

**State of Oklahoma**  
**Capacity Development Triennial Governor's Report**  
**State Fiscal Years 2018-2020**

Prepared by  
Oklahoma Department of Environmental Quality  
Water Quality Division  
Capacity Development Section

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## **Introduction to Capacity Development**

### **Reporting Requirements of Section 1420(c)(3) of the 1996 Amendments to the Safe Drinking Water Act**

In Oklahoma, the federal Safe Drinking Water Act (SDWA) and the Drinking Water State Revolving Fund (DWSRF) are administered by the Department of Environmental Quality (DEQ), with the DWSRF being co-administered by the Oklahoma Water Resources Board (OWRB). Closely tied with the management of the DWSRF, the DEQ also administers the state's capacity development program which provides technical, managerial, and financial (TMF) capability assistance to the state's public water supplies (PWSs). Section 1420(c)(3) of the 1996 Amendments to the SDWA requires that the DEQ must report to the governor every three years regarding the effectiveness of the state's capacity development program; the purpose of this report is to satisfy that requirement by providing an assessment of the capacity development program in Oklahoma and the statewide strategy for assisting water systems in need. Submittal of this report also assures that Oklahoma will not be subject to a 20 percent withholding of subsequent fiscal year federal grant funds from the DWSRF program.

### **Capacity Development Defined**

Capacity refers to the TMF capabilities that a water system requires to sustainably achieve and maintain compliance with the SDWA. With the 1996 Amendments to the SDWA, Congress recognized that to be sustainable, a public water supply must possess adequate TMF capacity. Success in mastering these factors is critical for a water system's ability to plan for, achieve, and maintain the production of safe and affordable drinking water that complies with all applicable drinking water standards. The three areas of TMF capacity are:

- *Technical Capacity*: a water system's ability to operate and maintain its infrastructure, including: source water adequacy, infrastructure adequacy, and technical knowledge and implementation.
- *Managerial Capacity*: the ability of water system personnel to effectively administer system operations, including management/ownership accountability, adequate staffing and organization, and effective external communication, partnerships, and linkages.
- *Financial Capacity*: the financial resources and fiscal management needed to support the operation of a water system, including revenue sufficiency, credit worthiness, and fiscal management and controls.

Water systems must possess adequate TMF capacity to reach and maintain sustainability, which is crucial to supporting positive health and economic outcomes for water system customers.

### **The Capacity Development Section**

DEQ's Capacity Development Section operates within the Public Water Supply Group, which is in the agency's Water Quality Division. The section is responsible for implementing the state's

capacity development strategy with the primary mission of seeing that all DWSRF applicant systems and all newly formed PWS systems have adequate TMF capacities to ensure sustainability. This is accomplished by both the direct provision of assistance via the section's staff and by coordination with third-party technical assistance providers.

The assistance provided by the Capacity Development Section is purely non-enforcement and is conducted with PWS systems on a voluntary basis. The section works to assist systems in developing the skills and harnessing the resources for a return to compliance and/or to sustainably remain there. The needs of Oklahoma's water systems range widely, including factors such as crumbling infrastructure, a lack of financial control policies, inadequate staffing, insufficient water rates and other TMF issues. When assisting a PWS system, the section conducts a comprehensive capacity development assessment that examines all of a system's potential needs and provides the system with an easily followed roadmap to sustainability. The goal of the section is to provide the tools, resources, and relationships needed for the system to reach sustainability; however, PWS systems must take action to use what is provided. It is up to the systems themselves to make the necessary changes.

Prior to SFY 2020, all capacity development work was completed by a single capacity development coordinator within the DWSRF section. However, with the increasing TMF needs of PWS systems across the state and promising results achieved with early capacity development work, a capacity development section was created and is now staffed by two coordinators and a section manager.

## **Projects and Focus Areas**

### **TMF Sustainability**

The primary duty of the Capacity Development Section is the support of TMF sustainability for newly formed PWS systems or for systems that apply for funding through the DWSRF. The SDWA requires that systems meeting either of these qualifications possess the necessary characteristics to be sustainable. The section staff and manager work with the operators, staff, and administrators of these systems to ensure that they are able to sustainably produce water that is in compliance with all health-based requirements at a reasonable cost.

