


Kentucky Division of Water **Annual Report** **2023**



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Director's Message



Dear Reader,

It is my privilege to present the Kentucky Division of Water Annual Report for State Fiscal Year 2023 (SFY23 – July 1, 2022 – June 30, 2023) which describes many of the significant projects, research, and outreach the Division engaged in, and the impacts that were made, across the Commonwealth.

I would like to call attention to the Division's extraordinary field staff, especially as they responded to the floods that devastated eastern Kentucky in July 2022. Their dedicated and tireless work was essential in identifying priority areas, assisting citizens in accessing available resources, monitoring debris cleanup, helping utilities bring services back online, and a myriad of other actions to facilitate recovery. A huge debt of gratitude is owed to all the folks that helped respond, staff recovery centers, and provide technical assistance for one of the most damaging floods on record in the Commonwealth.

We had much to celebrate over the past year - from having the #1 rated drinking water in the nation to celebrating the 50th anniversary of the Clean Water Act, all while developing several comprehensive and web-based resources to improve public interaction with our agency. These tools help us provide real time information about the health of Kentucky's waters.


I invite you to delve into this report to learn more about the important accomplishments the Division achieved in the last year, and look forward to continuing important collaborations with stakeholders and the public to manage, protect, and enhance the quality and quantity of the Commonwealth's water resources for present and future generations through voluntary, regulatory, and educational programs.

Sincerely,

Carey Johnson

Director

KY Tap Water Rated #1 in the United States and Safe Drinking Water Act Compliance Report



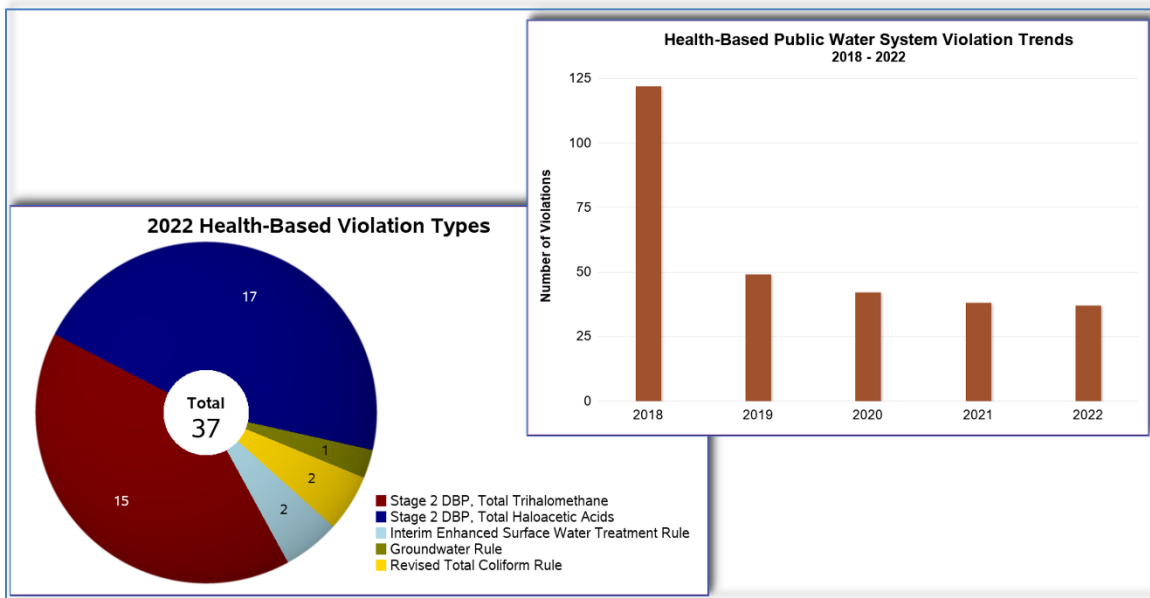
After analyzing feedback from water utility customers regarding tap water quality and reliability, price, conservation, billing and payment, communications, and customer service, the national data analytics company JD Power reported what the Division already knew - Kentucky has the best tap water of all 50 states!

The JD Power report noted that “Kentucky’s performance at the tap was so good that Louisville Water was actually able to trademark its tap water (called Louisville Pure Tap[®]), a feat some states would not dare to attempt.” More information about the methodology and results of the JD Power report are available online at <https://www.jdpower.com/business/resources/as-Americans-focus-on-water-these-states-boast-the-best>.

The JD Power report confirms the results of Kentucky’s 2022 Drinking Water Compliance Report, which indicates that public water systems across the state continue producing high quality drinking water and have a high rate of compliance with the Safe Drinking Water Act (SDWA) requirements.

The compliance report summarizes data and monitoring results which are required by the SDWA for more than 100 contaminants, and to take corrective action and notify customers when a contaminant exceeds standards. The 2022 report demonstrates that public water in Kentucky is safe and reliable.

The occurrence of health-based violations, which consist of maximum contaminant level (MCL) and treatment technique violations, continues to decrease. There were only 37 health-based violations issued to 18 different public water systems in SFY23.



Details of these and the associated SDWA rules can be viewed in the table below:

SDWA Rule	Number of Violations	Violation Category	Contaminant(s)
Stage 2 Disinfection Byproducts Rule	32	MCL	Total Haloacetic Acids, Total Trihalomethanes
Surface Water Treatment Rules	2	TT	Turbidity
Revised Total Coliform Rule	2	MCL	Total Coliforms, E. coli
Groundwater Rule	1	TT	Disinfectant

MCL = Maximum Contaminant Level

TT = Treatment Technique

Most health-based violations were for disinfection byproducts (DBPs), which are formed by reactions between organic matter in the water and disinfectants such as chlorine. A number of factors, including the concentration of organics in the source water, available treatment processes, disinfectant type, water pH and temperature, and water usage and age can affect the formation of DBPs.

In SFY23 there were 293 monitoring/reporting violations (i.e., a public water system failed to perform required monitoring, submit the data or supporting documents by the due date, or correct errors in the data). These violations do not directly indicate an issue with water quality or a risk to public health, and

water systems can often resolve them quickly by completing the necessary monitoring, or submitting required documents to the Division.

Division staff continue to support water systems with technical assistance, develop and provide resources to ease administrative burdens, and work with external partners to provide compliance training, reduce violations, and ultimately protect public health.

