

**Clean Water Infrastructure Replacement Plan**  
**(CWIRP)**

**June 2025**

**North Tiverton Fire District**  
**241 Hilton Street**  
**Tiverton, RI 02878**

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**Attachment A** - North Tiverton Fire District General Map

## 7.6A Contents of Plan

North Tiverton Fire District's 2025 Clean Water Infrastructure Replacement Plan (CWIRP) addresses each of the topics listed in Section 4.0 of the State of Rhode Island Department of Health's RULES AND REGULATIONS FOR CLEAN WATER INFRASTRUCTURE PLANS, dated October 1994, and as amended January 1995 and January 2002, to the extent that each is relevant to NTFD, its water sources, its water system, and its transmission/distribution/storage system.

This CWIRP utilizes, to the extent possible, data from NTFD's initial CWIRP submittal in August 2002 and amended in August 2004, approved on November 8, 2004, and amended, approved October 2012 and amended March 2019.

This CWIRP utilizes, to the extent possible, data from NTFD's latest Water Supply System Management Plan (WSSMP) which was submitted in May of 2012, updated and approved November 2014, updated November 2019.

Section numbering in the CWIRP is based upon that contained in the aforementioned RULES AND REGULATIONS document in order to facilitate ease of review.

## 7.6B Principal Components of the Water System

**System Description.** The North Tiverton Fire District operates a water utility that purchases all its supply from two sources: the City of Fall River and the Stone Bridge Fire District. As of December 2024, the system serves 3,289 service connections through approximately 48.73 miles of water main, of which an estimated 40 miles are cement-lined ductile iron. The system was developed in the late 1920's with the majority of the piping installed between 1996 and 2005. Portions of the pipeline are replaced annually based on age and condition. The primary transmission line running from the north to the south end of the system was fully replaced in the 1980s. The system includes two pressure zones: one serving the historic North Tiverton (NT) service area, and the other serving the former Tiverton Water Authority (TWA) service area.

Water is supplied to the North Tiverton service area through two pumping stations and one gravity-fed interconnection. The Carey Lane pumping station, built in 1983 and refurbished in 2019, connects to the Stone Bridge Fire District. The State Avenue pumping station, originally constructed in the 1950s and fully refurbished in 2010, connects to the City of Fall River. Additionally, a gravity-fed interconnection with the Stone Bridge Fire District is located at North Brayton Road. Both pumping stations also supply the two-million-gallon storage tank on Pocasset Avenue, constructed in 2005. The one-million-gallon underground storage tank on Hambly Road is currently inactive and not used in operations.

The City of Fall River provides an emergency interconnection to the TWA service area via the Stafford Road pumping station, constructed in 2005. The Stone Bridge Fire District supplies water to the area through a gravity-fed interconnection located at the intersection of Quintal Drive and Bulgarmarsh Road. The pressure gradient for the TWA service area is maintained by the Stone Bridge Fire District's Quintal Drive storage facility, which consists of a one-million-gallon steel standpipe tank.

NTFD's service area is shown in Attachment A. This map includes the present NT and TWA service areas, major transmission lines, storage facilities, pumping stations, interconnections with other water supply systems including connections for emergency purposes (whether for sale or purchase of water), location of master meters, and location of pressure zones.

Components of NTFD's water system are described in the following paragraphs.

**Water Sources.** NTFD purchases treated water from two suppliers, the City of Fall River and the Stone Bridge Fire District. There are two primary metered interconnections between NTFD and the City of Fall River, and three primary metered interconnections between NTFD and the Stone Bridge Fire District.

The City of Fall River obtains its water from North Watuppa Pond, located to the east of the city. North Watuppa Pond, with a volume of about 8 billion gallons, has a watershed area of approximately 9.2 square miles and a safe daily yield reported to be between 8.5 and 9.0 MGD. North Watuppa Pond has been utilized as a potable water supply since the late 1870's. Copicut Reservoir, with a volume of about 3 billion gallons, was developed by the city as an additional source of supply in 1975. Water is pumped from Copicut Reservoir, which has a watershed area of about 5.8 square miles, on an as-needed basis to maintain the level in North Watuppa Pond. The safe daily yield of Copicut Reservoir is reported to be between 6 and 6.5 MGD on average for the year. Water is treated in the city's own water treatment plant. There are seven storage tanks in the City of Fall River's distribution system. The total volume of the city's distributed storage, calculated based upon the height of each tank's overflow and the tank's diameter, is approximately 19.6 MG. Water from the City of Fall River enters the North Tiverton Fire District's distribution system through the district's State Avenue Pumping Station and Stafford Road Pumping Station.

