HUNTSVILLE TOWN WATER CONSERVATION PLAN

Prepared by:
Ronald Gault
Huntsville Town Culinary Water Manager
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1.0 Introduction

Huntsville Town's culinary water system serves under 500 connections and to date has not been required to develop a water conservation plan. This document represents its first effort in codifying the Town's water conservation planning. This document was prepared following the examples on the Utah Division of Water Resources (DWR) website.

2.0 Brief History

Since the 1940s, the Town's culinary water source has consisted of 3 springs: Upper Bennett, Peterson, and Lower Bennett. All three are clustered and their flows combined in the same drainage, with Upper Bennett, the largest producing spring, shared with the owners of the former Abby of the Holy Trinity Monastery property. In July of 1996, the Town received notice from the Utah State Division of Drinking Water (DDW) that they ruled Upper Bennet Spring was under the influence of surface water. The springs experience turbidity during the spring runoff and a simple chlorination system was used to disinfect the water. At the same time, DDW required that a new chlorination system had to be built or the spring would become unapproved for culinary use. As a result, the Town enacted a project to design and build the current water system, including a new treatment plant, which went into service in 2000. Including installation of new water lines, spring rehabilitation, and building a 1-million-gallon reservoir, the overall cost was ~$3 million. It was originally funded by a 50% USDA grant and a 50% loan.

The treatment plant underwent a significant upgrade in 2013 which added a bank of cartridge filters, upgraded the turbidity meters, installed a new chlorine injection system, and improved the floor drainage. Automated control system upgrades were installed in 2017 and again in 2020 which improved the consistency of the water quality. Programmable logic controllers (PLC) installed in the plant control panels, combined with upgraded operational control software, have increased the plant performance and provide detailed remote monitoring capability.

3.0 Existing Culinary Water System Overview

3.1 Sources

Huntsville Town has over 600-acre feet of water rights as shown in Table 3-1. The current spring fed water supply is rated as an underground source under the influence of surface water due to spring snowmelt that increases levels of turbidity. Upper Bennet Spring produces in excess of 300 gpm during most months with a State assigned safe yield of 180 gpm. Two smaller springs contribute small amounts of water. Since 2019, due to a DDW mandate, a secondary water source from a nearby well (Wishing Well) was developed, validated, and is currently being used as the primary source, producing in excess of 200 gpm of clean water with a safe yield rating of 150 gpm.

WR #	CFS	AC-FT	USE	STATUS	PRIORITY	SOURCE
E1659	0.041	30	Municipal	App	1980	Underground wells
E1477	0.3	120	Municipal	Cert	1980	Underground wells
A43294 35-4759, 35-7399, 35-7431	1.29	516.58	Municipal	Cert	1864-1938	Underground wells, Springs, S. Fork Ogden River
Total	**1.6**	**676.58**				

Table 3-1: Huntsville Town Water Rights

3.2 Treatment

The water treatment plant is a direct filtration design utilizing three layers of filtration. It is an open, pressurized system designed for up to a 500 gallons per minute (GPM) flow rate, although the maximum current capacity is in the range of 250 GPM based on the necessary distribution system demand and chlorine contact time.

Figure 3.1 is a top-level block diagram of the major plant subsystems. Due to the surface influences from the springs, the plant has been rated as Bin 1 by DDW, which dictated the acceptable types of filtration required, based on the performance level needed to achieve acceptable drinking quality levels. The plant easily meets DDW requirements thanks to redundant filtering processes.