The Kentucky Annual Drinking Water Compliance Report is online at <https://eec.ky.gov/Environmental-Protection/Water/Drinking/Pages/Annual-Compliance-Reports.aspx>.

Clean Water Act 50th Anniversary

The Division celebrated the 50th anniversary of the Clean Water Act (CWA), the nation's first comprehensive legislation protecting water quality, in 2022. The CWA established the goals of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters for the use and benefit of every American. Since passage of the CWA in 1972, waters in the United States have experienced a dramatic decrease in levels of pollution.

The Division and its countless partner organizations have made enormous progress in assessing and managing the 90,000 miles of streams within the Commonwealth. The Division continues to focus on the importance of water resources, investment in clean water and drinking water infrastructure, and commitment to continued progress.

To celebrate this milestone, the Division received a Governor's Proclamation declaring October 2022 as Clean Water Act Month, developed tips for water health and conservation, and developed a website to consolidate all the Division resources and educational videos. Visit the 50th Anniversary of the CWA website (<https://bit.ly/CWA50th>) to learn more.



Eastern Kentucky Flooding, July 2022

On July 28, 2022, Governor Andy Beshear declared a State of Emergency after a period of torrential rain caused severe flooding in 13 counties and resulted in the loss of lives, extensive damage to property and infrastructure, and disruption to communications, travel, and drinking water, wastewater, and power utilities for weeks. At the Governor's request, President Joe Biden issued a federal disaster declaration that allowed for FEMA Individual and Public Assistance in the declared counties.



Stream Debris in Eastern Kentucky, August 2022

As part of providing support for the Emergency Support Functions (ESFs) during and after the event, Division of Water field staff provided drinking water and wastewater status updates into an emergency database that instantly informed emergency responders. This real-time information was used to prioritize areas for dispatching resources, such as personnel, heavy equipment, and bottled water, and to prioritize power restoration. Additionally, Division personnel performed site selection and reconnaissance to stage bulk water hauling locations for flood cleanup, and for emergency onsite water treatment systems. The Division also worked with the EPA to establish mobile lab operations in Hazard that provided expedient water testing during the disaster.

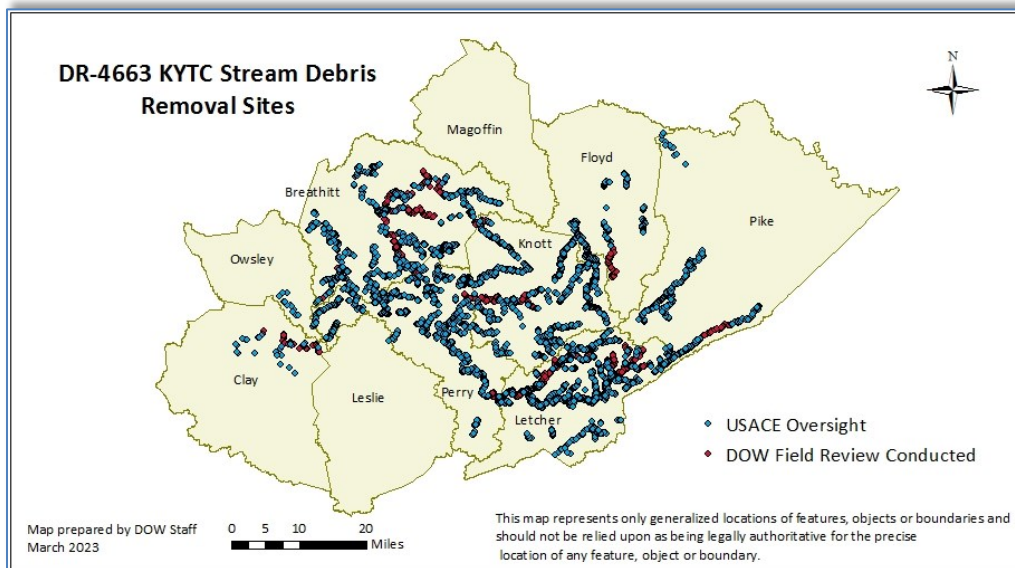


Stream Debris in Eastern Kentucky, August 2022

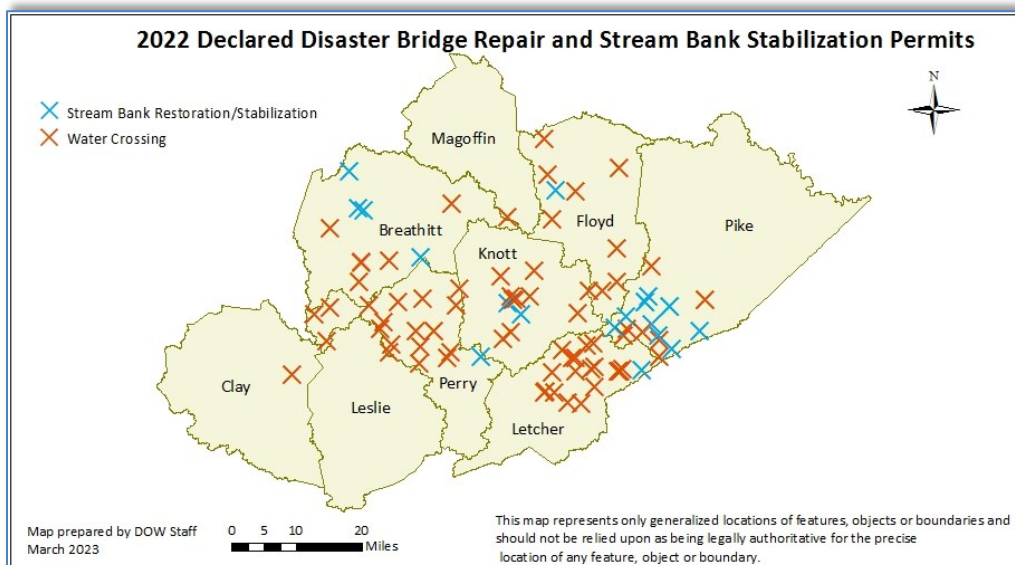
The recovery process included the Division collaborating with the KY Transportation Cabinet, FEMA, and the US Army Corps of Engineers to remove debris from over 10,000 locations where destroyed structures, vehicles, and fallen trees posed risks of future flooding or environmental degradation. Division staff worked tirelessly to conduct visits to over 2,000 of these sites, providing oversight to field operations and advice on performing debris removal in the most ecologically sound method possible.

