

2020 Annual Report to the USEPA Kentucky Capacity Development Program

**Federal Fiscal Year 2020
October 2019 – September 2020**



**Department for Environmental Protection
Division of Water
300 Sower Boulevard
Frankfort, Kentucky 40601**

2020 Annual Report to the USEPA Kentucky Capacity Development Program

Kentucky's Drinking Water Capacity Development Program Implementation Report is intended to provide the U.S. Environmental Protection Agency, Region 4, with pertinent updates covering all capacity development activities within the Commonwealth of Kentucky for Federal Fiscal Year (FFY) 2020.

A. New Systems Program Overview

1. *Has the State's legal authority (statutes/regulations) to implement the New Systems Program changed within the previous reporting year?*

Kentucky's legal authority, Kentucky Revised Statutes (KRS) 151.630, to implement the new systems program has not changed.

2. *Have there been any modifications to the State's control points?*

Kentucky uses the control points in the 1999 Capacity Development Report to the USEPA which have not changed since that time.

3. *List new systems (PWSID & Name) in the State within the past three years, and indicate whether those systems have been on any of the annual Significant Non-Compliers (SNC) lists.*

There have been no new systems added to the annual Significant Non-Compliers lists in the last three years. Three new waters systems were activated and two water systems were inactivated this fiscal year (Table 1).

As of September 30, 2020 there are:

- 433 regulated public water systems (PWS):
 - 380 community
 - 53 non-community
- 61 state-regulated water systems:
 - 6 bottled water systems
 - 55 semi-public water systems

TABLE 1 NEW PUBLIC WATER SYSTEMS ACCORDING TO FEDERAL FISCAL YEAR				
PWSID	Name	Source	Type	Date
2020 Activated				
KY0183544	Shiloh Dollar General – Susan Co	GW	NC	1/1/2020
KY0183715	Western Shores Pavilion	GW	NC	5/6/2020
KY0533545	Mt Moriah Baptist Church	GW	NTNC	6/1/2020
2020 Inactivated				
KY0180308	Murray Water District #2	GWP	C	6/1/2020
KY0500032	Bonnieville Water District	SW	C	12/31/2019
GW – Groundwater	SW – Surface Water			
C – Community	NTNC – Non-Transient Non-Community			
SemiP – Semi-Public	TNC – Transient Non-Community			
	BW – Bottled Water			

B. Existing System Strategy

1. *In referencing the State’s approved existing systems strategy, which programs, tools, and/or activities were used, and how did each assist existing PWS in acquiring and maintaining TMF capacity? Discuss the target audience these activities have been directed towards.*

Kentucky’s approved existing system strategy is outlined below, followed by a discussion of how each strategy assisted existing systems in acquiring and maintaining technical, managerial, and financial capacity:

- Prioritize systems most in need of improving capacity.
- Identify the factors that encourage or impair the capacity of water systems.
- Use the authority and resources of the Safe Drinking Water Act (SDWA) to enhance technical, managerial and financial capacity.
- Establish a baseline and measure the capacity improvements of systems in the state.
- Involve stakeholders in state efforts to improve water system capacity.

Prioritize systems most in need of improving capacity

The Division of Water (“the Division”) retains primacy to regulate a total of 434 community and non-community PWS in Kentucky. The majority of PWS (78%) serve communities with populations of less than 10,000 (Table 2). Although these PWS serve a small portion of Kentucky’s overall population, historically they have the greatest need for assistance.

TABLE 2 PUBLIC WATER SYSTEMS BY POPLUATION SERVED			
System Size by Population Served	Number of Water Systems	Percentage (%) of Total Water Systems	Population Served
≤ 10,000	338	78	1,084,166
> 10,000	96	22	3,424,637

The drinking water sanitary survey is an in-depth, on-site evaluation of a PWS's source water, treatment processes, infrastructure, management, and finances. The sanitary survey is conducted once every three years at community water systems (CWS) and once every five years at all non-community (NC) water systems, pursuant to SDWA regulations. An assessment of PWS technical, managerial, and financial capacity is conducted concurrently with the sanitary survey. If a PWS answers any technical, managerial, and financial capacity question unfavorably, then the PWS is deemed to lack capacity. Data gathered during the sanitary survey and capacity assessment provide the clearest measure of a PWS's technical, managerial, and financial capacity to produce safe drinking water in the short- and long-term. This data is used in conjunction with compliance data and the Enforcement Response Policy (ERP) to track, prioritize, and provide assistance to PWS.