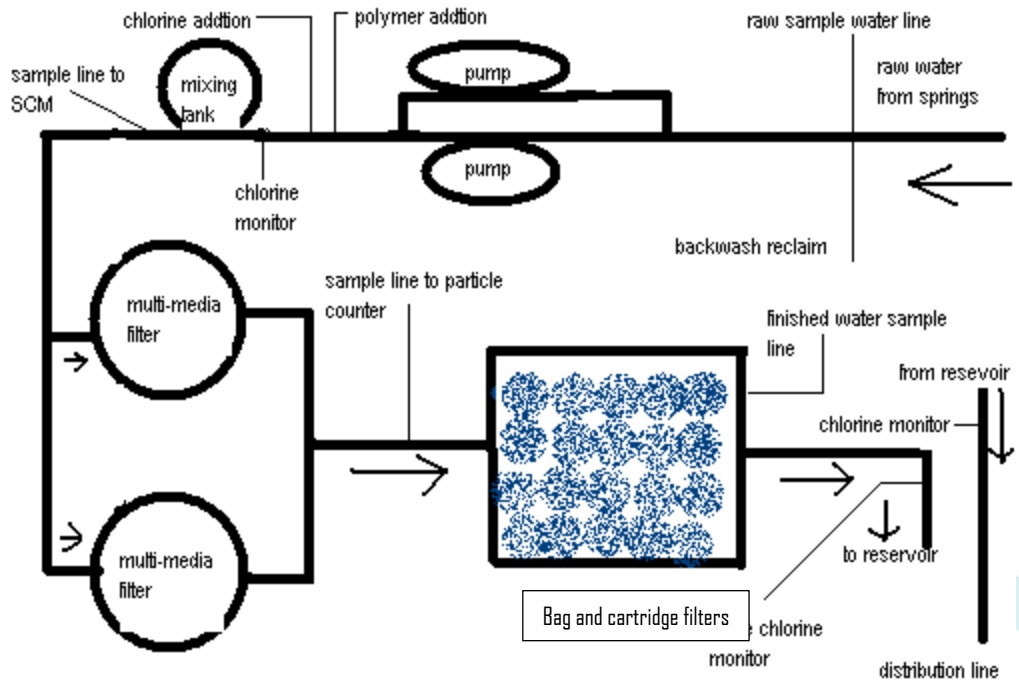

Figure 3.1: Block Diagram of the Huntsville Town Water Treatment Plant

Figure 3-2 is a screenshot from the treatment plant control computer. Entering raw water is sampled for turbidity and particle count. Line pressure is maintained at ~85 psi via one of two booster pumps plumbed in parallel. Only one pump is active at a time, with the control computer alternating pumps at each turn-on cycle. Chlorine gas and polymer is injected into the raw water as it enters a mixing tank. From the mixing tank water enters a system of three filters and then pumped to a one-million-gallon storage reservoir. Flow and pressure are monitored along the routing to provide feedback for the SCADA system.

3.3 Storage

As it exits the plant, water is monitored for particle count, pressure and chlorine. It is routed to a one-million-gallon reservoir built into a nearby hill. The reservoir water returns via gravity feed to the treatment plant and is directed to the Town. The treatment process turns on and off automatically as a function of the water level measured at the reservoir. The reservoir is 15 ft deep, and water is monitored for depth. When the level drops to a set point (12 ft) the plant is turned on until the water level reaches 15 ft. Water returns to the plant from the reservoir where it is monitored for chlorine level (this measurement is used in determining the input of chlorine at the injection point) and routed through piping to the Town. The average pressure coming out of the reservoir is ~80 psi under gravity-generated pressure. The elevation drop to the Town adds another ~30 psi, requiring pressure reducing prior to entering the Town.