During the days and weeks following the floods, the Division focused on helping to restore drinking water and sewer service to impacted communities, assisting school systems, and helping communities and residents navigate the regulatory landscape necessary for recovery. Over 70 personnel from the Division helped staff FEMA Disaster Relief Centers (DRCs) to offer in-person assistance to flood survivors.

Staff also held floodplain permitting open houses in Whitesburg, Hindman, and Jackson to educate individuals and communities about flood risks so they could make informed decisions about rebuilding in flood prone areas. The Division utilized best available data from preliminary flood hazard maps for the North, Middle and South Forks of the Kentucky River Watersheds, providing individuals with flood and ground elevations so that rebuilding could be done with enhanced safety and resiliency. The Division also filled out required permit applications for many citizens which allowed a “one-stop shop” for education, permitting, and FEMA paperwork.



Emergency Authorizations, or permits for the repair or reconstruction of more than 120 private culverts and bridges, allowed individuals to quickly access their properties so recovery could begin. The Division also provided pre-populated applications to cities and counties for an additional 272 private residences for which FEMA buyout and demolition was proposed. During the same time frame, the Division also issued 220 Emergency Authorizations to quickly facilitate repair at over 2900 locations where roadways, bridges, and sewer, water, and power lines were damaged or destroyed. This process helped speed the restoration of services, while providing entities with the documentation FEMA requires for reimbursement for repairs.



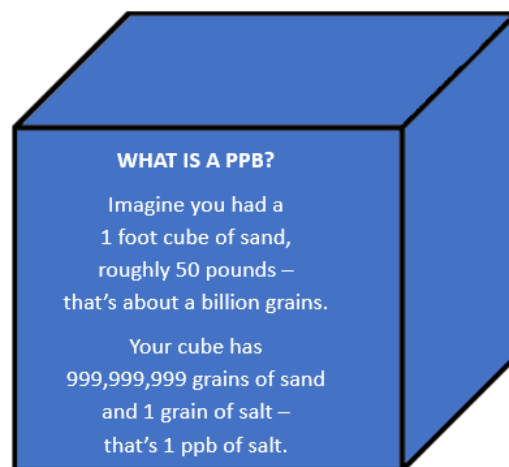
One year after the flood, the Division continues to engage in recovery by providing utilities with technical assistance, assisting local governments and residents with floodplain permits, and by providing planning for flood-resilient communities. The Division has taken a lead role in helping locate where residents can move out of flood-prone areas and onto higher ground. These efforts will help build back better and strengthen the Commonwealth to withstand future natural disasters.

Most importantly, the Division wishes to thank all of the dedicated staff in its field offices and in Frankfort, who worked so diligently and tirelessly to facilitate recovery, cleanup, and support efforts in the wake of this unprecedented disaster.

Per- and Polyfluoroalkyl Substances (PFAS) in Surface Waters and Fish

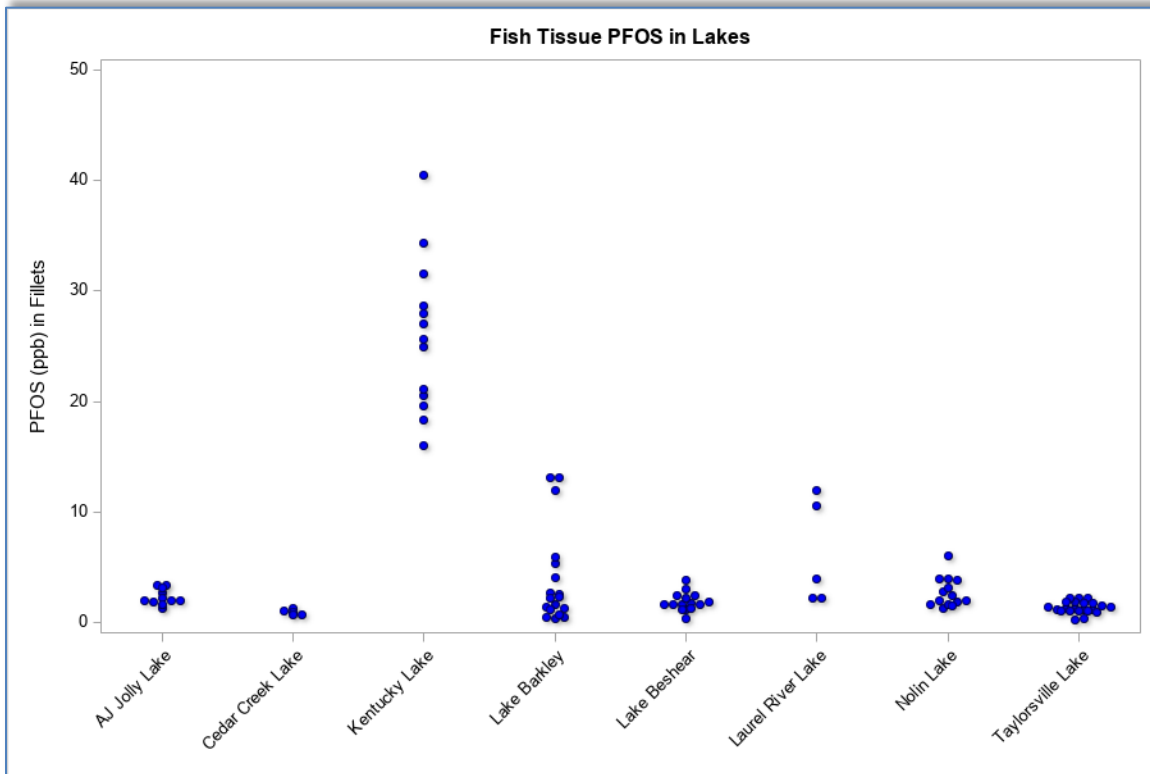
In September 2022, the Division released an interim report on PFAS levels found in fish and surface waters in Kentucky streams and lakes during an initial round of testing. The report is available at the Kentucky Energy and Environment Cabinet's Per- and Polyfluoroalkyl Substances (PFAS) website (<https://eec.ky.gov/PFAS>).

PFAS are a large group of manufactured chemicals that have been widely used for decades due to their ability to resist heat, oil, and water. Also known as “forever chemicals”, they are present in many consumer products such as stain-resistant carpet, water-repellant clothing, food wrappers, cookware, cleaning products, and in fire-fighting foams and manufacturing facilities. They break down very slowly and accumulate in people, wildlife, and the environment. Studies have indicated that exposure to higher levels of PFAS over time can contribute to negative health effects such as increased cholesterol, reduced ability to fight infections, low birth weights, decreased fertility, and an increased risk for certain cancers.