However, DEQ believes that TMF sustainability is a critical concern for all water systems across Oklahoma and has expanded the scope of the Capacity Development Section to provide TMF assistance to all water systems across the state. Any Oklahoma PWS system qualifies for assistance from the section in the following areas:

- **Technical Capacity**
  - Operation and Maintenance Plans
    - System Optimization
    - Routine / Preventative Maintenance Plans

- Work Order System Development
    - Critical Inventory Development
    - Leak Log Record Keeping
    - Valve Location and Exercising Plans
    - Dead-end Line Elimination
    - Energy Audits
  - Training and Continuing Education
    - Training Plans for Operators, Office Staff, and Board Members
    - Cross-Training Plans
  - Communication
    - Communication Policy Development
    - 24-hour Emergency Response System Development
    - Customer Notification Plan Development
  - Strategic Plan Development
  - Water Rights Planning
  - Mapping
  - Emergency Response Planning
    - Risk Assessment and Vulnerability Planning
    - Emergency / Stand-by Source of Water Planning
    - Critical Customer Planning
    - Mutual Aid Planning
  - Source and Production Planning
    - Hydraulic Modeling
    - Maximum Demand / Rated Design Modeling
  - Water Loss Auditing and Control
  - Contamination Prevention
    - Monitoring and Testing Procedures
    - Wellhead and Source Water Protection Plans
    - Backflow Prevention Planning
  - Water Meter Accuracy Testing
  - PWS System Security
- **Managerial Capacity**
  - PWS Governance and Management
    - Open Meeting Act Training
    - Open Records Act Training
    - Bylaws Development and Updating
    - Board Member Training and Continuing Education
    - Rules of Order Training
  - Organization and Personnel
    - Organizational Chart Development
    - Personnel Policy / SOP Development
    - System Administrator Management Training
    - Office Support Staff Training

- **Financial Capacity**
  - Budgeting
    - Budget Preparation and Use
    - Financial / Budget Reporting
  - Financial Position
    - Financial Indicator Training
    - Enterprise Accounting Training
  - Accounts Receivable / Accounts Payable Training
    - Fund Management Procedures
    - Financial Controls
    - Separation of Financial Duties Policies
  - Rate Studies and New Rate Implementation
  - Reserve Account Policies
  - Insurance and Bonding
  - Asset Management Plans
  - Auditing

The Capacity Development Section provides direct assistance in most of the above TMF areas; however, the section maintains technical assistance contracts with the Oklahoma Rural Water Association (ORWA) and referral relationships with other third-party technical assistance providers (Communities Unlimited, the Environmental Finance Center, and the Oklahoma Municipal League) to ensure that PWS systems receive help in areas where the section has a wait list or lacks the expertise.

The Capacity Development Section also promotes TMF sustainability as part of the Oklahoma Strategic Alliance (Alliance), a coalition of organizations committed to promoting PWS sustainability in Oklahoma. Ratified by Governor Stitt on September 3, 2019, the Alliance is comprised of the Office of the Secretary of Energy and Environment, DEQ, the Oklahoma Water Resources Board (OWRB), and the ORWA. Each organization is committed to working together and combining resources to help rural and small community PWS systems better maintain and update infrastructure, some of which is 70 to 100 years old. Since July 1, 2019, Alliance members have provided help in all TMF areas, generating \$6.04 in direct economic benefit for every dollar invested in their programs.

### **Water Loss Auditing and Control**

Since 2015, DEQ has worked to standardize and promote water loss auditing across the state by the use of the M36 Water Loss Audit Method developed by the American Water Works Association (AWWA). The program has had continuous success tracking and identifying sources of loss and non-revenue water across the state using this scientifically sound, repeatable, and comparable method.

An M36 method water loss audit quantifies volumes and values of real and apparent water losses from a distribution system. Real loss is defined as water that escapes the water distribution system

through leakage, breaks, and storage overflows. This loss is water that is treated but is never delivered to customers and results in increased operational costs and stress on source water supplies. Apparent loss is revenue lost due to customer meter inaccuracies, billing system data errors, and/or unauthorized consumption. It is water that could have been sold and siphons revenue from the system and distorts data on production and consumption.

An M36 method water loss audit also determines the volumes and values of nonrevenue water that a PWS is producing. The amount of revenue water a system can deliver has a direct impact on its ability to pay for operations, make debt obligations, and provide for capital improvement and emergency response funding. In contrast, nonrevenue water is the sum of the real and apparent losses occurring at a system as well as all unbilled authorized usage, such as water used for municipal buildings, parks, swimming pools, irrigation, firefighting, and system flushing. Unbilled authorized usage is a necessity; however, these amounts can become excessive if not tracked. A water loss audit is often the first time many PWS systems become aware of the impact of unbilled authorized usage and are able to begin controlling it.