The Stone Bridge Fire District obtains its water from Stafford Pond, located to the east of the district. Stafford Pond, with a volume of about 2.04 billion gallons, has a watershed area of approximately 1.48 square miles and a safe daily yield reported to be between 2.0 and 2.5 MGD. Stafford Pond has been utilized as a potable water supply since the mid-1940's. Water is treated in the Stone Bridge Fire District's own treatment plant. Water from the Stone Bridge Fire District enters the North Tiverton Fire District's distribution system through the district's Carey Lane Pumping Station, the Quintal Drive metered connection, and the North Brayton Road metered connection.

North Tiverton Fire District neither owns nor operates its own supply of ground or surface water, nor does it have a watershed area.

**Treatment Facilities.** Water purchased from the City of Fall River and the Stone Bridge Fire District meets the drinking water quality standards of the State of Rhode Island's Department of Health. NTFD tests water quality as it enters its distribution system from both sources at its three pumping stations. Chlorine is added, as required. There is no need for additional treatment facilities to maintain or improve water quality from NTFD's supply sources.

**Storage Facilities.** The North Tiverton Fire District (NTFD) has two water storage facilities integrated into its distribution system: a one-million-gallon ground-level reservoir on Hambly Road (currently out of service) and a two-million-gallon standpipe tank on Pocasset Avenue. The Pocasset Avenue tank, which receives water from the State Avenue and Carey Lane pumping stations, feeds directly into the distribution system. The Hambly Road tank was taken out of service due to design limitations that do not meet the system’s operational needs. Detailed information related to each storage facility is shown in the table below. Ownership of TWA’s former one-million-gallon standpipe tank was transferred to the Stone Bridge Fire District on May 3, 2012.

**Storage Facility Detailed Information**

	<b>Hambly Road Reservoir</b>	<b>Pocasset Avenue Tank</b>
Storage Facility Type	Ground Level Reservoir	Standpipe
Total Storage Volume (G)	1,030,000	2,140,000
Usable Storage Volume (G)	950,600	2,000,000
Facility Age	Built 1927	Built 2005
Facility Condition	N/A – not in service	Good
Last Date of Inspection	2007	2024
Construction Material	Concrete	Concrete
Interior Paint Coating or Lining	No	Yes
Cathodic Protection	No	No
Hydraulic Grade Line (HGL) Maximum Elevation (Ft.)	330	365

**Pumping Stations.** NTFD operates three pumping stations located at State Avenue, Carey Lane, and Stafford Road. These stations are integrated into the two distinct pressure zones of NTFD’s water distribution system. The State Avenue and Carey Lane pumping stations serve the NT pressure zone and supply the Pocasset Avenue storage facility. The Stafford Road pumping station supplies the former TWA pressure zone. The table below provides detailed information for each pumping station.

**Pumping Station Detailed Information**

	<b>State Avenue</b>	<b>Carey Lane</b>	<b>Stafford Road</b>
Type of Station	Booster	Booster	Booster
Year Built or Upgraded	2010	2019	2005
Treated Water Source	City of Fall River	Stone Bridge Fire District	City of Fall River
Maximum Flow	1,000 GPM	700 GPM	1,500 GPM
Nominal Flow	700 GPM	250 GPM	200 GPM
Number of Pumps	2	2	5
Pump #1	Centrifugal 500 GPM @ 68 feet TDH	Centrifugal 250 GPM @ 110 feet TDH	Centrifugal 500 GPM @ 100 feet TDH
Pump #2	Centrifugal 500 GPM @ 68 feet TDH	Centrifugal 250 GPM @ 110 feet TDH	Centrifugal 500 GPM @ 100 feet TDH
Pump #3	N/A	N/A	Centrifugal 500 GPM @ 100 feet TDH
Pump #4	N/A	N/A	Centrifugal 100 GPM @ 100 feet TDH
Pump #5	N/A	N/A	Centrifugal 100 GPM @ 100 feet TDH
Hydropneumatic Storage Tanks	No	No	No
Demand of Facility (nearest KW)	<40	<30	<100
Emergency Power	Natural Gas Generator	Propane Generator	Propane Generator
Generator Rating	40 KW	30 KW	100 KW
Chemical Feed Equipment	Chorine (LMI)	Chorine (LMI)	Chorine (Prominent)

**Transmission Lines.** The North Tiverton Fire District (NTFD) distribution system, originally developed in the late 1920's, includes approximately 48.73 miles of transmission pipeline. The system primarily consists of cement-lined ductile iron pipes with most of the current piping installed between 1996 and 2005. NTFD has implemented an ongoing infrastructure rehabilitation program, resulting in significant improvements to the system's operational efficiency. Each year, portions of the distribution system are replaced based on condition.

