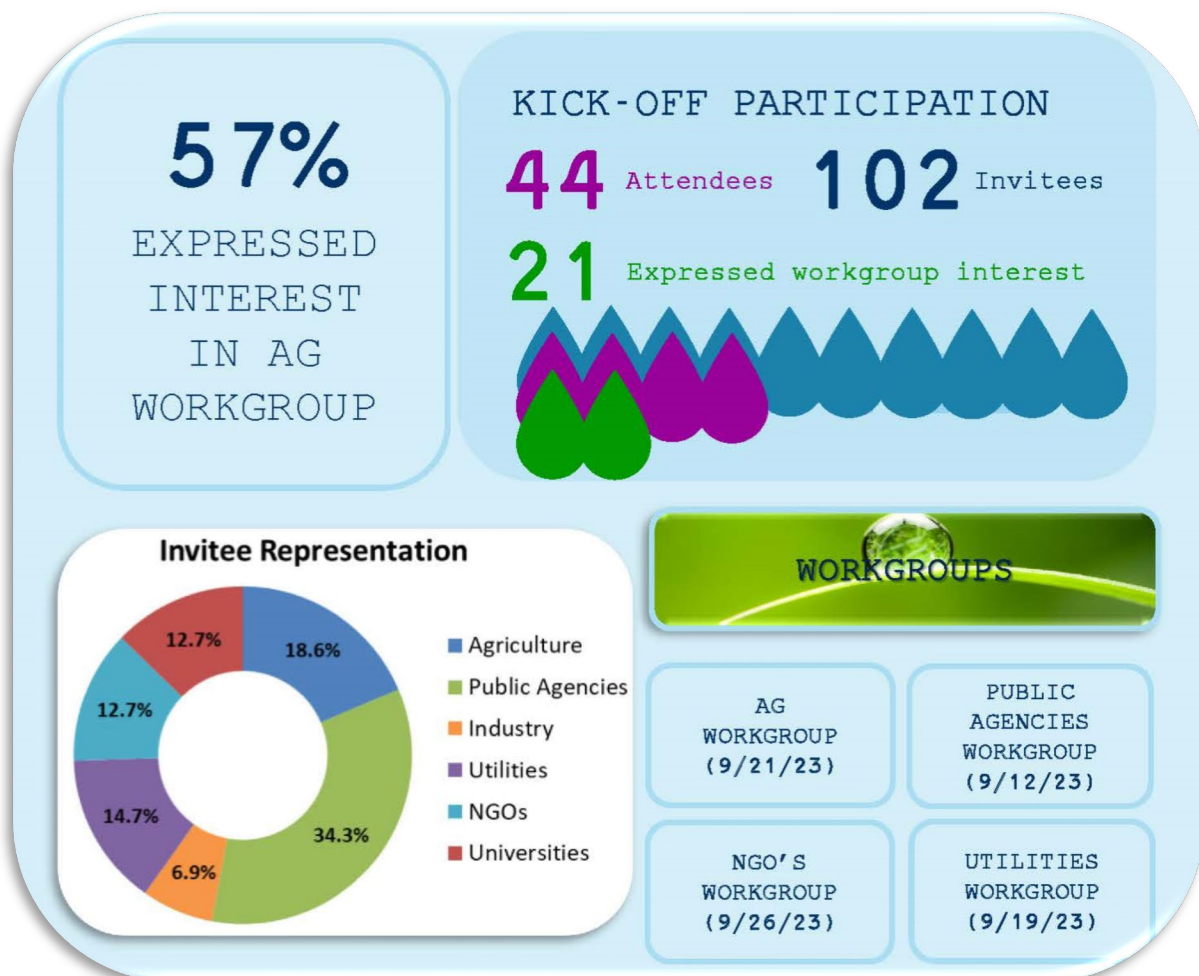


Figure 33. 2023 Nutrient Reduction Strategy kick-off infographic

Per- and polyfluoroalkyl substances (PFAS)

PFAS are a large group of chemicals that have been widely used for decades due to their ability to resist heat, oil, grease, and water. Common uses include non-stick cookware, stain-resistant carpets and fabrics, food packaging, and fire-fighting foam. These chemicals break down very slowly in the environment and can build up in people, animals, and the environment over time.



Consuming contaminated drinking water or food or using products containing PFAS are common ways that people can be exposed. Research suggests that exposure to certain PFAS levels over time may contribute to negative health effects such as developmental delays in children, decreased fertility, decreased ability to fight infections, increased cholesterol levels, or increased risk of certain cancers.

Due to the potential impacts for public health, the DEP began testing for PFAS in 2019. Testing started with public drinking water and expanded to include surface waters, fish tissue, and groundwater. Sampling for PFAS is now a regular component in a number of DEP programs, and results are available on the [PFAS web page](#).

The DEP continues to follow EPA’s regulatory progress with PFAS. In 2024, EPA released final National Primary Drinking Water Regulations for six PFAS. Department staff are actively working with public water systems on treatment methods to remove PFAS in order to comply with the new regulations.

Fish Consumption Advisories

The Kentucky DEP, Public Health, and Fish and Wildlife Resources jointly issue [fish consumption advisories](#) to the public when fish are found with trace contaminants of mercury, PCBs, and chlordane.

These advisories caution citizens about potential health problems that may result from eating fish caught statewide (Table 11) as well as from a particular waterbody (Table 12). These advisories do not ban eating fish; it is a guide to help citizens reduce risk and make informed decisions about eating fish from Kentucky waters. This guidance provides information on how often fish may be safely eaten. Most fish are healthy to eat and are an excellent source of low-fat protein. Consumption advisories do not affect those who swim, ski, or boat in Kentucky waters.