Table 1 below summarizes the percentages of water use and loss from the 202 systems across the state that have participated in the water loss auditing and control program.

**Table 1: Summary Water Balance – Total Yearly Percentages**

Volume from Own Sources: 94.3%	Water Sold As Exports: 10.4%	Authorized Consumption: 78.0%	Billed Authorized Consumption: 74.3%	Billed Metered Consumption: 74.2%	Revenue Water: 74.3%
	Water Supplied: 89.6%		Unbilled Authorized Consumption: 3.7%	Billed Unmetered Consumption: 0.1%	
Apparent Losses: 2.6%		Unbilled Metered Consumption: 2.3%		Customer Metering Inaccuracies: 2.1%	
		Real Losses: 19.4%	Unbilled Unmetered Consumption: 1.4%		Systematic Data Handling Errors: 0.2%
Water Main Leaks, Storage Overflows, Customer Service Line Leaks: 19.4%			Water Losses: 22.0%	Non-Revenue Water: 25.7%	
		Water purchased as Imports: 5.7%			

***Apparent Losses***

As defined earlier, apparent loss is water lost due to customer meter inaccuracies, billing system data errors, and/or unauthorized consumption. It is water that could have been sold and contributes to revenue loss and distorted production and consumption data. Annually, apparent losses account

for a smaller percentage of total water loss than real losses (2.6% as compared to 19.4%; see Table 1). However, apparent losses still represent a significant loss of revenue to most systems participating in the audit, costing on average \$29,665.00 per audited system and over \$5.8 million for the group. Apparent loss figures are summarized in Table 2, below:

**Table 2: Apparent Losses**

	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b>Total</b>
<b>Annual Apparent Loss:</b>	3,000 Gal/Yr	94,860,000 Gal/Yr	4,755,000 Gal/Yr	960,551,000 Gal/Yr
<b>Annual Cost of Apparent Loss:</b>	\$187.00	\$591,708.00	\$29,665.00	\$5,844,081.00
<b>Unauthorized Consumption</b>	4,000 Gal/Yr	10,230,000 Gal/Yr	510,020 Gal/Yr	103,052,000 Gal/Yr
<b>Customer Metering Inaccuracies</b>	0 Gal/Yr	75,750,000 Gal/Yr	3,859,500 Gal/Yr	779,620,000 Gal/Yr
<b>Systematic Data Handling Errors</b>	4,000 Gal/Yr	12,592,000 Gal/Yr	387,800 Gal/Yr	78,344,000 Gal/Yr

### ***Real Losses***

Real loss is defined as water that escapes the water distribution system through leakage, breaks, and storage overflows. This loss is water that is treated but is never delivered to customers and results in increased operational costs and stress on source water supplies. Overall, real water losses account for 19.4% of the total water supplied (Table 1) and comprise the largest category of water loss observed from the audited systems. Real water loss is composed of three types of loss: water main leaks, storage area overflows, and leaks on customer service lines (portions that are the responsibility of the system). The AWWA software is not detailed enough to break down real water loss into these three categories and simply reports the amount as a total of all three.

The AWWA software did, however, provide a number of performance indicators that detailed the volume, cost, and relative magnitude of real water loss. These are summarized in Table 3, below:

**Table 3: Real Losses**

	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b>Total</b>
<b>Current Annual Real Losses</b>	140,000 Gal/Yr	389,890,000 Gal/Yr	40,587,000 Gal/Yr	8,117,378,000 Gal/Yr
<b>Annual Cost of Real Loss (Valued at Variable Production Cost)</b>	\$24.00	\$1,087,204.00	\$55,061.00	\$10,021,043.00
<b>Annual Cost of Real Loss (Valued at Customer Retail Cost)</b>	\$19.00	\$1,017,882.00	\$201,054.00	\$11,057,995.00

### ***Leak Detection, Meter Analysis, and Loss Correction***

Conducting water loss auditing with the AWWA M36 method has improved understanding of real and apparent losses at participating systems; however, this is only the first step towards the ultimate goals of reducing water loss and retaining system revenue. The next step, intervention, takes the results gained from the water loss audit and uses it to guide efforts to find the specific sources of water loss and to implement solutions. This section summarizes the efforts of the technical assistance program conducted by the DEQ and the ORWA which focused on conducting leak detection and meter analysis at PWSs where an AWWA M36 water loss audit has indicated that significant problems with real and/or apparent loss may exist.