Due to the coronavirus pandemic, facility inspections and site visits were prohibited by the Energy and Environment Cabinet (the Cabinet) from mid-March through August due to the public health emergency declared by the Governor. The pandemic disrupted the completion of nearly 90 PWS during this timeframe. In order to fulfill its commitments, the Cabinet approved the continuation of inspections at the beginning of September. Sanitary Surveys resumed under social distancing guidelines and utilized virtual tools to conduct evaluations remotely. In order to complete the surveys by the end of the fiscal year, PWS capacity assessments were postponed to a later date. The Division is currently revisiting those PWS to complete the assessments. Therefore, fiscal year 2020 PWS capacity assessment data is incomplete as of the development date of this report.

Identify the factors that encourage or impair the capacity of water systems

Data from the survey is currently available in a Microsoft Word document or Portable Document Format ("pdf"). The Division utilizes a report extracted from the Safe Drinking Water Information System database which details PWS deficiencies and recommendations based on the eight essential elements (source water, treatment, distribution, finished water storage, pumps and controls, monitoring, reporting, and data verification, management and operations, and operator compliance) evaluated during the sanitary survey. Unfortunately, this report is nonspecific regarding the type(s) of deficiencies or recommendations identified within each element which currently requires Division staff to manually verify data within each of the eight elements for every PWS to assess capacity. The process is antiquated, time consuming, and labor intensive. The Division is exploring new applications to utilize and address the data extraction issue which will improve the Division's ability to prioritize and target assistance to PWS.

The SDWA requires PWS to monitor treated water for contaminants and report results to the Division at regular intervals during the year. The Division issues a Notice of Violation (NOV) when contaminant levels exceed specific limits, or when monitoring or reporting is not properly conducted. Historically, the greatest numbers of PWS violations are administrative in nature. However, implementation of the Stage 2 Disinfection By-Product Rule resulted in a short-term increase of Health-Based violations as well (Figure 1). Since FFY 2016, both administrative and health-based violations have steadily declined. The same trend is observed, except for a slight increase in the number of reporting violations, during FFY 2019. However, FFY 2020 data indicates that reporting violations are now decreasing as well (Figure 2).

Figure 1: Health-based and monitoring and reporting violation trends from FFY 2016 – FFY 2020.