The 2022 report notes that PFAS were detected in all 98 fish fillet samples collected from 7 streams and 13 lakes across the state between May 2021 and May 2022. Of the 27 PFAS that were tested for, 16 were detected in at least one sample. Perfluorooctane sulfonic acid (PFOS) was found in all samples and at the highest concentrations of any PFAS substance, with results for PFOS ranging between 0.31 and 50 parts per billion (ppb).

The US EPA is currently developing PFAS criteria for fish consumption and drinking water. In the meantime, the Division continues to collect PFAS data across the Commonwealth. During SFY23, surface water and fish fillet samples were collected from an additional 24 waterbodies including Kentucky, Taylorsville, Grayson, and Nolin Lakes, and Lake Barkley.



For more information on PFAS in Kentucky and the latest available sampling results visit <https://eec.ky.gov/PFAS> or for more information on fish consumption advisories visit <https://eec.ky.gov/Environmental-Protection/Water/Monitor/Pages/Fish-Advisories.aspx>.

In 2022, the Division began offering PFOA and PFOS certification for laboratories. In anticipation of upcoming federal regulations, the Division expanded this certification to include four additional PFAS compounds. This will allow public water systems to use historic data to meet initial monitoring requirements when the federal regulation becomes effective. Currently there are 10 laboratories certified for all six PFAS compounds.

Sampling, Testing and Reporting



The Fifth Unregulated Contaminant Monitoring Rule (UCMR5)

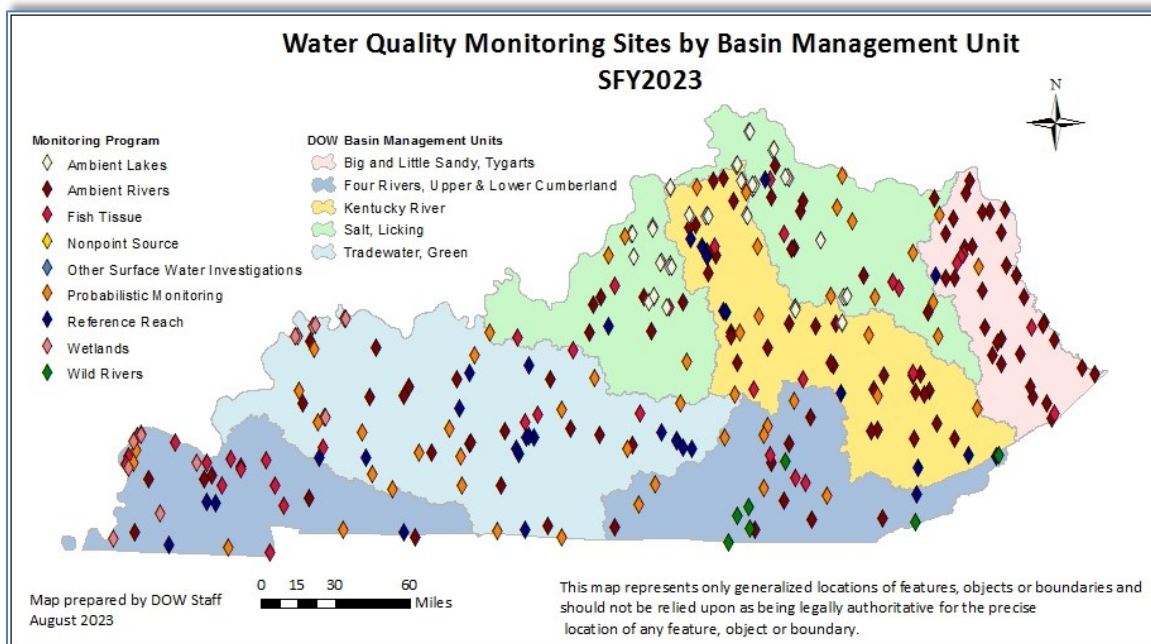
The Safe Drinking Water Act (SDWA) requires the EPA to issue a list of unregulated contaminants once every five years that public water systems are required to monitor. Sampling for the UCMR 5 began in 2023 and will continue into 2025, and requires sample collection for 30 chemical contaminants. Consistent with EPA's PFAS Strategic Roadmap, the UCMR 5 will provide new data needed to improve understanding of how frequently lithium and 29 PFAS compounds are found in drinking water and at what levels, which will help facilitate science-based decision making in protecting drinking water resources.

When they become available, results will be posted. Results can be found at [Occurrence Data from the Unregulated Contaminant Monitoring Rule | US EPA](https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#5) (<https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule#5>).

Surface Water Monitoring

During SFY23, the Division completed approximately 1,600 surface water monitoring site visits at 400 locations, and collected samples from streams, rivers, springs, wetlands, lakes, and reservoirs to assess water quality. This work provides a greater understanding of the condition of the Commonwealth's water resources through:

- Targeted monitoring of streams with high quality aquatic habitats, watersheds with emerging water quality concerns or issues, and watersheds with projects designed to improve water quality and evaluate program effectiveness;
- Probabilistic monitoring of streams and wetlands using randomly selected sites to measure ecosystem health and function over larger areas;
- Informing human health-related advisories specific to fish consumption, drinking water, and recreational activities; and
- Intensive water quality monitoring in watersheds to support Nonpoint Source watershed plan development.



The Division performed ambient monitoring at 158 stream and lake sites which involved nearly 900 site visits. These efforts assist in describing long-term trends in surface water quality throughout the Commonwealth. Fish tissue sample collection, which includes collection of both whole-body samples and fillets, examines contaminant levels in fish. The Division collected fish tissue samples at 38 locations in 14 rivers/streams and 24 lakes.

The Division monitors Harmful Algal Bloom (HABs) which targets waterbodies with suspected spikes in toxin-producing cyanobacteria and can result in risks to human health. During SFY23 the Division responded to eight reports of blooms but only one water sample collected during this time had detectable levels of toxins associated with HABs.

The Division collects data used to support watershed plan development, provide data for TMDL development, and track water quality improvements resulting from watershed planning activities. To support these efforts the Division conducting the following during SFY23:

- Monitored 103 stations in multiple watersheds throughout the Commonwealth. A total of 460 station visits occurred and included routine water chemistry and E. coli sampling, stream discharge measurements, multi-parameter water quality measurements, and observations. Macroinvertebrate sampling and habitat assessment occurred at 25 stations.

