Kentucky Division of Water

2020 Annual Report

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EXECUTIVE SUMMARY

Dear Reader,

The Kentucky Division of Water (the Division) is pleased to provide its Annual Report for State Fiscal Year 2020 (July 1, 2019 through June 30, 2020, or "SFY20").

The important work of the Division's scientists, specialists, engineers, and administrative staff had long been in progress before my appointment as Director in January 2020. I am honored to lead these outstanding individuals as part of the new administration of Governor Andy Beshear, and to help accomplish the mission of the Division – to manage and enhance the quality and quantity of the Commonwealth's water resources for present and future use through voluntary, regulatory, and educational programs.

In the last year, the Division streamlined its floodplain development permit process by issuing a general permit for certain activities, enhanced its Geographic Information System (GIS) and mapping capacities, including a Small Unmanned Aircraft System (sUAS) or "Drone" program, and continued to develop Kentucky's Nutrient Reduction Strategy. The Division also expanded regulatory and educational opportunities for drinking water and wastewater operators and water well driller assistants, as well as completed its 2018 Triennial Review of its water quality standards.

On June 22, 2020, the new federal Navigable Waters Rule (a.k.a., Waters of the United States or WOTUS) became final, which altered federal protection of many waterbodies in the Commonwealth. Since enactment of the new WOTUS rule, the Division has actively examined its programs, regulations, and statutory authority to determine the best path forward to continue its mission of protecting waters of the Commonwealth.

In January 2020, Energy and Environment Cabinet (EEC) Secretary Rebecca Goodman committed to expand and improve the cabinet's relationship with the water systems and the citizens of Martin County, who have had a troubled history regarding reliable water and wastewater service. The Division and its stakeholders have made significant progress in enhancing collaboration and operations of the Martin County Water District and look forward to continuing improvements.

Of all the challenges faced by the Division during State Fiscal Year 2020, the COVID-19 pandemic has been the most demanding. The Division quickly implemented Governor Beshear's Healthy At Home initiatives by gradually reducing the number of staff physically present in the office, and provided remote teleworking tools for personnel to perform their jobs. Throughout the pandemic, the Division comprehensively assessed and streamlined many of its processes, expanded online options for information and data submittal, supported the provision of essential water and wastewater services, and continued providing excellent customer service to the public and regulated community.

I encourage you to read about the Division's impressive work over the past year, and look forward to engaging all stakeholders to help accomplish the Division's mission in the future.

Best Regards,

Paul Miller, P.E.
Director

Rob Daniell and Jarod Jones (Kentucky Division of Water) loading boxes of masks to deliver to Drinking Water and Wastewater plants.

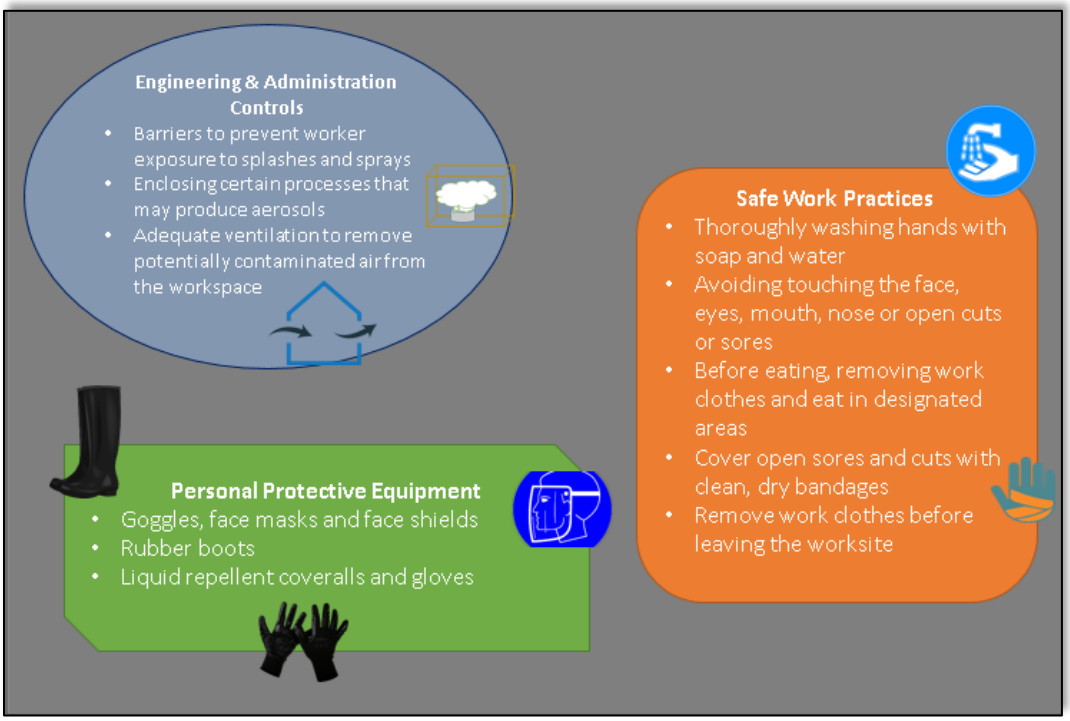
COMPLIANCE & INSPECTIONS

COVID-19 Response and Operations

The COVID-19 pandemic brought many challenges to the citizens of the Commonwealth, and it presented new issues that the Division, public water systems (PWS), and laboratories navigated to continue providing reliable water resources and maintaining operations under novel conditions.

Technical Guidance Story Map

The Division received multiple inquiries from PWS with issues ranging from how the pandemic might affect staffing and operations should there be an outbreak at a facility, to potential impacts on compliance requirements if a staff shortage occurred. Using guidance from the CDC, the Division collaborated with the Division of Compliance Assistance to develop a streamlined Technical Guidance Document for PWS to assist with emerging issues. A story map that displays the document became available on the Division's website on April 1, 2020, and can be found at: https://kygis.maps.arcgis.com/apps/MapSeries/index.html?appid=4c7379ad21e045c4a433c34cc450586d.



eForm 169 – General Data Submittal

The Division and PWS shared concerns regarding the availability of standard U.S. Mail and the need to reduce the number of staff at facilities and offices, which prompted the acceleration of an ongoing project designed to facilitate electronic submittal of PWS monthly operating reports. A compressed version of eForm 169 now enables submission of all types of data collected for compliance purposes. At the end of SFY20, the Division received nearly 50% monthly PWS submittals via the eForm 169.

Laboratory Audits

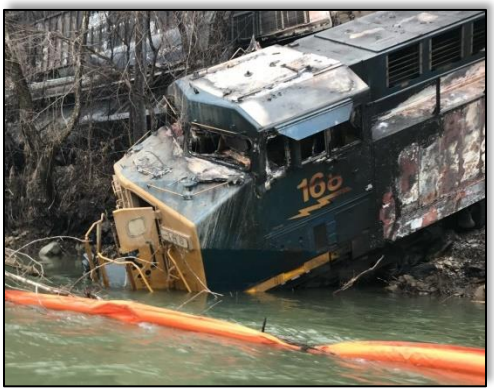
The Division began performing remote audits of microbiology laboratories, which allowed them to remain on schedule, while developing a similar process for chemistry laboratories. The Division completed data reviews for drinking water and wastewater laboratories, a KPDES investigation of Deane Mining sample results, and three separate reviews of data for disinfection byproducts to determine the reliability of results when re-collection was not an option due to a short sampling window. The Division anticipates that effective and efficient laboratory certification and audits will continue despite the challenges presented by COVID-19.

COVID-19 Service to Utilities

While the COVID-19 pandemic resulted in investigation and inspection protocol adjustments to meet new safety requirements, the Division provided support to the water sector through its regional offices by delivering approximately 2,500 gallons of hand sanitizer (produced and donated by Buffalo Trace Distillery and Brown-Forman), and nearly 40,000 face masks (donated by Hanes Brands) to drinking water and wastewater facilities in every county across the Commonwealth. These facilities are essential to delivering safe drinking water and wastewater services to Kentucky residents, and in keeping Kentuckians safe and healthy at home and at work.

Emergencies Across the Commonwealth

A fuel oil spill on December 20, 2019 resulted in contamination of the water source for the City of Cumberland, a Consumer Advisory to refrain from using tap water for any purpose, and widespread water outages. The Department for Environmental Protection (DEP), within which the Division is organized, donated truckloads of water to the city, which the Division helped distribute. In the interim, the Kentucky Rural Water Association (KRWA) assisted in mobilizing a carbon feeder from another water system to enable enhanced water treatment. With all stakeholders working together, water to the city was restored on Christmas Eve.

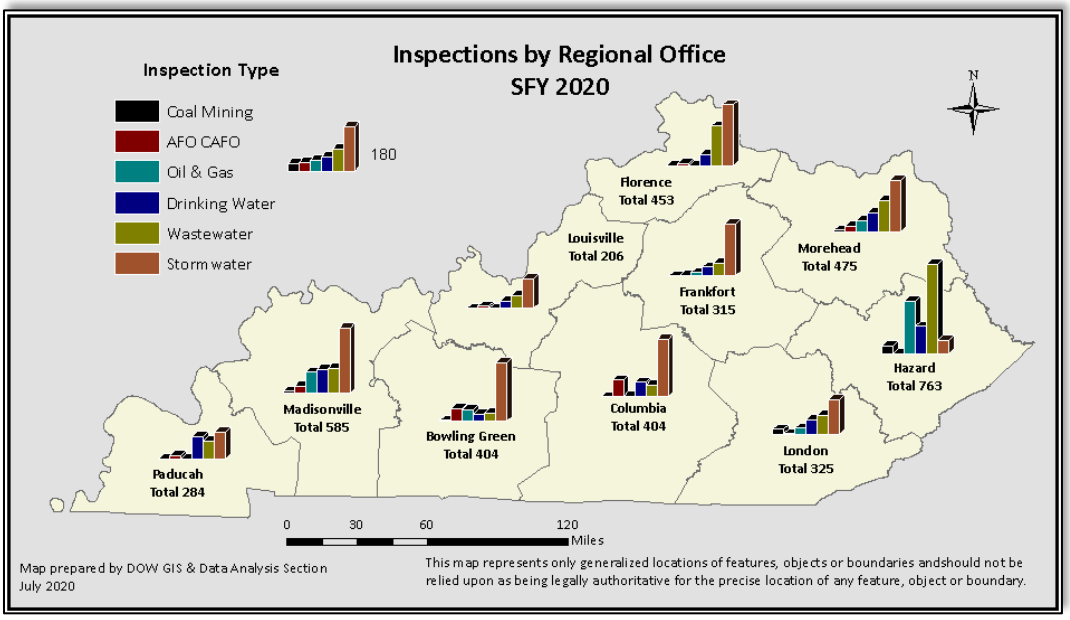


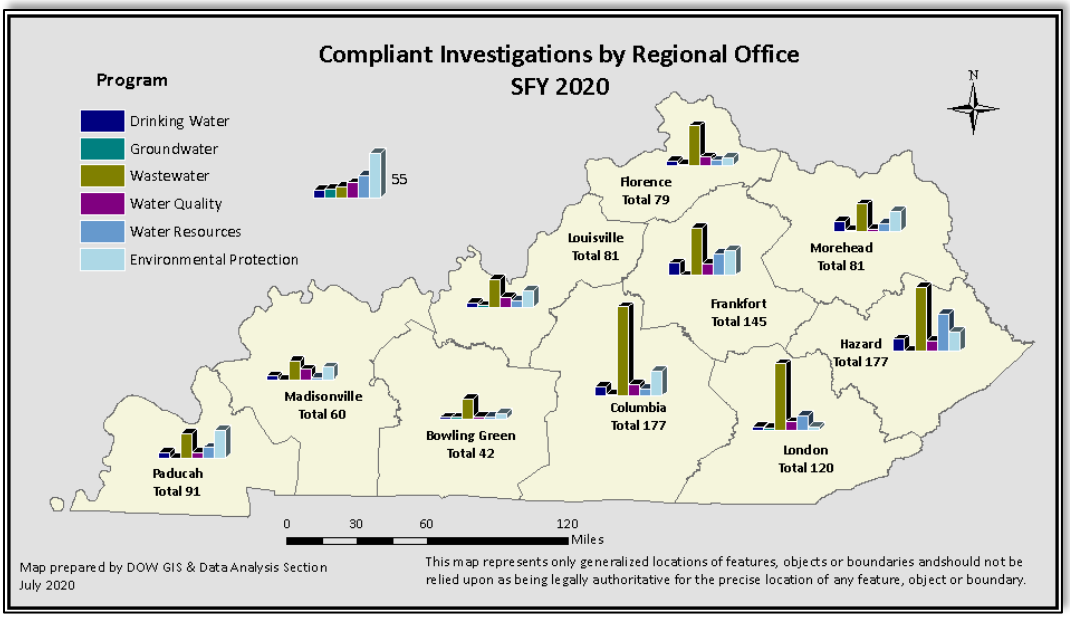
In February 2020, a rock slide in Pike County caused a CSX train derailment, which briefly trapped its two engineers in a fiery crash, and spilled ethanol into the Big Sandy River. The Division supported the Emergency Response Team while it supervised cleanup of the rail cars and site, by monitoring water quality for the multiple systems that use the Big Sandy as source water for drinking water plants.