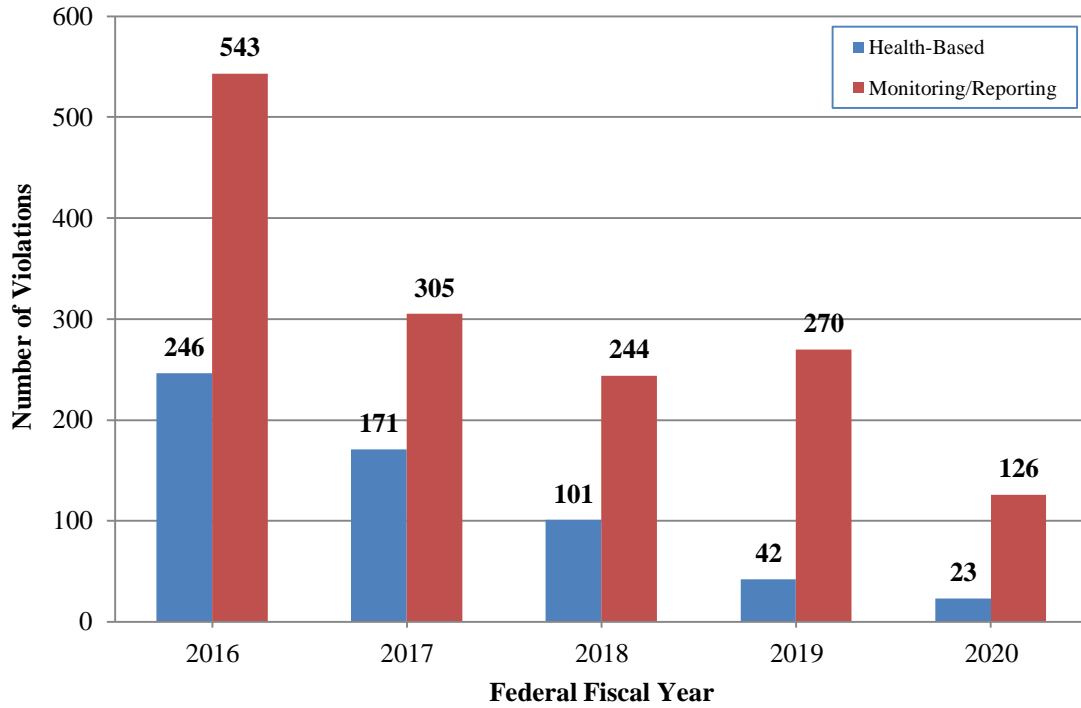
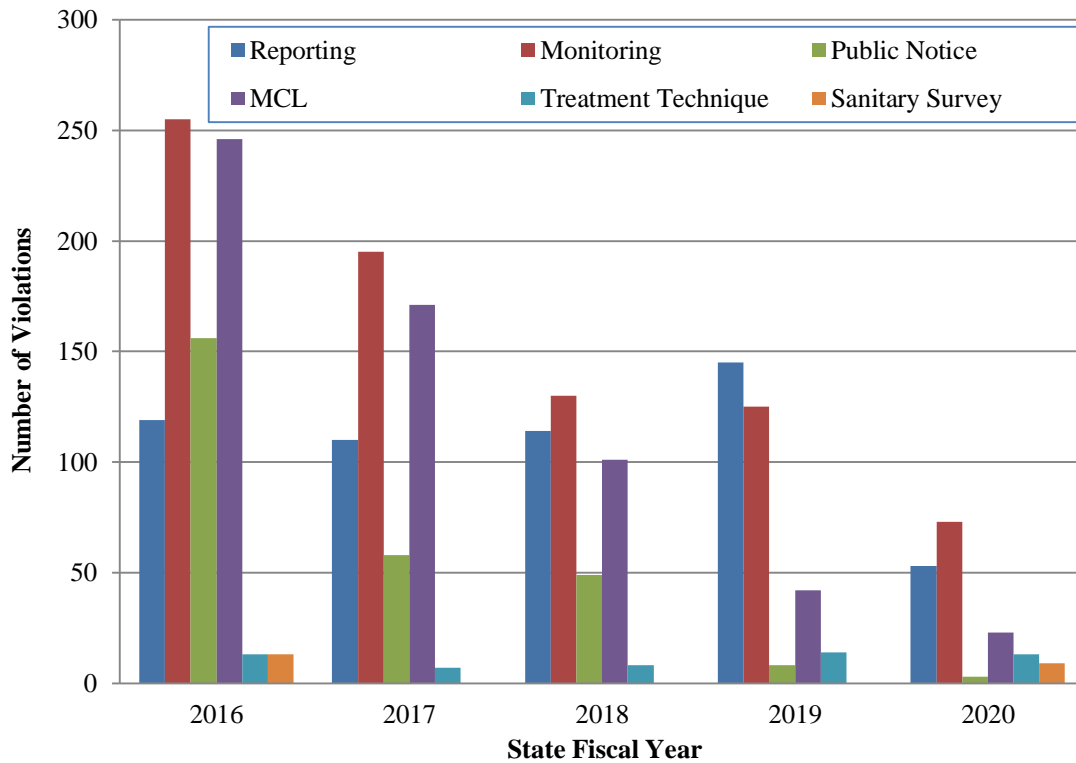


Figure 2: Individual violation trends from FFY 2016 – FFY 2020.



The Area-Wide Optimization Program (AWOP) continues to be a successful component for technical assistance. The Division continues to provide targeted technical assistance, performance-based trainings, and comprehensive performance evaluations to PWS which have aided in substantially reducing the number of health-based violations, particularly disinfection by-products. In 2019, 36 PWS serving over 1.4 million Kentuckians met microbial AWOP goals. The Division recognizes systems that actively participate in, and meet the goals of, the AWOP with certificates of achievement and awards.