PWS systems that participated in the water loss auditing pilot project and met the criteria of either nonrevenue water (as % of supply) greater than 20% or having apparent loss of greater than 10 gallons per connection per day (or both) qualified for leak detection and/or meter analysis technical assistance from ORWA. Participation in the technical assistance project was driven by the level of interest of the PWS in receiving the help (meaning that the system would benefit from the technical assistance in proportion to the level of effort and interest that the system contributed to the program).

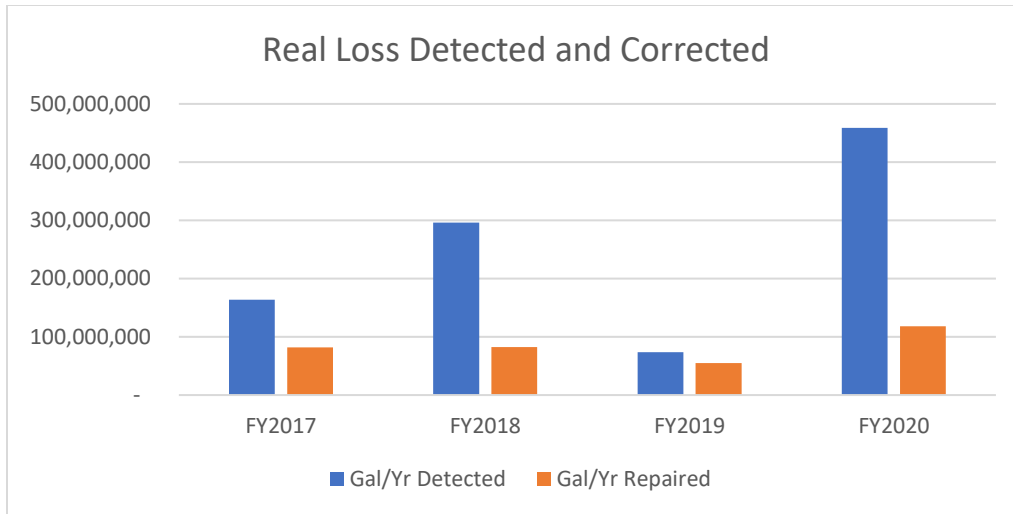
For systems that chose to participate, ORWA met with system personnel, reviewed the results of the water loss audit, and then coordinated an in-depth schedule of leak detection and meter analysis help. The typical technical assistance event took place over 2-3 weeks' time and involved locating leaks, analyzing meters and training PWS staff how to conduct their own leak detection and meter analysis. Following the completion of this technical assistance effort, participating systems receive a detailed report indicating the location, volume, and value of all identified leaks. Systems are encouraged to act on the information provided and make repairs where possible.

Table 4 and Figure 1 summarize the results of the program's first four years, below:

**Table 4: Leak Detection / Meter Analysis Results**

	<b>FY2017</b>	<b>FY2018</b>	<b>FY2019</b>	<b>FY2020</b>	<b>Total</b>
<b>Systems Receiving Leak Detection Help</b>	7	12	5	8	32
<b>Total # Leaks Detected</b>	36	52	28	57	173
<b>Gal/Yr Leaks Detected</b>	163,510,177	296,427,082	73,592,064	458,980,854	992,510,176
<b>Value/Yr of Detected Leaks</b>	\$460,188	\$574,156	\$235,509	\$41,806,855	\$43,076,709
<b>Total # Leaks Repaired</b>	18	12	25	6	61
<b>Gal/Yr Leaks Repaired</b>	81,755,088	82,490,000	54,662,400	118,260,000	337,167,488
<b>Value/Yr Leaks Repaired</b>	\$230,094	\$176,317	\$163,575	\$319,616	\$889,602





**Figure 1: Gallons per year of Leaks Detected and Repaired**

In total, 32 systems have received leak detection help from the ORWA, where, together, they have identified 173 leaks estimated at 992,510,176 gallons/year. Of the 173 leaks identified by ORWA, 61 of them have been repaired by the systems. These repairs have recovered an estimated 337,167,488 gallons of water per year valued at an estimated \$889,601.98 per year.

The amount of saved revenue has shown real, immediate, and positive impact, even saving at least one system from the brink of bankruptcy. Additional benefits seen by systems that have participated in the program are increased financial capacity, continued loss reduction, and better operational knowledge and decision making.