During the weekend of April 12 – 13, 2020, eastern Kentucky experienced strong storms with winds in excess of 40 mph. causing widespread damage and power outages across the region. The Division and KRWA worked together, amid challenges created by COVID-19, to move generators around the region to help restore power to water treatment facilities, so that they could continue providing clean drinking water and sanitation service to homes and hospitals.

Inspections and Technical Assistance

The Division conducts inspections of, and provides technical assistance to, wastewater, drinking water, stormwater, oil and gas, agriculture, and coal mining activities. The two graphs below illustrate the distribution of that work by the Division's field offices, which are located across the Commonwealth.

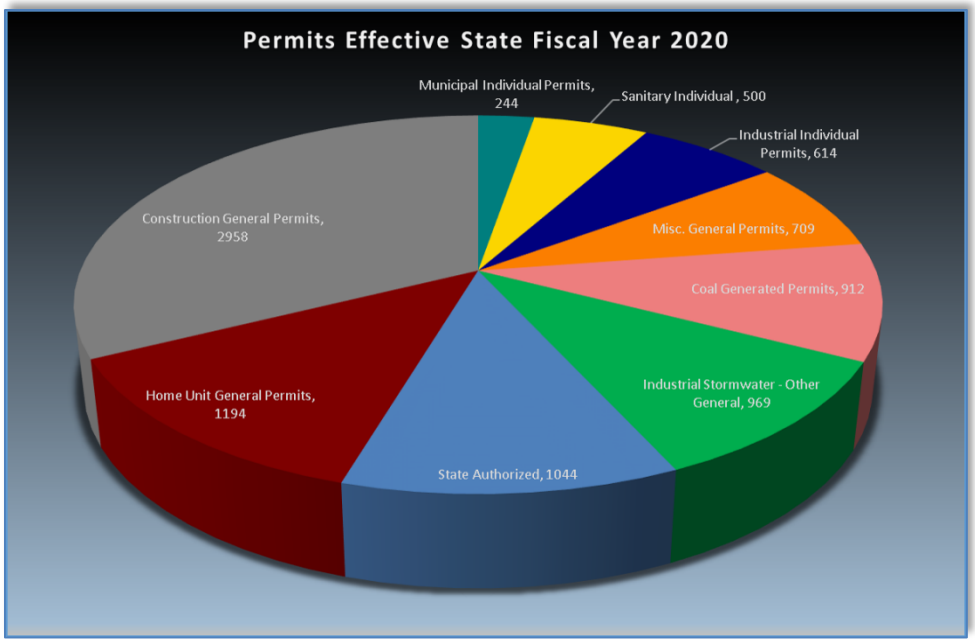

Inspections by Regional Office
SFY 2020
Inspection Type
Coal Mining
AFO CAFO
Oil & Gas
Drinking Water
Wastewater
Storm water
180
N
Florence
Total 453
Louisville
Total 206
Morehead
Total 475
Frankfort
Total 315
Hazard
Total 763
Madisonville
Total 585
Bowling Green
Total 404
Columbia
Total 404
London
Total 325
Paducah
Total 284
0
30
60
120
Miles
Map prepared by DOW GIS & Data Analysis Section
July 2020
This map represents only generalized locations of features, objects or boundaries andshould not be relied upon as being legally authoritative for the precise location of any feature, object or boundary.


Compliant Investigations by Regional Office
SFY 2020
Program
Drinking Water
Groundwater
Wastewater
Water Quality
Water Resources
Environmental Protection
55
N
Florence
Total 79
Louisville
Total 81
Morehead
Total 81
Frankfort
Total 145
Hazard
Total 177
Madisonville
Total 60
Bowling Green
Total 42
Columbia
Total 177
London
Total 120
Paducah
Total 91
0
30
60
120
Miles
Map prepared by DOW GIS & Data Analysis Section
July 2020
This map represents only generalized locations of features, objects or boundaries andshould not be relied upon as being legally authoritative for the precise location of any feature, object or boundary.

PERMITS, CERTIFICATIONS & APPROVALS

Kentucky Pollution Discharge Elimination System (KPDES) Permits

The federal Clean Water Act (CWA) requires dischargers of wastewater into waters of the Commonwealth to obtain a KPDES permit. To ensure that discharges of wastewater from industrial facilities, publicly owned treatment works, and other sources are not harmful to human health or the environment, KPDES permits contain technical and water quality-based limits on what can be discharged, and requirements to monitor and report the quality and quantity of wastewater being discharged.



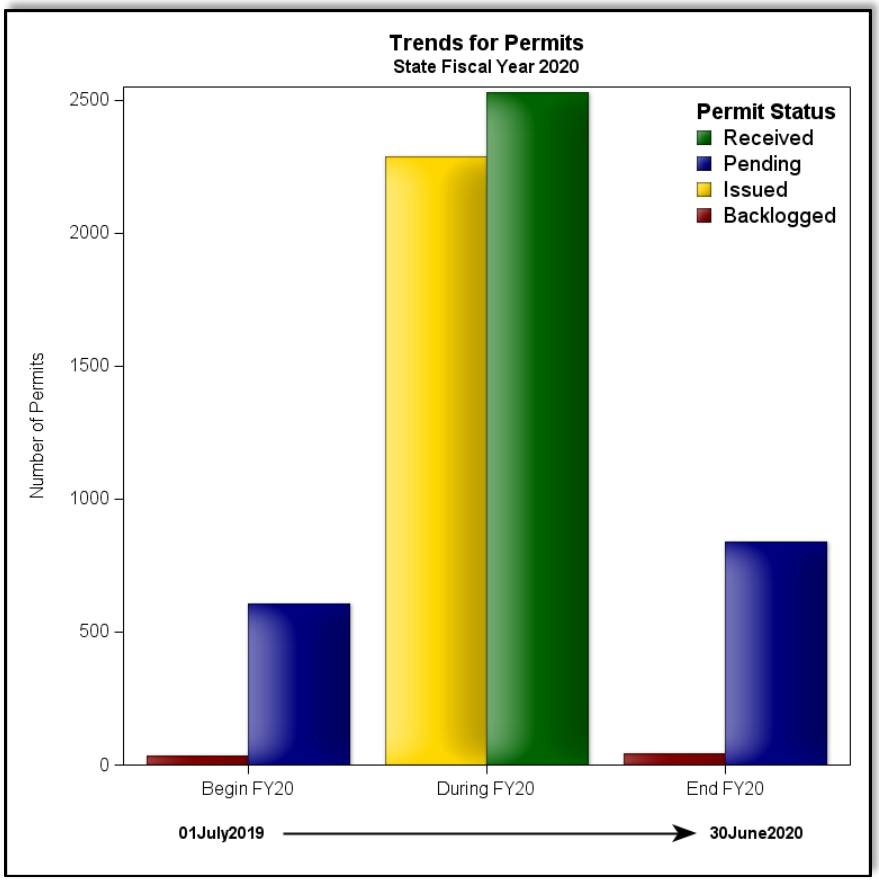
The Division authorizes approximately 8,000 total permits consisting of individual, general, and state-authorized permits. **Individual permits** apply to single entities and reflect site-specific requirements. **General permits** cover fifteen categories of dischargers with similar facilities, operations, and wastewater discharges, which a facility can obtain by filing a request for coverage with the Division. **State-authorized permits** include In-System Operational Permits (KISOP) for facilities that collect and transfer wastewater to a treatment system owned by another party, and No Discharge Operational Permits (KNDOP) for facilities that dispose of wastewater other than through point source discharges.

There are approximated 1,300 individual permits, more than 6,700 facilities covered by general permits, 55 KISOPs, and 815 KNDOPs in Kentucky.

With most permits having a five-year validity period, the Division receives an average of 2,500 new and renewal permit applications each year.

The Division began SFY20 with 606 pending applications, including 34 in backlog (permits beyond the regulatory timeframe). During SFY20, the Division received 2,528 total permit applications, issued final decisions on 2,286 applications, and ended the state fiscal year with 840 pending applications and only 42 in backlog.

Additionally, the Division re-issued five general permits: two for coal mining operations, and one each for stormwater construction, construction material manufacturing operations, and non-coal mining operations.

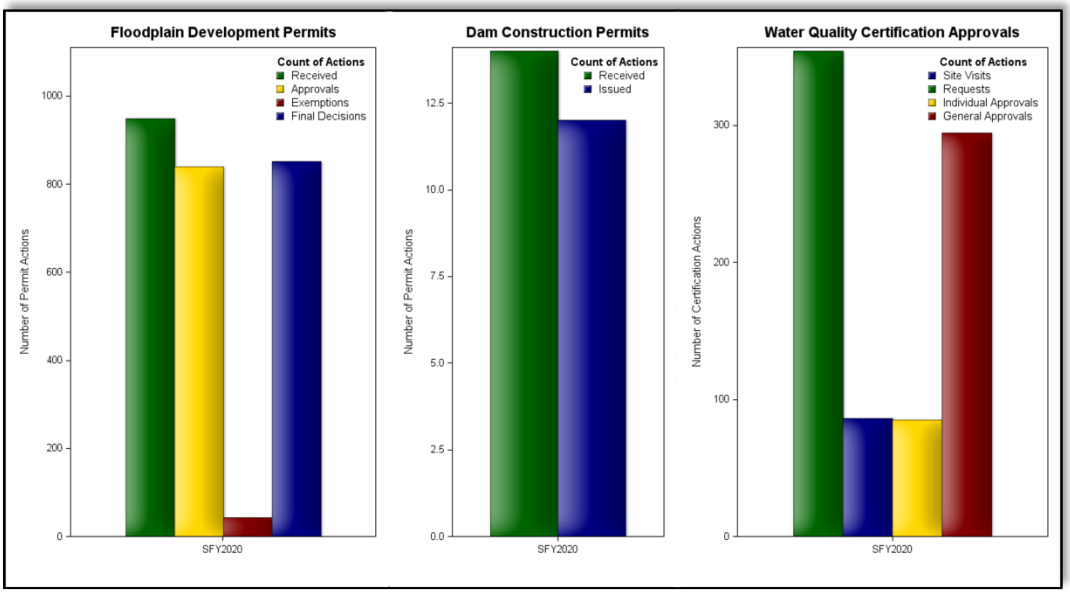


Infrastructure

The Division received 824 construction permit applications related to drinking water and wastewater infrastructure/treatment. The Division issued 798 decisions – 428 for wastewater, and 370 for drinking water.