A multi-agency workgroup that consists of representatives from the mainstem states, EPA, and the Ohio River Valley Water Sanitation Commission (ORSANCO) establish [advisories for the Ohio River](#).

Table 11. Fish consumption guidance that applies to specific groups of fish from all Kentucky waters.

Species	General Population	Sensitive Population	Contaminant
Predatory fish	1 meal per month	6 meals per year	Mercury
Bottom feeder fish and Panfish	1 meal per week	1 meal per month	Mercury
All other fish	No Advisory	1 meal per week	Mercury

Note: one meal is considered to be an 8 oz. serving for a 150-pound person.

Table 12. More restrictive guidance for fish consumption that applies to specific waterbodies.

Waterbody	Location	Species	General Population	Sensitive Population	Contaminant
Drakes Creek	W. Fork at Franklin, KY downstream to confluence	All fish	No Consumption	No Consumption	PCB
Knox Creek	Pike County	Bottom feeder fish	6 meals per year	No Consumption	PCB
Knox Creek	Pike County	Predatory fish	1 meal per month	6 meals per year	PCB
Knox Creek	Pike County	Panfish	1 meal per month	6 meals per year	PCB/Mercury
Knox Creek	Pike County	Flathead Catfish	No Consumption	No Consumption	PCB
Green River Lake	Lake-wide	Bottom feeder fish	1 meal per month	6 meals per year	PCB/Mercury
Fishtrap Lake	VA/KY state line to dam	Bottom feeder fish/hybrid bass	1 meal per month	6 meals per year	PCB
Fish Lake	Ballard County	Bottom feeder fish	1 meal per month	6 meals per year	Mercury
Little Bayou Creek	McCracken County	All fish	No Consumption	No Consumption	PCB
Mud River	Hancock Lake Dam to Wolf Lick Creek	Bottom feeder fish	No Consumption	No Consumption	PCB
Mud River	Hancock Lake Dam to Wolf Lick Creek	Predatory fish/Panfish	1 meal per month	6 meals per year	PCB
Mud River	Wolf Lick Creek to the Green River	Bottom feeder fish	1 meal per month	6 meals per year	PCB
Mud River	Wolf Lick Creek to the Green River	Panfish	1 meal per week	1 meal per month	PCB
Town Branch	Logan County	All fish	No Consumption	No Consumption	PCB
Metropolis Lake	McCracken County	All fish	No Consumption	No Consumption	PCB/Mercury

Note: one meal is considered to be an 8 oz. serving for a 150-pound person.

- **Sensitive Populations:** Women of childbearing age and children 6 years and younger are advised to eat no more than six meals per year of predatory fish and no more than one meal per month of panfish and bottom feeder fish. The general public is advised to eat no more than one meal per month of predatory fish and no more than one meal per week of panfish and bottom feeder fish.
- **Predatory fish include:** Largemouth Bass, Smallmouth Bass, Spotted Bass, White Bass and Striped Bass and their hybrids, Yellow Bass, Flathead Catfish, Blue Catfish, Musky, Sauger and Walleye and their hybrids, Bowfin, Chain Pickerel and all Gars.
- **Panfish include:** Bluegill, Green Sunfish, Longear Sunfish, Redear Sunfish, Rock Bass, and Crappie species.
- **Bottom feeder fish include:** Channel Catfish, Drum, Carp Sucker, White Sucker, Common Carp, Bullhead species, Northern Hog Sucker, Buffalo species, Spotted Sucker, Redhorse species, Sturgeon and Creek Chub.
- **Other fish include:** Asian Carp, Trout species, Minnows, etc.

Swimming Advisories

The DOW in the Energy and Environment Cabinet and the Division of Public Health Protection and Safety in the Cabinet for Health and Family Services agree that swimming advisories that have been in place for several years in different areas of the state should remain in effect until further notice. These advisories are due to high levels of *E. coli* bacteria.

People should avoid recreational contact with waters in the areas specified because of the bacteria, which occur in human and animal waste and indicate the presence of untreated or inadequately treated sewage. The bacteria create a potential for diarrheal illnesses and other infectious diseases.

Swimming advisories remain in effect for the following:

Upper Cumberland River

- The Cumberland River from Four Mile Bridge (Highway 2014) to Pineville at the Highway 66 Bridge and from Wallins Creek Bridge (Highway 219) to Harlan
- Martins Fork from Harlan to the Cawood Water Plant
- All of Catron Creek, all of Clover Fork and all of Straight Creek
- Poor Fork from Harlan to Looney Creek
- Looney Creek from the mouth to Lynch Water Plant Bridge

Kentucky River

North Fork of the Kentucky River upstream of Chavies. Although still above recommended levels, water quality has continued to improve and is approaching an acceptable level for swimming in some stretches of the river.

Licking River

Banklick Creek to the confluence with the Ohio River. The swimming advisory includes all of Banklick Creek and Three Mile Creek. Inadequate or failing sewage treatment systems can contribute to water quality problems along Kentucky waterways. Efforts by the Cabinet for Health and Family Services and local environmental health staff to ensure all new septic system installations are installed properly, and work by DOW and wastewater plant operators to monitor wastewater treatment plant compliance are reducing bacterial pollution from these possible sources. Work by both agencies is gradually reducing the number of discharges and improving water quality.

