



**Executive Summary - Water Supply
System Management Plan Update**

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Executive Summary

INTRODUCTION

The Harrisville Fire District (HFD) presents the 2021 Water Supply System Management Plan (WSSMP) Update as a comprehensive plan that addresses all of the elements in the “Rules and Procedures for Water Supply System Management Planning” and includes the “Demand Management Strategy” information that the state has added by law in 2011 as included in the “Rules and Procedures Governing the Water Use and Efficiency Act for Major Public Water Suppliers”. The HFD completed the Water Supply System Management Plan in 2015, and this is the 5-year update to that plan.

BACKGROUND

The HFD was incorporated by an Act of the General Assembly on March 14, 1906. Prior to and including this period, water had been supplied by the Pascoag Water System whose supply and distribution networks date back to the early 1900s. At that time, the Pascoag Water System consisted of two artesian wells, and two shallow trenches that acted as infiltration galleries.

The entire water systems for Pascoag and Harrisville operated under private ownership until 1934, when they were both taken over by the Districts. These subsequently operated together for approximately ten (10) years, at which time the HFD installed its own 300,000-gallon elevated storage tank, and in 1947 the Pascoag Utility District (PUD) developed its first large capacity gravel packed well.

In recent years, discussions of merging the PUD and HFD water systems have occurred at length. As of the date of this report, the two systems remain separate with PUD as a major wholesale customer for HFD. The PUD has been and will continue to be apprised of Harrisville’s efforts to maintain and develop a water supply sufficient to meet the needs of Harrisville, as well as those of the PUD, as ordered by the Providence County Superior Court in the matter entitled ***Russell Jette, et al. v. Pascoag Utility District, et al. v. The Rhode Island Water Resources Board, et al., C.A. No. PC01-5972***, in an order dated on or about January 28, 2002. Details of this court order are presented in the approved 2006 Harrisville WSSMP.

While the potential consolidation of Harrisville and Pascoag is not further investigated in this report, the option remains open and is consistent with State Guide Plan 721, Water 2030 and the Water Resources Board’s 2012 Strategic Plan that call for suppliers and the Board to identify opportunities for regionalization.

GENERAL SYSTEM DESCRIPTION

The HFD serves the Village of Harrisville, part of the Village of Oakland with potable water to residents as well as four of the five Town of Burrillville schools, the Harrisville Library and Town Hall.



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In Fall 2001, the PUD and HFD physically merged their water delivery infrastructure per mandated court order when methyl tert-butyl ether (MBTE) contaminated the PUD water system. The two Districts remain as separate entities, with the PUD as a wholesale customer of the HFD. Residents outside the service areas of these Districts are served by private wells or small community well systems.

The HFD's water system comprises a total of 25 miles of distribution piping serving approximately 3000 customers, 1355 meters, 2 storage tanks, and 2 interconnections (emergency and everyday use). The HFD's Water Department is financed directly through the sale of water. Its office is located at 115 Central Street, Harrisville, RI 02830.

WATER SUPPLY SOURCES

The HFD obtains its water from six active gravel packed wells, which entail Wells 1, 2, and 3 in the Central Street wellfield and Wells 5, 6, and 7 in the Eccleston Field wellfield. Well 4 was taken out of service and abandoned in 2014 due to poor yield. Well 7 is the newest well drilled in 2014. The wells are redeveloped or cleaned on an as-needed basis. The last redevelopments to occur were Wells 5 and 6 in 2018, and Wells 2 and 3 in 2013.

WATER TREATMENT FACILITIES

The water from all the wells is of good quality and requires minimal treatment. Disinfection and corrosion control are the only treatment process necessary. Treatment occurs at Pump Station 2 and Eccleston Field Pump Station. Pump Station 3 conveys water from Wells 1 and 3 to Pump Station 2, which also treats water from Well 2 prior to distribution. The Eccleston Field Pump Station treats water from Wells 5, 6, and 7 prior to distribution.

STORAGE FACILITIES

The HFD owns and operates two water storage facilities. The first one is a 500,000-gallon Hydropillar elevated tank located off Steere Farm Road; it was constructed in 1986, inspected in 2017, and repaired in 2013, with exterior painting in 2018. The second one is a 500,000-gallon composite tank located off Cherry Farm Road; it was constructed in 2007 and inspected in 2017.

DISTRIBUTION FACILITIES

The HFD's system is comprised of 25.2 miles of distribution piping ranging from 1¼ to 16-inch in diameter. Pipe material within the distribution system is cast iron, ductile iron (lined and unlined), copper, and PVC. The majority of the pipes were installed between 1936 and 1999, and the majority of the pipes in the system are 6-inch in diameter. The HFD maintains a total of 189 hydrants.

The HFD installed a Supervisory Control and Data Acquisition (SCADA) system in 2000 to improve the operation of its water system. The SCADA system allows staff of the HFD Water Department to monitor the tanks and pump stations, delivers data and alarms in real time, and allows the staff to make improvements to improve efficiency.