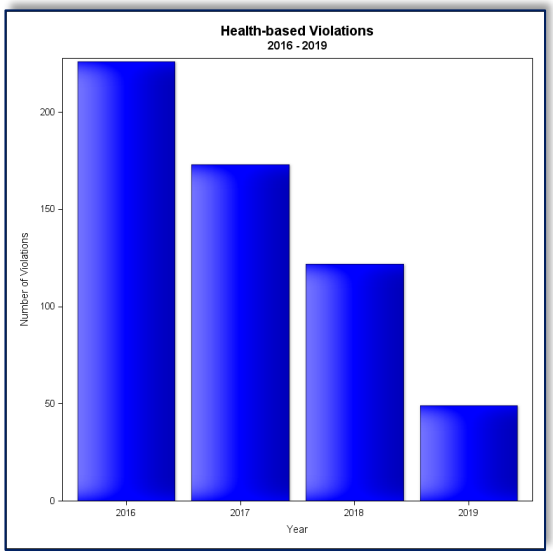
Floodplain Development and Dam Permits, and Water Quality Certification Approvals

In SFY20, the Division received 948 floodplain development permit applications. The Division issued 852 final decisions, 750 permit approvals, and 65 permit exemptions. The Division received 14 applications for dam construction permits, and issued 12. Of the 354 water quality certification requests it received, the Division issued 85 individual certifications, 294 general certification approvals, and conducted 86 site visits.



DRINKING WATER

EPA National Compliance Initiative (NCI)

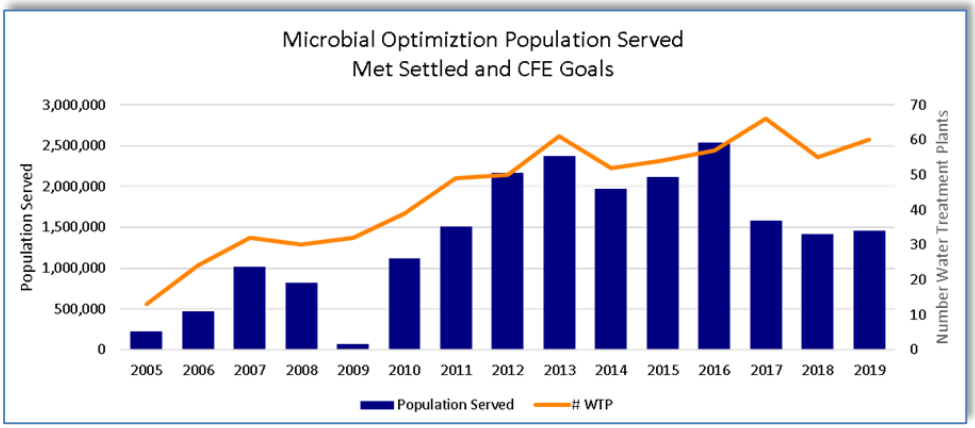


The NCI is an effort that supports the agency Strategic Plan (FY18 through FY22) and calls for a 25% reduction in the number of public water systems (PWS) in noncompliance with health-based standard by 2022.

Kentucky PWS have reduced health-based violations by 78% since 2016. This success is due to hard work on the part of PWS, continued implementation of the EPA Area-Wide Optimization Program (AWOP), and collaborations between the Division and its stakeholders.

Area Wide Optimization Program (AWOP)

The EPA Multi-State AWOP aims to maximize health protection by providing water systems with the tools, training, and support to optimize turbidity removal and reduce Disinfection Byproducts (DBP) in drinking water. To assist PWS in meeting program goals, the Division performed about 150 AWOP-related activities including performance-based training, jar testing at drinking water treatment plants, distribution system DBP sampling, and offered other targeted technical assistance. PWS participating in the AWOP program and that met turbidly removal goals served a population of 1,457,309, and PWS that met the DPB goals served 2,569,138 people.



Martin County Initiatives

The Division of Water enforces the federal Safe Drinking Water Act for all public water providers in the Commonwealth. The Division and the Public Service Commission have been actively involved with the Martin County Water District (MCWD) since 2002, when an inspection revealed numerous problems with the main water treatment plant.

During its review of MCWD drinking water reports, the Division found multiple violations of federal drinking water maximum contaminant levels. The violations were for excessive levels of DBP, which form when a disinfectant, such as chlorine, reacts with organic compounds in the water. To assist MCWD, the Division dedicated personnel and funding for KRWA to locate and repair leaks, and to teach plant operators techniques for optimizing the water treatment process. This effort helped MCWD achieve and maintain compliance with the drinking water DBP Rule.

The Division also worked with the Division of Abandoned Mine Lands (AML) to secure an AML Pilot grant to provide improvements to the drinking water intake and infrastructure system. The Kentucky Appalachian Regional Commission also invested funds to assist with repairs to leaking lines. A second capital improvement project to build water pump stations and install approximately 1,000 feet of water line also received funding.

In January 2020, EEC Secretary Goodman committed to assist Martin County citizens in obtaining and maintaining safe and reliable drinking water and wastewater services. She created a Martin County Water District Workgroup, which encourages open communication between the EEC and Martin County, and creates a collaborative environment dedicated to support the residents of Martin County. She also formed a Technical Subcommittee to study and make recommendations regarding issues such as water loss, and future capital improvements and investments.

The Division continues its comprehensive inspections and sampling, providing technical assistance and optimization training, and performing its regulatory functions. KRWA has assisted the Division by providing hands-on assistance in Martin County, advising the water district on operations and maintenance, locating and repairing leaks, collecting data for GIS mapping (see Martin County bathymetric study information, p 18), and collecting water samples with Division staff. These efforts will continue to improve delivery of safe and reliable drinking water to Martin County.

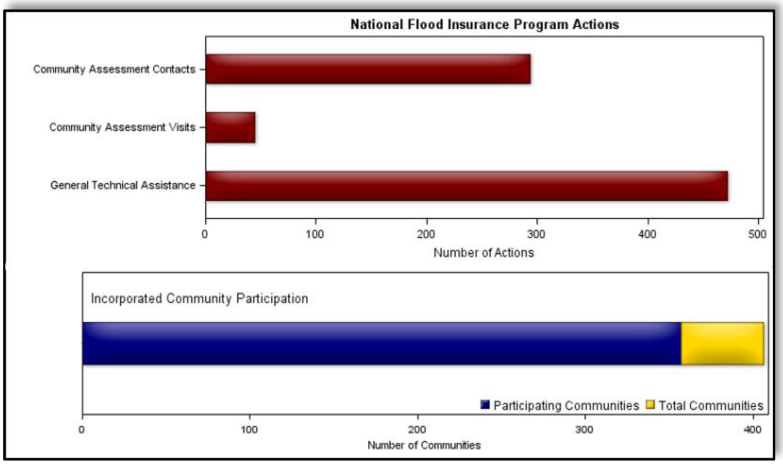
FLOODING & DROUGHT

Floodplain Development General Permit (FPGP)

In an effort to make its floodplain development permit program more efficient and consistent for citizens, and after careful review of its resources and prior permit applications, the Division developed a floodplain development general permit for construction activities that will not impact flood elevations, and therefore will not require a separate permit or review by the Division. Activities include construction of open spaces and parks, removal of stream obstructions, normal property maintenance that does not require machinery, below-grade swimming pools, utility poles and underground utilities, highway guardrails, and environmental investigations and monitoring. After a 60-day public notice and comment period, the permit became effective on July 1, 2020 and can be located on the Division website at https://eec.ky.gov/Environmental-Protection/Water/FloodDrought/Pages/UnderstandYourFloodHazards.aspx.

National Flood Insurance Program (NFIP)

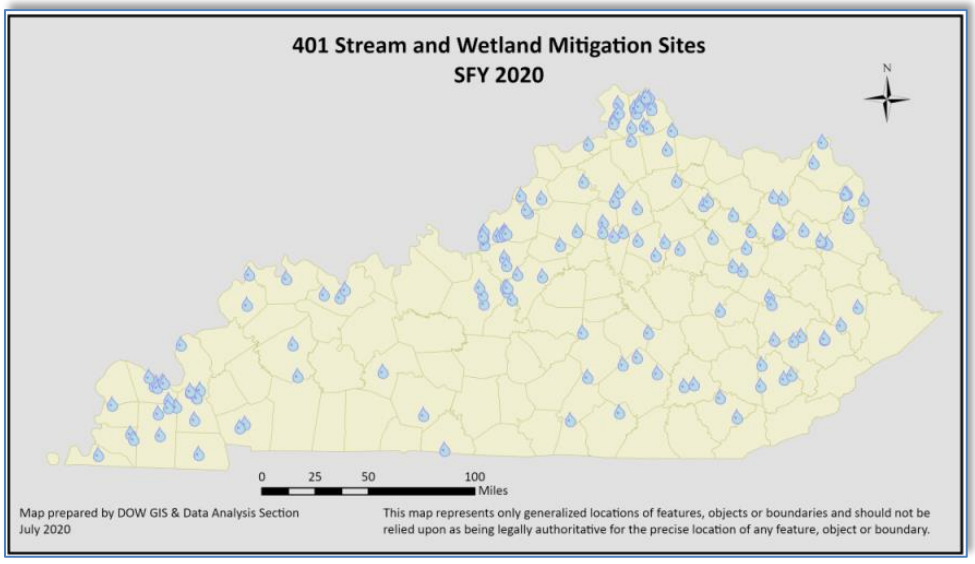
Through its state NFIP Coordinator, the Division conducted extensive outreach, trainings, and assessments, and facilitated other community contacts to enhance local floodplain management programs. The Division conducted 45 Community Assessment Visits (CAVs) and 294 Community Assessment Contacts (CACs) to understand local processes, educate local officials regarding state and federal floodplain requirements, and discuss floodplain best practices. The Division also engaged in General Technical Assistance (GTA) 472 times to assist local officials and community members with floodplain development requirements. The cities of Fairfield and Marion became the Commonwealth's newest participants in the NFIP, bringing Kentucky's total participating communities to 357, or 88% of incorporated communities in the Commonwealth.



GIS & MAPS

401 Water Quality Certification (WQC) Stream and Wetland Mitigation Sites GIS Layer

Mitigation is the effort to reduce ecological loss to wetlands and streams from development projects. In SFY20, the Division developed a GIS layer for easy observation of known mitigation site locations in the Commonwealth. This tool assists in monitoring report management and acts as a necessary data resource. For project planning purposes, consultants, and other state agencies often inquire about known mitigation site locations. The GIS layer includes established Mitigation Banks, In Lieu Fee program mitigation sites, and Permittee Responsible Mitigation both on-site and off-site. Each data point on the map provides the Agency Interest identification number to access data about the project using the cabinet's Advantage Regulatory Management database. The layer also provides the project name, county, who is responsible for maintaining the site, the Water Quality Certification number, and various other related information. The layer is publically available so that individuals can review their planned locations and identify existing area mitigation sites. This data set is available for download on the Kentucky Geography Network. Search with keyword 'mitigation': https://kygeoportal.ky.gov/geoportal/catalog/main/home.page.