During FFY 20, the Division completed 113 sanitary surveys and 75 instances of on-site assistance and training. The Division conducted two modular Distribution System Optimization trainings, and co-facilitated an USEPA Small System Workshop Group Discussion Session on disinfection by-products (DBPs) and Distribution Systems

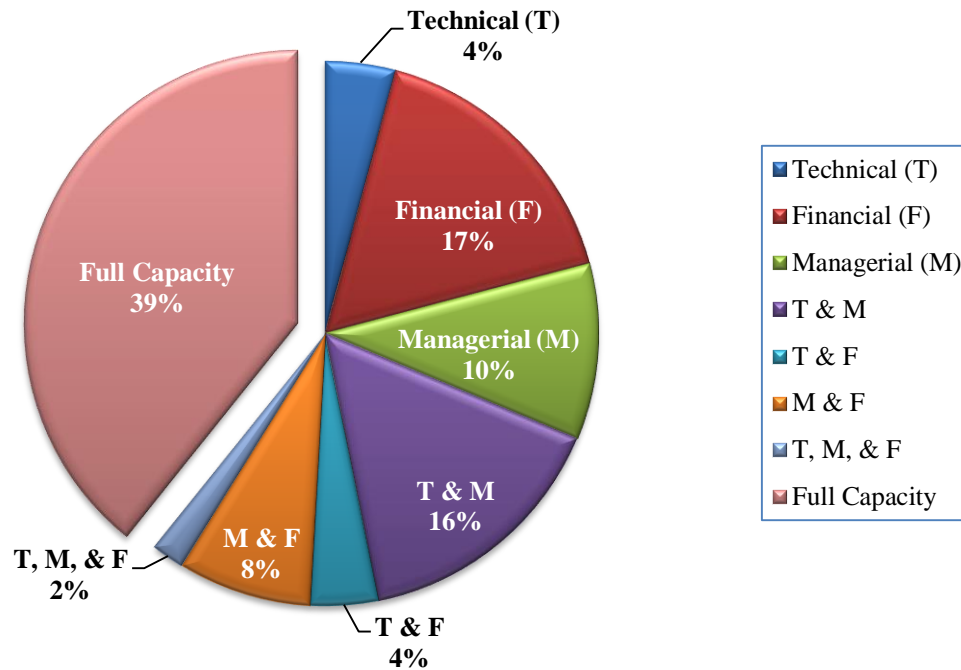
The Kentucky Division of Water and the Kentucky Infrastructure Authority jointly administer the Drinking Water State Revolving Fund (DWSRF) program via a Memorandum of Agreement. During this sanitary survey cycle, 31 communities received nearly \$77 million dollars to improve drinking water infrastructure. Projects that received funding represent investments in regionalization, rehabilitating, or constructing new water treatment facilities, replacing inadequate and aging water lines and tanks, and extending service to residents. Such projects improve the quality and availability of drinking water and strengthen local economies.

Establish a baseline and measure the capacity improvements of systems in the State

One method of measuring improvements in PWS capacity is evaluating the number of annual violations. Another method is analyzing deficiencies identified in the sanitary survey, which is examined concurrently with the capacity assessment of PWS. A dramatic reduction in the number of Kentucky PWS violations over the last two years demonstrates substantial improvement in PWS capacity. However, many managerial and financial factors which can cause long-term compliance problems at PWS, are not regulated by the SDWA or the Division. Therefore, judging a water system's technical, managerial, and financial resiliency, and sustainability to supply safe drinking water, cannot solely be determined using compliance data.

