ENVIRONMENTAL PROTECTION

WATER RESOURCE MANAGEMENT

DIVISION OF WATER SUPPLY AND GEOSCIENCE

Safe Drinking Water Act Rules

Water Supply Allocation Permits

Proposed Repeal and New Rule: N.J.A.C. 7:19-6.4

Proposed Amendments: N.J.A.C. 7:10-1.1, 1.2, 1.3, 2.7, 3.6, 5.2, 11.10, and 11.11; and 7:19-6.2

Proposed New Rules: N.J.A.C. 7:10-6

Proposed Repeals: N.J.A.C. 7:19-6.6 and 6.7

Authorized By: Shawn M. LaTourette, Commissioner, Department of Environmental Protection.

Authority: N.J.S.A. 58:1A-1 et seq., 58:12A-1 et seq., and 58:31-1 et seq.

Calendar Reference: See Summary below for explanation of exception to calendar requirement.

DEP Docket Number: 10-24-07.

Proposal Number: PRN 2024-095.

A public hearing concerning this notice of proposal will be held on Thursday, September 12, 2024, at 10:00 A.M. The hearing will be conducted virtually through the Department of Environmental Protection's (Department) video conferencing software, Microsoft Teams. A link to the virtual public hearing will be provided on the Department's website at https://dep.nj.gov/rules/notice-of-rule-proposals/.

If you are interested in providing oral testimony or submitting written comments at the virtual public hearing, please email the Department at wqaa@dep.nj.gov no later than 5:00 P.M. on Tuesday, September 10, 2024, with your contact information (name, organization, telephone number, and email address). You must provide a valid email address so the Department can send you an email confirming receipt of your interest to testify orally at the hearing and provide you with a separate option for a telephone call-in line if you do not have access to a computer that can connect to Microsoft Teams. Please note that the Department will take oral testimony at the hearing in alphabetical order of the testifying person's last name. Further, this hearing will be recorded. It is requested (but not required) that anyone providing oral testimony at the public hearing provide a copy of any prepared remarks to the Department by email.

Further information on a public hearing will be posted on the Department's website at www.nj.gov/dep/rules/notices.html at least 15 days prior to the date of the hearing. Notice will also be sent to those who have subscribed to the Department's rulemaking listserv. To subscribe, go to www.nj.gov/dep/rules/subscribe.html.

Written comments may also be submitted at the public hearing. It is requested (but not required) that anyone who testifies at the public hearing provide a copy of their comments to the stenographer at the hearing.

Submit comments by October 18, 2024, electronically at http://www.nj.gov/dep/rules/comments. The Department encourages electronic submittal of comments. In the alternative, comments may be submitted on paper to:

Stephanie J. Press, Esq.

Attn.: DEP Docket No. 10-24-07

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This rule proposal may be viewed or downloaded from the Department's website at www.nj.gov/dep/rules.

The agency proposal follows:

Summary

As the Department has provided a 60-day comment period on this notice of proposal, this notice is excepted from the rulemaking calendar requirement pursuant to N.J.A.C. 1:30-3.3(a)5.

The Department is proposing to amend the New Jersey Safe Drinking Water Act (SDWA) Rules at N.J.A.C. 7:10 and the Water Supply Allocation Permit rules at N.J.A.C. 7:19 to implement requirements regarding the operation and management of a public community water system in accordance with the Water Quality Accountability Act (WQAA), N.J.S.A. 58:31-1 et seq. These proposed requirements would include those related to technical, managerial, and financial capacity, civil administrative penalties for violations of the WQAA, valve and fire hydrant inspections, water loss audits, asset management programs, storage requirements, and administrative changes. Additionally, the Department is proposing new

definitions at N.J.A.C. 7:10-1.3 and 7:19-6.2 that are relevant to asset management programs and water loss audits.

The proposed new rules at N.J.A.C. 7:10-6 and 7:19-6.4 would apply to public community water systems with more than 500 service connections and, where applicable, holders of water allocation permits. The proposed amendments at N.J.A.C. 7:10-2.7 would apply to any public community or public non-transient noncommunity water system.

Authority and Scope (N.J.A.C. 7:10-1)

The Department proposes, at N.J.A.C. 7:10-1.1 and 1.2, to add the statutory authority of the WQAA to the SDWA Rules. The 2021 amendments to the WQAA clarified that the Department has the authority to adopt rules and establish penalties to duly enforce its provisions. Further, any person who violates the provisions of the WQAA, or any rule or regulation adopted pursuant thereto, shall be subject to the penalties and other remedies pursuant to the SDWA at N.J.S.A. 58:12A-1 et seq. Accordingly, the requirements of the WQAA are proposed to be codified in the SDWA Rules at N.J.A.C. 7:10-1.

Technical, Managerial, and Financial Competence of Water Systems (N.J.A.C. 7:10-2.7)

The Department proposes, at N.J.A.C. 7:10-2.7(a), to add financial capacity to the types of demonstrations it may request from a public water system, which currently include managerial and technical capacities. A major contributing factor as to why public water systems are failing to meet required standards is inadequate financial capacity. Pursuant to existing N.J.A.C. 7:10-13.4 and 13.6, the Department may request managerial and financial capacity information from public water systems. The proposed amendments would provide clarity that the Department may request this information from systems that they are already required to maintain pursuant to the existing rules. Additionally, proposed new N.J.A.C. 7:10-2.7(b), (c), and (d) would enable the

Department to require a public water system to demonstrate technical, managerial, and financial capacity in certain circumstances, including a change in status of the system, or a reclassification of a system based on a change in population but without an expansion of the system's existing infrastructure. A public water system would be required to provide its technical, managerial, and financial capacity demonstration within 180 days of a request from the Department.

Civil Administrative Penalties (N.J.A.C. 7:10-3.6)

The Department proposes to amend N.J.A.C. 7:10-3.6, to delineate the severity of specific violations of this chapter. Pursuant to the existing requirements at N.J.A.C. 7:10-3.6(d)1, "[m]ajor seriousness shall apply to any violation that has caused or has the potential to cause serious harm to human health or which seriously deviates from the requirements of the State Act …" Based on this regulation, the Department proposes new N.J.A.C. 7:10-3.6(d)1vii, to state that the failure of a water system to develop an asset management plan would be a major violation because this would represent a fundamental failure to comply with the requirements of the WQAA, and developing a plan to return to compliance would require a considerable amount of effort.

Pursuant to N.J.A.C. 7:10-3.6(d)2, a violation of moderate seriousness is "any violation which has caused or has the potential to cause substantial harm to human health or which substantially deviates from the requirements of the State Act …" The Department proposes new N.J.A.C. 7:10-3.6(d)2v, to state that the failure of a water system to implement its asset management plan or program is a moderate violation as the public community water system has developed an asset management plan but is not conducting actions and making decisions in accordance with the plan. Additionally, the return to compliance is relatively more

straightforward, and easier to implement, than if the public water system had not developed a plan.

The Department proposes new N.J.A.C. 7:10-3.6(d)3iv, v, and vi, that a minor violation would occur when a public water system failed to submit required information to the Department, specific to asset management plans and certifications, as outlined at N.J.A.C. 7:10-6.4, and other items pertinent to the SDWA Rules at N.J.A.C. 7:10-1 more broadly. This categorization is in line with existing requirements, as a failure to report information to the Department.

Discretionary Changes to National Regulations (N.J.A.C. 7:10-5.2)

This rulemaking amends N.J.A.C. 7:10-5.2(b)1, which establishes the requirements for Consumer Confidence Reports pursuant to the Federal SDWA. The proposed amendment would require a public community water system with more than 500 service connections to post the level of service goals identified in the system's asset management plan (as identified at N.J.A.C. 7:10-6.3(b)3) to its internet website, along with the most recently signed copy of the annual certification form required pursuant to N.J.A.C. 7:10-6.5(c). Access to level of service goals would enable the public to better understand what service quality can be expected from public community water systems. For example, a water system in a given service area may establish a level of service goal to respond to 95 percent of customer water quality complaints each year within one day. However, a neighboring water system may have different staffing capacity, and may instead be able to respond to 95 percent of customer water quality complaints within eight hours. By publishing this information publicly, water systems would be able to better set customer expectations for what kind of service the customers' water rates provide, thereby improving customer relations.

Operations and Management (N.J.A.C. 7:10-6)

The Department proposes to establish requirements at N.J.A.C. 7:10-6 for the operation and management of public community water systems. The proposed requirements would include submittal requirements for water loss audits for those systems with more than 500 service connections. The proposed subchapter would also relocate rehabilitation requirements from N.J.A.C. 7:19-6.6 to 7:10-6.5.

WQAA Valve and Hydrant Inspections (N.J.A.C. 7:10-6.2)

The WQAA requires that applicable water systems inspect and maintain valves and fire hydrants in their distribution systems within specific time frames, which are included at existing N.J.A.C. 7:10-6.2. For many public community water systems, valves and fire hydrants are the primary mechanism through which the distribution system is operated and maintained. For example, if a system needs to conduct repair work on a section of water main, properly operating valves are essential to the completion of these repairs. If the valves in the vicinity of a section of a damaged water main are not operational, then a larger section of customers could lose water supply during the repair. Inoperable valves can increase service disruptions and increase the potential for contamination of the damaged main as pressure is lost in a greater section of the water main.

Fire hydrants are also necessary to ensure the safe operation of a water system and public health as they allow reliable access to water for both fire protection, and water quality protection. Inoperable fire hydrants increase risks to public safety. In the event of an inoperable fire hydrant during a fire, emergency responders will need to utilize fire hydrants further away from the incident, increasing the potential for greater damage to property and loss of life. As to water quality protection, regular flushing of hydrants throughout the distribution system allows the removal of sediment and organic buildup in water mains. To ensure the continued operation of

these components of a distribution system, valves and hydrants must be tested and flushed regularly.

The WQAA requires public community water systems to develop a flushing program for each fire hydrant and dead-end main in distribution systems. Historically, many systems have conducted flushing on demand, typically in response to customer complaints of discolored or poor tasting water. Such flushing actions are typically limited in their effectiveness, as they are a reactive approach. Water systems that wait for customer complaints for their flushing operations risk providing poorer quality water, by allowing longer water age through stagnation, or failing to mitigate natural tuberculation in pipes. The WQAA takes a more proactive approach by requiring more regular, routine flushing, with the goal of improving water quality on a more consistent basis. As there are several types of flushing programs, the Department would, pursuant to the WQAA, enable water systems to develop programs that are best suited to the needs of their distribution systems. The most effective flushing programs will result in improved flows and pressures, control of color and turbidity issues, reduced water age, reduced disinfection by-products, and improved overall water quality (Rader, 2011). The Department recommends that the most robust flushing programs would incorporate unidirectional, dead-end, and spot flushing, all of which used in a planned approach, can result in the above benefits.

Proposed N.J.A.C. 7:10-6.2 codifies the WQAA requirements into regulation in a manner that is consistent with the statute and the intent of the New Jersey Legislature. This section also provides clarity that the valves and hydrants that must be tested and inspected pursuant to this section are those that are owned by the system. The Department would verify compliance through inspections, information submitted in capital improvement reports, and annual

certifications submitted to the Department by system owners. The WQAA requirements which require the system to locate each valve and hydrant using GPS are also included.

Water Loss Audits (N.J.A.C. 7:10-6.3 and 7:19-6.4)

A water loss audit, as described by the American Water Works Association (AWWA) in its M36 Water Audits and Loss Control Programs Manual, is a process by which a drinking water system can evaluate its water utility data, records, accounts, policies, and practices regarding the volumes of water that are moved from source to treatment to distribution and customer consumption. Using this information, a water utility can distinguish water that is reaching consumers from water that is leaking from its distribution system and, therefore, is lost. Though not explicitly required by the WQAA, stakeholders, including New Jersey public community water systems, environmental advocates, and professional water sector organizations agree that water loss auditing is integral to asset management. In accordance with the WQAA, this rulemaking incorporates the AWWA methodology for water loss audits at N.J.A.C. 7:10-6.3 and 7:19-6.4. See N.J.S.A. 58:31-7. Water loss audits were also identified by the New Jersey Joint Legislative Task Force on Drinking Water Infrastructure (Greenstein, L. R., & McKeon, J. F. 2018) as a first step toward achieving cost-effective reductions in water losses and are a component of asset management plans. This requirement would, therefore, be consistent with the intent of the Legislature and its findings, as well as the 2017-2022 New Jersey Water Supply Plan (https://www.state.nj.us/dep/watersupply/pdf/wsp.pdf).