NTFD maintains a detailed database of pipeline segments by street, which includes information such as pipe size, length, material, and year of installation. Pipe segments are categorized as Urgent, High, Medium, or Low priority, based on several factors including age, water quality, volume demands, frequency of breaks, and adequacy for fire protection.

Currently, two streets totaling approximately 1,715 feet are classified as Urgent and are scheduled for replacement in FY 2025-26. A summary of the transmission line by installation age is provided in the table below.

### Transmission Line Age Summary

<b>Decade of Installation or Replacement</b>	<b>Age of Transmission Line as of 2025</b>	<b>Length of Pipe (feet)</b>	<b>Percent of Total Distribution System</b>
2016-2025	0-9 Years	9,271	3.61%
2006-2015	10-19 Years	30,847	12.02%
1996-2005	20-29 Years	75,304	29.35%
1986-1995	30-39 Years	74,625	29.01%
1976-1985	40-49 Years	16,197	6.30%
1966-1975	50-59 Years	13,111	5.10%
1956-1965	60-69 Years	20,515	7.97%
1946-1955	70-79 Years	14,683	5.71%
1936-1954	80-89 Years	0	0%
1927-1935	90-98 Years	2,537	0.99%
<b>TOTAL</b>		<b>257,090</b>	<b>100.0%</b>

NTFD's water distribution system includes two primary transmission lines. The first delivers water from the State Avenue and Carey Lane pumping stations along Main Road (Route 138). The second supplies gravity-fed water from the Pocasset Avenue storage facility through Fish Road to Industrial Way. The table below provides detailed information on the primary transmission lines.

### Primary Transmission Line Detailed Information

<b>Location</b>	<b>Material</b>	<b>Install Date</b>	<b>Size (in.)</b>	<b>Length (ft)</b>	<b>Condition</b>
From State Avenue and Carey Lane along Main Road (Route 138)	DI	1980 - 1994	12	12,500	Good
From the Pocasset Ave storage facility through Fish Road to Industrial Way	DI	2004	16	6,600	Good
From the Beth Rd through Fish Road, North to Canonicus St.	DI	2014 - 2015	12	6,300	Good

**Interconnections.** The North Tiverton Fire District (NTFD) maintains five primary water interconnections: two with the City of Fall River and three with the Stone Bridge Fire District. All interconnections are equipped with meters. The table below provides detailed information on each interconnection.

**Interconnection Detailed Information**

Connection Location	State Avenue	Carey Lane	North Brayton Road	Quintal Drive	Stafford Road
Connection Source	City of Fall River	Stone Bridge Fire District	Stone Bridge Fire District	Stone Bridge Fire District	City of Fall River
Input Valve #1 Location	State Avenue	Carey Lane	North Brayton Road	Quintal Drive	Stafford Road
Input Valve #2 Location	Pump Station	Pump Station	N/A	Bulgarmarsh Rd	Pump Station
Owner of Valve(s)	North Tiverton Fire District	North Tiverton Fire District	North Tiverton Fire District	Shared	North Tiverton Fire District
Type of Feed	Pumped	Pumped	Gravity	Gravity	Pumped
Max Transmission Main Capacity	1,000 KGD	750 KGD	200 KGD	200 KGD	1,500 KGD
Average Throughput Volume (2024) <sup>1</sup>	191.2 KGD	251.7 KGD	6.6 KGD	65.7 KGD	0 KGD
Transmission Main Condition	Like New	Like New	Good	Good	Good

**Notes:** 1. Total Average Throughput Volume for 2024 is 515.2 KGD.

**Master Meters.** NTFD has five master meters, two measuring water at the primary interconnections with the City of Fall River and three measuring water at the primary interconnections with the Stone Bridge Fire District. Detailed information related to master meters is provided in the table below.