Residential and Agricultural Areas

The agencies also recommend against swimming or other full-body contact with surface waters immediately following heavy rainfall events, especially in dense residential, urban and livestock production areas. This recommendation is due to an increased potential for exposure to pollution from urban NPS pollution, bypasses from sewage collection systems, CSOs, and pollution from livestock waste. The public should avoid recreating in stream segments below wastewater treatment facility outfalls, confined animal feedlots or other obvious sources of pollution during any time of the year.

Harmful Algal Blooms

Although algae are present in most aquatic ecosystems, under certain environmental conditions (e.g. excess nutrients, warm temperatures, and low flow) populations of some algal species may grow exponentially, resulting in a 'nuisance' bloom. A harmful algal bloom (HAB) occurs when toxin producing cyanobacteria, commonly referred to as blue-green algae, grow excessively in a body of

water. These bacteria produce toxins that may affect the liver, nervous system and/or skin in animals or humans. Not all cyanobacteria produce toxins and some produce toxins only under certain conditions.



Action levels for HAB watch and warning advisories are detailed in Table 13. Recreational advisories will be placed when the action limits in this table are exceeded. Action levels for total microcystins (all congeners) and cylindrospermopsin recommended by EPA were adopted by the Kentucky HAB Work Group in 2019. Current HAB advisories can be located using the [Harmful Algal Bloom Viewer](#).

Table 13. Thresholds for advisories for total microcystins and cylindrospermopsin (µg/l).

Advisory Type	Total Microcystins	Cylindrospermopsin
Recreational Public Health Advisory - Algal toxins present at unsafe levels. Swimming, wading, and water activities that create spray are not recommended.	8	15

From 2021 - 2023 the following blooms have been reported:

- In 2021, blooms were reported at 7 waterbodies: Boltz Lake, Kentucky River, Licking River, Rough River Lake, Sportsman’s Lake, Taylorsville Lake, and Yatesville Lake. Toxins were detected below advisory levels at Sportsman’s Lake and Taylorsville Lake. No recreational advisories were issued.
- In 2022, blooms were reported at 5 waterbodies: Elmer Davis Lake, Shelby Lake, Boltz Lake, Buckhorn Lake, and Cave Run Lake. No toxins were detected. No recreational advisories were issued.
- In 2023, blooms were reported on 5 waterbodies: Logan Hubble Park Lake, Herrington Lake, Kentucky River – Pool 4, Elkhorn Lake, and Old Alexandria Reservoir. Toxins were detected at Kentucky River – Pool 4 and Old Alexandria Reservoir. An advisory was issued for Old Alexandria Reservoir on 10/30/2023 and was removed on Nov 21, 2023.

Water Recreation Tips

DOW and the Kentucky Department of Public Health issue [Water Recreation Tips](#) at the beginning of each recreation season. The following recommendations were published on May 24, 2024:

1. Avoid ingesting or inhaling the water.
2. Thoroughly clean hands and other areas that have come in contact with the water.

3. Avoid allowing open wounds to have direct contact with the water.
4. Avoid areas where swimming or harmful algal bloom (HAB) advisories have been issued.
5. Avoid water with obvious odors or surface scums.
6. Avoid getting in water after heavy rainfall, especially in dense residential, urban and agricultural areas.
7. Avoid areas below wastewater treatment facility outfalls, animal feedlots, straight pipes or other obvious sources of pollution.
8. Restrict pets and livestock from drinking the water if a bright green or blue-green surface scum is present.

Public Participation

Call For Data

On May 18, 2022, DOW sent out a 'Call for Data' to the TMDL email distribution list, the NPS email distribution list, and various agency partners, such as USACE and Louisville MSD (Appendix A). Attached to this email was a data format template to ensure that submitted data could be reviewed for sufficient quantity and quality to document decisions to use, or not use, the available data as part of the 305(b)/303(d) assessment process. All decisions to use, or not use, readily available data were tracked in either K-WADE, where DOW houses its monitoring data, or KATTS, where DOW houses its assessment data before submittal to ATTAINS.

Public Notice

The draft 2024 303(d) List of Impaired Waters was available for public comment from April 12 through June 15, 2024, as required by KRS 224.70-150. The DOW elected to include the [draft Prioritization Framework](#) as part of the Public Notice of the draft 2024 303(d) List of Impaired Waters.

A dedicated public notice site was developed for the public to view the draft 303(d) list, new listings, proposed delistings, waters with completed TMDLs, the 305(b) list, and the draft Prioritization Framework. Spreadsheets and interactive maps with video tutorials were available through the site. Links to assessment summaries and TMDL documents were available through the map dashboards or in the provided spreadsheets.

The official public notice announcement can be found in Appendix B. Notification was sent through a Commonwealth of Kentucky Energy and Environment Cabinet blog post (Appendix C). Additionally, the public notice was distributed electronically through the TMDL and NPS email distribution lists. Comments received and responses to comments are included in Appendix E.

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Appendices

Appendix A – Call for Data

The Kentucky Division of Water, Water Quality Branch, is seeking data for the upcoming 2024 305(b)/303(d) Integrated Reporting Cycle. It is strongly encouraged to reach out prior to submitting data to address specific circumstances.

For those interested in submitting water quality, bacteria, biological, or tissue data for consideration in the 2024 305(b) assessment process, please email TMDL@ky.gov and place “Data for 2024 Cycle” in the subject line. Data must be submitted no later than **October 1, 2022**. The sample collection time frame being considered for the 2024 cycle is 1/1/2017 – 12/31/2021.