This rulemaking also establishes definitions at N.J.A.C. 7:10-1.3 and 7:19-6.2 that are applicable to water loss audits. These include “AWWA,” “apparent loss,” “non-revenue water,” “public community water system,” “public water system,” “real losses,” “water loss,” and “water loss audit.” “AWWA” would be defined as the American Water Works Association. “Apparent loss” means losses in customer consumption attributed to inaccuracies associated with customer

metering, systematic data handling errors, plus unauthorized consumption (such as theft or illegal use of water). "Non-revenue water" (NRW) means the components of system input volume that are not billed and produce no revenue. NRW equals unbilled unauthorized consumption plus apparent and real losses. "Real losses" means the physical water losses from the pressurized system and the utility's storage tanks, up to the point of customer consumption. A "water loss audit" means a thorough examination of the accuracy of water utility data, records, accounts, policies, and practices regarding the volumes of water that are moved from source to treatment to distribution and customer consumption, ultimately distinguishing volumes reaching customers from volumes of loss. Standards for completing an audit are established in AWWA's Manual of Water of Supply Practices – M36, "Water Audits and Loss Control Programs" (4th ed. 2016), as amended or supplemented.

In this rulemaking, water loss audits would be required to be submitted by public community water systems with more than 500 service connections, or as specifically required in a permit issued by the Department pursuant to N.J.A.C. 7:10 or 7:19. Pursuant to this rulemaking, public community water systems would be required to submit water loss audits to the Department on an annual basis, and the Department anticipates that it would receive approximately 300 water loss audits each year. The proposed submittal requirements are similar to those of the Delaware River Basin Commission (DRBC) for public water systems (see 18 CFR Part 410). Pursuant to the current DRBC rules, about 90 New Jersey water systems located in the Delaware River Basin are required to conduct water loss audits. Of these roughly 90 water systems, about 20 water systems are not specifically required to conduct an audit pursuant to this rulemaking because those systems have fewer than, or equal to, 500 service connections. In comparison, of the approximately 285 public community water systems that are subject to the

WQAA, around 215 systems would be required to begin conducting water loss audits; as opposed to the approximately 70 public water systems that are already required to do so pursuant to the DRBC rules.

The Department proposes to require water systems to complete a water loss audit using free software offered by the AWWA. The key benefit of the AWWA water loss audit program is that it can assist water systems in quantifying real or apparent losses, such as leakage or metering issues, as well as quantifying the financial costs of these losses. A public community water system may also use AWWA's M36 Water Audits and Loss Control Programs manual to supplement its findings from an audit and take effective action, as necessary, based on those findings.

The proposed amendments and new rules at N.J.A.C. 7:19 include the use of the AWWA water loss audit program, which would begin the process of phasing out the outdated unaccounted-for-water (UFW) metric for many public water systems. The existing UFW metric has numerous limitations and does not adequately capture the extent of water lost during a water system's operations. UFW does not delineate water losses that may be considered acceptable, such as those incurred during fire protection activities, or hydrant flushing, from those that may not be acceptable, such as water lost due to leakage or unmetered use of water. This rulemaking serves as a transition from use of the UFW metric. As explained above, public community water systems with more than 500 service connections and permittees currently required to submit audits pursuant to their Water Allocation Permit conditions, would be required to conduct water loss audits on a single submittal schedule. Additionally, certain water allocation permittees reporting greater than 15 percent UFW would be required to complete an audit as well. While the Department is seeking to focus on water systems that have the capacity to complete an audit,

there may be circumstances where a much smaller water system is reporting very high water losses in excess of 15 percent UFW. In these circumstances, the Department may compel the system to conduct a more robust assessment, comprised of a water loss audit, to ensure the calculations being made by the system are accurate, and is aware of potential actions it could take to mitigate those losses. 15 percent UFW has been historically used as a threshold for additional actions by the Department for permittees. Permittees that can continue to accurately report UFW below 15 percent would be permitted to do so. Based on UFW data currently held by the Department, roughly five public water systems that fall below the service connection threshold report UFW of greater than 15 percent and would, therefore, need to begin conducting audits following the adoption of this rulemaking. This rulemaking would serve as the first step towards moving away from the UFW calculation for water systems.

The Department anticipates that the first few years of conducting audits will include a learning curve as systems become familiar with the audit and improve their understanding of how to properly characterize the quality of their data. To accompany this effort, the Department will work with State drinking water sector training organizations to ensure that systems will receive training that will allow them to complete an audit successfully. Some states have incorporated steps to include the Level 1 validation process. This is a process outlined by the Water Research Foundation and AWWA that would have individuals qualified through a training program, and overseen by the State evaluate data quality of audits prior to submittal to the State. However, due to the complication, expense, and staffing associated with developing a licensing program, which would be necessary to meet the requirements of a robust Level 1 validation program, such a process is not incorporated into this rulemaking.

As the quality of submitted data improves, the Department could, pursuant to the Water Supply Management Act at N.J.S.A. 58:1A-15f and consistent with N.J.A.C. 7:19-6.4, 6.5, and 8.3, require systems that exhibit significant water loss to take actions to reduce such loss. Examples of actions that the Department would take to compel systems to reduce losses include: a denial of increases to water allocation, leak detection surveys, submittal of a water main replacement schedule, or a meter replacement program. Each of these follow-up actions is consistent with existing regulatory requirements, or this rulemaking itself. The metering of all service connections is an existing requirement pursuant to N.J.A.C. 7:19-6.5, and the replacement of these meters would be a reasonable extension of this requirement.

The Department is proposing that, where a public community water system is in the bottom 35th percentile of comparable systems per the findings of submitted water loss audits, or reports greater than 15 percent UFW or non-revenue water, the Department may take several actions to compel a public community water system to reduce water losses. The 35th percentile is preserved from the existing rule, which allowed the Department to take additional actions to address water losses. This 35th percentile would be applied among systems with comparable characteristics, such as system size, geographic region, and operational considerations. Establishing the 35th percentile on a Statewide basis would not provide a satisfactory basis for compelling additional actions. Simply accounting for the 35 percent of public community water systems with the greatest amounts of real losses would generally create a list of the largest 35 percent of water systems, as larger utilities have inherently more water in their distribution systems that could leak. Additionally, variation in leakage is understood to change depending on geographic region, as distribution systems that must operate under greater elevation changes as is common in the northern half of the State will tend to have higher operating pressures and,

therefore, have a baseline greater amount of losses than in the southern, flatter part of the State. Therefore, to ensure that permittees that are demonstrating to less effectively manage their diversions of the State's waters than their peers that may be performing better, the Department would prioritize its actions, if deemed necessary, on the worse-performing public community water systems. The 15 percent non-revenue water threshold is consistent with the standard from the existing rules (N.J.A.C. 7:19-6.4(a)). While a water system may be able to still apply for, and receive, an increase in allocation above this threshold, this rulemaking would utilize an existing standard for the Department to apply when evaluating permit applications. Additionally, this requirement provides the Department with the ability to compel a public community water system to improve the quality of its data within an audit, as well as reduce leakage within its system.

Asset Management Plans and Programs (N.J.A.C. 7:10-6.3)

The WQAA requires that the specified public community water systems implement asset management plans within 18 months of the Act's effective date. The Department would apply the same timeframe to a water purveyor that establishes its service connections to meet the applicability criteria of the WQAA after the effective date of this proposed rulemaking. Thus, any public community water system that qualifies as a water purveyor pursuant to N.J.S.A. 58:31-3 after April 19, 2019, would develop and implement an asset management plan within 18 months of qualifying as a water purveyor. To provide standards and enforceable actions for asset management plans, this rulemaking establishes rules for asset management plans and programs developed to implement the plans. Asset management programs include the process of ensuring that there is sufficient investment in the system, as well as the planned maintenance, repair, replacement, and upgrade of the physical components of a drinking water system.

To identify the components of asset management programs, this rulemaking would establish definitions for related terms at N.J.A.C. 7:10-1.3 that are applicable to asset management programs, water loss audits, and storage of drinking water. The proposed definitions include "asset," "asset inventory," "asset management plan," "asset management program," "consequence of failure," "critical asset," "criticality assessment," "level of service," "probability of failure," and "remaining useful life" and all relate to the components of an asset management plan. The proposed definitions are derived from the WQAA and the Department's Asset Management guidance (https://www.nj.gov/dep/assetmanagement/pdf/asset-management-plan-guidance.pdf).

The Department proposes requirements at N.J.A.C. 7:10-6.3(b) for the five tenets of asset management programs. These aspects are the asset inventory and condition assessment, defined level of service goals, criticality assessments, determined life cycle costs, and long-term funding strategy. These regulatory requirements are proposed in a manner consistent with guidance that was developed as part of a stakeholder process, previously published by the Department in 2014.

The proposed asset inventory and condition assessment at N.J.A.C. 7:10-6.3(b)2 requires a public community water system to include a listing of all assets, and a numbering system or nomenclature to be used to facilitate the identification of all assets. Those assets identified by a public community water system as critical assets must be located using the Global Positioning System (GPS) standards as provided in the Department's General Practice and Procedure rules at N.J.A.C. 7:1D, Appendix A. The Department recommends that all fixed assets be located using GPS, as is stated in the 2014 guidance. However, due to the potential burden of this requirement, only critical assets must be located using GPS. All valves and hydrants must still be located using the GPS standards identified above. This assessment must also identify a variety of

characteristics that can be used to evaluate the condition of all assets. Although the most accurate condition assessment for this requirement is a physical inspection, the size of most public community water systems in New Jersey render a comprehensive physical inspection of all assets impractical. Therefore, pursuant to this rulemaking, a system would use other known characteristics of its assets, such as size, material, date of installation, or any other site-specific details for that asset that would be useful to make this evaluation. Other proposed requirements at N.J.A.C. 7:10-6.3(b)2 include the remaining useful life of all assets, their physical accessibility, economic value, and their energy use. The remaining useful life may be determined following the condition assessment and can be used to inform a system's capital improvement strategy. Once all assets are accounted for, the economic value of an asset may be used to evaluate replacement costs and calculate the net system value. The energy use of each asset must also be determined, as this can provide the information necessary to properly evaluate the operating costs of the various aspects of the system.

The Department is proposing, at N.J.A.C. 7:10-6.3(b)3, to require a system to include in its asset management plan level of service goals. "Level of service" is proposed to be defined at N.J.A.C. 7:10-1.3 as a public water system's desired service quality of a particular asset or service, against which the system can measure its performance. The proposed goals would provide certain minimum considerations for a system's asset management plan, such as compliance with State and Federal drinking water rules and regulations, and service goals and metrics. Due to the large amount of variability between systems, the Department will not mandate specific goals, nor evaluate specific goals as being adequate or inadequate. These proposed requirements would provide certain minimums, such as compliance with drinking water rules and regulations, and being reflective of the service goals and metrics of the system.

Deficiencies pursuant to this section would primarily come from these goals not being developed.

This rulemaking establishes a process for performing criticality assessments at N.J.A.C. 7:10-6.3(b)4 that is designed to evaluate the risk for each asset in a public community water system. The first step of this process is to use the Business Risk Exposure (BRE) framework. In the BRE framework, the probability of failure (scored between one and five) and the consequence of failure (scored between one and five) are multiplied together to create a criticality rating (scored between one and 25). The BRE framework is a commonly recognized methodology for evaluating risk of assets. It is recommended for use in the Department's 2014 Asset Management Guidance (https://www.nj.gov/dep/assetmanagement/pdf/asset-management-plan-guidance.pdf), and is a recommended methodology by the Water Research Foundation, a major research organization in the water sector (https://www.waterrf.org/research/topics/asset-management). The Department is not requiring the use of any specific values in criticality assessment. Instead, the Department is emphasizing the comparison of the probabilities and consequences of failure to determine criticality as the essential aspect of this part of the process. The probability of failure would be based on the likelihood of failure of each asset based on its mortality using the condition assessment, financial efficiency, and capacity. Assets with the highest probability of failure are typically scored higher, while assets with lower probabilities of failure are scored lower. The consequence of failure is based upon the severity of loss a system would incur as the result of the failure of a particular asset. This consequence would be characterized based upon the impacts and costs of several factors, such as public health and safety, the environment, social impact, reduction of level of service, unexpected repair or replacement costs, collateral damage, and legal costs, among others.