**Master Meters Detailed Information**

Meter Location	State Avenue	Carey Lane	North Brayton Road	Quintal Drive	Stafford Road
Connection Source	City of Fall River	Stone Bridge Fire District	Stone Bridge Fire District	Stone Bridge Fire District	City of Fall River
Device Type	Neptune 8” Turbine	Badger 4” Turbo	AMCO 12” MagMeter	Neptune Mach 10 Ultrasonic 8”	ABB 8” MagMeter
Recording Register	Dial	Electronic	Electronic	Electronic	Electronic
Units of Register	Cubic Feet	Gallons	Gallons	Gallons	Gallons
Multiplier	100	1	1	1	1000
Installation Date	2010	2019	2007	2025	2005
Size of Meter	8 in.	4 in.	12 in.	8 in.	8 in.
Connection Size	8 in.	8 in.	12 in. x 12 in.	12 in.	12 in.
Reading Frequency	Daily	Daily	Monthly	Monthly	Daily
Testing Frequency	N/A	N/A	N/A	N/A	N/A
Last Service	N/A	2019	Feb. 2010	2025	Feb. 2010
Last Test/Calibration	N/A	2019	Feb. 2010	2025	Feb. 2010

**Account Meters.** All user accounts within the North Tiverton Fire District (NTFD) are 100% metered, including residential, commercial, government, and the district’s single industrial account. NTFD also sells water to two commercial bulk water companies. These companies fill their trucks at designated local hydrants using temporary meters intended for this purpose.

NTFD began the conversion from manual read to electronic read meters on April 13, 2004. By the end of 2018, all 3,196 meters in the system had been fully converted. In 2019, the manufacturer of the electronic meter reading devices notified NTFD that it would no longer support or service the existing equipment. As a result, NTFD initiated a system-wide upgrade to cellular digital meters in 2021. By the end of 2024, 1,392 cellular meters, representing 42.27% of the district’s 3,293 total meters, had been installed.

**Fire Hydrants.** The North Tiverton Fire District (NTFD) maintains 431 fire hydrants throughout its water distribution system. All hydrants are currently in good working condition and are subject to a comprehensive annual maintenance program. This program includes systematic flushing to ensure water quality and pressure, painting to maintain visibility and prevent corrosion, and detailed inspections to assess mechanical integrity and operability. Hydrants are evaluated for leaks, ease of operation, drainage, and static pressure. Any hydrant found to be damaged, non-functional, or insufficient for fire protection is prioritized for repair or replacement. NTFD tracks hydrant condition and maintenance history using internal records to support long-term infrastructure planning and ensure compliance with fire protection standards.

## **7.6C Facility Sizing**

**Available Water Supply.** In recent years, the Town of Tiverton has seen a marked increase in high-density residential and mixed-use development, in alignment with statewide planning initiatives such as the Rhode Island Comprehensive Planning and Land Use Regulation Act. The North Tiverton Fire District's infrastructure was originally designed for lower-density residential needs and is now operating close to its supply limits.

To ensure responsible growth and system reliability, NTFD requires developers to perform a hydraulic analysis as part of the review process for new projects over four units. Current projections indicate that the NT service area is operating at approximately 90% of its available supply capacity. To preserve system functionality and emergency reserve, no new high-capacity developments will be approved unless upgrades to the supply infrastructure are implemented.

Water service within the TWA area relies on shared supply infrastructure and collaborative planning. Until additional system capacity is verified, only single-family residential applications will be considered for approval. These measures aim to balance development needs with long-term sustainability and water security.

**Available Distribution Capacity.** Based on current hydraulic modeling, the North Tiverton Fire District is operating near the upper limits of its existing pumping and distribution capacity. Ongoing efforts to assess and optimize infrastructure performance are in place, but limitations remain regarding system-wide expansion. Future development or increased demand will require system upgrades to maintain safe and consistent service across both the NT and TWA areas.

## 7.6D Financial Controls

The North Tiverton Fire District (NTFD) is an independent, quasi-municipal water agency established as a public corporate entity under the laws of the State of Rhode Island. NTFD is fully self-supporting, with funding derived from water user charges, service fees, and local property taxes. The district's aggregate annual budget is developed to cover all operating expenses as well as capital improvements related to the maintenance, rehabilitation, and upgrade of the water treatment and distribution system. Water and tax rates are set by the NTFD Administrative Board. Tax rates are subject to approval by district members at the Annual Meeting, which is held each June in accordance with district bylaws.

The operating budget serves as the primary funding source for NTFD's day-to-day operating expenses, capital improvement projects, and debt service on outstanding bonds. The district's budgeting process is designed to ensure full cost recovery, accounting for both fixed and variable expenses related to production, treatment, conservation, use, management, protection, procurement, and distribution of water for retail sales. A core objective of the budget is to fund all operating expenses through operating income, while utilizing reserve accounts strategically to stabilize cash flow, finance minor infrastructure upgrades, and address unforeseen emergencies. The budget also includes annual allocations for planned improvements to the treatment and distribution systems, supporting ongoing infrastructure reliability and regulatory compliance.