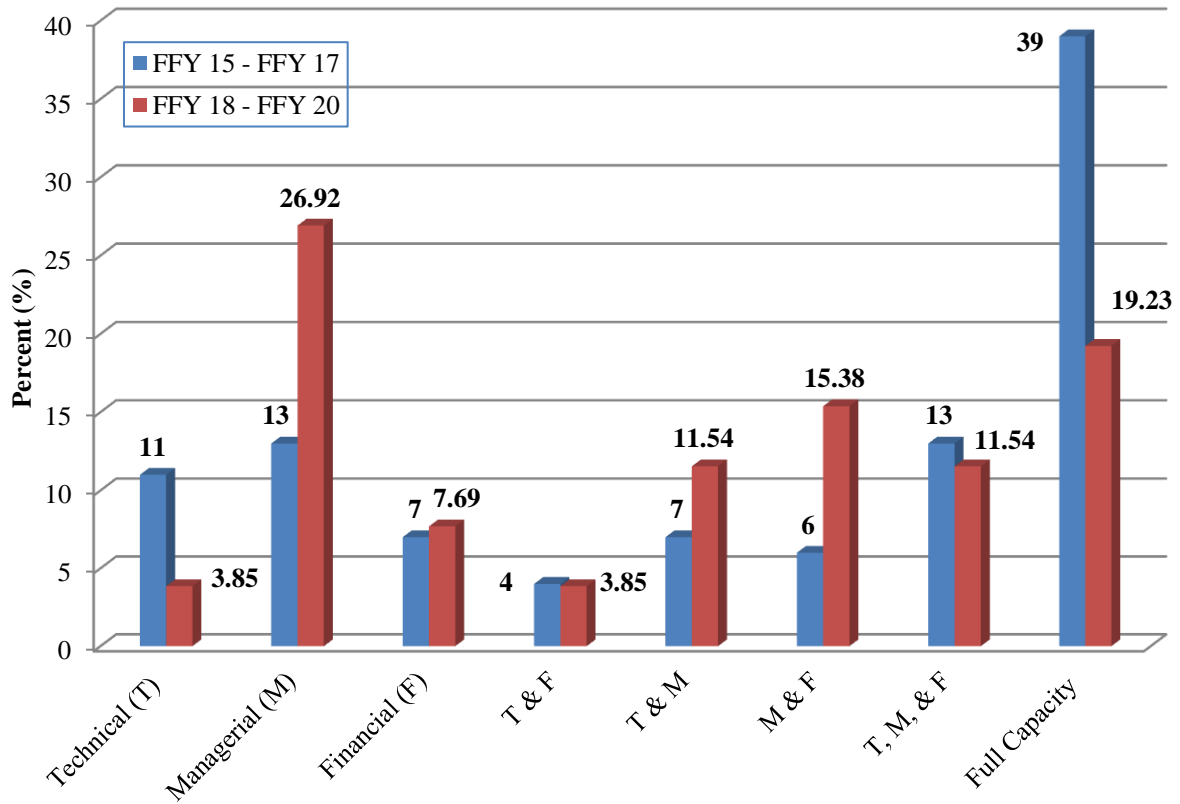
Beginning in FFY 2016, non-transient non-community and transient non-community water system sanitary surveys were changed from a three-year to a five-year cycle. These include schools, camps, resorts, and businesses which may not have the same technical, managerial, and/or financial resources as CWS, and are ineligible for loans from the DWSRF. The initial five-year cycle evaluating NC water system capacity is complete and will be used to measure future improvements in capacity (Figure 3). For easier consumption and simplification, capacity data of non-transient and transient systems is combined. According to baseline data, 39% of NC water systems currently possess the technical, managerial, and financial capability to produce safe drinking water; this data in Figure 3 is separated from those with insufficient capacity. The majority of NC water systems have insufficient technical, managerial, and financial capacity, or a combination thereof, which could result in short-term and/or long-term issues with resiliency and sustainability.

Figure 3: Baseline percentage of non-community water system’s technical (T), managerial (M), and financial (F) capacity from FFY 2016 through FFY 2020. Systems lacking T, M, or F capacity, or a combination thereof, are separated.



Community water system capacity data collected from FFY 2018 through FFY 2020 is compared to that collected from the previous three-year sanitary survey cycle beginning in FFY 2015 and ending in FFY 2017. Current data indicates that the percentage of CWS with insufficient managerial and financial capacity increased since the previous sanitary survey cycle. Also of note, the percentage of CWS with full capacity decreased since the previous cycle to just 19% (Figure 4). As previously stated, the coronavirus pandemic prohibited the Division from completing capacity assessments of all PWS in 2020. The Division is currently revisiting those systems to complete the assessment and provide technical assistance. Of the few assessments that were completed in 2020 prior to lockdown, it is not clear to what extent, if any the pandemic impacted the assessment results. Once all capacity assessment data is collected, water systems with greatest need will be prioritized to receive technical assistance according to the Capacity Development Strategy, and will potentially receive monetary assistance for infrastructure improvements through the Drinking Water State Revolving Fund loan program.

Figure 4: Comparison of CWS technical, managerial, and financial capacity data between current (FFY 18 – FFY 20) and previous (FFY 15 – FFY 17) sanitary survey cycles.



Enforcement Referral Policy/Enforcement Targeting Tool (ETT)

In FFY 2020, the Division referred two PWS to the Division of Enforcement after the PWS accrued eleven or more points as calculated by the ETT. If a system cannot return to compliance within six months of being identified by the ETT, formal enforcement action is initiated. Table 3 summarizes those systems. Kentucky drinking water and enforcement staff continue to participate in quarterly conference calls with USPEA Region 4 staff for updates and guidance on using the ETT.