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INTERCONNECTIONS

The HFD is connected to the PUD's system through one active interconnection whose sole purpose is supplying the PUD with wholesale water. The interconnection is located on Pascoag Main Street. The Union Avenue interconnection, which involved operating a gate valve owned the HFD and another gate valve owned by the PUD is now closed.

PLANNED EXTENSIONS

The HFD, by charter, is not bound to any one area in Burrillville, and can serve the entire Town. There are no extensions planned at this point in time to the system, or to the service area.

POPULATIONS SERVED AND PROJECTIONS

The HFD does not serve the entire population of the Town of Burrillville. While some residents have their own water supply wells, a portion of the town is served by the PUD. However, with the MTBE leak that adversely affected PUD wells, the HFD now provides most of the Town's public water. An analysis of the population served data is shown in the table below.

Village Zip Code	Village Name	Village Population	HFD Service Population
02826	Glendale	501	0
02830	Harrisville	5,935	2,345
02839	Mapleville	2,062	185
02858	Oakland	728	278
02859	Pascoag	7,227	0
TOTAL		16,453	2,808
PERCENT OF TOTAL		100%	17.1%

Source: Data.Census.gov

The population of Burrillville is estimated to be increasing by 0.62% per year, making the estimated population 16,514 persons in 2020, 16,828 persons in 2025, 17,142 persons in 2030, and 17,769 persons in 2040. Assuming that the percentage of the population served by the HFD remains at 17.1%, the service population in 2020 is estimated to be 2,900 persons.

MAJOR USERS

A Major User is defined by the State of Rhode Island as "any public or private organization or entity using more than 3 million gallons of water per year". The HFD maintains a list of the major users, with water usage in millions of gallons per year. This data is used in conjunction with the Major Users Technical Assistance Program along with its high-volume Meter Evaluation Program to develop individual information for each user complete with general suggestions and recommendations for reduction of water use. The HFD only has one major user, and in 2019, it consumed 15 million gallons of water.



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METERING

The entire water system is 100% metered. The HFD has installed remote read meters in order ensure actual read on meters. The HFD initiated and continues a comprehensive program to improve meters and meter reading systems as well as to assure that each meter was the appropriate size for the application.

LEGAL AGREEMENTS

The HFD currently has a court order mandating that they supply water to the PUD. This is the only legal agreement in place at this time, and the agreement does not specify the amount of water to be provided.

NON-ACCOUNT WATER AND LEAKAGE

Non-account water is defined as the difference between the metered supply and the metered use for a specific period of time including an allowance for firefighting. Non-account water can be from many sources, including the following:

1. Leaks in the distribution system.
2. Hydrant flushing, sampling, and other maintenance use.
3. Unmetered water used for public parks and buildings.
4. Other unmetered water used for public uses (street sweeping, construction, etc.).
5. Malfunctioning or old meters that do not accurately measure flow.
6. Unread or misread meters.

The percentage of Non-account water has varied from a low of 2% in 2011 to a high of 13% in 2019. The 2020 Fiscal Reporting shows 12.9% Non-account Water. Based on the last annual report (FY2020) the percentage of leakage is less than 1%.

In an effort to reduce the amount of Non-account water, the HFD has leak detection surveys performed, typically every three years. This work is performed by Atlantic States Rural Water and Wastewater Association at no cost to the HFD. A leak detection survey will be scheduled for completion in 2022.

DEMAND MANAGEMENT

The HFD holds as a basic principle that water is a limited resource crucial to society. It is the goal of the HFD to promote efficient use of water through effective demand management of the water system. The HFD has instituted several programs to reduce demand and promote water conservation including a Residential Retrofit Program and Public Education Program.

Residential Retrofit Program Kits are still available and being distributed periodically to new homeowners. HFD personnel currently participate in the Rhode Island Water Works Association education program. The HFD reviews available educational information for use in the Austin T. Leavy Elementary School.

SUPPLY MANAGEMENT

The HFD continues to work with the PUD, Town agencies, and state agencies to develop an effective overlay district to protect the Upper Branch Groundwater Aquifer.



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AVAILABLE WATER

The available water is the maximum pumping capacity of all six wells pumping in conjunction. The maximum pumping capacity is 1.152 MGD.

SAFE YIELD

A safe yield analysis on the Upper Branch Groundwater Aquifer, which feeds the HFD wells was performed in 1991. The US Geological Survey report is entitled “Ground-Water Resources of Rhode Island” by Elaine C. Todd Trench. The report indicates on page 105:

“The yield of the Upper Branch ground-water reservoir has been estimated at 6.3 million gallons per day (Johnston and Dickerman, 1974b, p. 21). Withdrawals at this rate are not expected to cause downstream reaches of the Pascoag and Chepachet Rivers to go dry.”

ANTICIPATED FUTURE DEMANDS

The purpose of this section is to compare anticipated future demands to the water that is available from the current wells. The projected available water, average daily demand, max day demand and surplus water (available water minus average day) are shown in the table below.

Year	Available Water (MGD)	Average Daily Demand (MGD)	Maximum Day Demand (MGD)	Surplus Water (MGD) based on ADD
2020	1.152	0.578	1.156	0.574
2025	1.152	0.589	1.178	0.563
2030	1.152	0.600	1.200	0.552
2040	1.152	0.622	1.244	0.53

The future average daily demand is based population projections as stated previously. The above projections include an average daily demand of 48% for the PUD.