- Conducted National Lakes Assessment and National Rivers and Streams Assessment surveys at two lakes and three streams.
- Randomly selected target streams for Probabilistic Stream Bio-Assessment monitoring across the Commonwealth for federal CWA assessments and reporting. This program collected water chemistry, fish, and aquatic invertebrate samples from 52 stream segments.
- Collected aquatic invertebrates, fish, and water chemistry samples from Reference Reach 32 sites to determine variation in water chemistry and aquatic life in Kentucky's least-disturbed streams. Condition checks at other Reference Reach locations are used periodically to evaluate whether stream segments are still high quality and minimally disturbed. during SFY23.
- Conducted 14 vegetation surveys and 12 Kentucky Wetland Rapid Assessment Method assessments within 11 wetlands in the Mississippi Valley-Interior River bioregion. These data will help assess the biological and functional conditions of the surveyed wetlands. Additionally, water chemistry samples and multi-parameter water quality measurements were collected.

2022 Integrated Reporting Cycle for Clean Water Act §305(b) and 303(d)

Section 305(b) of the Clean Water Act (CWA) requires states to report water health to Congress every two years. Similarly, Section 303(d) of the CWA requires identification of impaired waters, the pollutant(s) causing the impairment, and development of a total maximum daily load (TMDL) for each pollutant. The resulting "Integrated Report" addresses both sections 305(b) and 303(d) of the CWA.

The 2022 reporting cycle, which was completed and on public notice during SFY23, represents water quality monitoring that took place between 2016 and 2020. In total, data from 1,047 sampling locations contributed to 615 assessments being completed. The Division sampled the Big and Little Sandy Rivers and Tygarts Creek basin management units (BMU), the Kentucky River BMU, the Salt and Licking Rivers BMU, and the Upper Cumberland and Four Rivers BMU. Data collected by the Ohio River Valley Water Sanitation Commission (ORSANCO) were also used to update assessments along the Ohio River.

The 303(d) list was placed on public notice from February 21 – April 22, 2023, using a dedicated public notice site (<https://2022-303d-public-notice-kygis.hub.arcgis.com/>) with interactive maps and video tutorials. At a citizen's request, the Division participated in a public meeting at the Kenton County Public

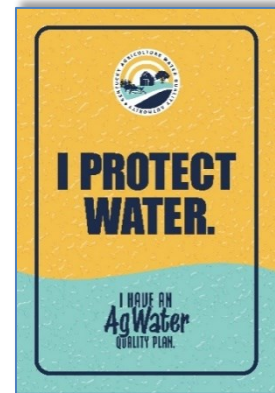
Library to discuss 1) how and why waters are assessed and placed on public notice, 2) water quality issues affecting the community, and 3) what efforts are being made to improve local water quality.

The Division submitted Kentucky's 2022 Integrated Report on June 9, 2023, and received EPA approval on July 7, 2023. Results can be accessed by visiting the Water Health Portal (<https://water-health-portal-kygis.hub.arcgis.com/>) or the Division's ArcGIS Hub Site for the Integrated Report (<https://integrated-report-site-kygis.hub.arcgis.com/>).

Outreach and Education

Agriculture Water Quality Act (AWQA)

Kentucky is reinvesting in AWQA tools to help farmers and foresters develop plans for protecting water quality using best management practices (BMPs) (<https://bit.ly/AWQABMPS>). The Division used EPA funding to build an interactive AWQA Planning Tool (<https://bit.ly/AWQP>) that streamlines conservation planning while improving access to funding, technical information, and water quality data. Additionally, the Division invested in a statewide AWQA marketing and outreach campaign consisting of radio, video, and print media, and is working with the Division of Conservation, the University of Kentucky Cooperative Extension, and others to distribute AWQA-branded grazing sticks and fencepost signs at livestock and commodity training events to promote completing and implementing AWQA plans.



Drinking Water eSearch

In January of 2023, the Division added a new “Notices of Violation (NOV)” function to the Energy and Environment Cabinet (EEC) eSearch webpage that allows users to search for federal violations issued to public water systems. This will improve Division workflow efficiency and allow water systems to easily access past or new NOV’s for public notification and Consumer Confidence Report purposes. The eSearch webpage can be accessed at <http://dep.gateway.ky.gov/eSearch/>. Select “Search Our Data” and then “Search Documents” to begin a search.

Your Consumer Confidence Report Keeps You Informed



It tells you the source of your water – a lake, river, spring, or groundwater.



It lists the regulated contaminants that were found in your water, and at what level.



It gives potential health effects from drinking contaminated water, and what can be done to protect against waterborne illnesses.



It compares contaminant levels in your water to national standards, and reports any health-based violations.

For more information regarding Consumer Confidence Reports on water systems throughout the country, visit the EPA website at Consumer Confidence Reports (CCR)

(https://ordspub.epa.gov/ords/safewater/f?p=136:103:::::103:P103_STATE:KY)

Drinking Water and Clean Water Advisory Workgroup

Many years ago, the Division convened the Drinking Water and Clean Water Advisory Workgroup. This stakeholder workgroup includes individuals, water-related nonprofit agencies, state and federal agency representatives, educational institutions, and public utilities, and is intended to be used to share information and gain feedback that helps inform the work of the Division. In SFY23, the workgroup continued meeting on a quarterly basis to discuss important issues such as PFAS, the federal drinking water Lead and Copper Rule Revisions, infrastructure needs and funding, and other topics that affect the delivery of reliable drinking water and wastewater service across the Commonwealth.

Educational Equipment

To improve understanding of water-related issues in the Commonwealth, the Division continually works with stakeholders, educators, journalists, and regulators to develop online outreach and print publications about water quality, Division initiatives, and best management practices.



DOW educational equipment in use

The Division maintains a large supply of environmental educational equipment that is available for checkout for educators and other professionals to use for events. The educational equipment includes stormwater models, Enviroscares, display boards, a stream table, and even a costume for Ollie the Otter, the Division's unofficial mascot. The Division worked with various stakeholders to deliver Enviroscares for six events and the Ollie the Otter costume for three appearances. The stream table was currently part of a year-long exhibit at the Living Arts and Science Center in Lexington.