Once a criticality rating is established, public community water systems would determine an appropriate threshold for which assets reach the level of being considered "critical assets." After identifying its critical assets, a system must identify several characteristics that are specific to each. The system would then evaluate each critical asset's vulnerability to a variety of hazards, including, but not limited to climate change, fire, tidal surge, severe weather, flooding, vandalism or other malevolent acts, and corrosion. The Department recognizes that climate change may have a relatively wide range of outcomes over a 30-year timeframe. To provide some certainty, for specific risks posed by sea level rise, or flood hazards, systems must use one of the methodologies referenced at N.J.A.C. 7:7-9.19 and 7:13-3.1 to identify which critical assets in those mapping areas are vulnerable to those risks. Following completion of this process, the system would create a prioritized list of assets for inspection, maintenance, renewal, or upgrades.

After creating a prioritized list of assets, pursuant to N.J.A.C. 7:10-6.3(b)5, a system would develop an implementation schedule to reduce the vulnerability of its critical assets, with efforts to minimize system disruptions. As the system becomes aware of the risks to its assets, the Department anticipates that strategies to reduce these risks should become apparent. Therefore, to reduce potential risks, the system would take actions to reduce the potential impact from the failure of critical assets.

Additionally, pursuant to N.J.A.C. 7:10-6.3(b)6, the Department proposes to require a public water community system to conduct a life-cycle cost evaluation as part of its asset management program. To ascertain the financial portion of a successfully implemented asset management program, the costs of owning and operating each asset across its lifetime must be determined. These costs include those that may be attributed to planning, design, construction,

acquisition, operation and maintenance, potential repairs, possible rehabilitation, and disposal. Once these costs are fully understood, they may be used to guide operation and maintenance programs and repair or replacement schedules, as well as guide capital improvement plans.

Pursuant to proposed N.J.A.C. 7:10-6.3(b)7, a public community water system would establish a long-term funding strategy. As asset management programs encompass a significant number of expenditures to address system needs, the system must have a full understanding of the capital available to fund these needs. Therefore, a complete strategy must contain an evaluation of all likely funding strategies and sources, such as loans or grants, estimates for annual expenditures necessary to implement an asset management program, and an analysis that the strategy is supported by the system's customer rate and fee structure.

While there are opportunities for loan and grant money from programs, such as the Drinking Water State Revolving Fund, other Federal grants, or from private banking institutions, such external sources for revenue are typically reserved for major capital investments and can add to the debt load of a public community water system. Pursuant to proposed N.J.A.C. 7:10-6.3(b)7, a system would be required to demonstrate that its internal funding, derived from rates and fees, can support the cost of operations, any existing debt service, and meet established level of service goals. The Department recognizes the challenges of maintaining affordable water rates, and preventing "rate shock," particularly for low-income customers. Historically, many systems do not fully capture the costs associated with owning and operating their infrastructure into their rates. Instead, a system will defer capital expenses until the point of failure of assets, exacerbating the costs and impacts of that failure. While the Department does not regulate rate structures, the Department would review the reporting of rates as part of the Capital Improvement Reporting process described at proposed N.J.A.C. 7:10-6.4. This would enable the

Department to compare rates and the overall effectiveness of each system in relation to other systems, as well as evaluate impacts to ratepayers as systems undertake work necessary to adequately operate their infrastructure. The Department does also acknowledge that the rates reported are not comprehensive, and various public community water systems may have different customer classes, and usage classes, to mitigate rate increases on residential customers. However, this information would provide additional insight into the expectations of costs for a typical New Jersey resident served by a public community water system. The information would also assist the Department in any future evaluation of such cost impacts.

In its asset management plan, a system would provide a managerial plan as proposed at N.J.A.C. 7:10-6.3(b)10. Pursuant to the Department's requirements for demonstrations of managerial and financial capacity at N.J.A.C. 7:10-13.4, during system startup, the system would be required to, among other things, have a managerial plan, or a description of the organizational structure, and to describe the roles of key personnel for the system. Since many systems' needs and operational practices have changed since startup, it is essential that systems continue to maintain their managerial plans to ensure that adequate staffing is maintained. Systems with inadequate staffing have experienced difficulties both in day-to-day operations and compliance with the requirements of the SDWA. Therefore, to continue to protect public health and safety, and maintain continuity of operations, this rulemaking includes requirements at N.J.A.C. 7:10-6.3(b)10 for public community water systems to continue to meet staffing needs as outlined in managerial plans.

A system must also provide information regarding its succession planning in its managerial plan. Proposed N.J.A.C. 7:10-6.3(b)10 would require a system to facilitate staffing transitions and minimize any interruptions to the operation of the system. The Department

recognizes that there is a general trend of the highest tier of experienced license holders in the drinking water sector (T-4 and W-4) nearing retirement age, and there are concerns around the loss of experience at these water systems. Having individuals who understand the nuances of operations at public community water systems improves system reliability, thus protecting public health by minimizing probability of emergent conditions which could compromise water safety or reliability.

This rulemaking also adds N.J.A.C. 7:10-6.3(b)1 and 8 and (c), which are specific to asset management programs established pursuant to the WQAA. These requirements include the following: the creation of a program ensuring that assets are acted upon in a manner consistent with Federal and State rules and regulations and AWWA standards; water mains be replaced utilizing a 150-year replacement cycle; an annual dedication of funds towards highest priority projects; and a certification of the asset management plan's completeness by the system owner and licensed operator or professional engineer of the system.

As to the 150-year replacement cycle, if a public community water system seeks to establish an alternate replacement cycle, the Department may request for its review and approval, a detailed engineering analysis of the asset condition and estimated service lives of the water mains serving the system. Further, the Department recognizes that certain categories of water main relining projects may substantially add to the effective lifespan of a particular pipe. Therefore, to account for situations where water systems have selected such a relining strategy, this rulemaking enables systems to utilize this relining as a component of a detailed engineering analysis to evaluate a pipe's effective lifespan, as provided for in the WQAA. The Department recognizes that relining a pipe to meet the provided specifications may not be the best approach

for many of the water mains currently in service, but this allowance has been included for systems that have planned their investments to incorporate such a strategy.

Additionally, this rulemaking would clarify that the certification of the asset management plan is a recurring requirement that must be undertaken by the system owner and licensed operator at a minimum of every three years. These plans would be recertified more frequently when significant changes in the operations (such as permanent changes in source water, treatment processes, or major expansion of service area), planned capital improvements, or the status or ownership of the system occur. To help ensure compliance, this rulemaking also clarifies that information contained in asset management plans must be made available to the Department upon request, and that plans must be stored onsite in a secure manner due to the sensitive nature of much of the information contained in the plans.

Asset Management Program Reporting and Additional Certifications

The Department proposes, at new N.J.A.C. 7:10-6.4, to require systems to submit certain information to provide insight into how effectively the systems are implementing asset management programs. Upon review of this information, the Department would determine which systems may need more specific review of their asset management plans and provide technical assistance or take enforcement action as necessary. The submitted information would be made publicly accessible to provide an enhanced and transparent understanding of the systems' overall status and well-being.

Pursuant to proposed N.J.A.C. 7:10-6.4(a), a system would be required to submit a capital improvement report annually to the Department, the New Jersey Board of Public Utilities (BPU), and the New Jersey Department of Community Affairs (DCA). This report would contain the description and cost of all infrastructure projects undertaken in the previous year, and the description and cost of infrastructure projects planned over the next 10 years. The Department

intends for these reports to be made publicly available and, therefore, does not intend for systems to submit sensitive information about a given project on this submittal.

The capital improvement report would also include other information to enhance the Department's ability to evaluate how effective and compliant water systems are in implementing their asset management plans. This includes a description of the age of water mains comprising their distribution systems, updates on valve and hydrant testing schedules, as well as select characteristics related to a system's technical, managerial, and financial capacity. This information is intended to serve as an indicator to the overall "health" of a water system's operations. Although systems should not expect to be penalized by the Department for having relatively poor performance in some areas in comparison to their peers, systems may be issued penalties if regulatory thresholds are not met. Examples of such situations include not meeting the water main replacement rate required by the Department or failing to report data. By making this data publicly available, customers would have greater insight into how their water system is improving or declining over time, as well as allowing customers to compare their own system's performance to other systems.

The final required submittal in this section of the rulemaking is also required pursuant to the WQAA. The annual certification statement is required to be signed by the responsible individual, as identified below, of applicable water systems and they must certify compliance with a variety of rules and regulations pertaining to drinking water pursuant to proposed N.J.A.C. 7:10-6.4(c), (d), and (e). This includes all Federal Safe Drinking Water Regulations at 40 CFR Parts 141 to 143, the New Jersey Safe Drinking Water Act Rules, N.J.A.C. 7:10, Licensing of Water Supply and Wastewater Operators rules, N.J.A.C. 7:10A, and Water Supply Allocation Permits rules, N.J.A.C. 7:19. As the WQAA does not specifically identify these rules and

regulations, this rulemaking clarifies which rules and regulations must be accounted for. The responsible individual varies based on the ownership type of each system. For privately held systems, the responsible corporate officer must sign, for authorities or commissions, the executive director must sign, and for municipally owned systems, either the mayor or chief executive officer must sign. The Department is aware of a small number of systems where the structure of the system's ownership does not align with the WQAA's requirements, such as municipal utilities authorities without an executive director and, therefore, the rules allow flexibility for the Department to approve other individuals only for those select circumstances.

This rulemaking builds upon the requirements of the WQAA and requires that the responsible individual signing the annual compliance statement complete an annual training requirement. Following the adoption of this rulemaking, the Department will publish and maintain a list of training programs that these individuals may use to fulfill this requirement. These programs would be similar to or the same as, some of the training modules at the EPA's Drinking Water Training System at https://cfpub.epa.gov/epa_dwts/dsp_welcome.cfm. This training is intended to serve as a minimally time-intensive refresher course for system owners to understand the roles and responsibilities that they have as the responsible individual.

Rehabilitation

The Department proposes to relocate the rehabilitation requirements at N.J.A.C. 7:19-6.6 to 7:10-6.7, with amendments. The Department proposes this relocation with amendments because requirements regarding the operation and management of public community water systems are more appropriate in the SDWA Rules than in the Water Supply Allocation Permits rules. The references to "Class 2 and 3 Purveyors" are proposed to be removed, as this terminology is not used in the SDWA Rules at N.J.A.C. 7:10. The associated due dates would also be removed because they are no longer applicable due to the length of time that has elapsed

since the requirement was first incorporated into the Department's rules. Requirements related to management and status surveys would be removed because the proposed asset management plan and program requirements would supersede them.

Distribution Storage Requirements (N.J.A.C. 7:10-11.11)

The Department proposes to relocate the requirements for system pressure and storage from N.J.A.C. 7:19-6.7 to 7:10-11.11. The Department also proposes additional updates to N.J.A.C. 7:10-11.10 and 11.11 that are intended to enhance reliability and oversight for public community water systems which may lack adequate storage.

This rulemaking would also establish certain terms and concepts at N.J.A.C. 7:10-11.11 and modify other terms and concepts that are currently codified at N.J.A.C. 7:19-6.7 and relocate those terms and concepts to N.J.A.C. 7:10-11.11. These terms and concepts are "single prime source" and "finished water storage capacity." A public community water system with a "single prime source" means a public community water system that relies upon a single well, a surface water intake structure, or single treatment plant (with or without multiple wells or intakes and with or without multiple treatment trains), or single interconnection to provide its peak water demands. This type of system may lack sufficient alternative water source(s) in an emergency situation to meet the needs of the customers it serves. These terms and concepts are "finished water storage capacity" and "single prime source." The Department proposes to add the term "finished water storage capacity" at N.J.A.C. 7:10-11.11 because total storage in a public community water system is not reflective of the needs for actual system operations. Pursuant to the existing requirements for system pressure and storage at N.J.A.C. 7:19-6.7, a single prime source system with no interconnections or auxiliary power must have total storage equal to its average daily demand. However, this does not mean that the system would be capable of providing water to its customers for an entire day should an emergent condition arise where

water cannot be treated or produced for that period. As storage is depleted, the operating pressure of a distribution system will gradually drop and could result in the entire distribution system losing pressure. This would pose substantial risks to public health and safety as the loss of pressure could result in contaminants in the subsurface entering the distribution system, and a loss of capacity for fire protection. Should this circumstance arise, it would be necessary for a significant investment of resources for the system to sanitize, and repressurize its distribution system to return to normal operating conditions. The Department will collaborate with water systems that may have altered storage requirements on a timely and reasonable schedule.

This rulemaking also clarifies that a system that is reliant on interconnections to provide some or all its storage to have a written agreement to detail the terms of its storage. Many water systems in the State have "handshake agreements" or other informal agreements where one system will provide sufficient storage for one or many systems that are interconnected. This practice results in several challenges, particularly with cost-sharing and liability around those storage facilities, wherein resilience for each system may be lost if that storage is not properly maintained.