### **Capacity Development Baseline Assessment**

In 2017, DEQ began work on a project to assess the TMF capacity of small municipal PWSs and rural water districts in Oklahoma. Named the Capacity Development Baseline Assessment, the project was designed to develop a clear concept of state-wide TMF needs, to determine which systems are most in need of help, and to delineate the unique set of needs faced by each system. The project functions by conducting capacity development assessments at all municipal PWSs and rural water districts in Oklahoma serving 10,000 or fewer people. By using the comprehensive capacity development assessment tools developed by the DEQ and used originally for assessing DWSRF borrowers and newly created systems, a clearer picture of the TMF sustainability needs across the state was gained.

The baseline capacity development assessment project was implemented as a cooperative venture between the WQD and the Environmental Complaints and Local Services (ECLS) Division at DEQ. To complete the large number of assessments required in this project, a cadre of local ECLS inspectors were called up to conduct the assessments with PWS system personnel. Given that ECLS inspectors are the DEQ personnel that PWS systems see most frequently, relationships and

trust were already established and a framework for efficient completion of the project already existed. This project capitalized on this framework to conduct the assessments.

The results of this project allowed DEQ staff to identify trends and correlations within the data including the state-wide average assessment score and the greatest issues affecting a significant proportion of Oklahoma water systems. 571 Capacity Development Assessments have been completed as of August 31, 2020. Additional details about the participating PWSs are in following tables and figures:

**Table 5: Summary Characteristics of Audited Community Water Systems**

<b>Total Number of CDAs Completed (as of 8/31/2020):</b>	<b>571</b>
<b>Average Score:</b>	<b>77.29%</b>

Preliminary results of the 571 completed indicate that, on average, assessed water systems have slightly over 77% of the necessary TMF capacity issues to achieve sustainability. This means that, on average, assessed systems are missing almost one quarter of the items, procedures, policies, and resources needed to become sustainable. The range of assessed values are shown in Figure 2:

**Figure 2: Score Range of Assessed Systems**

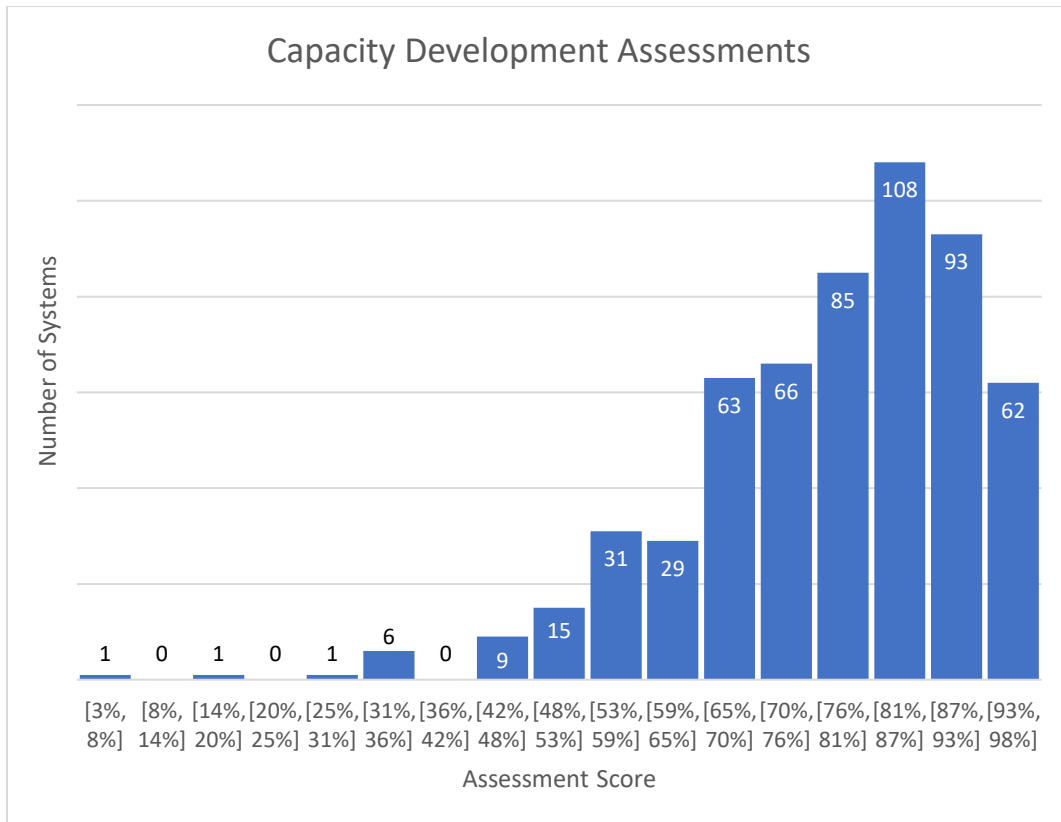


Table 6 identifies the top ten issues among systems, below.