Lead and Copper Rule Revisions

In SFY23, the Division made significant efforts to engage water systems about new drinking water Lead and Copper Rule Revisions. In all, the Division:

- Hosted 30 drinking water workshops, Continuing Education Unit trainings, and meetings which reached over 400 water professionals
- Issued ten "Drinking Water Wednesday" emails dedicated to Lead and Copper Rule Revisions and service line inventories (send your email address to DrinkingWaterCompliance@ky.gov to join the listserv and receive future emails)
- Completed eleven Lead Service Line Inventory Plan pre-reviews

The Division also partnered with Rural Community Assistance Partnership, Kentucky Rural Water Association, the KY-TN American Water Works Association, and other stakeholders to prepare guidance, trainings, and templates for water system use.

***Naturally Connected* blog and *Land, Air, & Water* articles**

The Energy and Environment Cabinet maintains several publications including [Naturally Connected – A blog of the Kentucky Energy and Environment Cabinet \(wordpress.com\)](https://kydep.wordpress.com/) (<https://kydep.wordpress.com/>), and the Cabinet's webzine [Land, Air & Water – Kentucky Energy and Environment Cabinet's Webzine](https://landairwater.me/) (<https://landairwater.me/>) which the Division contributes to regularly. The Division produced five *Land, Air, and Water* articles in the 2022-2023 state fiscal year.

Source Water Protection Web Resources

Drinking water quality and availability requires focus on protecting its sources, such as groundwater, springs, and surface water, from both contamination and depletion. Source water protection, rather than treatment, is the most effective and efficient way to safeguard public health and the environment against

threats to quality and sustainability. During SFY23, the Division continued expanding access to planning tools for source water protection (SWP). Working with the Drinking Water and Clean Water Advisory Workgroup Source Water Protection subcommittee, the Division developed a survey for public water systems and SWP planners to determine the most useful resources for their work. Using those responses, the Division developed six new web-based resources.

Source Water Protection Basics: The SWP Basics page targets a general audience, so it can be used as a tool to communicate with customers and decision makers who may not be familiar with SWP.

Source Water Protection Elements: SWP Elements targets anyone who is new to the SWP planning process, and may be especially useful to communicate with municipal governments, city councils, or civics groups.

Source Water Protection Strategies: SWP Strategies focuses on how utilities and local governments can develop strategies to protect the drinking water source, and provides communications tools and examples of successful partnerships between utilities and stakeholders.

Source Water Protection Planning Tools: The Web Tools for SWP Planning target a more technical audience, and cover data from state and federal agencies on a variety of topics.

Source Water Protection Success Stories: The Division often highlights SWP successes and demonstrate the value and efficacy of SWP strategies. This tool allows the user to explore which Kentucky communities are implementing strategies to protect their water supplies.

Source Water Protection Funding Opportunities: Targeted towards utilities and local governments, this resource highlights several statewide and national programs that may be used for SWP. Funding sources include:

- EPA's Funding Integration Tool (FITs)
- State Revolving Fund
- 319(h) Grant Program
- Natural Resources Conservation Service

Nutrient Reduction Strategy

In the Fall of 2022, the Division released its updated Nutrient Reduction Strategy (<https://eec.ky.gov/nutrientreduction>) that identifies priority watersheds, outlines a framework to address the most pressing nutrient (primarily nitrogen and phosphorus) issues, and evaluates progress in reducing nutrient loads to the Mississippi River and eventually to the Gulf of Mexico. Integral to this effort is the Gulf Hypoxia Program (<https://www.epa.gov/ms-htf/gulf-hypoxia-program>) which represents the largest federal investment in the twelve Hypoxia Task Force states.



View of the Ohio River in Owensboro

Kentucky received federal approval for its Gulf Hypoxia Program workplan (<https://bit.ly/GHPKY>), which builds new tools for utilities and municipalities to improve stormwater management and sewage nutrient treatment, expands Kentucky's nutrient monitoring capabilities, and invests in conservation through state partnerships. In June of 2023, the Division held a nutrient kickoff meeting (<https://www.youtube.com/watch?v=4f7nOXSWpz0>) to engage stakeholders and reengage partner workgroups to reduce nutrients in Kentucky waterway.

Water Quality Outreach Campaigns

The Division participated in a variety of outreach campaigns throughout the year, frequently delivering workshops to the public on topics such as water quality, biological monitoring, and ecosystem health and function. Highlights from some of these activities include regional training for the 2023 Envirothon competition at Lost River Cave Park in Bowling Green, and participation in Kentucky Burrowing Crayfish Blitz sponsored by the Office of Kentucky Nature Preserves and the Kentucky Department for Fish and Wildlife Resources.

Wetland Program Development Grant

Utilizing resources from the Wetland Program Development Grant, the Division developed a Stream Quantification Tool (SQT) that enhances access and information for stream assessments, impacts, and mitigation requirements related to Water Quality Certifications. Staff attended training and continues to coordinate with the Kentucky Interagency Review Team in the development of the SQT, which ensures a comprehensive perspective from the expertise of multiple agencies.

Nonpoint Source Program CWA §319(h)



Nonpoint Source (NPS) pollution comes from a variety of sources such as vehicle oils, animal waste, and gardening pesticides, and is carried across the ground by rainfall or snowmelt until it is discharged into lakes, rivers, and streams. Through its NPS Management Program, the Division administers and implements federal CWA Section 319(h) grant funds from the EPA which are used to address problems associated with NPS pollution. In Federal Fiscal Year (FFY) 2022, the Division received \$2.8 million in 319(h) funding, with communities and organizations sharing \$1.4 million to implement projects that control NPS pollution within watershed planning areas. These projects included implementation of best management practices in 12 watershed planning areas, helping with the development of four watershed plans, coordinating statewide Agriculture Water Quality Authority efforts, and providing technical assistance and training to agricultural producers on water quality issues, such as nutrient management. Additionally, the funds help support over 15 Division staff, allowing for attendance at over 100 outreach and education events including community meetings, classrooms experiences, conferences, and workshops.

Basin Coordinator Quarterly Newsletters

The Division creates and distributes quarterly newsletters that include a variety of material, from Basin Team updates and highlighting successes, to information on best management practices and watershed management-related funding updates. During SFY23, the newsletters transitioned from a Basin-specific to statewide approach which allows larger teams to develop content, and river basin stakeholders to learn about and engage in NPS pollution efforts.