- If the water quality, bacteria, biological, or tissue data you collect are submitted to EPA’s Water Quality Portal (WQP) via the Water Quality Exchange, there is no need to compile your data for submittal. Please inform us of what data is available through EPA’s WQP that we should review and consider in the assessment process.
- If your data is stored in an agency or organization database, a raw data export should be provided without manipulation.
- If you have data that has been submitted to another party within the Cabinet, and believe the data are appropriate for consideration in the 305(b) assessment process, please email us specifically to ensure we are aware that this data is available.

The Division thoroughly reviews all data submitted to ensure it is appropriate for use in the 305(b) assessment process. The attached data guide offers specific examples of data we ask that you provide as part of your submission (including data types and metadata). The guide does not represent a template or required format, but instead aims to capture those properties of water quality, bacteria, biological, or tissue data that are most informative to us in our evaluation of data quality and quantity. If you do not have all fields from the data guide, this should not discourage you from reaching out. We hope this guide will be a useful resource in communicating the necessary information the Division seeks when reviewing external data for use in assessment.

Again, we strongly encourage reaching out early in the process if you are interested in submitting data to the Division for use in assessment. We look forward to hearing from you!

Appendix B – Public Notice Announcement

Draft 2024 303(d) List and 2022-2032 303(d) Prioritization Framework, April 16, 2024

The Kentucky Division of Water (DOW) has opened a 60-day comment period on the draft 2024 303(d) list of impaired waters as required by KRS 224.70-150. Accompanying this public notice is a draft of Kentucky’s 2022-2032 303(d) and Impaired Waters Prioritization Framework, also open for public comment. Comments received by email or mail must be dated or postmarked no later than June 15, 2024. Comments may be sent:

- Via email (preferred method) to TMDL@ky.gov (Subject line: “303(d) List”)
- Via U.S. Mail to: Water Quality Branch (ATTN: 303(d) List)
Kentucky Division of Water
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

The DOW has developed a dedicated [public notice site](#) to view the draft 303(d) list with the prioritization framework, new listings, proposed delistings, waters with completed total maximum daily loads (TMDLs), and the 305(b) list. Spreadsheets and interactive maps with video tutorials are available through this site. Links to assessment summaries and TMDL documents are available through the map dashboards or in the provided spreadsheets.

Section 305(b) of the Clean Water Act (CWA) requires states to submit a biennial report to EPA describing the quality of the state’s waters and to provide an inventory of waterbodies with water quality that supports, or fails to support, its designated uses (e.g., primary contact recreation, aquatic life, fish consumption, etc.). Section 303(d) of the CWA requires states to identify and maintain a list of impaired waters, and to develop a TMDL for each pollutant-waterbody combination that does not meet water quality criteria.

EPA recently released its [2022 - 2032 Vision for the Clean Water Act Section 303\(d\) Program](#). As part of the 2024 public notice process, DOW has provided a draft of Kentucky’s 2022-2032 303(d) and Impaired Waters Prioritization Framework. The draft Prioritization Framework communicates goals and priorities in addressing impaired waters in the Commonwealth for the coming years.

The 2024 reporting cycle focuses on DOW’s Ambient Rivers program from the Green and Tradewater Rivers Basin Management Unit, DOW’s Ambient Lakes program from 2021 and 2022, and DOW’s Probabilistic Biological Monitoring program from 2017-2021, where a statewide approach was newly implemented. Data collected by other internal programs and external data contributors provide updates throughout the state. In total, 993 stations had new data available to update 780 assessments.

Assessment results from the [2022 Integrated Report](#) can be accessed at the [Kentucky Water Health Portal](#). Responses to comments received during the public comment period will be included in the Integrated Report to Congress. Upon EPA approval of the 2024 303(d) list, the Water Health Portal will be updated with the 2024 305(b) assessment information. Information, updates, and resources about the Prioritization Framework will be maintained on the [TMDL Priorities webpage](#).

Appendix C – Blog Post

Division of Water Invites Review and Comment on Kentucky’s Impaired Waters and Priorities Through Interactive Website

The Kentucky Division of Water (DOW) has opened a 60-day comment period on the draft 2024 303(d) list of impaired waters as required by KRS 224.70-150. Accompanying this public notice is a draft of Kentucky’s 2022-2032 303(d) and Impaired Waters Prioritization Framework, also open for public comment. Comments received by email or mail must be dated or postmarked no later than June 15, 2024. Comments may be sent:

- Via email (preferred method) to TMDL@ky.gov (Subject line: “303(d) List”)
- Via U.S. Mail to: Water Quality Branch (ATTN: 303(d) List)
Kentucky Division of Water
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

The DOW has developed a dedicated [public notice site](#) to view the draft 303(d) list with the prioritization framework, new listings (Figure 1), proposed delistings, waters with completed total maximum daily loads (TMDLs), and the 305(b) list. Spreadsheets and interactive maps with video tutorials are available through this site. Links to assessment summaries and TMDL documents are available through the map dashboards or in the provided spreadsheets.