**TABLE 3
ENFORCEMENT TARGETING TOOL REFFERALS**

PWSID	PUBLIC WATER SYSTEM NAME	CAUSE(S)
KY0860141	FOUNTAIN RUN WATER DISTRICT	DBP MCL and OEL Violations
KY0090343	PARIS WATER WORKS	DBP MCL, TOC, and SWTR Violations
CCR - Consumer Confidence Report		PN - Public Notice
DBP M&R - Disinfection By-Product Monitoring & Reporting		RTCR - Revised Total Coliform Rule
DBP MCL - Disinfection By-Product Maximum Contaminant Level		SWTR - Surface Water Treatment Rule
MOR - Monthly Operating Report		TCR - Total Coliform Rule
OEL - Operational Evaluation Level		TOC - Total Organic Carbon

Involve Stake Holders in State Efforts to Improve Water System Capacity

The Division continues to utilize State and Local Assistance set-aside funds from the DWSRF to contract with the Kentucky Rural Water Association, which provides technical, managerial, and financial assistance to small, rural PWS. In FFY 2015, the contract was updated with an emphasis on providing technical assistance to priority PWS that are out of compliance with the Stage 2 Disinfection By-Products Rule (DBPR). Additional assistance is provided in the areas of operations, maintenance, training, and planning. Assistance provided to PWS during the current sanitary survey cycle included:

- Reducing the number of PWS in persistence non-compliance with the Stage 2 DBPR from 24 at the start of the triennium to five
- Returning 272 PWS to compliance. This also reduced the number of PWS on the ETT list from 152 to 66.
- Assisting 28 PWS in updating their Operations and Maintenance Manuals
- Assisting 31 PWS in reviewing their rates, charges, and debt consolidation, with sixteen PWS receiving additional assistance in filing for rate increases. The revenue recovered through rate adjustments totaled over \$1.1M. With interest rates being lower in FY2020, one PWS was able to refinance \$1,590,000 in long-term debt and realized a net savings of \$389,092.
- Confidence Reports alone totaled \$242,800.
- Conducting 121 on-site technical assistance visits to PWS to reduce DBP formation during water treatment and distribution. Staff evaluated precursory organics removal, chemical treatment, water distribution, and water tank operations to reduce DBP formation.
- Conducting 13 training sessions, with 5 sessions being web-based due to COVID-19. There were a total of 93 continuing education hours available to the 816 attendees representing 270 PWS. The topics presented included Corrosion Control, Safe Drinking Water Act Compliance, DBP Mitigation, Asset Management, Emergency Response Planning and Electronic Reporting of Drinking Water Compliance.

The Drinking Water Advisory Council (DWAC) is a stakeholder panel convened to address issues that affect consumers and the regulated community. This group of government officials, public and rural water utility representatives holds quarterly public meetings. An ad hoc workgroup of the Council is currently updating the Capacity Development Strategy and the sanitary survey evaluation to include requirements from the American Water Infrastructure Act (AWIA) of 2018. The goal is to enhance the efficiency and efficacy of the program, address current challenges prohibiting PWS from achieving TMF capacity, and encourage PWS to develop asset management plans that include best management practices. The workgroup is reviewing a draft of the updated strategy and will present it to the DWAC and to the public for comment prior to implementation.

2. Based on the existing system strategy, how has the State continued to identify systems in need of capacity development assistance?

Kentucky continues to use technical, managerial, and financial criteria from the sanitary survey and the ETT as its primary means for determining and prioritizing PWS in need of assistance. The Division and its stakeholders are currently re-evaluating the Capacity Development Strategy to align it with requirements of AWIA 2018. The Division also uses rated design capacity, water availability, operator certification, pressure and/or water loss, and regulatory compliance as further indicators of capacity.

The Division provides technical data on the drinking water program through sanitary surveys and inspections, and uses this information to provide support to improve PWS technical, managerial, and

financial capacity. In addition, complaints are tracked and flagged, if necessary, for investigation and resolution.

Kentucky's Capacity Development Program personnel interact with PWS at training venues, during sanitary surveys, and through on-site outreach. These interactions often reveal issues and trends that the Capacity Development Program should target.