Nonpoint Source Pollution, Watershed Planning, CWA Section 319 and other web pages

The Division maintains the Nonpoint Source Pollution (<https://bit.ly/DOWNPS>), Basin Coordination (<https://bit.ly/DOWBC>), and Watershed Planning (<https://bit.ly/DOWWSP>) webpages which give users access to the Kentucky Water Health Guide, Watershed Planning Guidebook for Kentucky Communities, EPA's Watershed Planning Module, and the newly created 319 Grant Reporter. Users can also access the Water Maps Portal (<https://watermaps.ky.gov>) which contains interactive maps that display water data ranging from water quality impairments to harmful algal blooms, as well as tools that demonstrate drought potential. The Story Map Gallery

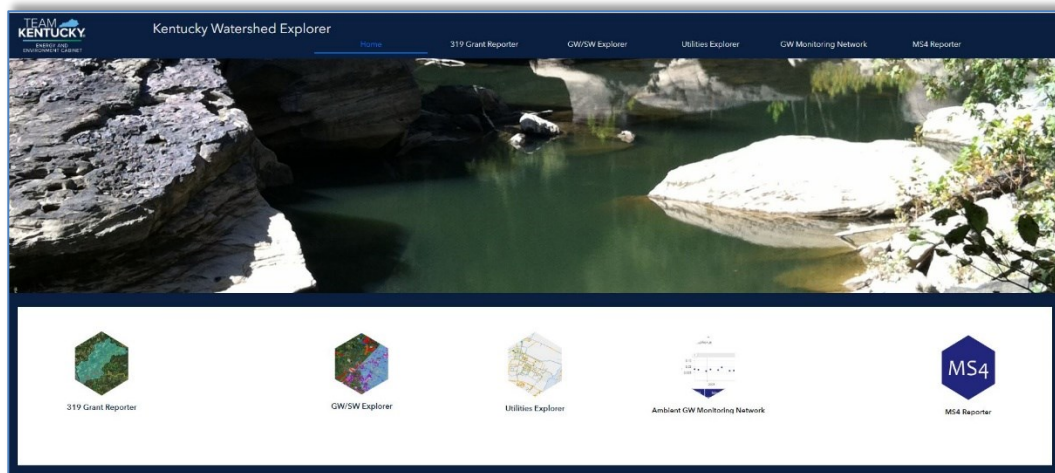
(<https://kygis.maps.arcgis.com/apps/PublicGallery/index.html?appid=1f4266e090ec497c8da345b95c9396f7>) provides useful tools to explore specific projects, watershed planning initiatives, and programs.

The Kentucky Watershed Explorer (watermaps.ky.gov)

The Kentucky Watershed Explorer is a web-based collection of applications that retrieves and presents data quickly and efficiently. The first application was the Clean Water Act Section 319(h) Grant Reporter which assists applicants with NPS funding. By selecting the watershed of interest, users can generate a report containing much of the information required for the application with the push of a button.

In SFY23 the Division added four new applications to the Explorer:

- The Groundwater/Surface Water Explorer allows users to explore and compare groundwater and surface water features.
- The Utilities Explorer presents information on both Drinking Water and Wastewater Systems.
- The Groundwater Monitoring Network Dashboard graphs sample results for dozens of chemicals at wells and springs across the Commonwealth.
- The MS4 Reporter was developed as a resource for permittees and others to quickly access information such as urbanized area boundaries and the impairment status of receiving waters.



Opening view of the Kentucky Watershed Explorer

Funding and Drinking Water Capacity Development



Small, Underserved, and Disadvantaged Communities Grant

The *Water Infrastructure Improvements for the Nation* (WIIN) Act established the Small, Underserved, and Disadvantaged Communities (SUDC) grant to states, territories, and tribes to assist public water systems in meeting Safe Drinking Water Act (SDWA) requirements. In the spring of 2023, the EPA approved the Division’s work plan which will provide training, equipment, and software to 30 public water systems for the “GIS Based Asset Management Initiative”. This funding will provide a basis for asset management and the resources necessary to complete required service line inventories for the federal Lead and Copper Rule Revisions. Funds will also be used to supplement drinking water technical assistance to systems that meet the SUDC definition.

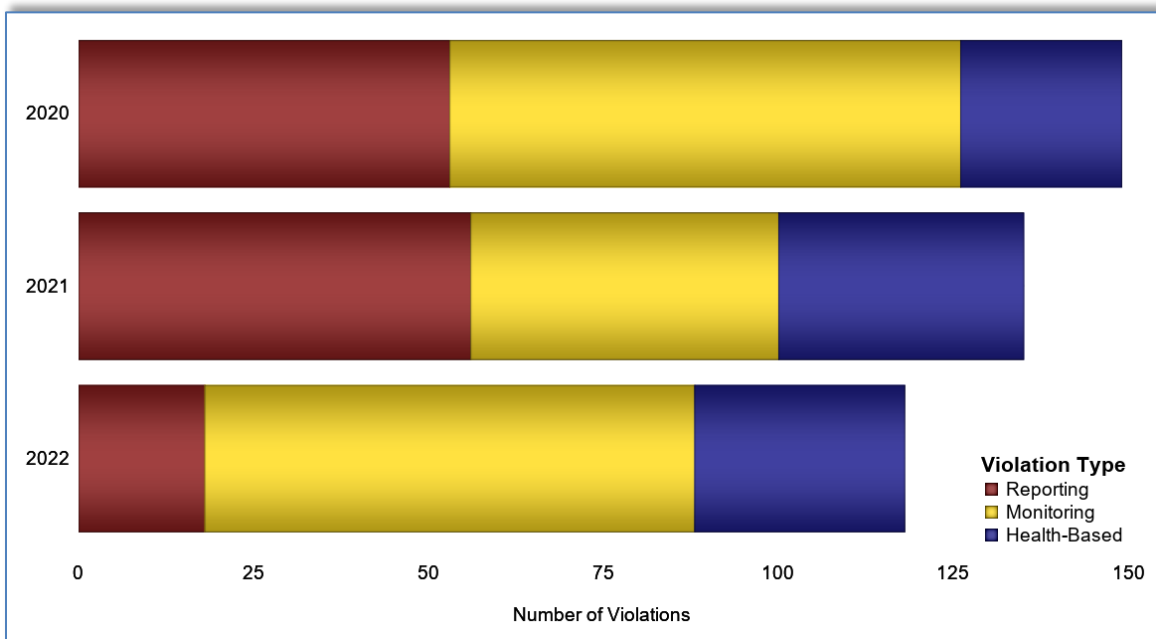
Drinking Water Capacity Development Strategy Revision

In 1996, Congress amended the SDWA with several provisions, one in which was the establishment of the Drinking Water State Revolving Fund program. To receive the full benefit of the fund, states with primary SDWA enforcement responsibility (like Kentucky) developed a strategy and program to evaluate and assist public water systems in improving their technical, managerial, and financial capacity to consistently produce safe and reliable drinking water.