Finally, this rulemaking clarifies rules for below-grade reservoirs at N.J.A.C. 7:10-11.11(e). Any new reservoirs that are constructed below grade will be required to be above the flood hazard area elevation as established at N.J.A.C. 7:7 and 7:13. This reduces the risk of contamination of the treated water supply because of flooding and ensures accessibility of the reservoir to water system staff even during flood events. Additionally, these reservoirs will be required to have access hatches to ensure proper maintenance and inspection both inside and outside of the reservoir.

Other Proposed Amendments

The Department also proposes to amend the definition for "public water supply" at N.J.A.C. 7:19-1.3 to include the term "public water system," and include additional language to define a public water system. This amendment would better align the usage of such terms at N.J.A.C. 7:19 with 7:10.

Social Impact

The Department anticipates that the proposed amendments, new rules, and repeals will have an overall positive social impact. The proposed amendments and new rules at N.J.A.C. 7:10 establish requirements for the operation and management of public community water systems. The Department's policy of setting standards designed to protect public health will result in a positive social impact not only to the public, but also to the water supply industry, which strives to provide the best quality water possible to customers. The proposed amendments and new rules set forth provisions that would codify the requirements established by the WQAA. These requirements would compel New Jersey water systems to take the initiative in accurately quantifying water loss. Additionally, information received by the Department from systems will continue to be made readily available to the public, increasing both the accountability and transparency of operations of water systems.

This rulemaking is expected to have positive social impacts through the AWWA water loss audit requirement. By completing an audit, a system would be able to identify losses in its distribution system, both real and apparent, such as leakage and metering issues. By utilizing this information to properly inform a loss mitigation strategy, the system would be able to maximize the value of their investments, which are derived from water rates paid by customers. A loss mitigation strategy that prioritizes the areas that show the greatest needs can allow a public

community water system to defer rate increases by reduced operating costs of treating and pumping water, reduce costs of responses to water main breaks caused by underperforming infrastructure, or increase revenues by fully capturing the current water usage by faulty meters. Quantifying these potential cost savings is challenging to make Statewide due to the highly variable operating conditions of public community water systems across the State.

Compliance with both the WQAA and this rulemaking is expected to have benefits to public health. Microbial contamination is one of the most acute health risks in water supply, and public community water systems have an obligation to minimize these risks. Gastrointestinal illness is a frequent symptom of exposure to microbial contaminants through freshwater recreation, as well as drinking water. According to the CDC in 2018, approximately seven million people in the United States are admitted to emergency rooms because of illness related to the digestive system, for all causes. Aging infrastructure is associated with risks to public health, as older pipes may allow for microbial contamination through cracks, or buildup of biofilms inside pipes. Service interruptions associated with aging infrastructure, such as water main breaks, can exacerbate these risks, as affected customers often must boil their own water to preserve its safety, which is not only inconvenient, but may not be followed by some customers. According to an article published by Journal AWWA (Renwick et. al, 2019), at least 29 percent of waterborne outbreaks associated with distribution systems in the United States can be directly linked to water main breaks or repairs or storage issues. Sensitive populations, such as the immunocompromised, elderly, and very young, are particularly susceptible to health risks. With an adequate water main replacement schedule, and implementation of an asset management program, a system can significantly reduce public health risks posed by aging distribution system infrastructure. Due to variability in water main age and replacement cycles for water systems,

quantification of these society benefits is difficult to capture. Additionally, there is a cost to the loss of potable water service. According to FEMA's BCA Reference Guide, it is estimated that there is a social cost of $138.00 dollars per person per day (in 2022 dollars) when potable water services are lost (https://www.fema.gov/sites/default/files/documents/fema_standard-economic-values-methodology-report_2023.pdf). This represents a significant societal cost and averting these costs would provide substantial improvements for the quality of life of New Jerseyans.

The reporting requirements of this proposed rulemaking are expected to have a positive social impact. This rulemaking would require public community water systems to submit annual capital improvement reports, annual asset management metrics, an annual compliance certification form, and water loss audits. Each of these submittals will be made accessible for the public at large to access this information. The intent behind this is to increase the accountability and transparency to the public of public community water system operations. A major component of the WQAA is the accountability aspect, and the requirements in this rulemaking will enhance this aspect. When decision-makers for public community water systems have access to operating details for other utilities, they can gain a better insight as to what investment needs may be necessary to ensure sustainable operations for their public community water systems. Additionally, this information will provide more operational information to the Department, the New Jersey Board of Public Utilities, and the New Jersey Department of Community Affairs as they implement their respective oversight roles. Obtaining this information would allow the State agencies to better identify which systems may have capacity limitations, and better guide technical assistance to these struggling public community water systems, before public health impacts related to the failure of such public community water systems arise.

Economic Impact

Costs incurred to comply with the SDWA and Water Supply Allocation Permit rules are standard business expenses for public water systems. The costs incurred as a result of the proposed amendments, new rules, and repeals are necessitated by the statutory mandates at N.J.S.A. 58:12A-2 and 58:1A-5 to protect public health and ensure an adequate and reliable public water supply. It is expected these costs will be largely passed on to consumers through rate increases. The scope of this rulemaking is primarily applicable to public community water systems with more than 500 service connections, which at the time of this rulemaking, number approximately 285, and to certain holders of water allocation permits with regard to water loss audits. As this rulemaking is primarily the codification of the requirements of the WQAA, effective October 19, 2017, public community water systems have already been following the WQAA's requirements. This impact statement will focus on the costs to water systems directly incurred by this rulemaking; however, the Department will recognize costs incurred to meet WQAA requirements as reported by public community water systems in a survey conducted by the Department in April 2019.

Water Loss Audits

The Department expects that the principal costs to water systems from this rulemaking will come from the annual water loss audit requirement and potential ensuing leak detection efforts. However, the Department expects this requirement to be revenue neutral, if not a net cost saving for water systems. Standardized by the AWWA, the cost to complete the water loss audit is low, as the software itself is free and the inputs are data that water systems collect during standard operations. The WQAA does not explicitly require water loss auditing, therefore, making this requirement new with this proposal. The Department considers the information gained from conducting such an audit useful as a water system implements its asset management

plan. As the audit will identify inefficiencies (actual physical losses, as well as paper accounting losses) within water systems, eventual savings will result for treatment, pumping, and infrastructure procurement. The effective use of water loss audits is also expected to provide savings for water systems by reducing the need to develop additional water supply sources. According to conservative calculations in the New Jersey Joint Legislative Task Force on Drinking Water Infrastructure Report, using data obtained from audits required by the Delaware River Basin Commission (DRBC), there are at least $10 million of water losses in New Jersey that are economically recoverable on an annual basis. An additional $12.5 million in lost revenue should be recoverable with improved metering and billing practices. The report projected that if water systems can save this $22.5 million annually, then this would be enough to raise $350 million in bonds to fund capital improvement projects, while allowing water systems to maintain water rates. The Department recognizes associated costs include staff time for training on how to complete an audit, then staff time to compile the necessary data and evaluate the scoring for the accuracy of each metric. According to estimates from the DRBC, most systems were able to complete an audit in one to three days (DRBC, 2015). The Department estimates that for complex systems, completing an audit may take about 120 staff hours each year, costing about $4,800 per year, assuming average salaries of approximately $80,000. Training needs will vary for each utility, however if 40 hours of staff time are used to obtain training, this would likely cost around $800.00 per utility per year. This would put an approximate maximum cost at $5,600 per utility per year for training and completion of the audit. The Department anticipates a learning curve to this process, with audits and training needs becoming less time intensive for systems as time progresses.

There is also the possibility that the Department may require a system to conduct leak detection surveys or other such follow-up actions if it determines that a system has excessive leakage as determined by benchmarking after a few years of receiving and comparing submitted data. These surveys provide the potential for systems to save money by fixing leaks as they are found. Meter replacement programs, for example, may have an upfront cost to water systems. This cost can be highly variable, as some public community water systems may elect to use upgraded metering systems, such as Advanced Metering Infrastructure (AMI) during replacements, conduct projects where meters are relocated to curbs, rather than in basements, or simply conduct in-kind replacement of meters using the same technology and configuration. However, aging meters are commonly recognized as a source of lost revenue for water systems, as older meters tend to display lower customer consumption as time progresses. Residential water meters tend to have an effective lifespan of 20 years, but that age can vary significantly between technologies, manufacturers, and maintenance programs. Limited research is available to quantify the amount of water that is undercounted as a consequence of aging meters, but the phenomenon is well-understood throughout the water sector. A meter replacement program not only allows water systems to better account for apparent losses for audits, but also lets systems more precisely set rates for water being used by its customers. Denial of applications for increased allocation in water allocation permits and the submittal of a water main replacement schedule is not expected to incur recurring costs for systems. Denial of a permit application is within Department's authority pursuant to N.J.S.A. 58:1A-15 and should be incorporated into regular business expenses. Many New Jersey public community water systems are required to have a water main replacement schedule as part of their asset management programs and the WQAA. Therefore, submitting this schedule is not expected to incur recurring costs.

System Owner Training

The proposed mandatory annual training for the individuals responsible for signing the annual certification statement is expected to result in minimal costs for the water systems. Prior to the adoption of this rulemaking, the Department will publish and maintain a list of training programs that system owners may utilize to fulfill this requirement. This training is intended to serve as a minimally time-intensive refresher course for system owners to understand the roles and responsibilities that they have as system owners. Such a training program was identified in the New Jersey Joint Legislative Task Force on Drinking Water's Report as an important policy change and is, therefore, consistent with the spirit of the Legislature. Time expected to fulfill this training requirement is projected to take no more than four hours per year.

Discretionary Changes to National Regulations (N.J.A.C. 7:10-5.2)

The changes to the Consumer Confidence Report (CCR) requirements pursuant to N.J.A.C. 7:10-5.2 are expected to incur a nominal cost to applicable public community water systems. Identifying the location on a public community water system's website for level of service goals and the annual certification form may have a minor upfront cost in terms of staff time for these systems. However, this is projected to be a small enough cost that it could be incorporated into existing system resources.

Administrative Changes (N.J.A.C. 7:10-2.7)

The Department is also proposing to amend N.J.A.C. 7:10-2.7 and relocate certain requirements currently codified at N.J.A.C. 7:19 to 7:10. The proposed amendments at N.J.A.C. 7:10-2.7 are not expected to incur substantial costs to the regular operations of water systems. Pursuant to these amendments, the authority in which the Department could request reports on technical, managerial, and financial capacity from water systems in additional circumstances is

be clarified. As these circumstances are uncommon, providing such a report to the Department is not expected to pose any new recurring cost for the typical water system.

Portal Costs

The WQAA required that the Department, DCA, and BPU develop a portal through which the three agencies can receive the annual capital improvement report. The Department's rulemaking includes certain items to be submitted on an annual basis and, therefore, expects to have the submissions related to this rulemaking submitted through the same portal. The overall cost to develop this portal was $356,456 with the costs being attributable to information technology staff time and costs to support contractors. The portal is not expected to incur a substantial cost to water systems, though staff time may be needed to create accounts and compile information into the format designated by the Department. Use of the portal eliminates creating and managing paper reports. Paperless submittals spare systems the costs associated with printing and delivery paper and save the Department the costs associated with filing and retrieving paper forms. The cost of fully hosted cloud storage is estimated at one percent or less than the cost of retaining paper when considering the cost of filing cabinets and office space or storage boxes and offsite record storage. Additionally, usage of an electronic portal minimizes recurring costs to the Department by reducing staff time to manually enter or manage individual submittals. While Department staff resources are still needed to provide technical support for water systems, or answer inquiries on a case-by-case basis, that would have been needed to receive those submittals, regardless of format utilized.

Storage Rules Updates

The proposed updates to the storage requirements are not expected to immediately present significant economic costs. The revisions from total storage to finished water storage

capacity may result in some systems needing to develop a strategy to enhance their storage capabilities.

Estimated Costs of Compliance with the WQAA

While the upfront costs of compliance with the Water Quality Accountability Act are understood to have been significant, cost savings from improved management and replacement of infrastructure are expected to provide substantial cost savings to water systems long term. Based on several case studies (United States Government Accounting Office, 2004), utility managers who had implemented asset management programs gained a greater understanding of their system's infrastructure. Consequently, they were able to make more well-informed decisions that would save substantial amounts of both staff time and money by targeting older infrastructure for replacement that was more vulnerable to failure. For example, a study of Australian water utilities that had implemented asset management programs reduced operating costs by nearly 20 percent over 10 years (Campenella and Kerkez, 2019). Additionally, the New Jersey Legislature's 2018 Report on Drinking Water Infrastructure identified that emergency repairs cost 10 times as much as planned infrastructure upgrades. As discussed in the Social Impact above, averted water quality issues which may have been caused by aging infrastructure, thereby contributing to health issues, can result in cost savings by avoiding health care costs.