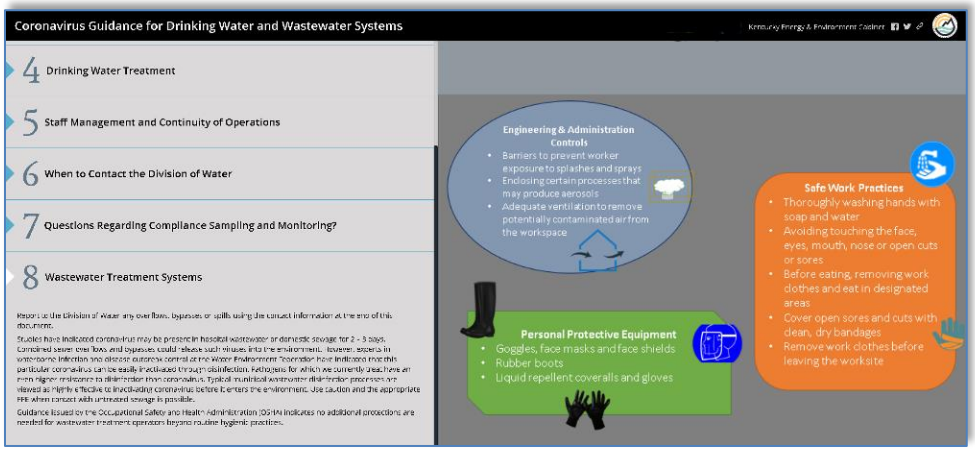


Web Applications (Story Maps and Viewers)

The Division continually strives to improve transparency and provide user-friendly access to data and information to the public and the regulated community. In addition to enhancements, updates, and maintaining existing viewers and story maps (e.g. Harmful Algal Blooms (HAB)s Viewer, Water Health Portal, Flood Hazard Portal), the Division also developed several new web applications in 2020.

Coronavirus Guidance for Drinking Water and Wastewater Systems

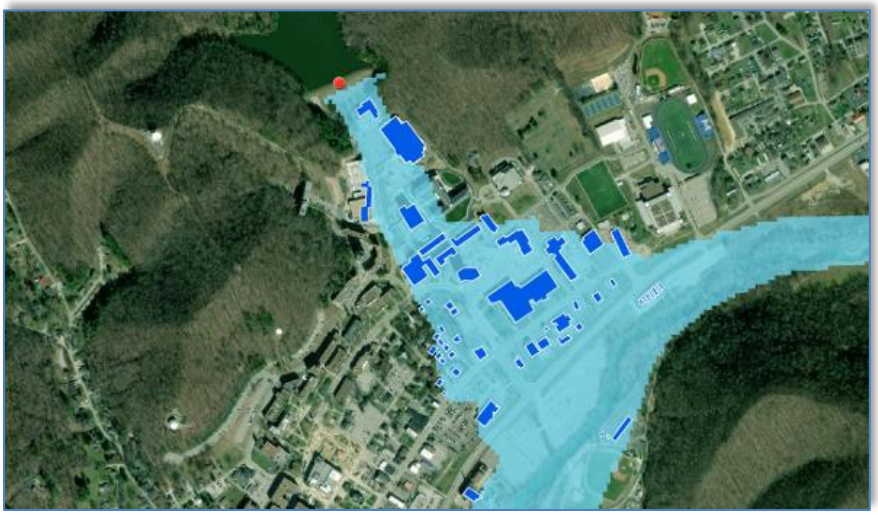
This story map assisted drinking water and wastewater utilities during the coronavirus pandemic with guidance regarding how to protect staff during the pandemic, planning for increased absenteeism due to sick workers, and new methods of submitting compliance data. The story map received updates as new information became available.



The Coronavirus Guidance for Drinking Water and Wastewater Systems story map can be accessed through the Story Map Gallery on the DOW Water Maps Portal (watermaps.ky.gov) or directly at https://eec.ky.gov/Environmental-Protection/Water/Drinking/Pages/Drinking%20Water.aspx.

Kentucky Dam Inundation Area Viewer

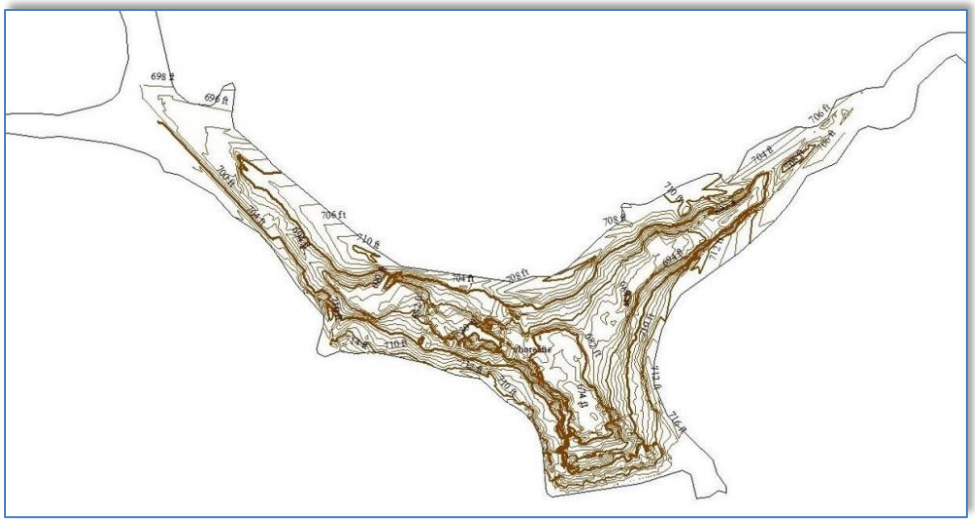
The Division created a new dam viewer that depicts Kentucky-regulated dams classified as High Hazard due to their potential to cause loss of life in the event of a dam failure. A user can search the viewer by dam name, county, and address, and find potential inundation areas and structures at risk should a high hazard dam fail. This information will allow emergency management staff to plan for emergencies, including providing safe evacuation routes should they become necessary. The public can use this viewer to understand the risks associated with high hazard dams and make informed decisions for potential development in the inundations zones.



The Kentucky Dam Inundation Area Viewer can be accessed on the DOW Water Maps Portal (watermaps.ky.gov) or directly at https://eec.ky.gov/Environmental-Protection/Water/FloodDrought/Pages/DamSafety.aspx.

Martin County Bathymetric Study

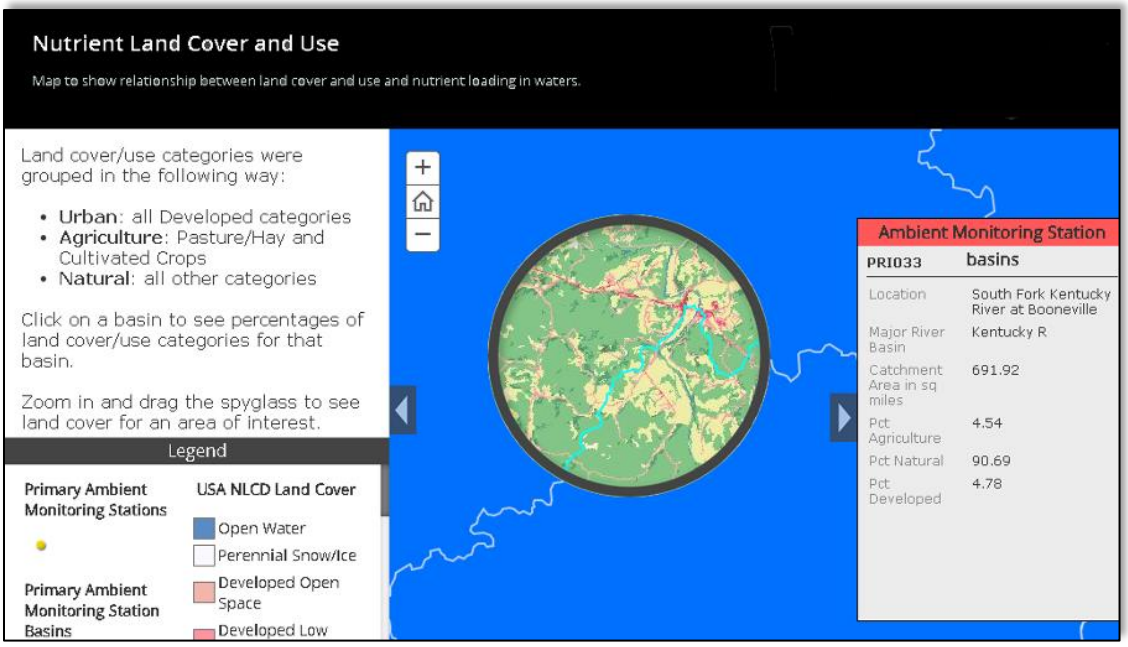
Built in 1969, the Curtis Crum reservoir (supplemented by water pumped from the Tug Fork River) serves as the drinking water source for the MCWD. Over the years, MCWD has struggled with providing adequate drinking water supplies for its customers. In an attempt to ensure Martin County citizens have a safer and more dependable water supply, the Commonwealth of Kentucky tapped into its newly formed sUAS or "Drone" Team. The Division began an intensive study of the reservoir using aerial and bathymetric (revealing features beneath the water surface) studies to map the lake and surrounding terrain for a better understanding of the storage capacity and volume of the lake.



The Bathymetric Survey of Curtis Crum Lake story map can be accessed through the Story Map Gallery on the DOW Water Maps Portal (watermaps.ky.gov) or directly at https://eec.ky.gov/Environmental-Protection/Water/Pages/Martin-County-Water-District-Workgroup.aspx.

Nutrient Reduction in Kentucky

As the Division works to update the Kentucky Nutrient Reduction Strategy, it has been guided in part by the *Nutrient Loads & Yields in Kentucky, 2005-2017* study. A story map showing study results was developed to encourage stakeholder engagement in the Nutrient Reduction Strategy, and provide a public data interface for this and future loads and yields assessments. This application features interactive maps showing areas of higher and lower nutrient loading into waters of the Commonwealth and the relationship between nutrients and land use. In addition, the story map shows reduction in nutrient loads in areas where investments in reduction strategies have been implemented.

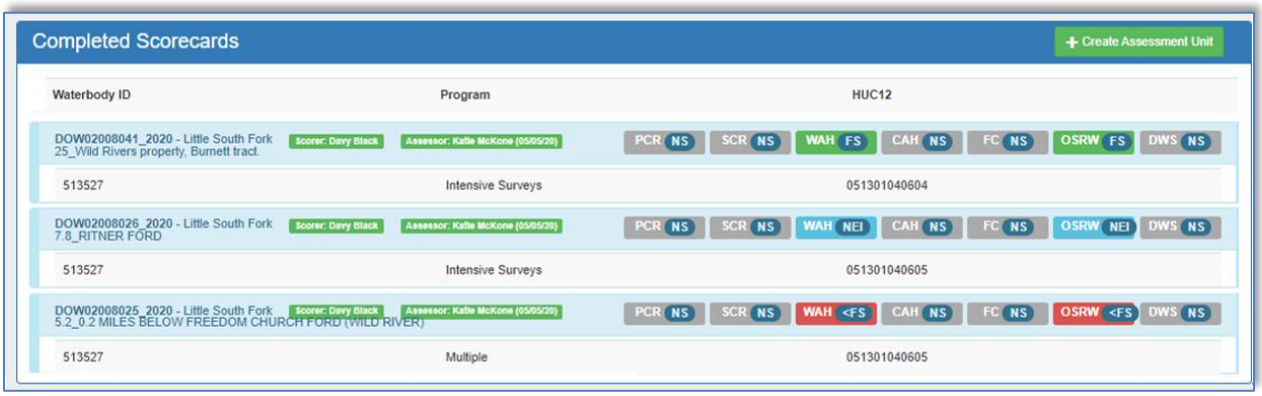


The Nutrient Reduction in Kentucky story map can be accessed through the Story Map Gallery on the DOW Water Maps Portal (watermaps.ky.gov) or directly at https://watermaps.ky.gov/nutrients.