Outside agencies have been the source of funds for major improvement projects that typically require large amounts of up-front capital. The external agencies that are a source of funds for NTFD are the United States Department of Agriculture Rural Development (USDA RD) which has provided low interest loans with up to 45% project grant funds to rural areas of 10,000 population or less, and the Rhode Island Clean Water Finance Agency (RICWFA) which has provided low interest loans. In 2009, the USDA RD re-interpreted the definition of rural areas based upon the population of the city or town in which it resides. This decision has made NTFD as a district ineligible for future funds based upon the Town of Tiverton's population of 15,780, according to the United States 2010 Census.

As of fiscal year-end 2024, NTFD's total long-term debt is \$3,799,274.30, spread over seven loans, six with United States Department of Agriculture Rural Development (USDA RD) and one with Rhode Island Clean Water Finance Agency (RICWFA). Annual payments (interest and principal) over all seven loans total approximately \$297,097.39. NTFD's debt-service ratio is 8.497%, below the reasonable accounting limit of 15%. Funds are prudently borrowed, and only for major capital improvements.

The North Tiverton Fire District has made significant infrastructure investments to support system reliability. Since 2010, approximately 4.68 miles of aging water main has been replaced through its annual replacement program. An additional .58 miles of new main have been installed to eliminate dead ends and extend service to new developments. NTFD also cleaned and relined 1.06 miles of cast iron pipe to enhance water quality and extend system life. Other major improvements during this period include the refurbishment and upgrade of the Carey Lane Pump Station and the full upgrade of all variable frequency drives (VFDs) at the Stafford Road Pump Station. NTFD also modernized its technology systems by upgrading all district computers, servers, internet, billing software, and SCADA controls to enhance cybersecurity and operational efficiency. NTFD implemented a digital work order system to streamline field operations, enhance response times, and improve tracking of maintenance and repairs. A separate software-based backflow testing program enables certified testers to upload results directly, supporting accurate records, regulatory compliance, and proactive monitoring of testing schedules.

In 2021, NTFD launched EyeOnWater alongside the rollout of new cellular-based meters, replacing legacy radio-read devices. This software provides near real-time usage data, helping staff quickly

identify leaks or abnormal consumption, reduce water loss, and prevent high customer bills. The system enhances operational efficiency and improves overall service delivery.

The district’s most recent capital acquisition was a fully outfitted service body truck to support field operations.

### 7.6E Watershed Protection Fund

The North Tiverton Fire District does not own or manage any watershed land and, therefore, is not eligible to participate in or benefit from the Watershed Protection Fund.

### 7.6F Summary, Including Action Items

Since 2010, the North Tiverton Fire District has undertaken a series of strategic infrastructure and technology upgrades to enhance system reliability, customer service, and long-term sustainability. These improvements include extensive water main replacements and relining projects, pump station upgrades, full modernization of computer systems, billing software, SCADA controls, and internet infrastructure, as well as the implementation of advanced work order, backflow tracking, and meter reading technologies. Collectively, these investments have improved operational efficiency, strengthened regulatory compliance, and enhanced service delivery for all district customers.

Action items related to the North Tiverton Fire District’s Clean Water Infrastructure Replacement Plan are summarized in the table below, along with the corresponding implementation schedule and designated responsible party. This list reflects current planning priorities and considers alignment with the Rhode Island Department of Health’s Office of Drinking Water Quality Project Priority List (PPL). Currently, no NTFD projects are included on the active PPL.

#### Action Items

	Action Item	Implementation Schedule	Responsible Person or Organization	Estimated Cost
1	Fish Road water main	Closed - Replaced 4298’ of 6” CI with 12” DI		
2	Upgrade Carey Lane Pump Station	Closed – Replaced: Pumps, Flow Meter, Chlorine System, Chlorine Analyzer, Generator, Heaters, and SCADA controls.		
3	Upgrade Stafford Rd Chemical Treatment and Analyzers	2025 - 2027	NTFD - Pare	TBD
4	Decommission study of the Hambly Rd IMG underground tank	2025 - 2030	NTFD - Pare	TBD
5	Engineering study to evaluate and identify options to increase supply capacity.	2025 - 2026	NTFD - Pare	Approx. \$14k
6	Annual water main replacement	Ongoing	NTFD	Approx. \$800K per year
7	Conversion to Cellular Meters	2021 - 2030	NTFD	Approx. \$135k per year