3. *During the reporting period, if statewide PWS capacity concerns or capacity development needs (TMF) have been identified, what was the State's approach in offering and/or providing assistance?*

The Division continues to provide on-site assistance and training to PWS identified as a priority by the ETT, AWOP, and sanitary survey. Additionally, the Division works with its stakeholders to provide training and support through the Kentucky Division of Compliance Assistance, the Kentucky Public Service Commission, Rural Community Assistance Partnership, Kentucky Rural Water Association, and Kentucky Water & Wastewater Operators Association.

4. *If the State performed a review of implementation of the existing systems strategy during the previous year, discuss the review and how findings have been or may be addressed?*

An ad-hoc workgroup is reviewing the strategy to update the method and criteria used to determine TMF capacity and to include requirements from AWIA 2018, particularly in the areas of asset management and consolidation. The updated draft strategy will be presented to the DWAC and to the public for comment prior to implementation.

5. *Did the State make any modifications to the existing system strategy?*

There were no changes to the Capacity Development Strategy in FFY 2020. The Division provides technical data on the drinking water program through sanitary surveys and inspections, and uses this information to provide support to PWS to maintain compliance with the SDWA. In addition, complaints are tracked and flagged, if necessary, for investigation and resolution.

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7. *If the State performed a review of implementation of the existing systems strategy during the previous year, discuss the review and how findings have been or may be addressed?*

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8. *Did the State make any modifications to the existing system strategy?*

There were no changes to the Capacity Development Strategy in FFY 2020.

C. Looking ahead – Miscellaneous Notes/Challenges

The Division continues to conduct actions to ensure that it maintains primary regulatory responsibility over PWS pursuant to 40 C.F.R. 142, so that compliance can be tailored to Kentucky's unique needs and challenges. The Division regularly engages drinking water stakeholders through the DWAC to facilitate discussions regarding future regulations, education, workforce development, new technology, and best practices to promote the value of and enhance water resources in the state. The DWAC also helps promote and support funding of applied research and development in water technology, sustainability, security, water quality, and infrastructure resiliency. The Division and Kentucky Infrastructure Authority, which jointly administer the DWSRF, continue to advocate funding to address aging infrastructure through the SRF loan program.

Infrastructure

Kentucky has made significant improvements in water and wastewater infrastructure over the past 20 years. Regional Water Management Councils coordinated planning and investment in water resources throughout Kentucky. Compliance with USEPA environmental regulations has steadily improved. The number of failing systems has decreased, and consolidation in the industry has reduced the number of systems and improved water quality. Between general and SRF funding, over \$1.3 billion has been invested in Kentucky water systems, which has resulted in public drinking water availability to 97% of Commonwealth citizens.

To continue providing water service and creating opportunities for economic development, Kentucky needs to properly maintain its water infrastructure. Water infrastructure can provide useful service for 20 to 100 years, but with reduced water consumption and a flat customer base, the cost of maintaining aging water infrastructure will continue to increase. A system to foster investment, maintenance, and capitol planning must be implemented to manage costs and stabilize customer rates. In order to do so, the Division is developing asset management guidance as required by AWIA 2018. The goal is to incorporate asset management as a requirement to receive SRF funding, and to work collaboratively with other funding agencies to adopt asset management strategies for borrower eligibility.

The Division will develop guidance that encourages regular rate reviews, promotes rate indexing, and improves regulatory accountability and follow-up on PWS financial audits.

Workforce Development

The availability of skilled labor is at an all-time low. Electricians, mechanics, plumbers, heavy equipment operators, and water and wastewater operators are currently in short supply as the economy expands. The median age of Kentucky's water utility workforce is 55. Many operators returned to the water industry after retirement because new candidates are not entering the industry. Therefore, the Division is utilizing SRF set-aside funds to support recruitment and training of new drinking water operators, and promoting technology in operations to support PWS personnel decision making.

On November 1, 2019, revised regulations governing drinking water and wastewater operator certification became effective and are jointly implemented by the Division of Water and Division of Compliance Assistance (DCA). While the framework formerly in place worked for many years, the challenges facing the industry made it necessary for the Division and the DCA to review and analyze

regulations to determine needed changes. The regulatory package was developed with stakeholder input, and is helping to address operator shortages while maintaining high standards for operators in Kentucky. Changes made to 401 KAR Chapters 5, 8 and, 11 include:

- Expansion of education and experience substitutions to include a wider variety of applicable education and skills
- Acceptance of state-approved apprenticeship programs towards operator certification
- Expansion of Operator-In-Training to help with alternate staffing plans
- Revisions to Class IV Wastewater Operator qualifications to maintain a solid experience base without requiring experience in excess of what is needed to successfully operate a facility
- Allowing continuing education requirements for drinking water and wastewater operators to be accrued in the same system to help operators manage licenses.
- Expanding options for reciprocity to out-of-state operators by taking into account qualifications and experience in the field, rather than focusing only on initial licensing credentials.