MONITORING & ASSESSMENTS

Assessment Program / KATTS Application

In 2017, the EPA released its redesigned Assessment, Total Maximum Daily Load (TMDL) Tracking, and Implementation System (ATTAINS). In 2016, the Division received an EPA Exchange Network grant and began developing its own Kentucky Assessment and TMDL Tracking System (KATTS). In August 2019, the application moved into production, and by October 2019 data population with historic assessment and TMDL information gathered from several different sources was completed. After three "sprints" of expansion work from October through the end of SFY20, the Division used KATTS to complete scorecards on 983 stations and complete 389 assessments. This work will continue into SFY21 as KATTS enables the Division to complete its 2018-2020 CWA Section 305(b) reporting requirements by submitting Kentucky data and Integrated Report documents directly to the EPA ATTAINS system via KATTS. Enhancement of the KATTS application will continue for the next two years, expanding the functionality to other users in the Division.

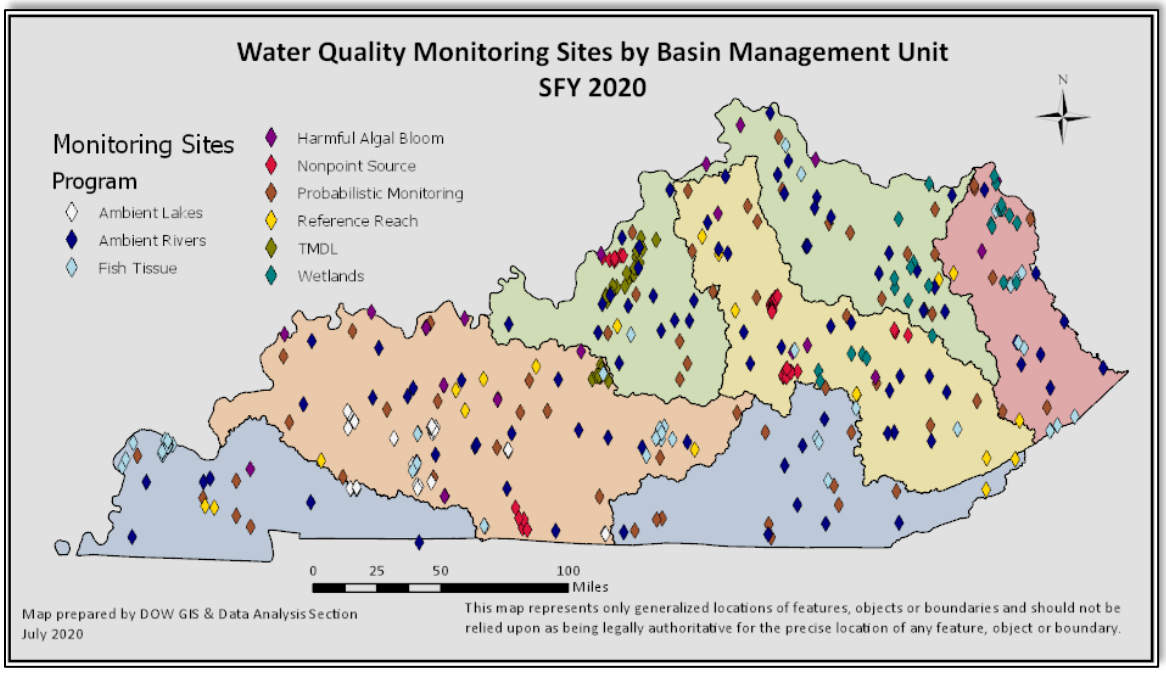


Surface Water Monitoring

During the 2019 sampling season, the Division completed approximately 2,900 monitoring site visits at over 430 locations, and collected samples from streams, rivers, springs, wetlands, lakes, and reservoirs to assess water quality. This work assists in greater understanding of the condition of Kentucky 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, to determine program effectiveness;

- Probabilistic monitoring of streams and wetlands using randomly selected sites to project current aquatic conditions statewide or in a particular river basin;
- Monitoring for potential fish consumption, drinking water, or recreational advisories through fish tissue collection and response to HAB reports; and
- Focused water quality monitoring in watersheds that require TMDL development for pollutants



Monitoring highlights from the past year include:

- **Ambient collections** consist of water chemistry and physiochemical parameters, and bacteria, during the recreation season, and assist in 305(b) assessment and determining long-term trends. Sampling occurred at 115 stream and lake stations, resulting in 980 total station visits.
- **The Fish Tissue Program** collects both whole body and filets to examine contaminant levels in fish, and provides information used to update fish consumption advisories across the Commonwealth and for federal Clean Water Act water quality assessment. Sample collection occurred at 29 lakes in standard rotation, and at 19 lakes as part of special investigative studies.
- **The HAB Response Program** collected samples from approximately 23 stations.
- **The Probabilistic Stream Bio-Assessment Program** selects a random sample of potential target streams to assess stream conditions across the Commonwealth, and uses the information for federal Clean Water Act assessments and to make scientifically sound decisions regarding Kentucky streams. This program collected samples from 53 stream segments for water chemistry, fish, and insects.
- **The Reference Reach Program** utilizes samples from Trend Monitoring Sites (TMS) to determine variation in water chemistry and aquatic life in Kentucky's least-disturbed streams. Samples taken from other Reference Sites help inspect the condition of, and verify that, the stream

segments are still high quality and minimally disturbed. This program collected biologic and bi-monthly water chemistry samples from 16 TMS over the last year.

- **The Intensive Surveys** monitoring program collects data used by the Nonpoint Source Program to support watershed plan development and efforts to improve area water quality. The program monitored about 50 stations in Trammel Creek (Allen County), Middle Fork Beargrass Creek (Jefferson County), Paint Lick Creek (Garrard County), and Red River (Wolfe County), totaling 327 station visits.
- **The Total Maximum Daily Load (TMDL) Monitoring Program** collects data to support the development of TMDLs and TMDL alternatives for 303(d) listed impaired waters, and the assessment of streams for warm water and cold water aquatic life, and primary and secondary contact recreation. The program made 868 total station visits to collect water quality and biological data at 40 stations in two watersheds: Floyds Fork (Bullitt, Jefferson, and Oldham Counties), and North Fork Nolin (Larue County).
- **The Wetlands Program** collects data to support development of Indices of Biological Integrity, and to provide baseline chemistry data to aid the development of wetland-specific water quality criteria. This program made 151 total station visits to collect water chemistry data and performed Kentucky Wetland Rapid Assessments (KY-WRAM) at 25 stations in the Western Allegheny Plateau ecoregion.

2019 HAB Summary

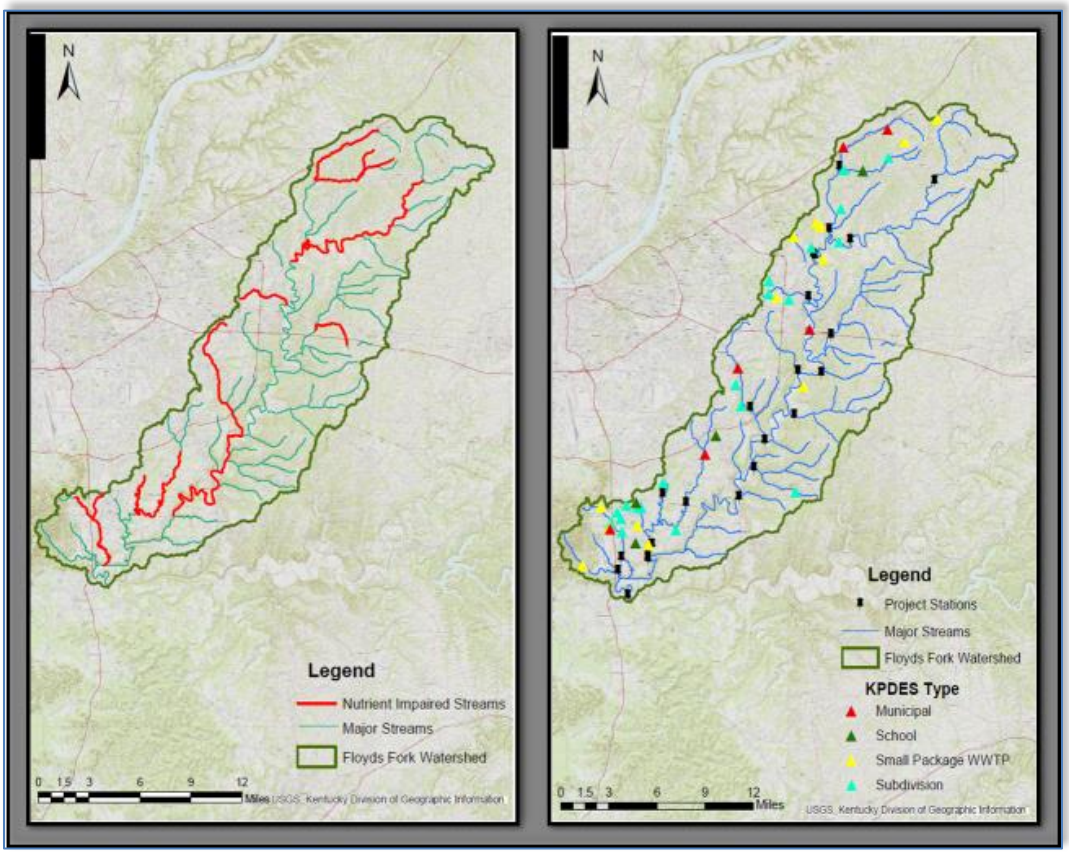
In 2019, the Division responded to algal bloom reports on 19 waterbodies, and sampled 17 for cyanotoxin analysis, 12 of which had cyanotoxins present at the time of collection. Excluding the Ohio River, only one waterbody (Briggs Lake in Logan County) had cyanotoxins present above recreational health advisory levels. This resulted in an advisory for Briggs Lake from September 26 through November 22, 2019, for high levels of microcystins, a hepatotoxin produced by several species of cyanobacteria.

In early September 2019 a large HAB developed on the Ohio River, the response to which required a coordinated effort by Kentucky and other states along the river, the Ohio River Valley Sanitation Commission (ORSANCO), and the US Army Corps of Engineers. From September 12 through October 24, teams collected a total of 169

samples, which were analyzed by multiple laboratories. On September 26, four recreational advisories issued due to high levels of microcystins at the Greenup, Meldahl, Markland, and McAlpine pools which remained in effect until November 7.

Floyds Fork Watershed Model

In September 2019, the Division completed an intensive year-long water quality monitoring project in the Floyds Fork watershed, with a goal to collect high resolution in-stream data to calibrate a water quality model for the watershed. The Division sampled 20 sites twice per month to capture the full range of flow conditions and seasonal variation, and compiled detailed information from over 100 nutrient point sources in the watershed to add to the model. The Division and EPA Region 4 staff are working closely to build the Floyds Fork model, which will help the Division develop pollution load reduction plans for several streams in which excess nutrients impact aquatic life. The resulting TMDL plans will identify the nutrient goals in the impaired streams and will outline necessary management actions to achieve them. The TMDL plans will be an important step in restoring water quality in the nutrient-impaired waters of this watershed.