Survey data received by the Department suggests that rate increases necessary to remain in compliance with WQAA may result in relatively higher rate increases for customers of publicly owned water systems than investor-owned water systems, which are referred to as "privately held" in the WQAA. This can be attributed to several factors. In general, investor-owned utilities have historically charged higher rates than publicly owned systems. Also, investor-owned water systems have several additional regulatory requirements that publicly owned systems are not subject to, through the BPU. For example, many investor-owned utilities

were previously required to perform valve and hydrant inspections pursuant to N.J.A.C. 14:9-2.2 and are required to have meter replacement programs pursuant to N.J.A.C. 14:9-4. Based on this, many investor-owned water systems should already have built much of the costs of WQAA compliance with the valve and hydrant maintenance into their rate structure. Another potentially costly component of the WQAA is the 150-year replacement cycle for drinking water mains. While systems may alter this cycle following a detailed engineering analysis, or the Department may specify a replacement rate for a system, the overall replacement program is anticipated to be a substantial cost for systems. For example, based on a U.S. Environmental Protection Agency (EPA) survey of systems (United States Environmental Protection Agency, 2011), a public community water system serving between 3,301 and 10,000 individuals may have an average of 46 miles of distribution main (eight-inch diameter), and 16 miles of transmission main (16-inch diameter). Costs of water main replacement are highly variable, as there are many contributing factors, such as size of mains, local municipal traffic control or paving requirements, and locating other buried infrastructure that can add to replacement costs. Based on information obtained from permits issued by the Department, a rough, yet reasonable estimate for water main replacement costs is approximately $300.00 to $500.00 per foot. Therefore, for a system to maintain the 150-year replacement schedule, such a system could be spending on average from $650,000 to $1,100,000 each year on water main replacements. However, projecting this number across the State would incorporate a great deal of uncertainty, as different public community water systems may have developed over different time spans, different service requirements, and different sizes all of which may impact those site-specific costs.

While some systems have already established a rate structure and financing schedule to be able to support the costs of compliance with the WQAA, many utilities are continuing to

account for these costs. From the April 2019 survey conducted by the Department, approximately 50 percent of all responding water systems indicated that no change in rates would take place to maintain compliance with the WQAA, 35 percent indicated that some sort of rate increase would be expected in the near future, and 13 percent of the remaining responses anticipated rate increases between one and 10 percent. The valve and hydrant inspection requirements are statutory requirements established by the WQAA. When BPU proposed and adopted its valve and hydrant inspection rules, N.J.A.C. 14:9-2.2, which were mirrored in the WQAA, it determined that appropriate rate setting would be the source of cost recovery for water systems. The Department's April 2019 survey further indicated that for a system serving between 3,301 and 9,999 individuals, maintaining such a program costs between $30,000 and $47,000 (in 2019 dollars) each year, with an upfront cost between $16,000 to $77,000 (in 2022 dollars).

Environmental Impact

The Department anticipates a positive impact on the environment because of the proposed rules, which set forth requirements regarding the operation and management of public community water systems. The largest positive environmental impacts resulting from this rulemaking will be a reduction in water losses from requiring public community water systems to both replace aging water mains and conduct water loss audits on an annual basis to identify the amount, type, and cost of water loss that occurs within their distribution systems. Estimates from the New Jersey Joint Legislative Task Force on Drinking Water Infrastructure determine real losses of water in New Jersey's water systems to be approximately 130 million gallons of treated drinking water each day. In comparison, in 2015, New Jersey's public water suppliers diverted an average of 1,175.42 million gallons of water per day. While there are significant financial costs associated with this loss, these numbers show a substantial amount, approximately 11

percent of treated water, which has essentially been wasted. In addition, this is a waste of the chemicals and energy which went into the treatment and pumping of that water. These costs are challenging to characterize, as the costs of water treatment Statewide vary drastically. Some public community water systems may be able to produce water consistent with the Department's standards with only disinfection, while others may use much more sophisticated and costly treatment technologies, such as advanced oxidation or reverse osmosis.

By analyzing the audit data submitted by water systems, the Department would be able to more accurately identify public community water systems that are efficiently using the water which they have been permitted to divert. If a public community water system consistently demonstrates a failure to address significant quantities of real losses, as shown by their audit, then the Department may take steps to compel the system to reduce such losses. As these steps are taken, and water systems replace water mains most prone to leakage as established in their asset management programs, real water losses are expected to decrease, and reduce diversions of water by public community water systems. This will allow for reduced overall diversion of water and reduced waste, allowing more water to be available for passing flows, aquatic habitats, and reduce environmental pressures during periods of drought. This rulemaking enhances these benefits as it also requires these audits from systems that may not have water allocation permits, but purchase water from systems that do. If public community water systems that may not have sources of their own have a better understanding of the losses of the water that they purchase, then they are better incentivized to address leaks and reduce the cost of those real losses. This contributes to reduced water withdrawals as the water systems that divert and treat the water would be able to reduce production. There are also several other environmental benefits to the reductions in water losses. Public community water systems would be able to reduce overall

energy use both at the treatment plant, by reducing the amount of power that is needed to be treated to meet actual customer demands, and at pumping stations, by reducing the amount of power needed to deliver said water. Benefits also come from reduced need for public community water systems to purchase, store, and dispose of potentially hazardous chemicals, such as chlorine, by needing to treat lesser quantities of water to meet customer demands. The use of water loss audits, and particularly, when water systems take measures to reduce real losses, can also serve to reduce vulnerability to drought, particularly for water systems which use reservoirs for raw water supply. By reducing leakage of water in their distribution systems, water systems can reduce the amount of water that must be pumped from the reservoir to meet customer demands.

The other requirements in this rulemaking are not expected to result in as significant environmental impacts, as they relate more towards the operations and management of water systems. However, improvements to overall efficiency, such as an improved understanding of energy costs from an effective asset management program may become apparent. If acted upon, reduced energy usage would stand to reduce the production of greenhouse gases, such as carbon dioxide, which are a byproduct of much of the energy production in New Jersey. This reduction would, therefore, assist in reducing emissions which contribute to climate change.

Federal Standards Statement

N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c. 65), requires State agencies that adopt, readopt, or amend State rules that exceed any Federal standards or requirements to include in the rulemaking document a Federal standards statement.

The Department's SDWA rules at N.J.A.C. 7:10 incorporate by reference the National Regulations at 40 CFR 141, as amended and supplemented, promulgated by the EPA pursuant to the Federal Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq., including all siting requirements, filtration and disinfection requirements, maximum contaminant levels, monitoring and analytical requirements, reporting requirements, public notification requirements, and recordkeeping requirements as the New Jersey primary drinking water rules, applicable to all public water systems. The Department's SDWA rules are, therefore, the Federal standards, except with respect to those areas for which the Department has determined, as authorized by the SDWA and allowed by the National Regulations, to establish New Jersey-specific requirements.

The Department's Water Allocation Permit Rules at N.J.A.C. 7:19 are not promulgated pursuant to the authority of, or in order to implement, comply with, or participate in any program established pursuant to Federal law or pursuant to a State statute that incorporates or refers to Federal law, Federal standards, or Federal requirements. Therefore, the Department has determined that a Federal standards analysis is not required for the proposed amendments, new rules, and repeals at N.J.A.C. 7:19.

Currently, there are no Federal standards or requirements for water loss auditing, or asset management. The EPA has developed a variety of resources and guidance to assist water systems in conducting such activities but has not developed corresponding rules. America's Water Infrastructure Act (AWIA) of 2018 (33 U.S.C. §§ 2201 et seq.) does require a risk and resilience assessment to be conducted by public community water systems serving populations of greater than 3,301. The Department recognizes that these requirements are complementary, as completion of one enhances a system's ability to satisfactorily complete the other and may lead to insights that had not been anticipated by completing only one alone. However, the Department

notes that the risk and resilience assessment process is distinct from the proposed asset management plan requirements, and there is separate EPA guidance that relates to the risk and resilience assessment process at https://www.epa.gov/waterresilience/awia-section-2013.

Jobs Impact

The mandates and requirements pursuant to the WQAA have had and are expected to continue to have a positive impact on jobs in New Jersey. However, the Department anticipates that the proposed amendments, new rules, and repeals will also have a positive impact on jobs across several sectors based on the requirements outlined in the Summary above. These impacts will vary based on how effectively public community water systems comply with the requirements of the WQAA and the requirements of this rulemaking.

Pursuant to the WQAA, valve and fire hydrant testing requirements require a substantial amount of labor hours to complete. Particularly for drinking water utility staff, specialized contractors with valve-turning equipment that water systems may not own, or in some cases, fire departments for hydrant testing. Based on information from a survey made by the Department of water systems impacted by the WQAA, most systems have reported either hiring additional full-time staff or hiring consultants to meet the Act's requirements. The cybersecurity requirements have had a minor positive impact on jobs, as water systems have reported some additional hiring of either information technology staff or consultants to develop and maintain cybersecurity programs. The additional certifications do not appear to have impacted job growth, as this was able to be accomplished by existing system staff and ownership. The asset management plan requirements are expected to have had and will continue to have a positive impact on jobs. While a portion of water systems have primarily used existing internal resources, others have hired consultants to varying extents in order to complete plans. Positive job impacts are also expected

as a consequence of the 150-year replacement cycle for water mains, particularly in the construction sector. Additionally, the WQAA requires the annual dedication of funds to the highest priority projects identified in its asset management plans. Many public community water systems in New Jersey had not historically replaced water mains on a schedule as aggressive as the one established in the WQAA and, therefore, will either need to hire additional staff to assist in the planning for this effort or hire construction firms to conduct the replacements. The WQAA also requires the annual submittal of a capital improvement report, detailing the status of capital improvement projects by public community water systems. Completion of the report itself is not expected to have a significant impact on jobs for most systems but it will help ensure that systems are completing the necessary capital improvements, which will effectively positively impact jobs. The proposed changes to the technical, managerial, and financial capacity at N.J.A.C. 7:10-2.7 are not expected to have a significant impact on jobs in New Jersey. Such demonstrations of technical, managerial, and financial capacity are infrequently requested by the Department, and as this task is infrequent, the Department does not believe this change will justify the hiring of additional full-time staff. Public community water systems may; however, need to hire a consultant to assist with the development of this report, if requested.

The valve and hydrant requirements proposed at N.J.A.C. 7:10-6.2 are not expected to have a significant impact on jobs in New Jersey. The requirements in this rulemaking largely mirror the requirements from the WQAA. The Department is proposing to incorporate by cross-reference the interconnection valve tests currently required at N.J.A.C. 7:10A-1.12(e) and 7:19-6.9(d). The variances are not expected to require additional staff to maintain compliance in comparison to the WQAA, as they provide clarification regarding how existing testing

requirements at interconnections should be tested or clarify the criteria for when valves must be repaired.

The proposed requirements for unaccounted-for water (UFW) and water loss auditing may have a positive impact on jobs. While UFW has historically been reported to the Department by many public community water systems in the State, it is now widely regarded as a defunct metric, as discussed in the Summary, which does not adequately capture water losses in a given system. As the Department intends to eventually replace this reported number with the AWWA water loss audit, public community water systems are expected to gain a more complete understanding of where and how water is being lost in their distribution systems. Completing such an audit may be accomplished with existing staff and resources, albeit with training. After an audit is completed, it is possible to assign costs to water losses, which will allow systems to determine the amount of resources they could recover by addressing these losses. Possible sectors that could see job growth include additional staffing for public community water systems to conduct leak detection, construction workers to make repairs, and consultants to assist in the completion of an audit. Additionally, some systems may choose to hire a consultant to assist them in elevating the quality of data. There is also the possibility that increased savings following these activities provide sufficient monetary savings to hire additional staff for routine system operations.

The proposed requirements for Asset Management programs at N.J.A.C. 7:10-6.3 that go beyond the requirements enumerated in the WQAA may have a positive impact on jobs in New Jersey. Though the WQAA requires systems to develop an asset management plan, it does not provide specific requirements for what those plans were to contain. The Department previously provided guidance in 2014 (https://www.nj.gov/dep/assetmanagement/resources.html) and took

steps to ensure systems would not be required to revise the plans pursuant to this rulemaking. However, the possibility does exist some systems may need to revisit certain portions of their plans. Therefore, it is possible that a system may need to dedicate additional resources to revise their approaches to satisfy the proposed requirements for asset management plans. However, the Department does not anticipate that this will have a significant impact on jobs.