In this plan, it is assumed that the available water for the HFD is the total amount the sources were designed to withdraw, there is no formal permitted amount per day. In times of drought or high demand, conservation efforts will be required by the system users based on the HFD outdoor restrictions to manage demand. HFD is always considering future supply sources to increase redundancy of the water supply system.

RATE STRUCTURE

The HFD is a quasi-municipal public utility providing water and fire protection. All of its operations are financed from water revenues in the form of user fees. All residential, commercial, industrial and government water users are subject to the same fees and rates. The HFD uses an increasing block rate structure. User fees and charges levied by the HFD are established by its Operating Committee. Currently meters are read and customers are billed on a quarterly basis.



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FINANCIAL MANAGEMENT

The HFD hired B&E Consulting, LLC to provide a pro-forma rate study (Study). This Study was completed in 2020 and proposed new rate and structure changes. HFD implemented these changes initially in 2020 and completed those updates in 2021.

EMERGENCY MANAGEMENT

An emergency management plan is submitted with this WSSMP, in addition to a Risk and Resiliency Assessment, which is required by the US EPA.

The HFD is a member of Rhode Island Water/Wastewater Agency Response Network (RIWARN) which is a network that allows water and wastewater systems in Rhode Island to receive rapid mutual aid and assistance from other systems in RI to restore facilities damaged by natural or man-made incidents.

WATER SUPPLY SOURCE PROTECTION

As noted in the Source Water Protection Plan (2008), there are underground storage tanks that are a potential source of pollution along with high-intensity land uses, and roads near the wells. The management plan for contending with these issues has already been enacted to an extent – the Town of Burrillville has an “Aquifer Zone” to limit the type of development and uses within the Wellhead Protection Area. The SWPP makes recommendations for the public, the landowners, and the commercial and industrial businesses to follow. There is nothing further that the HFD does to protect the wellheads at this time, but in the past, they bought land around the wells when possible, and bought water rights from property owners living near the wells.

GENERAL POLICIES

The HFD takes pride in the high quality of the water delivered to its customers. It is constantly striving to operate the system to benefit the citizens and businesses of Burrillville while maintaining efficiency such that the rates and charges are appropriate to operate, maintain and protect the integrity of the water system.

The HFD has adopted nineteen Water Supply Management Objectives (goals). These goals are consistent with state goals and policies, and reflect the basic principles established by State Guide Plan Element 721, Water Supply Policies for Rhode Island, adopted by the State Planning Council on May 12, 1988. They are also consistent with the needs for water supply planning outlined in State Guide Plan Element 721: Rhode Island Water 2030.

Consistent with these basic principles, supportive of the effort to meet the needs of the Northwestern Region of Rhode Island, and consistent with the Town of Burrillville Comprehensive Plan, the HFD has adopted nineteen (19) Water Supply Management Objectives summarized below.

1. Continue system wide maintenance and capital improvements.



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2. To the maximum feasible extent, eliminate system dead-ends and prevent new development which contributes to the proliferation of dead-ends.
3. Conserve water through an efficient rate structure.
4. Promote water conservation through public education.
5. In conjunction and coordination with the State of Rhode Island Major User Technical Assistance efforts, disseminate technical information.
6. Reduce potable water consumption by encouraging industrial process water recycling and reuse as an alternative to continuous consumption of potable water resources and develop alternative water sources where possible, such as groundwater, for large industrial process uses, large irrigation uses, and other forms of consumption which do not require drinking water levels of purification.
7. Prepare, maintain, update, and implement in 5-year increments with annual updates a system-wide capital improvement program .
8. Meet emergency “loss of supply” conditions in a timely and effective manner.
9. Maintain a water supply management system that is coordinated with the managers of regional water system interconnections and the Burrillville Wastewater Treatment Facility.
10. Control new connections and the expansion of the water supply distribution system to manage the increased demand relative to supply and the capacity of the distribution system.
11. Continue the meter replacement program of “remote read” meters.
12. Rationally respond to drought conditions through implementation of conservation measures based on thresholds of drought severity and user requirements.
13. Annually update the Emergency Management Plan.
14. Periodically update the Rules and Regulations.
15. Calibrate master meters.
16. Maintain the volume of non-account water at less than fifteen percent and work to achieve a volume of ten percent or less of the total amount of water billed.
17. Revise the billing system to categorize uses by SIC classifications.
18. Support and promote the State’s efforts at remediation of hazardous material sites and the improvements of local groundwater sources.
19. Utilize the billing system to notify customers of the availability of water conservation devices and to remind customers of the need to conserve water.

The HFD has been working towards meeting these goals over the last five years. In addition to replacing its current meters with remote-read ones, it completed a rate study in 2020. The HFD last implemented



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new water rates in the 2015 calendar year, along with the current rates which were implemented in 2020 and 2021.

It is expected that as goals are met, goals will be revised or removed from the list. The goals that are achieved will be reported on in the next plan update as an accomplishment.