While these changes will aid in the recruitment and development of operators, the cabinet remains committed to working with partner organizations, facilities, and other government agencies to help address operator shortages.

Technical Assistance

In 1999, there were 698 PWS in Kentucky. Through regionalization efforts, there are now 434 PWS serving more than 95% of the Commonwealth. While merging assets and resources has enhanced the ability of many PWS to maintain compliance with the SDWA, regionalization has also created new challenges in maintaining compliance, particularly with the Stage 2 DBPR. Improper treatment, aging and/or inadequate infrastructure, and increased water age during transmission to customer taps can produce harmful contaminants in drinking water. Consecutive systems that lack infrastructure to treat water purchased from another system have particularly struggled to maintain compliance with Stage 2 DBPR. Moving forward, the Division and its stakeholders will continue efforts to reduce DBPR non-compliance through targeted technical assistance, and anticipate seeing better results in the coming years.

Capacity Development Strategy

The 2018 amendments to the SDWA prompted the Division to initiate a DWAC workgroup to determine criteria for PWS asset management plans, and develop a strategy to assist PWS implementation of asset management planning. After review by the DWAC, the Division, and the Cabinet, the criteria and strategy will be sent to the USEPA for approval by December 2021. Upon approval, the Division will incorporate asset management planning into its training and technical assistance activities in FFY 2022.

The Division is also updating its drinking water and capacity development data management systems to allow faster detection of, and response to, health-based violations, which will improve PWS compliance. Additionally, the Division is pursuing implementation of electronic data collection and submittal systems for PWS compliance.

Lead and Copper Rule Revision

The USEPA published proposed changes to the Lead and Copper rule on November 13, 2019. The Lead in Drinking Water Workgroup was reconvened shortly thereafter, and met through January 2020, to provide input for the cabinet's comments to the USEPA regarding the proposed rule. The cabinet's comments can be found on the cabinet's website at:

<https://eec.ky.gov/Pages/Agency404.aspx?oldUrl=https%3a%2f%2feec.ky.gov%2fEnvironmental-Protection%2fWater%2fDrinking%2fDWAdvisoryCouncil%2fLead+Documents%2fKY+Lead+Workgroup+Recommendations+2-10-20+Final+Draft.pdf>.

Martin County Water District

A historical review of SDWA violations at the Martin County Water District (MCWD) revealed multiple violations of federal drinking water maximum contaminant levels, and in particular, DBPs.

The Division dedicated personnel and funding for the Kentucky Rural Water Association (KRWA) to work on-site locating and repairing leaks, and providing technical assistance to MCWD's operators, to optimize treatment and distribution system performance. The prioritization of training and technical assistance provided to MCWD helped the system return to compliance with DBP.

The Division collaborated with the Kentucky Division of Abandoned Mine Lands (AML) to secure an AML Pilot grant that will provide improvements to MCWD's drinking water intake and treatment facility, and distribution system. The Kentucky Appalachian Regional Commission also invested funds to help repair leaking lines. A capital improvement project to build water pump stations and install approximately 1,000 feet of water line also received funding.

Due to ongoing technical, managerial, and financial challenges identified at MCWD over the last several years, the Cabinet Secretary established an internal workgroup of state agencies to ensure that the district receives necessary assistance and resources, to encourage open communication between Martin County and the cabinet, and to establish a collaborative environment dedicated to supporting the residents of Martin County. A technical subcommittee was formed to study issues such as water loss, future capital improvements, district investments, and to develop recommendations to ensure MCWD has the capability to produce safe drinking water.

The Division continues conducting comprehensive inspections, water sampling, providing technical assistance and optimization training, and performing its regulatory functions at MCWD. KRWA has helped with on-site assistance in Martin County by advising the water district on operations and maintenance, locating and repairing leaks, and collecting data for GIS mapping and water samples. These ongoing efforts will continue improving the district's capacity to deliver safe and reliable drinking water to Martin County residents and businesses.