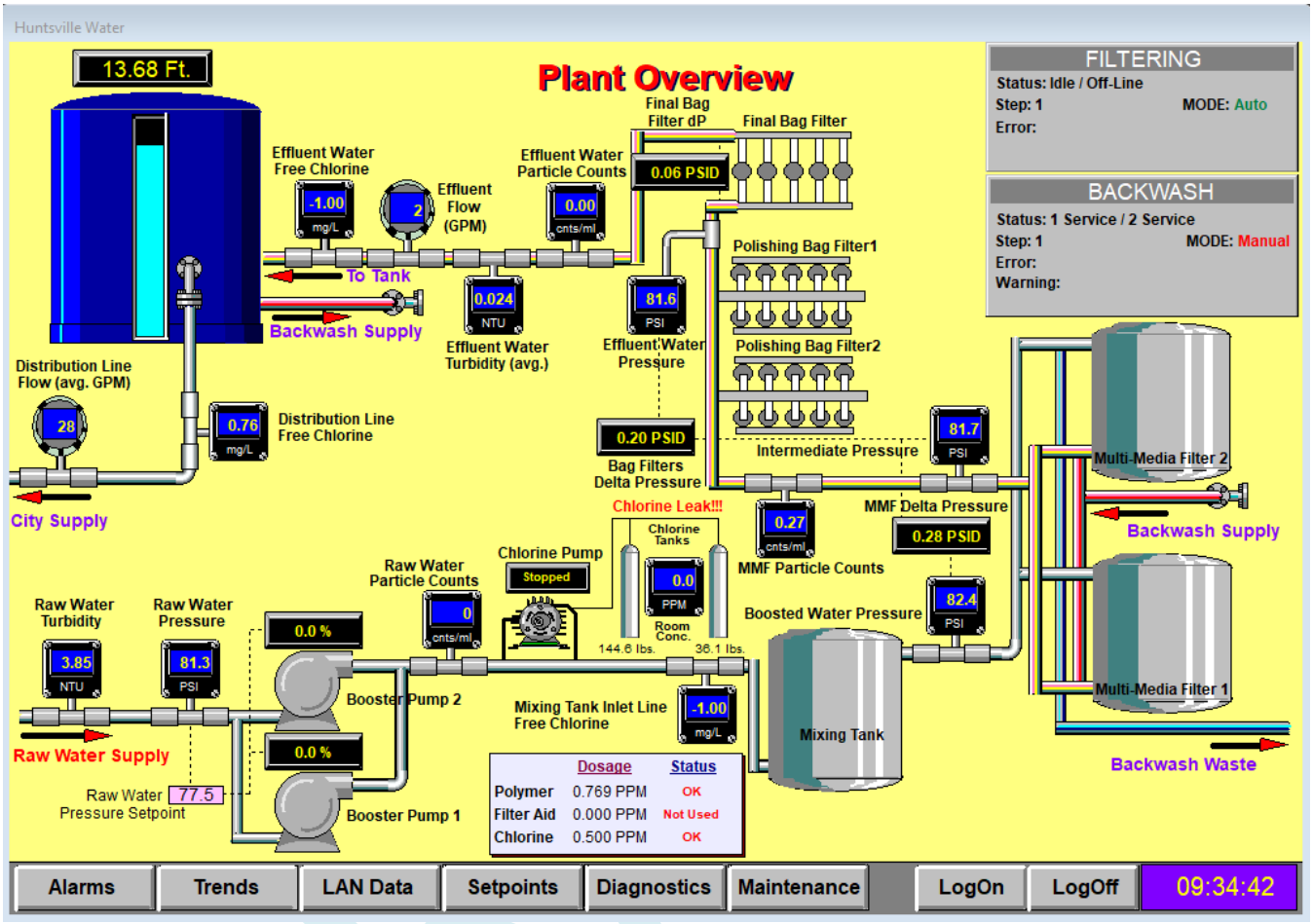

Figure 3-2: Water Treatment Process and Monitoring Points

3.4 Transmission/Distribution System

Approximately 17,000 feet of 12-inch-high density polyethylene (HDPE) pipe transports the water to the Town. A number of connections are located along the route to Town. In the past several years, the piping has been experiencing an increasing rate of leaks, causing a resulting increase in repair costs. The Town is planning a spring-summer 2026 project to replace 3,600 feet of the HDPE in the area experiencing the greatest number of leaks.

4.0 Culinary Water Connections

4.1 Growth Projections

Estimated growth in culinary water equivalent residential units (ERUs) is based on historical growth in the Town. The recent incorporation of Ogden Valley City surrounds Huntsville Town thereby halting any further expansion of Town's area. The remaining growth will come from the remaining undeveloped lots within the Town boundaries. Table 4-1 depicts a recently composed estimate of the increase in Equivalent Residential Units (ERU) for the next ten years.