The American Water Infrastructure Act of 2018 further amended the SDWA by requiring states to update their Capacity Development Strategies to better plan for future infrastructure needs. In response, Kentucky utilized the input of its Drinking Water Advisory Workgroup to make the necessary updates to its strategy, which was approved by EPA in early 2023 and will be fully implemented at the beginning of the next federal fiscal year. A progress report will be included in the 2023 Drinking Water Capacity Development Annual Report to EPA and the 2023 Drinking Water Capacity Development Triennial Report to the Governor.

2022 Drinking Water Capacity Development Annual Report to EPA

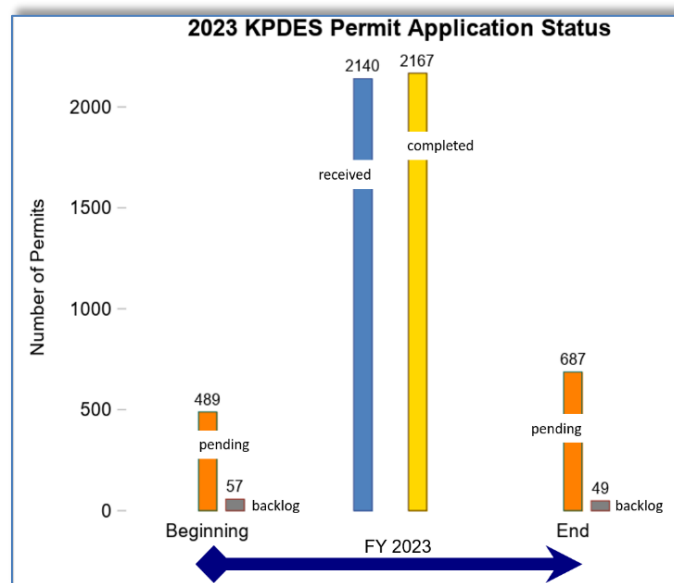
The Drinking Water Capacity Development Annual Report provides information on technical, managerial, and financial capacity development activities and coincides with the Drinking Water Capacity Development Strategy. Overall, in 2022, the number of water system monitoring, reporting, and health-based violations continued to decline which can be attributed in part to the technical assistance provided by the Division and its stakeholders, and infrastructure investments worth over \$43 million dollars in 12 disadvantaged communities. Approximately 45% of public water systems in Kentucky exhibited the technical, managerial, and financial capacity to consistently produce safe and reliable drinking water, the highest percentage since the COVID-19 pandemic.



Permitting and Inspections

Surface Water Permits

The Division receives an average of 2,500 new and renewal Kentucky Pollutant Discharge Elimination System (KPDES) permit applications each year. During the past year, the Division received 2,140 total permit applications, issued final decisions on 2,167 applications, and ended the state fiscal year with 462 pending applications and only 66 in backlog status.



Floodplain Permits

The Division experienced a significant increase in floodplain development permit applications during SFY23 due to the flooding in eastern Kentucky in July 2022. Over the course of SFY23, the Division issued permits for 1,334 development projects in the floodplain, averaging only seven days from receipt of the application until issuing the permit approval. The Division also issued 55 emergency authorizations for the repair of 76 private bridges and culverts destroyed during the July 2022 flood event, usually within one day of receiving the application, and 570 floodplain development approvals resulting from the three federally declared disasters.

Water Quality Certifications

During SFY23, the Division issued 305 water quality certification final actions, reviewed annual mitigation monitoring reports for 127 projects, and released 12 of those projects from future monitoring in accordance with the §401 certification approval. The Division also reviewed 28 proposed stream and wetland mitigation banking projects through the Interagency Review Team process, and completed 304 site visits to support the permit application, mitigation project, and mitigation bank review process.

Dams

The Division has 15 active dam safety permits where new dam construction or modification of existing dams is ongoing. Monthly construction reports from the dam owners are received and the Division conducts inspections to ensure the dam is constructed or modified in compliance with the permit. The Division issued 8 new permits for dam construction or modification during SFY23.

The Division conducted 143 dam inspections during SFY23, including 132 high hazard dams, including regular and follow-up inspections.

State-Owned Dam Repair

The Division initiated State-Owned Dam Repair projects to improve the stability and hydraulic capacity of Willisburg Lake Dam and Clements Lake Dam in SFY23. Geotechnical and structural investigations of the Willisburg Lake Dam structure and overall dam design requirements have been completed. Engineering design plans have progressed to 40% complete and are scheduled for completion in October 2023. For Clements Lake Dam, geotechnical and structural investigations of the structure have been completed, and several design alternatives have been developed. Overall dam design planning will begin with the selection of the final design alternative in October 2023. Construction for both structures is expected to begin in calendar year 2025.



Upstream Slope and Reservoir of Willisburg Dam, February 2023

Dam-Related Emergency Responses

The Division conducted response activities on two structures during 2023. Mt. Sterling Reservoir Dam, a Significant Hazard dam that provides the drinking water source for Mt. Sterling in Montgomery County developed vertical slides on the downstream slope in the fall of 2022. Division staff are monitoring the structure and coordinating with the dam owner and engineer to develop an Emergency Action Plan, and continue monitoring the structure to ensure public safety and the stability of the water supply.

Silver Crystal Dam, a Low Hazard recreational dam in Jefferson County, experienced a piping failure and slope collapse. The Division worked with the Emergency Response Team to facilitate a controlled drawdown of the reservoir to reduce the risk of a total breach of the dam, and are currently working with the owner on a remedial plan.

The Division continues working with the engineering firm for the City of Marion to develop interim and long-term plans for the Marion City Dam, a Significant Hazard dam in Crittenden County that provides the drinking water source for the city. In Spring of 2022, the dam experienced a piping failure and slope collapse, and was partially breached by the city to prevent catastrophic failure of the dam. Since the event, the Division has provided extensive support to city and county officials, including the city's engineering firm for stabilization and potential repair of the structure.

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