The proposed requirement at N.J.A.C. 7:10-6.3(b)10 to maintain a managerial plan in accordance with N.J.A.C. 7:10-13.4 with respect to staffing and succession may have an impact on jobs. The New Jersey Joint Legislative Task Force on Drinking Water Infrastructure (Greenstein, L. R., & McKeon, J. F. (2018)) identified potential staffing shortages in the near future, as many experienced licensed operators are nearing retirement, and lack qualified replacements. Thus, this proposed requirement may compel systems to increase hiring to increase the pool of qualified licensed operators.

The asset management program reporting and additional certifications requirement is not expected to have a significant impact on jobs in New Jersey. As discussed earlier, the WQAA requires public community waters systems to submit a report outlining their capital improvements on an annual basis, which comprises the majority of the reporting requirements in this rulemaking. While this rulemaking does provide some additional reporting requirements to those established in the WQAA, it is not expected that these changes alone will require the hiring of additional staff. Many of these items should be already collected by the system during the course of typical operations (often because of existing regulatory requirements) or are part of a water loss audit. The reporting of this information is not expected to add substantially to a system's workload. The capital improvement report and the Water Loss Audit would only need to be submitted once every year.

In general, estimates from a study funded by UTCA (Black and Nada, 2019) indicate that $1 billion in investment in drinking water, wastewater, and stormwater capital investments can generate approximately 13,787 jobs in New Jersey. While the UTCA report did not break down impacts from such investment in the drinking water sector specifically, and the scale of investment needed by systems to comply with this rulemaking is difficult to calculate, it does provide insight into certain trends. Many of the jobs generated by such an investment would primarily be in the construction sector, with retail trade, real estate and rental and leasing, and health care and social assistance being the next largest sectors to see job growth.

Agriculture Industry Impact

Pursuant to N.J.S.A. 52:14B-4, the Department has evaluated this rulemaking to determine the nature and extent of the impact of the proposed amendments on the agricultural industry. The proposed amendments are anticipated to have minimal impact on agriculture in New Jersey. Water for agricultural purposes is typically supplied from their own sources, such as irrigation wells, ponds, streams, and is not purchased from public water systems. These nonpotable water supply wells are not subject to the SDWA rules.

The Department is not aware of any public water system that meets the regulatory threshold pursuant to this rulemaking that is also part of the agricultural industry. There is a possibility that reduced water diversion from public water systems because of reduced leakage could result in increased capacity in certain watersheds. This could provide increased amounts of water to be available for diversion by other entities, such as the agriculture industry, however the magnitude of this impact cannot be quantified at this time. Water used for agriculture is regulated pursuant to N.J.A.C. 7:20A, which would not be amended by this rulemaking.

Regulatory Flexibility Analysis

In accordance with the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department has evaluated the reporting, recordkeeping, and other compliance requirements that the proposed amendments, new rules, and repeals would impose on small businesses. The Department estimates that of the approximately 285 public community water systems in New Jersey with more than 500 service connections, less than 10 are small businesses. The proposed amendments, new rules, and repeals would require public water systems to perform certain actions and adopt programs to improve operations and management as discussed in the Summary above. A detailed description of the initial and ongoing compliance costs are also provided in the Summary above. These requirements apply to water systems that may be considered a small business, but that also serve many customers potable water on a regular basis. A relaxation of these standards would not be protective of public health and would be inconsistent with the existing application of the New Jersey Safe Drinking Water Program, which has been effective for decades.

Housing Affordability Impact Analysis

In accordance with N.J.S.A. 52:14B-4, the Department has evaluated the proposed amendments, new rules, and repeals to determine their impact, if any, on the affordability of housing. Costs incurred by public community water systems to operate and maintain their infrastructure, while can be aided by loans and grants, are primarily financed by rates paid by the system's residential customers. However, these costs are associated with bills issued by public community water systems and are not expected to impact the cost of housing. Therefore, the Department anticipates the proposed amendments, new rules, and repeals will have minimal

impact on the affordability of housing because it is unlikely that the amendments will evoke a major change in the average costs associated with housing.

Smart Growth Development Impact Analysis

In accordance with N.J.S.A. 52:14B-4, the Department has evaluated the proposed amendments, new rules, and repeals to determine their impact, if any, on housing production within Planning Areas 1 or 2, or within designated centers, pursuant to the State Development and Redevelopment Plan. The proposed amendments, new rules, and repeals create certain operational and management requirements for public community water systems. The Department anticipates that the proposed amendments, new rules, and repeals will have no smart growth development impact because it is unlikely that the rules will evoke a change in housing production in Planning Areas 1 or 2, or within designated centers.

Racial and Ethnic Community Criminal Justice and Public Safety Impact

The Department has evaluated this rulemaking and determined that it will not have an impact on pretrial detention, sentencing, probation, or parole policies concerning adults and juveniles in the State. Accordingly, no further analysis is required.

List of References

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3. Greenstein, L. R., & McKeon, J. F. (2018). The Joint Legislative Task Force On Drinking Water Infrastructure (USA, NJ Legislature). Trenton, NJ.

4. United States Environmental Protection Agency (2011) National characteristics of drinking water systems serving 10,000 or fewer people. EPA Washington DC.

5. Renwick, D.V., Heinrich, A., Weisman, R., Arvanaghi, H., & Rotert, K. (2019). Potential Public Health Impacts of Deteriorating Distribution System Infrastructure. Journal AWWA, 111(2).

6. Rader, L. (2011). How to Flush Distribution Lines. National Drinking Water Clearinghouse Retrieved from http://www.nesc.wvu.edu.

7. Van Abs, D. (2018). Water needs through 2040 for New Jersey public community water supply systems. New Jersey Department of Environmental Protection.

8. Andrews, A., Harkins, A., Eskaf, S., & Nida, C. (2017). Water and wastewater rates and rate structures in North Carolina. University of North Carolina Finance Center.

9. Van Abs, D., & Evans, T. (2018). Assessing the Affordability of Water and Sewer Utility Costs in New Jersey. Jersey Water Works.

10. Black, A. P., & Nada, L. S. (2019). The economic impacts of a $1 billion increase in New Jersey drinking water, wastewater and stormwater capital investment. American Road & Transportation Builders Association.

11. Kunkel, G. (2017). Report on the evaluation of water audit data for New Jersey water utilities. Natural Resources Defense Council.

12. Delaware River Basin Commission (2015, June 16). *Water Management Advisory Committee Meeting Summary*. Retrieved from https://www.nj.gov/drbc/library/documents/WMAC/06162015/wmac_june15.pdf.

Full text of the rules proposed for repeal may be found in the New Jersey Administrative Code at N.J.A.C. 7:19-6.4, 6.6, and 6.7.

Full text of the proposed amendments and new rules follows (additions indicated in boldface **thus**; deletions indicated in brackets [thus]):

CHAPTER 10

SAFE DRINKING WATER RULES

SUBCHAPTER 1. GENERAL PROVISIONS

7:10-1.1 Authority

[These rules are] **This chapter is** promulgated pursuant to the New Jersey Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq.[, as amended]; the Subsurface and Percolating Waters Act, N.J.S.A. 58:4A-4.1 et seq.; the Realty Improvement Sewerage and Facilities Act, N.J.S.A. 58:11-

23 et seq.**; the Water Quality Accountability Act, N.J.S.A, 58:31-1 et seq**; the Water Supply Management Act, N.J.S.A. 58:1A-1 et seq.; and [N.J.S.A.] 58:11-9.1 et seq.

7:10-1.2 Scope, applicability**,** and purpose

[These rules] **This chapter** implement**s** New Jersey's Safe Drinking Water Program for the purpose of ensuring the provision of safe drinking water to consumers, and enabling the Department to assume primary enforcement responsibility [under] **pursuant to** the Federal Safe Drinking Water Act, P.L. 93-523, 42 U.S.C. §§ 300f et seq. The Safe Drinking Water Program also ensures the provision of safe water of adequate pressure and volume by implementing portions of the Water Supply Management Act addressing storage, emergency plans**,** and reducing [unaccounted for] water [(water lost in the distribution system)] **losses**; and by issuing physical connection permits [under the] **pursuant to** N.J.S.A. 58:11-9.1 et seq.; and by establishing standards for construction and procedures for certifications[, under] **pursuant to** the Reality Improvement, Sewerage and Facilities Act, N.J.S.A. 58:11-23 et seq. **Requirements for the operation and management of public community water systems are implemented through the Water Quality Accountability Act, N.J.S.A. 58:31-1 et seq.**

7:10-1.3 Definitions

The following words and terms, when used in this chapter shall have the following meanings unless the context clearly indicates otherwise. Additional definitions specifically applicable to N.J.A.C. 7:10-11, 12, and 13 are set forth at N.J.A.C. 7:10-11.4, 12.3, and 13.2, respectively.

...

"Asset" means any component used in the operation of a public water system including, but not limited to: buildings, storage tanks, valves, hydrants, pumps, treatment facilities, electrical components, power services (primary and auxiliary), tools, equipment, transmission and distribution piping, wells, intakes, vehicles, machinery, land, or personnel integral to the operation of a water utility.

"Asset inventory" means a systematic record of assets and their attributes, such as physical condition details, financial details, asset performance, and service delivery performance indicators and targets.

"Asset management plan" means a written plan describing the methods by which a public water system can maintain the level of service goals established by the public water system consistent with N.J.A.C. 7:10-6.3(b)3 at the lowest cost. The plan includes an inventory, a condition assessment, and an evaluation of the criticality and vulnerability of all assets. It also includes an implementation schedule and funding strategy for the maintenance and prioritized rehabilitation, repair, or replacement of all assets.

"Asset management program" means a program through which a public water system implements an asset management plan.

...

"Consequence of failure" means the severity of water loss a system would incur as a result of the failure of a particular asset. Such factors include, but are not limited to, impacts or costs to public health and safety, the environment, social impact, reduction in level of service, unexpected repair or replacement, collateral damage, or legal costs.

...

"Critical asset" means an asset whose failure would have significant consequences, either in the ability of the system to provide service to its customers or to comply with regulatory requirements, or adversely affect the environment, public health, or financial well-being of the public water system.

"Criticality assessment" means the qualitative determination of the significance of an asset based on its importance to the continued and effective operation of the system, as may be determined by the likelihood and consequence of its failure.

...

"Finished water storage capacity" is the volume of water stored that can be delivered to the distribution system either by gravity or pumped while maintaining the minimum pressure requirements above the 20 pounds per square inch (psi) hydraulic grade line.

...

"Level of service" means the measurable service quality for a particular asset or service.

...

"Probability of failure" means the likelihood of failure of an asset based upon the asset's mortality, financial inefficiency, or deficient capacity to provide an expected level of service, consistent with N.J.A.C. 7:10-6.3(b)3.

...

"Real loss" means the physical water loss from a water system's distribution system and storage tanks, up to the point of customer consumption.

...

"Remaining useful life" means the difference between the asset's actual age and the estimated useful life. The useful life may be determined by considering the manufacturer's recommendation, its current condition, and service history.

...

"Single prime source" means a public community water system that relies upon a single well, a surface water intake structure, or single treatment plant (with or without multiple wells or intakes and with or without multiple treatment trains), or single interconnection to provide its peak water demands.

...

"Water loss audit" or "audit" means a thorough examination of the accuracy of water utility data, records, accounts, policies, and practices regarding the volumes of water that are moved from source to treatment to distribution and customer consumption intended to distinguish the volume of water reaching customers from the volume of water loss.

...

SUBCHAPTER 2. GENERAL REQUIREMENTS

7:10-2.7 [Managerial and technical] **Technical, managerial, and financial** competence of water systems

(a) An existing **public** water system [which] **that** has undergone a change in status or ownership and/or is found by the Department to be in [significant] noncompliance with the State**'s** primary drinking water [regulations] **rules** shall, upon request, provide**,** to the Department**,** a demonstration of managerial capacity as provided [in] **at** N.J.A.C. 7:10-13.4 and 13.6**,** [and]

technical capacity as provided [in] **at** N.J.A.C. 7:10-13.3 and 13.5**, and, if deemed appropriate, financial capacity as provided at N.J.A.C. 7:10-13.4 and 13.6**.

(b) The Department may require an existing public water system to demonstrate technical, managerial, and financial capacity in situations where technical, managerial, or financial capacity has changed, or will change, such as when an existing water system undergoes a change in status through deactivation with subsequent reactivation, through reclassification based on a change in population without expansion of existing infrastructure, or substantial change in treatment and/or distribution infrastructure.