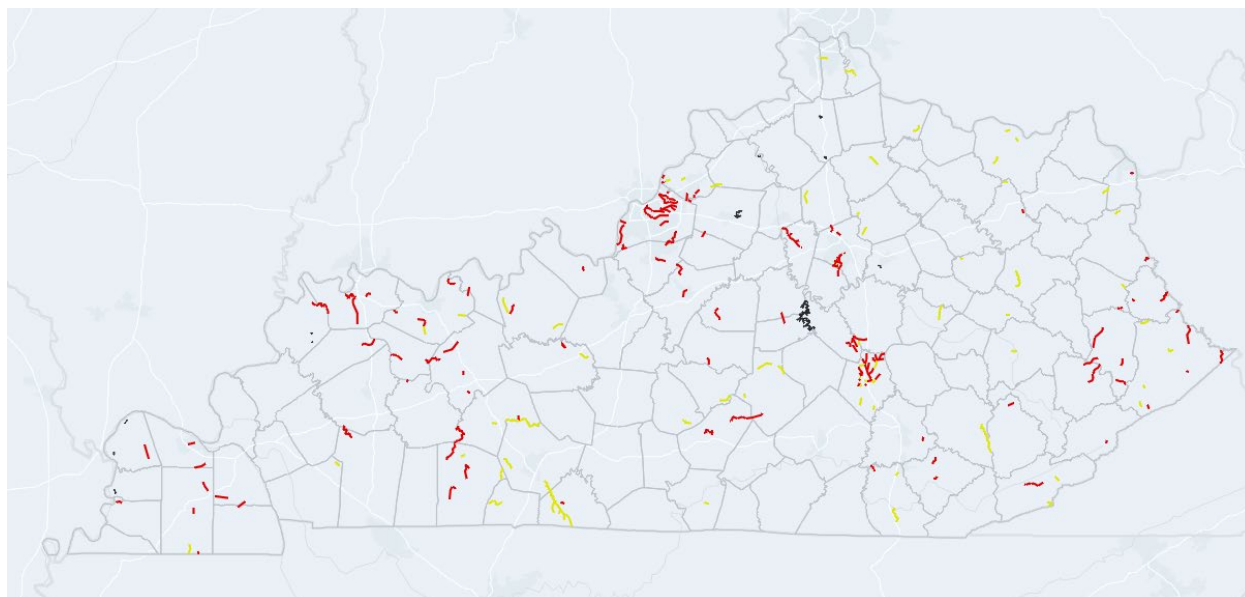


Figure 1. New listings map from the public notice site, which displays waterbodies with pollutants that are newly listed on the 2024 303(d) list as causes of impairment (not meeting water quality standards) and require a TMDL (total maximum daily load).

Section 305(b) of the Clean Water Act (CWA) requires states to submit a biennial report to EPA describing the quality of the state’s waters and to provide an inventory of waterbodies with water quality that supports, or fails to support, its designated uses (e.g., primary contact recreation, aquatic life, fish consumption, etc.). Section 303(d) of the CWA requires states to identify and maintain a list of

impaired waters, and to develop a TMDL for each pollutant-waterbody combination that does not meet water quality criteria.

EPA recently released its [2022 - 2032 Vision for the Clean Water Act Section 303\(d\) Program](#). As part of the 2024 public notice process, DOW has provided a draft of Kentucky's 2022-2032 303(d) and Impaired Waters Prioritization Framework. The [draft Prioritization Framework](#) communicates goals (Figure 2) and priorities in addressing impaired waters in the Commonwealth for the coming years.

Goals

Kentucky's 303(d) program has the following goals for the 2022-2032 long term planning period in implementing CWA 303(d) activities:

- Promote and support optimized monitoring and assessment strategies to accurately identify and catalogue impaired waters
- Develop TMDLs that are scientifically sound, readily implementable, and resilient to changing watershed conditions
- Support development of [TMDL Alternative Plans](#) where planned and ongoing restoration activities may be immediately beneficial for improving water quality
- Track progress of activities and measure water quality improvement over time resulting from plan implementation
- Integrate across Clean Water Act and other programs and build partnerships to plan activities, leverage resources, and align priorities
- Emphasize transparency and effective communication in all program areas to promote meaningful public involvement, encourage public participation, and strengthen partnerships

Figure 2. Excerpt from Kentucky's draft 2022-2032 303(d) and Impaired Waters Prioritization Framework.

The 2024 reporting cycle focuses on DOW's Ambient Rivers program from the Green and Tradewater Rivers Basin Management Unit, DOW's Ambient Lakes program from 2021 and 2022, and DOW's Probabilistic Biological Monitoring program from 2017-2021, where a statewide approach was newly implemented. Data collected by other internal programs and external data contributors provide updates throughout the state. In total, 993 stations had new data available to update 780 assessments. The draft 2024 305(b) list has 3,168 assessment units representing 13,691.8 river miles, 213,075 lake/reservoir acres, and 192,514 springshed acres. On the draft 2024 305(b) list, there are 3,859 pollutant-waterbody combinations (Figure 3). On the draft 2024 303(d) list, there are 3,070 pollutant-waterbody combinations, which require a TMDL (Figure 3). Broken down by waterbody type, 1,607 rivers/streams are on the draft 303(d) list totaling 7,565.0 river miles, 72 lakes/reservoirs are on the 303(d) list totaling 186,664.0 acres, and nine springs are on the 303(d) list totaling 82,988 springshed acres.

Assessment results from the [2022 Integrated Report](#) can be accessed at the [Kentucky Water Health Portal](#). Responses to comments received during the public comment period will be included in the Integrated Report to Congress. Upon EPA approval of the 2024 303(d) list, the Water Health Portal will be updated with the 2024 305(b) assessment information. Information, updates, and resources about the Prioritization Framework will be maintained on the [TMDL Priorities webpage](#).