**Table 6: Ten Most Common TMF Issues**

Percentage of systems without	TMF Capacity Issue
79.9%	Without SoonerWarn (Mutual Aid).
69.2%	Do not conduct energy audits on a regular basis.
68.5%	No written plan to regularly test backflow preventers.
62.5%	Have no written plan to eliminate dead ends in distribution system when feasible.
57.1%	System has no water rights management plan, or is unaware of the water rights they do possess.
55.7%	System has no written plan to respond to and address deficiencies noted on sanitary surveys or other inspections.
55.3%	System has not conducted a risk assessment (EPA VSAT or other method) and an emergency response plan (ERP) and has not certified with EPA that both steps have been completed. ERP must be reviewed and practiced annually.
53.9%	Does not track water loss yearly with AWWA M36 Method.
52.5%	Operations & Maintenance plan is not regularly reviewed by board.
48.5%	Has no Operations and Maintenance plan available and/or regularly updated, detailing all aspects of the water system.

An overview of the baseline capacity development assessments over a three-year period yielded the following two conclusions:

**1. Of the TMF issues surveyed, all of the top ten issues are technical issues.**

All of the top ten issues were found to be in the technical section of TMF capacity. Specifically, two out of the ten were issues related to Operation & Maintenance (O&M). The two O&M aspects that systems tend to lack most include: lack of a plan that is regularly updated, and plans that are not reviewed on a regular basis by the board. A complete and up-to-date O&M plan is critical to PWS system sustainability – it should cover all aspects of system operations and be both thorough and straight-forward enough so that an operator who is not familiar with a PWS system could operate it and produce safe water in an emergency. O&M plans are also excellent tools to train new staff and to document and preserve institutional knowledge concerning system operations. PWS governing boards are encouraged to review O&M plans at least annually to become familiar with system operational challenges and to develop a knowledge base for making accurate, strategic, and financial decisions.

**2. Capacity development assessment score relates to system population.**

Assessment score and water system population showed a slight positive correlation suggesting that higher scores correspond to higher populations. Systems with higher populations have access to more funding and other resources allowing for higher levels of sustainability. Systems serving smaller populations may have lower assessment scores due to issues such as having a volunteer staff, a smaller revenue base, or less ability to access needed professional services. This finding reinforces that TMF sustainability assistance should be primarily directed towards PWS systems serving smaller populations in rural areas.

## New Initiatives

### Asset Management

Asset management is the practice of operating a PWS so that the cost of owning and operating infrastructure capital assets is minimized while delivering the service level that satisfies customers. Termed “applied common sense” by the water industry, it is a means of operating a system that maximizes efficiencies and maintains sustainability, allowing a system to provide safe water at an affordable cost - indefinitely. An asset management plan is built around five core components:



Figure 3: The Five Core Components of Asset Management

- Building an asset inventory,
- Determining a target level of service,
- Determining criticality of assets,
- Calculating life cycle costing, and
- Developing a long-term funding plan.

Building an asset management plan that follows these core components guides systems toward obtaining the longest and most efficient use of infrastructure possible while ensuring customers receive the quality of service they expect from the system.

America’s Water Infrastructure Act of 2018 (AWIA) requires that states amend their capacity development strategies to include a description of how the state will encourage the development of asset management plans at PWS systems. The Capacity Development Section has completed a revision of the state’s strategy, which now includes the promotion of asset management best practices and details the training and technical assistance that the agency will provide. The strategy revisions focus on providing training seminars, one-on-one assistance, and providing for third-party asset management plan development via the ORWA technical assistance contract.

Also, because no low-cost/free option existed, the Capacity Development Section has developed an asset management plan tool that is available to any Oklahoma PWS system, free of charge. The Microsoft Excel-based tool assists systems in cataloging their assets, determining the likelihood and consequence of failure, and exploring timeframes and funding options for asset replacement.

DEQ is on track to be the first state agency in EPA Region 6 to complete the required strategy revision.