PLANNING & PROTECTION

Agriculture Water Quality Act (AWQA) - Nutrient Reduction Workplan Grant

Coinciding with the 25th Anniversary of Kentucky's Agriculture Water Quality Act (AWQA), the EEC sought state-level improvements in the adoption of Agriculture Water Quality Plans (AWQP) through plan modernization, a volunteer nutrient monitoring program, and communication support to promote nutrient reduction. The AWQA is a unique law that requires all Kentucky agriculture operations with 10 or more acres to develop and implement an AWQP of best management practices (BMP) that protect water quality. Enhancement of this Kentucky-specific water quality protection tool contributes to the goal of section 104(b)(3) of the federal Clean Water Act and Goal 1 of the EPA's FY 2018-2022 Strategic Plan:

> "Funding provided supports the EPA's FY 2018-2022 Strategic Plan. This award will support Goal 1- Core Mission: Deliver real results to provide Americans with clean air, land, and water, and ensure chemical safety, Objective 1.2 - Provide for Clean and Safe Water: Ensure waters are clean through improved water infrastructure and, in partnership with states and tribes, sustainably manage programs to support drinking water, aquatic ecosystems, and recreational, economic, and subsistence activities of the EPA Strategic Plan (available at https://www.epa.gov/planandbudget/strategicplan.html)."

While the Division applied for $200,000 in SFY20 funding, it received $100,000 with the potential for additional future funding. In light of the lower grant amount, the Division achieved its revised project goals that included:

SFY2020

Nutrient Education and Outreach - $80,000

- AWQA Workbook enhancements to integrate additional BMP implementation resources
- Volunteer Nutrient Monitoring Training and Materials Updates
- Outreach & Communication
  - Statewide and targeted outreach including partner agencies, stakeholder groups and Nutrient Priority watersheds
  - Engagement with Municipal separate storm sewer systems (MS4) on Stormwater Quality Management Plans (focus on Minimum Control Measures #1 & #2).

Nutrient Priority Watersheds - $20,000

- Travel – Hypoxia Task Force (HTF) & Kentucky Nutrient Reduction Strategy (NRS) Meetings and Outreach (2021-2022)
    - EEC representatives will participate in annual HTF meetings in 2020, 2021 and 2022 and collaborate with other HTF member states on nutrient reduction progress, as well in-state for NRS meetings and outreach.

Detailed Budget		
Budget Categories (Itemize all Categories)	**FY 2019 Funds**	**FY 2020 Funds**
Contractual	$70,000	$30,000
Supplies	$20,000	$50,000
Travel	$10,000	$20,000
TOTAL	**$100,000**	**$100,000**

Milestones Schedule		
Output/Outcome	**Start Date**	**Completion Date**
AWQA Workbook Base Upgrade	10/1/2019	9/30/2021
AWQA Workbook Enhancements	10/1/2020	9/30/2022
Travel	10/1/2019	9/30/2022
Volunteer Monitoring/Education	10/1/2019	9/30/2022
Nutrient Education and Outreach	10/1/2020	9/30/2022

Nutrient Reduction Strategy (NRS)

The Division is updating the Kentucky Nutrient Reduction Strategy to reflect revised priorities and the latest analysis of water quality monitoring data. Its 2019 Nutrient Loads & Yields Study (https://eec.ky.gov/Environmental-Protection/Water/Reports/Reports/2019-NutrientLoadsYieldsinKY.pdf) evaluates nitrogen and phosphorus trends in streams to track watershed improvements and help prioritize agency resources. The Division also developed an interactive story map (https://watermaps.ky.gov/nutrients) to encourage stakeholder engagement in the Nutrient Reduction Strategy Update and provide a public interface for loads and yields analysis.

Over the course of the year the Division, and other EEC representatives, met with agricultural stakeholders and partners to promote conservation and water health. The cabinet worked with partners to publish AWQA articles in significant farming publications such as *Kentucky Farm Bureau News* and the *Kentucky Soybean Sentinel*. The Division collaborated with the Division of Conservation (DOC), the University of Kentucky, and the Agriculture Water Quality Authority to develop a more user-

friendly AWQP e-workbook to assist producers in developing plans, and facilitate BMP adoption. A $100,000 grant from the EPA in 2019, and a $70,000 grant in 2020, greatly enhanced development of the AWQA e-workbook, outreach materials, and volunteer nutrient monitoring resources.

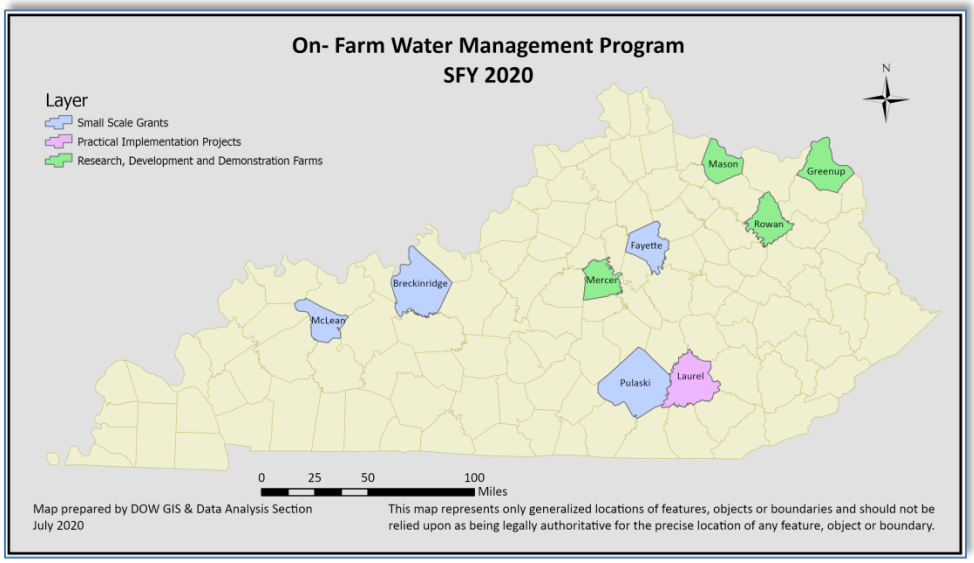
The Division also collaborates with DOC and federal agencies in the Federal Water Subcabinet of the HTF to bring national attention to the accomplishments and remaining challenges in Kentucky waterways. In February 2020, the Division participated in a HTF meeting with other states and leading officials of the EPA, U.S. Geological Survey, U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration, and U.S. Department of Agriculture to identify solutions to nutrient pollution in the Gulf of Mexico basin. The Division and DOC are working with the University of Kentucky Cooperative Extension Service to develop a State Science Assessment through the HTF's partnership with land grant universities. This State Science Assessment will facilitate a greater understanding of the effectiveness of livestock BMPs in Kentucky.

For more, please visit the Division's Kentucky Nutrient Reduction Strategy webpage at https://eec.ky.gov/Environmental-Protection/Water/Protection/Pages/Nutrient-Reduction-Strategy.aspx.

On-Farm Water Management Program

In March of 2018, the Kentucky Agricultural Development Board committed up to $1 million to establish the On-Farm Water Management Program (OFWMP). The OFWMP is a proactive approach to viewing water resilience as an economic development issue for Kentucky farms. On-farm water management practices are designed to help producers capture, store, and utilize all available water resources in a way that will help them reduce drought vulnerability, reduce dependence on municipal water, manage excess runoff, and improve soil health and moisture availability.

After a successful first year, this collaboration between the Water Resources and Agricultural Development Boards received an additional $437,851, which restored total funds available for water harvesting projects to $1 million. A new Small Scale Grant (SSG) category and a published list of desirable BMPs increased program accessibility to the agricultural community. The 2020 OFWMP now consists of three categories: Research, Development, and Demonstration farms (RDD), Practical Implementation Projects (PIP), and SSG.



The RDD category covers water management practices on public, regional farms and makes up to $250,000 available for projects in this category. RDD farms serve as educational hubs open for public instruction, and must hold field days to display water harvesting concepts to area producers. To date, four RDD projects received approval in Greenup, Mercer, Mason, and Rowan Counties.

In Greenup County, a greenhouse water harvesting system should be completed in Fall 2020. The project endeavors to demonstrate the effectiveness of water recycling that saves money, uses less fertilizer, and promotes healthier plant growth.

The completed RDD in Mason County centered on the installation of a Compost Bedded Pack Barn. The structure collects rainwater from the barn roof and stores it in tanks, decreasing the farms dependency on the rural water system. The barn also gives the producer a better way to winter cattle without damaging pastures, and improves manure storage.

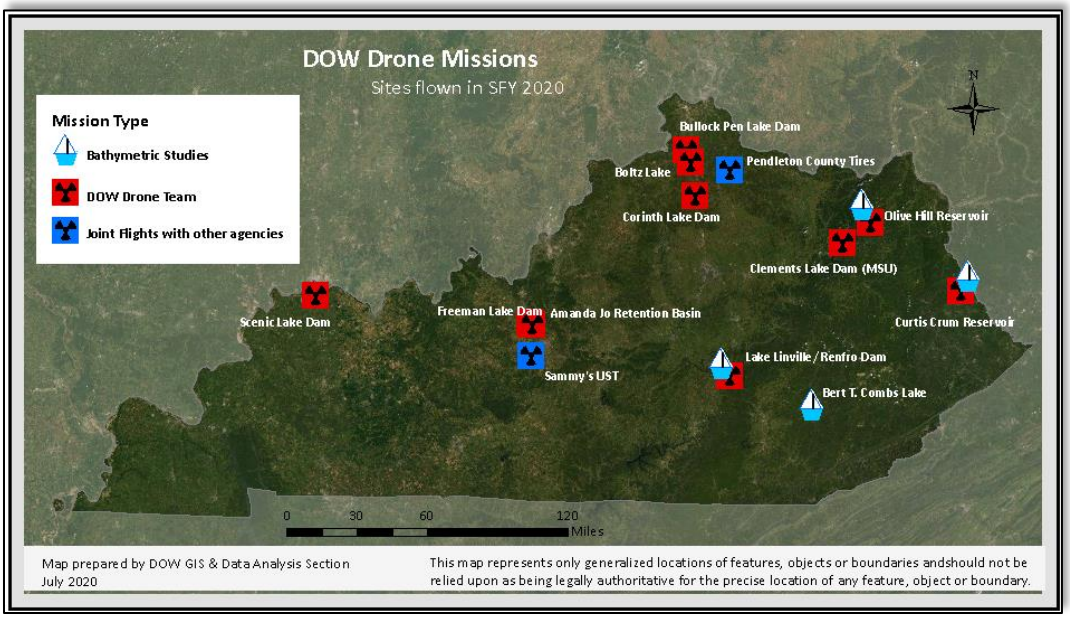
In Mercer County, the RDD project will construct a reservoir recharged by an existing natural spring. This reservoir will serve as the main water source for irrigation and will minimize the need for tapping into the municipal water source, and should be completed in 2021.

The Morehead State University Farm in Rowan County completed installation of four water quantity projects, including:

- Land Based (Pond) Water Harvesting and Distribution Systems for Livestock
- Hog Gestation House Evaporative Cooling Water Harvesting System
- Water Harvesting Systems for Livestock Consumption at the Bull Barn
- Greenhouse Evaporative Cooling System/Water Harvesting System

PIP and SSG are for private farms that wish to implement on-farm water management projects. PIP farm projects carry a $100,000 cap and SSG projects carry a $10,000 cap. The OFWMP has approved one PIP project in Laurel County and four SGG projects in Breckinridge, Fayette, McLean, and Pulaski Counties. Projects have involved irrigation, harvesting runoff water from a structure, and alternative water source installations.

Small Unmanned Aircraft Systems (sUAS) "Drone" Team



In early 2019, the Division implemented a sUAS program, commonly referred to as the "Drone" Program. The Drone Team began its first series of flights in early 2019, and primarily focused on flights over state-owned dams. Since most of those flights consisted of leaf-on imagery, the team decided to collect leaf-off imagery to better document the full range of conditions at select dams. The team collected leaf-off imagery at Clements Dam (MSU), Freeman Lake Dam, Guist Creek Lake Dam, and

Scenic Lake Dam (pre-construction), and conducted additional flights at Bullock Pen Lake to document the dam construction progress. Four lakes were added to the program during fiscal year 2020 and initial flights were conducted at Boltz Lake, Corinth Lake, and Lake Linville (Renfro Dam), with initial Woods Creek flights planned later.