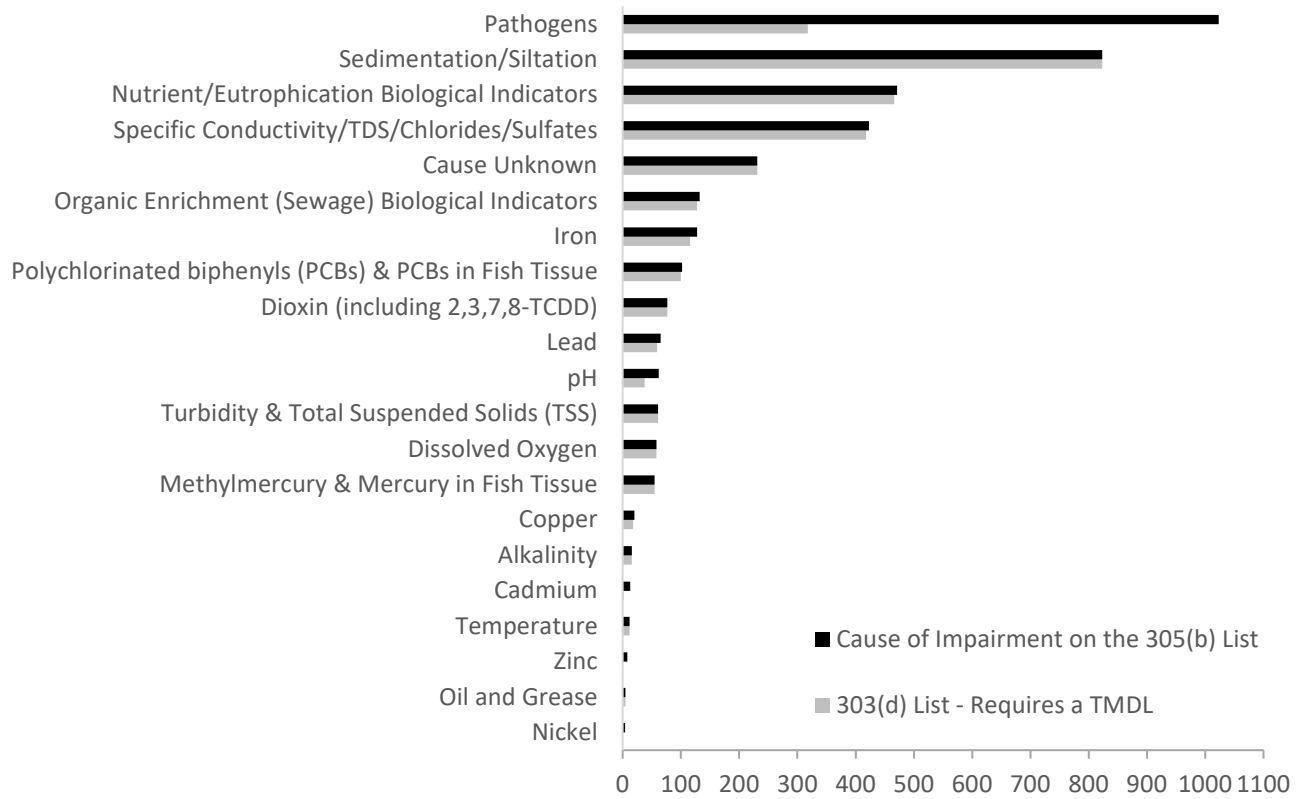


Figure 3. Number of impairments on the draft 2024 305(b) list (black bars) and how many of these impairments are on the draft 2024 303(d) list requiring a TMDL (gray bars).

Appendix D – Comments Received and Response to Comments

The purpose of this appendix is to document the public comments received and provide a response to these comments in writing. Comments are reproduced as received with DOW responses following in black text.

Comment 1:

[REDACTED]

Private Citizen

May 22, 2024

Lara Panayotoff, Supervisor
TMDL Section
Water Quality Branch
Kentucky Division of Water
300 Sower Blvd., 3rd Floor.
Frankfort, KY 40601

ATTN: 303(d) List

Re: Draft 2024 303(d) List and 2022-2032 303(d) Prioritization Framework

Dear Lara:

Thank you for the opportunity to review and provide comments regarding the above referenced draft documents. We recognize the significant effort required by KDOW to collect and assess data for a State with over 90,000 miles of streams.

In general, *Kentucky's 2022-2032 303(d) and Impaired Waters Prioritization Framework* is well organized, clearly written and technically sound. I appreciate the challenges the division has overcome with the successful implementation of the 2013 Vision, and I support a continued commitment to integrated and flexible watershed management approaches.

As noted in the Background section of the draft Prioritization Framework document:

The Division's top goal for TMDL development in the 2013 Program Vision planning period was to address all stream bacteria impairments (E. coli or fecal coliform) on the 2016 303(d) list. To meet this goal, the Division created a new reporting framework for addressing these impairments, the Kentucky Statewide Bacteria TMDL. Using this streamlined and efficient approach, the Division successfully completed more than 330 E. coli and fecal coliform TMDLs.

The Division of Water should be commended for this accomplishment. The Statewide Bacteria TMDL framework provides a consistent methodology for completing TMDLs for any waterbody impaired by bacteria within Kentucky's jurisdiction. The efficacy of this approach is demonstrated by the number of bacteria TMDLs completed in a relatively short period of time. I support the division's recommendation to continue completing TMDLs under this framework during the 2022-2032 Program Vision Period.