### Lead Testing in School and Child Care Program Drinking Water Grant Program

Starting in early CY2020, the Capacity Development Section began implementation of a new program aimed at reducing or eliminating lead from the drinking water in public schools and public

or private childcare centers. Using funding appropriated by the Water Infrastructure Improvements for the Nation (WIIN) Act Section 2107, the Lead Testing in School and Child Care Program Drinking Water Grant Program (or LWSC for short) offers free and voluntary testing of drinking water outlets for lead to any Oklahoma public school or public/private child care center that requests to participate, along with direction on how to address high lead levels based on EPA's "3Ts" guidance.

In the past, lead was a common component of faucets and water supply plumbing. If the water transported and delivered by such plumbing is corrosive, lead can leach out from the lines and fixtures and enter the water exposing anyone using the water to lead. Lead is a highly toxic metal that is harmful to all humans, and no level of lead in the body is considered safe. Children are at particular risk of adverse health effects from lead, including nervous system damage, learning impairment, bone development problems, hearing damage, and anemia. The LWSC program aims to protect the health of children by reducing or eliminating children's exposure to lead in the water they drink at school or childcare centers.

The program is guided by a coalition of agencies and organizations (the Secretary of Energy and Environment's Office (OSEE), DEQ, the Departments of Education (OSDE), Health (OSDH), Human Services (ODHS), and the Oklahoma Parent Teachers Association (OPTA)) and seeks to prioritize facilities that serve younger children (ages 6 and under), facilities serving or located in disadvantaged communities, and facilities that are older and are more likely to contain lead plumbing.

Along with no-cost testing, program participants implement EPA's 3Ts guidance to:

- **Communicate**, throughout the implementation of the program, the results and important lead information to the public, parents, teachers, and larger community,
- **Train** on the risks of lead in drinking water and of the importance of testing for lead, as well as developing key partnerships to support the program,
- **Test** using appropriate testing protocols and a certified laboratory, and
- **Take Action**, including the development of a plan for helping schools and childcare facilities in their response to test results and in addressing potential elevated lead where necessary.

Expected outcomes for this project are:

1. The reduction of children's exposure to lead in drinking water.
2. Training schools or childcare programs to begin implementing a testing program and mitigating lead exposure by utilizing the 3Ts toolkit in determining the best action to take for remediation.
3. Improvement of staff and community knowledge on lead in drinking water and other environmental harms.
4. Water quality improvement and lead exposure reduction in drinking water.
5. Establishment of routine practices such as those outlined in the 3Ts guidance.

6. Fostering sustainable partnerships at the state and local level to allow for a more efficient use of resources and the exchange of information among experts in various areas of school, childcare, utility, and health sectors.
7. Expanding the level of trust between the community, parents, and teachers.

The program has developed a webpage that provides flyers, fact sheet, and guidance videos on the importance of eliminating lead from school and childcare center drinking water, along with information on how to participate in the program (located at <https://www.deq.ok.gov/state-environmental-laboratory-services/environmental-public-health-information/lwsc/>). The coalition is currently completing testing at the first participating school (Central Oak Elementary) and is planning on conducting additional outreach to gain more participation.

### **Disadvantaged Communities and PWS Sustainability**

Adequate TMF capacity is a critical component of PWS sustainability and is required for a system to consistently provide safe drinking water to the public. Acquiring and maintaining this TMF capacity can be challenging for any water system, but systems located in small and disadvantaged communities can find it particularly difficult. A failure to maintain TMF capacity can lead to unsustainable, inefficient operation and frequent or continuous violations of health-based, primary drinking water standards.

Over the past three years, the DEQ has been surveying the TMF needs of rural and small municipal PWS systems via the Capacity Development Baseline Assessment Project. Each system was assessed on 109 different aspects of operational sustainability. Preliminary results of the survey found that, on average, the assessed systems possessed 76.8% of needed TMF capacity, and that both decreasing TMF score and population correlated with an increasing likelihood and frequency of primary drinking water standards violations.

In state fiscal year 2020, DEQ and ORWA, as members of the Oklahoma Strategic Alliance, joined forces and developed a program aimed at improving and enhancing PWS sustainability. Named the Long-Range System Sustainability (LRSS) Program, the program leads PWS systems through a series of programs and trainings that, once complete, provide a significant boost to TMF capacity and system sustainability. The LRSS program focuses on many of the issues examined by the Baseline Assessment, and systems that complete the program demonstrate an improved TMF score, as well as improved efficiency, operations, and fiscal condition.