In addition to Kentucky-owned dams, flights also took place at Curtis Crum Reservoir, Bert T. Combs Lake, and Olive Hill Reservoir as part of a new bathymetry program. Bathymetric surveys help create maps of the land beneath the water surface, and lead to better understanding of the storage capacity and volume of the lake. In combination with aerial imagery, bathymetric data collection produces more robust models of reservoirs and surrounding watersheds. In conducting the studies, a remote controlled drone, used in conjunction with manned watercraft, collects the data for these studies. The Division collaborated with multiple agencies for the design and execution of the project including the Kentucky Department of Fish and Wildlife Resources, Department of Natural Resources, Division of Abandoned Mine Lands, and Department of Transportation, as well as the State of Oklahoma and the U.S. Department of Surface Mining Reclamation and Enforcement.

As part of a grant from the federal Department of Homeland Security, the Division installed sensors on reservoirs across the state to monitor lake levels for flood conditions. A solar panel powers the sensors, which send collected data to the Division via a cellular signal. Having the ability to monitor lakes across the state from a centralized location will greatly improve both flood and drought monitoring. To date, the Division has installed sensors at 29 different lakes.

New areas for drone usage are being explored as other state agencies find useful ways to implement the Drone program. The Division conducted a flight at the Amanda Jo Detention Basin to collect elevation data to update maps in that area. The Division is researching new equipment for additional types of data collection, such as thermal, infrared/near infrared, and other sensor data to extend the program into areas such as drought monitoring, leak detection in dams and possibly water distribution systems, and tracking HABs just to name a few.

The Drone Team fostered many valuable relationships during this period. Work continues with the Kentucky Department of Transportation and Department of Fish and Wildlife Resources, including formation of a users' group that combines multiple state and local governmental agencies under one

umbrella. Consisting of well over 300 members statewide, the group met monthly to discuss and exchange ideas concerning equipment, standard operating procedures, and techniques.

Bullock Pen Lake Dam State Owned Dam Repair Project

The Division continues rehabilitation of the Bullock Pen Lake Dam (Grant and Boone Counties), which serves as the main water supply source for the Bullock Pen water district, and is owned by the Kentucky Department of Fish & Wildlife Resources. The dam was hydraulically deficient and could have overtopped during a large rainfall event, and the dam spillway was eroded and endangering the embankment structure. This $15 million project began in early 2019 and will continue through late 2021. Initial site preparation, completed in late 2019, included installation of a steel coffer dam on the upstream side to allow the work to proceed safely without draining the lake, and removal of parts of the existing embankment to allow new construction to begin. Following initial preparation, construction began at the base of the new spillway with a concrete lined settling basin, stepped concrete channel up the embankment slope, and a new labyrinth-style spillway on top of the earthen embankment. Once these features are complete, construction will begin on a new stream channel at the dam outlet, the old spillway stabilized and filled, and the dam embankment raised approximately four feet to provide additional structural stability without increasing the lake pool level. Final construction will re-contour the embankment and establish vegetation to protect the earthen portions of the dam from erosion.

Infrastructure Planning

State Revolving Fund (SRF) Environmental Reviews

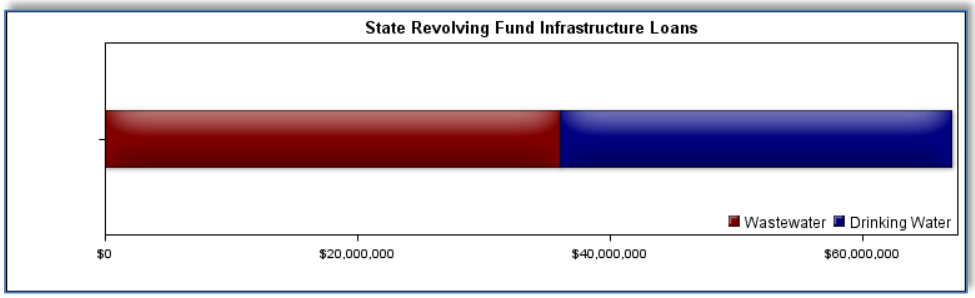
EPA state revolving funds (SRF) provide low-cost funding to communities for various water-related infrastructure projects, and require a state environmental review for funding approval. While the Kentucky Infrastructure Authority distributes the funds, the Division conducts the necessary SRF environmental reviews following a process similar to the National Environmental Policy Act (NEPA). The

Division reviews all SRF projects for compliance with the Kentucky's State Environmental Review Process (SERP) document and other environmental laws and regulations.

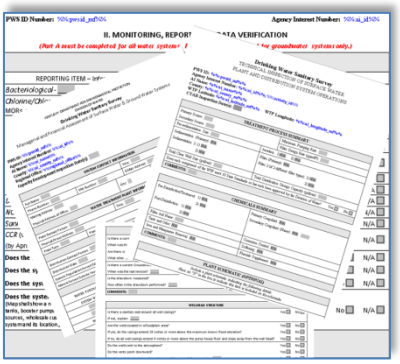
This year, the Division received and completed 26 SRF environmental reviews. Of these, 22 qualified as a Categorical Exclusion (*i.e.*, identified actions which are not considered to significantly affect environmental quality). The remaining four received a Finding of No Significant Impact (FONSI) because the applicant received concurrence from state and federal agencies including the Kentucky Department of Fish and Wildlife Resources, Kentucky Heritage Council, Kentucky State Clearinghouse, Natural Resource Conservation Service, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service, that the project will have minimal environmental impacts. The Division reviews concurrence documents to confirm that the project will have no significant effect on the environment, and places the FONSI on the Division website for 30-day public comment period. If the project will have significant effects, the applicant is required to participate in preparing an Environmental Impact Statement. If the Division does not receive any opposing comments, it issues an approval for the FONSI.

Infrastructure Financing

In conjunction with the Kentucky Infrastructure Authority, the Division continues to fund water and wastewater infrastructure projects through the administration of the State Revolving Funds (SRF) loan program. This year, the SRF funded nearly $70 million ($36 million for wastewater, and almost $31 million for drinking water) in projects ranging from line extensions to major upgrades of aging water and wastewater infrastructure. Funding for these projects, which serve approximately 95% of the population with public water service, are key to improving quality of life for citizens of the Commonwealth. Moving forward, the Division will focus on improving and maintaining efficiency for long-term system sustainability.



Sanitary Surveys



A Sanitary Survey is a review of a PWS to determine its ability to supply safe drinking water to consumers. These surveys examine source water, treatment, distribution system, finished water storage, pumps, monitoring and reporting, management and operation, and operator compliance. Site visits are an important component of sanitary surveys, and provide the primacy agency (in this case, the Division) with the chance to assist operators and managers in meeting regulatory requirements. During SFY20, the Division completed 67 sanitary surveys. COVID-19 challenges and restrictions resulted in 61 incomplete surveys. Although COVID-19 made an impact on the number of surveys, the Division is actively looking for ways to make the Sanitary Survey process more efficient and data collection more useful. This will help utilities with the core concepts of Asset Management, and will assist the Division in identifying a broader range of needs regarding infrastructure management and financing.

Wastewater Regional Facility Plans

The federal Clean Water Act requires wastewater regional facility plans (WWRFPs) to assess wastewater treatment facilities and infrastructure, from physical facilities to operations and funding, to enable appropriate future improvements for continued, reliable service. The Division typically receives between two and four WWRFPs each year. In SFY20, the Division received and completed plans from Louisville MSD and the City of Tompkinsville Regional Planning Agency.

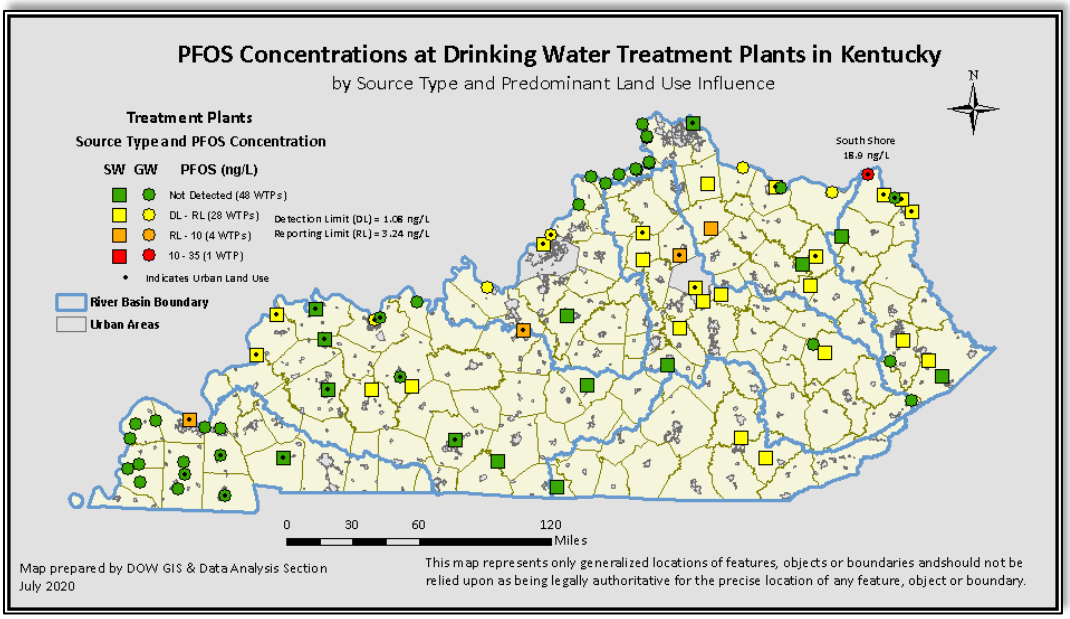
Infrastructure COVID-19 Technical Support

If there is a 'silver lining' to the COVID-19 pandemic, it helped the Division implement new electronic data processes in some cases and increased usage in others. Electronic submittal of compliance data for drinking water systems should assist in decreasing the most common type of SDWA violations, which are monitoring and reporting. Prior to March 2020, the Division received approximately 20% of water and wastewater infrastructure construction permit applications by electronic means. Since that time, electronic submittals have been nearly 100% and have factored into delivering critical service in a timely manner.

Source Water Protection Activities

Per- and Poly-fluoroalkyl Substances (PFAS) Monitoring

The Division has taken a proactive approach to evaluate water resources for the occurrence of PFAS in Kentucky. During the 2019 calendar year, the Division conducted an examination of PFAS in a representative sample of Kentucky's public drinking water. Over the course of four months, the Division collected and analyzed samples of finished (treated) water from 81 community public drinking water treatment plants (WTPs), representing 74 public drinking water systems. Sampling sites were representative of surface water (43 WTPs) and groundwater (38 WTPs) supplies, urban and rural land-use influence, and varying sizes of populations served. Source waters for the WTPs include each of Kentucky's major river basins, the main stem of the Ohio River, and major aquifers in the state. The population served by the WTPs in this study is approximately 50% of the population receiving public drinking water.



DEP personnel collected samples for analysis at the DEP Division of Environmental Program Support (DEPS) laboratory. The DEPS laboratory analyzed eight PFAS in each sampling event: PFBS, PFHpA, PFHxS, PFNA, PFOS, PFOA, ADONA and HFPO-DA.

Quality assurance samples, including laboratory blanks, trip blanks, and field blanks were also analyzed to ensure proper protocols were followed throughout each sampling event.