The Draft Prioritization Framework has identified the completion of TMDLs for waters not supporting Primary or Secondary Contact Recreation designated uses due to bacteria impairments as a high priority issue to address in the upcoming planning period. I would support this recommendation with one caveat: the *Prioritization of Plans* in the Framework indicates that the division will develop TMDLS “as new waters are listed for bacteria (E. coli, fecal coliform) impairments...”. I recommend that the division complete the development of TMDLs for existing “priority” bacteria impairments prior to addressing NEW listings.

The 2022 303(d) List identifies many segments of the Ohio River as “high priority” waters for completion of TMDLs which means that a “*TMDL is in development or will be in development within the next two years and is expected to be completed during the next one to two reporting cycles (within 1-4 years).*”

I recall that EPA Region V undertook an endeavor to complete a bacteria TMDL for the Ohio River, but that TMDL has not come to fruition for reasons unknown to me. Rather than delaying progress on these segments any longer, I suggest that the Kentucky Division of Water prioritize and lead the completion of bacteria TMDLs for all segments of the Ohio River listed as impaired for contact recreation. This effort aligns with the both the vision priority from the 2016-2022 period as well as the current draft Prioritization Framework.

Most of Kentucky’s CSO communities are located along the Ohio River. All of the Kentucky CSO permittees have either completed or have made significant progress implementing approved Long Term Control Plans (LTCPs); these LTCPs represent a significant financial commitment by each community. Communities have taken on the financial burden of these CSO programs with the presumption that upon successful completion of approved LTCPs, a permittee’s obligations to mitigate CSOs would be achieved. The completion of TMDLs for CSO impacted waters is necessary to provide the regulatory certainty that permittees deserve and was implied with the approval of the LTCPs by the Division of Water and USEPA.

The completion of TMDLS for CSO impacted waters is consistent with USEPA’s CSO Policy which states:

“The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of WQS or the receiving waters’ designated uses or contribute to their impairment. Where WQS and designated uses are not met in part because of natural

background conditions or pollution sources other than CSOs, a total maximum daily load, including a waste load allocation and a load allocation, or other means should be used to apportion pollutant loads;"

The Draft 2024 303(d) List and the 2022-2032 303(d) Prioritization Framework outline a comprehensive approach to improving water quality across the Commonwealth. These documents, in conjunction with the Statewide Bacteria TMDL, represent an opportunity for the expeditious completion of TMDLs for the Ohio River. I would recommend the addition of an Ohio River Appendix to the Statewide Bacteria TMDL document to allow for a consistent approach to TMDL development across all major River Basins in the Commonwealth.

This effort is tremendously important for CSO permittees that want to complete their LTCP efforts with the knowledge that their investment in CSO mitigation efforts align with the targets established in the applicable TMDLs. As most CSO programs are nearing completion, I suggest that the division complete the development of the Ohio River TMDLs as soon as practicable.

I appreciate the opportunity to provide comments on these documents. Thank you for your consideration of these remarks.

Sincerely,

A solid black rectangular box redacting the signature of the author.

Comment 2:



June 12, 2024

Water Quality Branch
ATTN: 303(d) List
Kentucky Division of Water (KDOW)
300 Sower Blvd., 3rd Floor
Frankfort, KY 40601

Re: Draft 2024 303(d) List and 2022-2032 303(d) Prioritization Framework

To Whom It May Concern:

Thank you for the opportunity to review and provide comments regarding the above referenced draft documents. We recognize the significant effort required by KDOW to collect and assess data for a State with over 90,000 miles of streams.

In general, we find *Kentucky's 2022-2032 303(d) and Impaired Waters Prioritization Framework* to be well organized, clearly written and technically sound. We applaud the successful implementation of the 2013 Vision and support a continued commitment to integrated and flexible watershed management approaches.

As noted in the Background section of the draft Prioritization Framework document:

The Division's top goal for [total maximum daily load] TMDL development in the 2013 Program Vision planning period was to address all stream bacteria impairments (E. coli or fecal coliform) on the 2016 303(d) list. To meet this goal, the Division created a new reporting framework for addressing these impairments, the Kentucky Statewide Bacteria TMDL. Using this streamlined and efficient approach, the Division successfully completed more than 330 E. coli and fecal coliform TMDLs.

KDOW should be commended for this accomplishment. We believe the Statewide Bacteria TMDL framework provides a consistent methodology for completing TMDLs for any waterbody impaired by bacteria within Kentucky's jurisdiction. The efficacy of this approach is demonstrated by the number of bacteria TMDLs completed in a relatively short period of time. We support KDOW's recommendation to continue completing TMDLs under this framework during the 2022-2032 Program Vision Period.

The Draft Prioritization Framework has identified the completion of TMDLs for waters not supporting Primary or Secondary Contact Recreation designated uses due to bacteria impairments as a high priority issue to address in the upcoming planning period. We support this recommendation with one caveat. The *Prioritization of Plans* in the Framework indicates that KDOW will develop TMDLs "as new waters are listed for bacteria (E. coli, fecal coliform) impairments...". We strongly recommend that KDOW complete the development of TMDLs for existing bacteria impairments prior to addressing NEW listings.

The 2022 303(d) List identifies many segments of the Ohio River as "high priority" waters for completion of TMDLs which means that a "TMDL is in development or will be in development within the next two years and is expected to be completed during the next one to two reporting cycles (within 1-4 years)."

Rather than delaying regulatory progress on these segments any longer, we strongly suggest that KDOW prioritize and lead the completion of bacteria TMDLs for all segments of the Ohio River listed as impaired for contact recreation. This effort aligns with the both the vision priority from the 2016-2022 period as well as the current draft Prioritization Framework.