(c) A public water system subject to (a) or (b) above shall submit the demonstration of technical, managerial, and financial capacity to the Department within 180 calendar days from receipt of the request, or as otherwise approved by the Department.

(d) The buyer of a public water system subject to a written request issued pursuant to (a) above shall submit the demonstration of technical, managerial, and financial capacity to the Department within 180 calendar days from the date the system is purchased, or as otherwise approved by the Department.

[1.] **(e)** Determinations made pursuant to this section with respect to a **public** water system subject to the jurisdiction of the Division of Local Government Services within the Department of Community Affairs shall be made in consultation with the Director of that [Division] **division**. Nothing in [these rules] **this chapter** shall infringe upon the regulatory jurisdiction of the Division of Local Government Services [under] **pursuant to** N.J.S.A. 40A:1-1 et seq.

[2.] **(f)** (No change in text.)

SUBCHAPTER 3. CIVIL ADMINISTRATIVE PENALTIES AND REQUESTS FOR ADJUDICATORY HEARINGS

7:10-3.6 Civil administrative penalties for violation of the State Act--general

(a)-(c) (No change.)

(d) The seriousness of the violation shall be determined as major, moderate**,** or minor as set forth [in] **at** (d)1 [through]**, 2, or** 3 below:

1. Major seriousness shall apply to any violation that has caused or has the potential to cause serious harm to human health or which seriously deviates from the requirements of the State Act, or any regulation, rule, permit, or order adopted or issued pursuant thereto. Violations of major seriousness shall include, but not be limited to, violations [which] **that** are in complete contravention of such requirements or if some of the requirements are met, [which] **that** severely impair or undermine the operation or intent of the requirements. Violations of major seriousness shall include, but not be limited to:

i.-iv. (No change.)

v. Intentional MCL violation for those parameters that a water system is designed and/or operated to treat; [and]

vi. Constructing or operating, or commencing or proceeding to build, modify, install, replace, expand**,** or operate a water system without the proper authorization or permit issued or imposed pursuant to the State Act, and, if applicable, a permit cannot subsequently be obtained without major modification[.]**; and**

vii. Failure to prepare an asset management program pursuant to N.J.A.C. 7:10-6.3(a).

2. Moderate seriousness shall apply to any violation [which] **that** has caused**,** or has the potential to cause**,** substantial harm to human health or [which] **that** substantially deviates from the requirements of the State Act, or any regulation, rule, permit, or order adopted or issued pursuant thereto. Violations of moderate seriousness shall include, but not be limited to, violations which are in substantial contravention of such requirements or if some of the requirements are met, which substantially impair or undermine the operation or intent of the requirements. Violations of moderate seriousness shall include, but not be limited to:

i.-ii. (No change.)

iii. Failure to institute corrective measures for MCL violations in accordance with N.J.A.C. 7:10-5.6; [and]

iv. Failure to provide public notice of violations in accordance with 40 CFR 141.203[.]**; and**

v. Failure to implement an asset management plan or program as outlined at N.J.A.C. 7:10-6.3.

3. Minor seriousness shall apply to any other violation not included [in] **at** (d)1 or 2 above. Violations of minor seriousness shall include, but not be limited to:

i. -ii. (No change.)

iii. Constructing or operating, or commencing or proceeding to build, modify, install, replace, expand**,** or operate a water system without the proper authorization or permit issued or imposed pursuant to the State Act, and, if applicable, a permit is subsequently obtained without the need of any modifications[.]**;**

iv. Failure to submit any of the items identified at N.J.A.C. 7:10-6.4;

v. Failure to submit any certification required pursuant to N.J.A.C. 7:10-1;

and

vi. Failure to make available upon the Department's request, any plans, reports, or records that are required to be maintained pursuant to N.J.A.C. 7:10-1.

(e)-(g) (No change.)

SUBCHAPTER 5. STATE PRIMARY DRINKING WATER REGULATIONS

7:10-5.2 Discretionary changes to National Regulations

(a) (No change.)

(b) The National Regulations, at 40 CFR 141.151, require each community water system to annually develop and deliver to its customers a Consumer Confidence Report (CCR) [which] **that** provides information on the quality of the water delivered by the system and characterizes the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. In addition to the standards and requirements in the National Regulations for the development and distribution of the CCR, the following requirements shall apply:

1. Notwithstanding the provisions of the Federal Safe Drinking Water Act amendments of 1996, 42 U.S.C. §§ 300f et seq.**,** and the National Regulations, at 40 [C.F.R] **CFR** 141.155, every public community water system, regardless of the number of persons served, shall mail a copy of its Consumer Confidence Report to each of its customers.

i. For a public community water system with more than 500 service connections subject to the requirements at N.J.A.C. 7:10-6, the system shall post a copy of the following on its internet website:

(1) The level of service goals identified by the public community water system pursuant to N.J.A.C. 7:10-6.3(b)3; and

(2) The most recently signed annual certification form required pursuant to N.J.A.C. 7:10-6.5(c), with a link to the Department's website at https://www.state.nj.us/dep/watersupply/g_reg-wqaa.html.

2. – 4 (No change.)

SUBCHAPTER 6. OPERATIONS AND MANAGEMENT

7:10-6.1 Authority, purpose, and scope

This subchapter sets forth requirements by the Department for public water systems for Asset Management programs, inspections of certain infrastructure, and other requirements adopted pursuant to the Water Quality Accountability Act. This subchapter applies to public community water systems with more than 500 service connections. Asset management programs, developed in accordance with accepted industry best management practices and consistent with the Department's asset management technical guidance at https://www.nj.gov/dep/assetmanagement/, ensure that public community water systems are capable of providing a sustainable and reliable water supply that meet all applicable Federal and State statutes, rules, and regulations.

7:10-6.2 Water system operations

(a) A public community water system shall perform the following operations involving valves, excluding service connection valves or customer shut-off valves, in its distribution system:

1. Inspect each valve in its distribution system, in accordance with (a)2 and 3 below, to determine:

i. The accessibility of the valve for operational purposes; and

ii. The operating condition of the valve.

2. Valves greater than 12 inches in diameter shall be inspected at least once every four years, and all others at least once every eight years.

3. Inspections of valves shall include:

i. Clearing of the area around the valve to ensure full access to the valve for operating purposes;

ii. Cleaning out of the valve box; and

iii. Dynamic testing of the valve, by opening and closing the valve for either the number of turns recommended by the manufacturer to constitute a credible test, or at a minimum, the number of turns, which constitutes 15 percent of the total number of turns necessary to completely open the valve.

4. Any valves found to be broken or otherwise not operational shall be repaired or replaced on a schedule consistent with the system's asset management plan as described at N.J.A.C. 7.10-6.3(b).

5. Each valve shall be located using GPS to the extent possible in accordance with the mapping standards at N.J.A.C. 7:1D Appendix A.

6. For valves used at interconnections between water systems, inspections shall be completed in accordance with requirements at N.J.A.C. 7:10A-1.12(e) and 7:19-6.9(d).

(b) A public community water system shall perform the following operations in the distribution system, involving each fire hydrant owned solely or jointly by the water system:

1. Each fire hydrant shall be tested to determine its working condition on an annual basis in a manner consistent with the recommendations of the manufacturer or AWWA;

2. A plan shall be implemented for flushing each fire hydrant, water main, and dead end of a water main, which shall be made available to the Department upon request;

3. Each fire hydrant shall be located using GPS to the extent possible in accordance with the mapping standards at N.J.A.C. 7:1D Appendix A; and

4. Fire hydrants shall be labelled in accordance with the following:

- **i. Initials, abbreviation, corporate symbol, or other distinguishing mark or code of the water system;**
- **ii. A number or symbol, or both, using a scheme determined by the purveyor allowing its location to be readily determined;**
- **iii. The markings may be made with a soft metal plate, plastic, or another durable material; and**
- **iv. Shall be of such size and so spaced and maintained as to be easily read.**

(c) A public community water system shall keep a record of all inspections, tests, and flushings conducted pursuant to this section for a period of at least 12 years. This record shall be maintained and be made available to the Department upon request.

7:10-6.3 Asset management programs

(a) A public community water system shall develop the elements of an asset management program in accordance with the requirements at (b) below. Any public community water system that newly qualifies as a water purveyor pursuant to N.J.S.A. 58:31-3 after April 19, 2019, shall develop and implement an asset management plan within 18 months of qualifying as a water purveyor.

(b) An asset management plan must include:

1. A program designed to inspect, maintain, repair, renew, and upgrade wells, intakes, pumps, distribution, and treatment facilities in accordance with all Federal and State laws, rules, and regulations, and standards established by the AWWA.

2. An asset inventory and condition assessment that:

i. Lists all assets in the public water system;

ii. Includes a numbering system or nomenclature that will facilitate the identification of all assets;

iii. Lists and locates all critical assets identified in the criticality assessment at (b)4 below, using GPS in accordance with the mapping standards at N.J.A.C. 7:1D Appendix A;

iv. Identifies the size, material, date of installation, service history, and any other information the public community water system identifies as important to assessing the condition of the assets;

v. Describes the condition of the assets;

vi. Determines the remaining useful life of the assets;

vii. Evaluates the accessibility to the assets;

viii. Establishes the economic value of the assets; and

ix. Determines energy use of the assets including, but not limited to:

(1) Type of energy or fuel source used;

(2) Hours of operation per year; and

(3) Total kilowatt-hours (kWh) of electrical consumption.

3. Goals for levels of service, which:

i. Incorporate all applicable standards set forth in this chapter and any other applicable Federal and State statutes, rules, and regulations, including, but not limited to, N.J.A.C. 7:10A and 7:19;

ii. May include, but need not be limited to, goals related to customer service and accountability, energy and water efficiency and conservation, water main breaks and service interruptions, and social and environmental considerations; and

iii. Are developed in consideration of customer service and other system-specific goals as determined by the public community water system.

4. A criticality assessment to identify and evaluate critical assets for the operation of the public community water system. This assessment shall:

i. Evaluate the probability of failure and the consequence of failure for all assets. The combination of both factors shall be utilized in a scoring system to calculate a rating to establish each asset's criticality;

ii. Establish a threshold in that scoring system above which any asset would be deemed to be a critical asset;

iii. Identify vulnerabilities for each critical asset from short- and long-term hazards including, but not limited to, climate change, fire, tidal surge, severe

weather, flooding, vandalism or other malevolent acts, and corrosion. Areas in which critical assets are located that are vulnerable to sea level and flood hazards shall be identified and evaluated at N.J.A.C. 7:7-9.19 or 7:13-3.1, as applicable; and

iv. Establish a prioritized list of assets to be inspected, maintained, repaired, renewed, or upgraded, based on the information provided at (b)4i and ii above.

5. An implementation schedule for replacing, repairing, and reducing the vulnerability of all critical assets, in a manner which minimizes system disruptions.

6. A determination of life-cycle costs by evaluating the total costs associated with each asset over the entire time period it is owned. This includes costs associated with planning, design, construction, acquisition, operation and maintenance, potential repairs, possible rehabilitation, and disposal.

7. A long-term funding strategy that ensures sufficient capital is routinely reserved to promote long-term system sustainability and to fund targeted infrastructure improvement actions. The strategy shall include:

i. An economic evaluation that includes all likely funding options and sources;

ii. Estimated annual expenditures to address the requirements of this subchapter including, but not limited to, inspections, maintenance, repairs, renewals, and upgrades required to meet public health and environmental standards or enforcement actions; and

iii. An analysis that the long-term funding strategy is supported by the public community water system's customer rate and fee structure.

8. A water main renewal program designed to achieve a 150-year replacement cycle.

i. If a public community water system seeks to establish an alternate replacement cycle, the Department may request for its review and approval, a detailed engineering analysis of the asset condition and estimated service lives of the water mains serving the system;

ii. Water mains that are relined in a manner consistent with the Class IV standards established in the AWWA manual, M28 Rehabilitation of Water Mains, Third Edition, which is incorporated herein by reference, as amended or supplemented, may be considered as an extension to the effective lifetime of the main as part of a detailed engineering analysis. To qualify, the liner must demonstrate:

(1) A 50-year internal burst strength, when tested independently from the host pipe, equal to or greater than the maximum allowable pressure of the pipe to be rehabilitated; and

(2) The ability to survive any dynamic loading or other short-term effects associated with sudden failure of the host pipe due to internal pressure loads.