It is important to note that all detections of PFOA and PFOS, both individually and when added [PFOA + PFOS], were below the 2016 EPA-recommended Human Health Advisory of 70 ng/L for those analytes.

There were 96 PFAS detections, which equates to a 15% sample detection rate overall. Furthermore, 79 of the PFAS sample detections that occurred were less than 5 ng/L.

One or more PFAS were detected at 41 of the 81 WTPs sampled; and specifically at 72% of the surface water WTPs sampled, and 26% of the groundwater WTPs sampled. The most frequently detected analyte was PFOS, followed by PFOA. The highest concentration of any analyte detected was HFPO-DA at 29.7 ng/L. ADONA was not detected in any samples.

For drinking water systems that utilize surface water, detection rates were highest in WTPs drawing water from the Ohio River. For drinking water systems using groundwater as a source, PFAS compounds were most commonly detected in the WTPs drawing from the Ohio River Alluvium. PFAS detections were more common in WTPs that have source water under urban land-use influence than those with rural land-use influence.

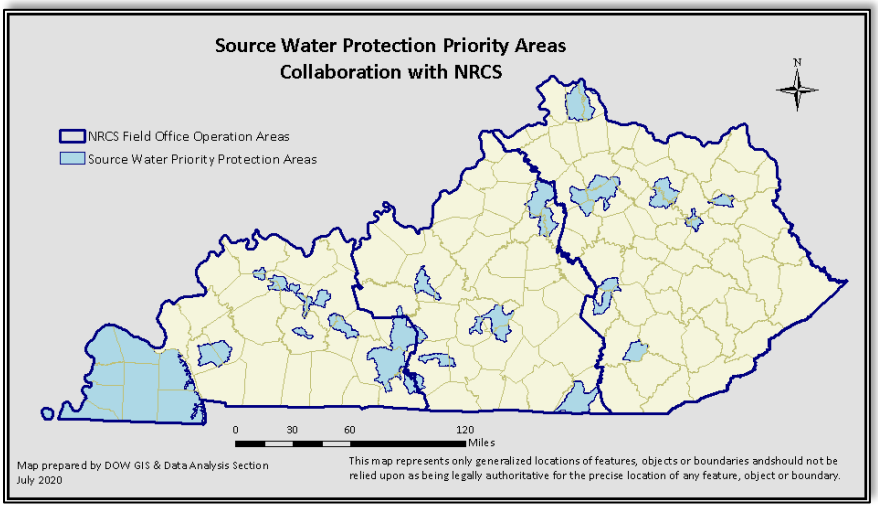
The second phase of this proactive monitoring approach began in January 2020, and will evaluate the presence of PFAS in source water that may be used for drinking water, industry, agriculture, and recreation. An initial set of monitoring stations has been selected to represent each of the major river basins in Kentucky, with a focus on proximity to facilities with the potential for on-site PFAS management. Monitoring and reporting will be completed in late 2020 or early 2021.

Natural Resources Conservation Service (NRCS) Collaboration on Source Water Protection Priority Areas

Amendments to the 2018 Farm Bill added provisions for conservation programs to enhance source water protection through targeted practices. This provision encourages protection of drinking water sources by identifying local priority areas, providing increased incentives for practices in those areas, and dedicating at least 10% of conservation funds to source water protection activities.

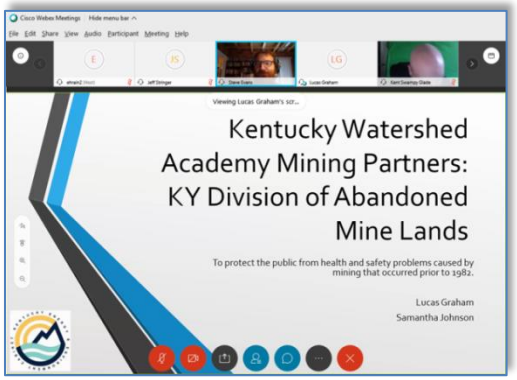
The Division worked with the NRCS and its State Technical Committee to identify local priority areas through GIS analysis of documented source water and wellhead protection areas. These were compared to watershed planning areas, National Water Quality Initiative candidate watersheds, and

agricultural areas. The NRCS adopted the Division's recommended priority areas based on its analysis, and solicited input from the State Technical Committee for additional priority areas.



The Division continues to collaborate with the NRCS, and will provide recommendations for updates and additional priority areas later in 2020.

Kentucky Watershed Academy



Watershed planning and implementation initiatives experience greater water quality improvement when a dedicated watershed coordinator works toward achieving local goals. Through the 319(h) grant program, the Division establishes watershed coordinators across the Commonwealth, whose efforts increase local engagement in watershed planning necessary for successful reduction of nonpoint source pollution, and supports coordinators through training designed to strengthen knowledge and capability. The Kentucky Watershed Academy formalizes the training most requested by coordinators and makes it widely accessible to current and future watershed planners.

Through a partnership with the Kentucky Water Resources Research Institute (Clean Water Act §319(h) grant #16-05), the Division funded the development of six training modules covering topics based on feedback received from coordinators surveyed at previous trainings, and that assist watershed coordinators in the development and implementation of watershed plans.

- *Module 1: The Clean Water Act and Other Helpful Water Quality Laws*

  The introductory module describes the basic components of the federal Clean Water Act (CWA), with increased emphasis on the sections directly pertaining to watershed management.

- *Module 2: Water Quality Basics*

  This second module describes the most frequently used measurements of water quality used by citizen samplers, university researchers, environmental consulting firms, regulatory agencies, and others. It provides an overview of basic field water chemistry and its relevance to waterbody health, and includes specific indicators for nutrients, pathogens, metals, and water chemistry.

- *Module 3: Land Use Impacts and Related Best Management Practices*

  This module evaluates different land uses across the Commonwealth and the ways that they can affect water quality. Participants learn how to access and display land use maps, as well as evaluate land uses for potential water quality impacts.

- *Module 4: Dealing with Data*

  This module helps participants organize and interpret water quality data for effective communications in planning documents, outreach publications, and informational presentations.

- *Module 5: Likely Partners*

  This module is a companion to the BMP component of Module 3, because it offers guidance on developing partnerships in the pursuit of implementing specific water quality BMPs.

- *Module 6: Effective Communications*

  This module describes tactics for effective watershed outreach and social marketing campaigns. It offers suggestions for community engagement activities, with examples of past utilization in Kentucky watersheds.

Module 1-4 pilots were in-person half day workshops, and Modules 5 and 6 will be released as a webinar series. The recordings of the workshops will be made available through a Kentucky Watershed Coordinator Resource webpage to enable easy access for current and future watershed coordinators.

REGULATIONS & STANDARDS

401 KAR Chapter 6 (Water Wells)

The Kentucky Administrative Regulations (KAR) contained in 401 KAR Chapter 6 establish education, experience, and training requirements for water well drillers and water well driller assistants, as well as establish standards for the construction, modification, and abandonment of water wells. The passage of Senate Bill 32 during the 2019 legislative session amended Kentucky Revised Statutes (KRS) Chapter 223, which governs water well drillers and construction practices, initiated the new water well driller assistant certification program, and established new fees for certification. The Division filed emergency regulations, concurrent with "normal" proposed regulatory amendments, with the Legislative Research Commission (LRC) on July 11, 2019, so that the water well driller assistant program could begin immediately. After working through the administrative regulatory process established in KRS Chapter 13A, the amendments became effective on January 3, 2020.

In addition to adding the new water well driller assistant program, the amendments added definitions, updated and added specifications for certain types of wells, and revised examination, certification, and continuing education requirements.

401 KAR Chapter 10 (Water Quality Standards) / 2018 Triennial Review

The federal Clean Water Act requires Kentucky to review its water quality standards, contained in 401 KAR Chapter 10, every three years. Also known as the "Triennial Review", Kentucky began the process by holding public listening sessions across the Commonwealth in 2018. The Division filed proposed revisions to its regulations with the LRC on June 12, 2019, and after working through the administrative regulatory process established in KRS Chapter 13A, the amendments became effective on January 4, 2020. The EPA approved the changes on June 2, 2020.

In addition to revising several Tables by removing antiquated references and replacing them with latitude, longitude, and identification numbers for accuracy, some of the notable revisions to 401 KAR Chapter 10 included:

401 KAR 10:001 - Definitions for 401 KAR Chapter 10

- Adding 6 new definitions and clarifying 12 definitions
- Removing 14 terms that were no longer applicable to, nor used in, Chapter 10

401 KAR 10:026 – Designation of uses of surface waters

- Adding alternatives for examining economic and social impacts of unattainable uses, and adding designated uses for 57 basins, streams or stream segments
- Adding re-examination of waterbodies that do not include specified uses every 5 years to determine if new information is available for consideration

401 KAR 10:029 – General provisions

- Clarifying that the purpose of 401 KAR Chapter 10 is to protect both existing and designated uses
- Formalizing the removal of mixing zones for bioaccumulative chemicals of concern, which were phased out on September 8, 2014

401 KAR 10:030 – Antidegradation policy and implementation methodology

- Including 29 additional streams or stream segments, comprising approximately 114.35 miles of surface waters, newly categorized as Exceptional Waters
- Clarifying that surface waters that do not fully support any designated use shall be categorized as impaired, except for Outstanding or Exceptional waters, or those that are impaired only for mercury or methylmercury as it applies to fish consumption

401 KAR 10:031 – Surface water standards

- Updating the cadmium aquatic life criteria; establishing aquatic life criteria for selenium in fish tissue for specified fish and for carbaryl, and allowing application of the Copper Biotic Ligand Model for site-specific copper aquatic life criteria
- Removing the outdated surface water temperature guideline table, the aquatic life selenium egg/ovary tissue criteria, the fecal coliform criteria for the primary contact recreational use, and the nitrite-nitrogen human health criterion for the main stem of the Ohio River
- Adding a provision that Primary Contact Recreation and/or Secondary Contact Recreation criteria may be suspended in Combined Sewer Overflow receiving waters under conditions specified in Section 7 of this administrative regulation
- Updating Materials Incorporated by Reference

401 KAR Chapter 11 (Certified Operators)

The Division of Water and Division of Compliance Assistance have joint responsibility for regulations contained in 401 KAR Chapter 11, which establish education, experience, and training requirements for certified drinking water and wastewater operators. Regulatory amendments addressed shortages of certified operators and persons eligible for certification, by expanding the base of education and experience that assists in qualifying a person for operator certification, while maintaining high standards for certified operators.

The Divisions filed the proposed regulations with the LRC on May 13, 2019, and after working through the administrative regulatory process established in KRS Chapter 13A, the amendments became effective on November 1, 2019.

The amended regulations added a certified training provider program, expanded acceptable education and experience for certification, recognized state-approved apprenticeship programs as an avenue towards certification, and expanded equivalent certification options for qualified out-of-state operators.

The Division also filed amendments to related regulations in 401 KAR Chapter 8 (Public Water Supply) and Chapter 5 (Water Quality) which establish standards for staffing and operator classification at drinking water and wastewater facilities.

Current and pending Division regulations are located on the Division website https://eec.ky.gov/Environmental-Protection/Water/Regs/Pages/default.aspx and on the LRC website at https://apps.legislature.ky.gov/law/kar/TITLE401.HTM.

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Andy Beshear, Governor

Energy and Environment Cabinet

Rebecca Goodman, Secretary

Kentucky Department for Environmental Protection

Anthony R. Hatton, P.G., Commissioner

Kentucky Division of Water

Paul Miller, P.E., Director

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Water Quality Branch	**Melanie Arnold**
Water Resources Branch	**Shawn Hokanson**
Watershed Management Branch	**John Webb**
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