Most of Kentucky's combined sewer overflow (CSO) communities are located along the Ohio River. All of the Kentucky CSO permittees have either completed or have made significant progress implementing approved Long Term Control Plans (LTCPs); these LTCPs represent a significant financial commitment by each community. Communities have taken on the financial burden of these CSO programs with the presumption that upon successful completion of approved LTCPs, a permittee's obligations to mitigate CSOs would be achieved. The completion of TMDLs for CSO impacted waters is

Ashland | Frankfort | HWU | Louisville MSD | Maysville | JSA | RWRA | SD1

necessary to provide the regulatory certainty that permittees deserve and was implied with the approval of the LTCPs by KDOW and the United States (US EPA).

The completion of TMDLs for CSO impacted waters is consistent with US EPA's CSO Policy which states:

"The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of [water quality standards] WQS or the receiving waters' designated uses or contribute to their impairment. Where WQS and designated uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load, including a waste load allocation and a load allocation, or other means should be used to apportion pollutant loads;"

The Draft 2024 303(d) List and the 2022-2032 303(d) Prioritization Framework outline a comprehensive approach to improving water quality across the Commonwealth. These documents, in conjunction with the Statewide Bacteria TMDL, represent an opportunity for the expeditious completion of TMDLs for the Ohio River. We recommend the addition of an Ohio River Appendix to the Statewide Bacteria TMDL document to allow for a consistent approach to TMDL development across all major River Basins in the Commonwealth.

This effort is tremendously important for CSO permittees that want to complete their LTCP efforts with the knowledge that their investment in CSO mitigation efforts align with the targets established in the KDOW TMDLs. As most CSO programs are nearing completion, we strongly suggest that KDOW complete the development of the Ohio River TMDLs as soon as practicable.

We appreciate the opportunity to provide comments on these documents. We look forward to working with KDOW on the development and implementation of TMDLs.

Thank you,



Director of Utilities
City of Ashland



Sewer Director
City of Frankfort



General Manager
Henderson Water Utility



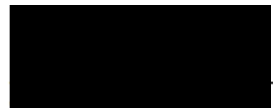
Executive Director
Louisville MSD



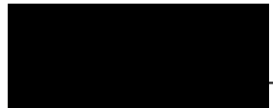
City Manager
City of Maysville



Executive Director
Paducah McCracken County Joint Sewer Agency



Executive Director
Regional Water Resources Agency



Executive Director
Sanitation District No. 1 of Northern Kentucky

Response to Comments 1 & 2:

Due to the similarity in the comments received, one response to address both comments is provided here.

Thank you for your comment and for participating in the public comment period. The effort to develop bacteria TMDLs for the Ohio River began in 2007 and involved a multi-agency workgroup coordinated by the Ohio River Valley Water Sanitation Commission (ORSANCO), and including the US Environmental Protection Agency (EPA, Regions 3, 4, and 5), US Geological Survey (USGS), US Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration (NOAA), and the states bordering the Ohio River main stem (Illinois, Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia). Despite completing significant technical work since the beginning of the project, the TMDL report has not been completed and the workgroup has had little activity for several years, a point that the commenters have raised.

DOW acknowledges the commenters' concerns with the uncertain status of this TMDL and the impact of that uncertainty on regulated entities, including CSO permittees. In response to this comment and in acknowledgement of the high priority placed on addressing bacteria impairments in DOW's Clean Water Act Section 303(d) Prioritization Framework, DOW raised the topic of the Ohio River Bacteria TMDL at the June 2024 ORSANCO Technical Committee Meeting with the following state update:

“During the public comment period on the 2024 303(d) list and prioritization framework for impaired waters, we received a comment regarding the development of a bacteria TMDL for the Ohio River, with appropriate recognition of CSO communities and their long-term control plans. The comment urges Kentucky to develop a TMDL using its statewide approach. The Kentucky Division of Water will need to appropriately address this comment, and in order to do so, we’d like to request ORSANCO coordinate a meeting with the appropriate EPA regions and Kentucky DOW to discuss the current draft TMDL and options for Kentucky’s development of TMDLs for bacteria impaired segments along the Ohio River.”

A follow up meeting with EPA Regions 4 & 5, Kentucky DOW, and ORSANCO was subsequently held on Friday, August 23, 2024, to discuss the current status of the multi-agency, basin-wide TMDL effort. At this meeting, DOW learned that the workgroup has no plans to resume work or allocate resources to the completion of this TMDL.

Considering this new information, the TMDL priority ranks for the bacteria-impaired Ohio River mainstem segments have been moved from High to Medium on the 2024 303(d) list, and the Prioritization Framework has been revised to make it clear that TMDLs for the Ohio River mainstem segments are not currently planned for completion under the Kentucky Statewide Bacteria TMDL framework. DOW will begin evaluating a range of approaches to these needed TMDLs. While approaches similar to that used in the Kentucky Statewide TMDL will be considered, it bears mentioning that a large multi-state watershed may not be a good fit to the Statewide approach, which was designed with intrastate stream segments in mind. More complex approaches may require newer data on *E. coli* loadings from Ohio River tributaries and a better understanding of current conditions within the mainstem, especially given the considerable progress that has been made on the Long Term Control Plans since the data were collected for the multi-state TMDL effort. In evaluating TMDL approaches, the potential needs for new *E. coli* data for the Ohio River and its tributaries will be discussed with

ORSANCO. Future 303(d) lists and revisions to the Prioritization Framework will reflect the status of continuing efforts to address impairments in these waters.