9. Effective March 31, 2025, annual water loss audit as described at N.J.A.C. 7:19-6.4.

10. An updated, maintained, and implemented managerial plan in accordance with N.J.A.C. 7:10-13.4 that describes the current operational needs of the public community water system and provides information regarding the system's succession planning.

(c) The public community water system shall certify its asset management plan as follows:

1. The asset management plan must be certified every three years or after a change in ownership or status;

2. The asset management plan is complete and that all the information it includes is true and accurate and complies with all applicable Federal and State statutes, rules, and regulations; and

3. The certification must be signed by:

i. The licensed operator or professional engineer for the public community water system; and

ii. The responsible individual identified at N.J.A.C. 7:10-6.4(c).

(d) Upon the implementation of an asset management program in accordance with (a) and (b) above, each public community water system shall dedicate funds on an annual basis to address and remediate the highest priority projects as determined by its asset management plan.

(e) The asset management plan shall be made available to the Department upon request and shall be stored in a secured location onsite.

(f) The Department may request information about the characteristics and repair schedules of specific assets.

(g) The asset management plan must be updated and revised as it is implemented.

7:10-6.4 Asset management program reporting and additional certifications

(a) Each year, on March 15, a public community water system shall submit a capital improvement report through the NJDEP online portal at https://www.nj.gov/dep/online/. The capital improvement report, shall include, but may not be limited to, the following:

1. Infrastructure improvements completed in the past previous calendar year and the cost of those improvements funded by emergency and routine capital spending;

2. Infrastructure improvements planned to be undertaken in the next three years, and the estimated cost of those improvements;

3. Infrastructure improvements that will be required over the next four to six years and the estimated cost of those improvements;

4. Infrastructure improvements that will be required over the next 10 years and the estimated cost of those improvements;

5. Age, size, material, and breakage rate of water mains owned by the public community water system;

6. Information pertaining to valve and hydrant inspections pursuant to N.J.A.C. 7:10-6.2; and

7. The reporting of certain characteristics related to the operations, technical, managerial, and financial capacity of the public community water system.

(b) A public community water system shall annually certify to the Department that it complies with the requirements listed in this subsection. The system shall submit its certification electronically through the NJDEP Online Portal at https://www.nj.gov/dep/online/.

1. The National Primary Drinking Water Regulations, 40 CFR 141 through 143;

2. This chapter;

3. The Licensing of Water Supply and Wastewater Operators rules, N.J.A.C. 7:10A; and

4. The Water Supply Allocation Permits rules, N.J.A.C. 7:19.

(c) The certifying individual for the purposes at (b) above shall be:

1. For privately held systems, the responsible corporate officer;

2. For authorities or commissions, the executive director; or

3. For municipally owned systems, the mayor or chief executive officer.

(d) If (c)1, 2, or 3 above do not apply, the Department shall approve the certifying individual for the system.

(e) The certifying individual identified at (c) above shall complete an annual training program as designated by the Department.

1. The certifying individual shall certify completion of this training through the statement at (b) above.

2. The Department will maintain a list of acceptable training programs on its website.

7:10-6.5 Rehabilitation

(a) Upon determination by the Department that any components of a water supply system have deteriorated to a degree that may jeopardize the ability of the system to deliver an adequate and reliable supply of water or may cause waste of an unduly large amount of water, the purveyor shall submit, within a time period required by the Department, a

report and implementation schedule specifically identifying the scope of rehabilitation work necessary, the time required for work implementation, and the required water rate modification to finance the work.

(b) All rehabilitation work performed on water supply systems shall conform to the current design requirements specified in the New Jersey Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq., and N.J.A.C. 7:19-6.

(c) For planned or required transmission or distribution system rehabilitation, loans will be provided on a priority basis, pursuant to the Water Supply Bond Act of 1981 (Public Law 1981, Chapter 261) and associated rules (N.J.A.C. 7:1A), to the extent that eligibility requirements of the rules are met, and the funding availability allows.

1. In cases where a critical water supply emergency exists, pursuant to N.J.A.C. 7:1A-6, application may be made for an emergency, interim rehabilitation loan. Upon approval of said loan, the emergency applicant is required to make full application for a Water Supply Rehabilitation Loan, pursuant N.J.A.C. 7:1A.

2. For the purposes of this section, a critical water supply emergency means the total loss of the public potable water supply served by the emergency loan applicant to at least 25,000 residents or 50 percent of the residents within the emergency loan applicant's service area that lasts for at least a 24-hour period.

SUBCHAPTER 11. STANDARDS FOR THE CONSTRUCTION OF PUBLIC COMMUNITY WATER SYSTEMS

7:10-11.10 Permit requirements and standards for the construction for distribution systems; master permits

(a)-(b) (No change.)

(c) The Department shall deny a permit application under this section for any proposed distribution main extension if the source, treatment, transmission**,** or storage capacity does not meet the requirements of N.J.A.C. [7:19-6.7 and] 7:10-11.6(a) **and 11.11**, or the public community water system is unable to meet its historical peak daily demand as well as the additional demand anticipated from the proposed expansion calculated in accordance with N.J.A.C. 7:10-11.5(e) [through]**, (f), and** (g).

7:10-11.11 Distribution storage requirements

(a) Suppliers of water shall provide finished water storage [as required pursuant to N.J.A.C. 7:19-6.7 and] as follows:

1. (No change.)

2. The balances and interrelationships of source location, interconnections, transmission and distribution grid, size of transmission-distribution system lines, location of booster pumps, and existence of pressure zones and location of storage facilities must be such as to ensure the minimum pressure of 20 pounds per square inch at street level. If delivered by pump storage, the equipment shall have the firm capacity to provide the required flow and have automatically operating auxiliary power.

3. The following requirements for minimum finished water storage capacity apply to all public community water systems unless modified in accordance with (a)6 or 7 below.

Type of System	**Minimum Finished Water Storage Capacity (Percentage of Average Daily Demand)***

Single prime source system, no interconnection(s), auxiliary power not provided in accordance with N.J.A.C. 7:10-11.6(i)	**100 percent**
Single prime source system, no interconnection(s), auxiliary power provided**	**80 percent**
Single, prime source system with interconnection(s)*	**50 percent**
Single prime source system with interconnection(s)*, auxiliary** power provided**	**50 percent**
Multiple sources, no interconnection(s), auxiliary power provided**	**50 percent**
Multiple sources, with interconnection(s) *	**50 percent**
Multiple sources with interconnection(s)*,**	**30 percent**

auxiliary power provided**	

***Average daily demand shall include the demands of consecutive systems for which a system sells water on a routine basis. A consecutive system's storage waiver is contingent on the supplying system's storage.**

****Auxiliary power provided in accordance with N.J.A.C. 7:10-11.6(i) and must be able to supply at least 50 percent of average daily demand.**

*****Combined interconnection(s) must be able to supply the system with at least 50 percent of average daily demand in addition to the capacity used to routinely supply the system with bulk purchased water. A contract commitment with the water system supplying water is required in accordance with N.J.A.C. 7:19-7.1.**

4. Where system size allows, and in consideration of water system pressure gradients, storage should be spread out and located at different points within the system.

5. If a public community water system relies upon another interconnected public community water system to provide some or all of its storage, the systems must agree, in writing, as to the terms of the provision of storage. This agreement must be submitted to the Department upon request. The system that provides its storage must ensure it has adequate supply to meet its own demands and the demands of any contracting system.

[2.] **6.** The location, size, type**,** and elevation of the equalization reservoir, standpipe, or elevated storage tank shall be such as to ensure that the distribution system meets the pressure requirements established at N.J.A.C. 7:10-11.10(d). A system designed to provide for fire protection shall, in addition, provide gravity storage. Hydropneumatic pumping system combinations are not acceptable for the purposes of fire protection.

7. The location, size, type, and elevation of the equalization reservoir, standpipe, or elevated storage tank shall be such as to ensure that it optimizes water quality, minimizes detention times, and ensures effective mixing.

Recodify existing 3.-7. as **8.-12.** (No change in text.)

(b)-(d) (No change.)

(e) Regulations for below-grade reservoirs are as follows:

1. Any reservoir constructed partly or entirely [below grade] **below-grade** shall be designed, located, and graded**,** so as to be secure against uplift and entry of underground or surface contamination **and located above the climate-adjusted flood elevation**.

2.-4. (No change.)

(f) Regulations for the construction of above-grade reservoirs, standpipes, and elevated tanks are as follows:

1. Each above-grade reservoir, standpipe, and elevated tank shall be equipped with such **access hatches and** inside or outside ladders as may be necessary to facilitate **both internal and external** inspection **and maintenance**.

2.-3. (No change.)

(g)-(h) (No change.)

CHAPTER 19

WATER SUPPLY ALLOCATION PERMITS RULES

SUBCHAPTER 6. WATER SUPPLY MANAGEMENT ACT RULES

7:19-6.2 Definitions

The following words and terms shall have the following meanings**,** unless the context indicates otherwise:

...

“Apparent loss” means losses in customer consumption attributed to inaccuracies associated with customer metering, systematic data handling errors, plus unauthorized consumption (theft or illegal use of water).

...

“AWWA” means the American Water Works Association.

...

“Non-revenue water” or “NRW” means the components of system input volume that are not billed and produce no revenue. NRW equals unbilled authorized consumption plus apparent and real losses.

...

[“Public community water system” means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.]

“Public community water system” has the same meaning as the definition of the term in the Safe Drinking Water Supply Rules at N.J.A.C. 7:10-1.3.

"Public water system" or “public water supply” has the same meaning as the definition of the term “public water system” in the Safe Drinking Water Supply Rules at N.J.A.C. 7:10-1.3.

“Real losses” means the physical water losses from the pressurized system and the utility’s storage tanks, up to the point of customer consumption.

...

"Water loss" means the difference between the water supplied volume and authorized consumption, also equal to the sum of apparent and real losses.

"Water loss audit" or "audit" means a thorough examination of the accuracy of water utility data, records, accounts, policies, and practices regarding the volumes of water that are moved from source to treatment to distribution and customer consumption, ultimately distinguishing volumes reaching customers from volumes of loss. Standards for completing an audit are established in AWWA's Manual of Water Supply Practices - M36, Water Audits and Loss Control Programs (4th ed. 2016), incorporated herein by reference, as amended or supplemented.

...

7:19-6.4 Unaccounted-for water and water loss audits

(a) Each public community water system serving a population of over 500 persons, shall calculate and report the percentage of unaccounted-for water to the Department annually. Unaccounted-for water is the amount of water entering the distribution system minus the amount of water delivered through service meters. The percentage of unaccounted-for water shall be calculated by dividing unaccounted-for water by the amount of water entering the distribution system multiplied by 100 percent. Exceptions may be made for purveyors that have been issued a service meter waiver pursuant to N.J.A.C. 7:19-6.5(a)5.

(b) Effective (365 days after the effective date of this rulemaking), water loss audits shall be conducted and reported to the Department on an annual basis by the following entities, unless issued a service meter waiver pursuant to N.J.A.C. 7:19-6.5(a)5:

1. A public community water system with more than 500 service connections pursuant to N.J.A.C. 7:10-6.3;

2. A public community water system that reports to the Department an unaccounted-for water percentage of greater than 15 percent; and

3. A public community water system required to conduct and report a water loss audit under the conditions of a permit issued pursuant to this subchapter or N.J.A.C. 7:10.

(c) A water loss audit must include water loss data for 12 consecutive months as compiled and entered into the AWWA Free Water Audit Software v.6.0, incorporated herein by reference, as amended or supplemented. The audit must be submitted to the Department in a Microsoft Excel format through the NJDEP Online portal at https://www.nj.gov/dep/online/. The audit must be conducted in a manner that demonstrates:

1. Real water losses greater than 0.0;

2. Costs of non-revenue water that are less than 100 percent of the public water system's operating costs;

3. Findings that are consistent with the operating characteristics of the public water system;

4. If an audit does not meet the criteria at (c)1, 2, or 3 above, then the public water system shall submit a corrected audit within 30 days.

(d) If the Department determines that water losses reported in an audit are in the bottom 35th percentile regarding real losses of comparable public water systems, or report greater than 15 percent unaccounted-for water, the Department may notify the system and take one or more of the following actions:

1. Deny an application for increased allocation;

2. Deny an application for a permit associated with increased demand as issued pursuant to N.J.A.C. 7:10-11.10;

3. Require a corrective action plan to reduce real and apparent losses;

4. Require leak detection surveys;

5. Require the submission of a water main replacement schedule; or

6. Require a meter replacement or calibration program.

(e) Penalties pursuant to this section shall be assessed as established at N.J.A.C. 7:10-3.6.

7:19-6.6 and 6.7 (Reserved)