With the Assistance for Small and Disadvantaged Communities Drinking Water Grant Program, DEQ will begin using the guidance from the Baseline Assessment and the tools developed in the LRSS program to bring about significant positive changes at Oklahoma's underserved, small, and disadvantaged systems. This approach has several advantages:

- **Targeted TMF Assistance:** Via the recently completed Baseline Assessment, the PWS systems most in need of TMF help are known. Furthermore, the assessment specifies precisely what type of assistance is needed. Once work via this grant begins, DEQ will be

able to target technical assistance on missing or malfunctioning PWS processes for maximum positive effect.

- **Rapid Deployment:** The LRSS program is completely developed and functional, having been in service for a year. By using the structure and services of the LRSS program, DEQ will be able to immediately begin work at targeted PWS systems, generating positive results quickly.
- **Proven Results:** The LRSS program is a significant part of the technical assistance provided to small Oklahoma PWS systems by the Oklahoma Strategic Alliance. In its first year, the work of alliance partners has saved over 337 million gallons of water via water loss reduction, improved small Oklahoma PWS financial operating ratios by 0.33, added over \$2 Million in revenue to PWS budgets (via rate adjustments and efficiency improvements), and helped systems implement numerous policy and procedure improvements. Similar results can be achieved for the PWS systems targeted by this program.

By using the Baseline Assessment as a roadmap and the LRSS program as the tool, DEQ will effect rapid and significant positive change at the PWS systems that are the focus of this program. We intend to tailor the provided TMF assistance to focus on resolution of health-based drinking water standards violations that can be corrected via improved operations and system optimization, as well as on improving all aspects of the system's TMF capacity. We intend to measure and report on our success in terms of system compliance, capacity development assessment scores, and improvements in PWS system financial conditions (as indicated by fiscal indicators and metrics).

The Assistance for Small and Disadvantaged Communities Drinking Water Grant Program will provide TMF assistance to Oklahoma PWS systems that are both underserved (facing health-based drinking water violations), small (serving 10,000 or fewer people) and economically disadvantaged with a focus on actions that lead to resolution of violations of health-based primary drinking water standards and that significantly improve PWS system efficiency, operation, and fiscal health. To implement this program, some or all the following technical assistance activities will be conducted with participating systems:

- Asset Management Planning.
- Business and Financial Policy Planning and Development.
- Capital Improvement Planning.
- Distribution System Mapping and Line Inventory.
- Employee Succession Planning and Guidance.
- Governing Authority / Board Training and Guidance.
- Mutual Aid Planning and Development.
- Office and Support Personnel Training.
- Operations and Maintenance Plan Development and Implementation.
- Operator Skillset Development and Continuing Education.
- Optimization of Water Treatment and Disinfection Systems.

- Rate Analysis and Implementation.
- Risk / Vulnerability Assessment and Emergency Response Planning.
- Safety Training and Safety Plan Development / Implementation.
- Source Water Protection Plan Development and Implementation.
- Water Loss Auditing, Leak Detection, and Meter Analysis.

Each participating PWS will receive a package of technical assistance activities focused on their individual needs and tailored to maximize effectiveness. Also, there is no maximum amount of time or effort that may be expended on an individual system; as much assistance and guidance as needed will be provided to the participating system.

Participating systems must meet the qualifications of being both underserved (by having been in violation of a health-based primary drinking water standard at some point over the past five years), and serving a disadvantaged community or communities (communities where the median household income is at 85% or less than the national median household income according to the United States Census Bureau / American Community Survey). Participation is voluntary and is driven by the level of interest of the participating system.

Expected outcomes for this program are:

1. A trend showing an overall reduction in the number of PWS systems out of compliance with health-based standards in small and disadvantaged communities.
2. Increased use of asset management planning to enhance sustainability and long-term viability of PWS systems in small and disadvantaged communities.
3. A trend showing improvement in financial indicators of PWS systems in small and disadvantaged communities.
4. A trend showing continued improvement in TMF assessment scores in small and disadvantaged communities, and improvement in the overall state TMF assessment score.
5. Improved performance of drinking water plants in small and disadvantaged communities.
6. Improved understanding of current and emerging threats to water quality, safe drinking water, and public health.
7. Reduction in real and apparent water loss at PWS systems serving small and disadvantaged communities.
8. Reduced number of accidents, injuries, and safety-related incidents at PWS systems.

Implementation of this program is expected to begin in late September 2020.