Year	ERUs
2026	352
2027	355
2028	357
2029	360
2030	362
2031	365
2032	368
2033	370
2034	373
2035	375
2036	378

Table 4-1: Estimate Growth in Equivalent Residential Units – Huntsville Town

4.2 Current and Future Water Use

In 2025, Huntsville Town distributed over 56 million gallons of treated water from its treatment plant. Total billings to all users amounted to about 18 million gallons, amounting to an aver of about 70 gallons per capita per day. Approximately 38 million gallons of water was unaccounted for. Repaired leaks along the 3,600-foot section due for replacement in 2026 accounted for a substantial amount of this loss. Experience with these leaks showed that due to the porousness of the soil in this area, leaks take a long time to manifest on the surface. Experience repairing detected leaks the past couple of years have primarily been from cracking pipe welds and soil abrasion leaks due to insufficient proper backfill when the pipe was originally installed. It is suspected that there are still undetected leaks in the section. Table 4-2 depicts the usage data for 2025. Note that the second half of the year had a major reduction in losses, the result of several large leaks detected and repaired in the spring of 2025, all in the due to be replaced section.

	Plant	Distribution	Difference	Town	**Loss**
January	7,344,740	3,820,932	3,523,808	1,169,997	2,650,935
February	5,126,278	3,991,201	1,135,077	1,082,340	2,908,861
March	6,668,750	6,529,465	139,285	1,107,005	5,422,460
April	4,776,586	5,932,840	-1,156,254	1,505,931	4,426,909
May	12,014,684	11,061,950	952,734	1,774,214	9,287,736
June	9,268,581	8,119,719	1,148,862	2,286,684	5,833,035
July	4,239,003	3,834,772	404,231	2,655,537	1,179,235
August	3,994,721	3,381,410	613,311	1,873,130	1,508,280
September	3,017,877	2,653,294	364,583	1,497,164	1,156,130
October	3,093,841	2,439,779	654,062	1,190,903	1,248,876
November	2,281,471	2,353,684	-72,213	1,049,539	1,304,145
December	3,390,668	2,677,772	712,896	1,177,339	1,500,433

Table 4-2 – 2025 Huntsville Town Culinary Water Usage

5.0 Water Measurement and Billing

5.1 Water Measurement

100% of Huntsville water connections are metered and all are read and bills sent on a monthly basis.

5.2 Water Billing

The water rates allow for a base rate of 7,000 gallons/month with a tiered scale that escalates the cost per gallon above that minimum rate. Over 90% of residential connections are consuming less than the allowed minimum gallonage of 7,000 gallons.

Monthly charge for a connection within the municipal boundaries up to 7,000 gallons		Charge for connections outside the municipal boundaries up to 7,000 gallons	
3/4 inch	$103.50	3/4 inch	$135.00
1 inch	$161.10	1 inch	$208.80
1.2 inches	$229.50	1.5 inches	$299.70
2 inches	$299.70	2 inches	$382.50
3 inches	$423.90	3 inches	$465.30

Overage Categories	In Municipal Boundaries	Outside Municipal Boundaries
7,000-19,999	$12.15	$13.95
20,000-29,999	$14.40	$16.20
30,000-39,999	$16.20	$18.00
40,000-49,999	$18.45	$20.25
50,000-59,999	$20.70	$22.50
60,000-69,999	$22.95	$24.75
70,000-79,999	$25.20	$27.00
80,000-89,999	$27.45	$29.25
90,000-99,999	$29.70	$31.50
100,000 +	$21.95	$33.75

6.0 Conservation Practices

While this is the Town's first water conservation plan, the Town has been following a conservation-based protocol of measuring, monitoring, educating, billing, analyzing, and remediating tasks to control and minimize its culinary water usage.

6.1 Measuring

Any meter that fails to report is immediately repaired or replaced by the Town maintenance department.

6.2 Monitoring

Town ordinances do not allow treated water to be used for irrigation. The Town has secondary water lines installed, and the irrigation company is a private organization with the majority of Town residents as shareholders. A high user list for culinary water is compiled every month, and these users are notified via email or phone as to their abnormal usage. They are asked to investigate why their usage is so high. If they are unable to identify the cause, the Town maintenance personnel are dispatched to investigate.

6.3 Educating

The monthly Town newsletter contained in the water bills has frequent articles regarding the water system as part of a public awareness program. The Town website has a section devoted to culinary water with information about the system, information on cross connection prevention, etc. Frequent water system status briefings are provided to the Town council in their public meetings.

6.4 Billing

The large leak the Town experienced in December 2024, and the financial burden from remediating it, resulted in the Town applying for a loan to fund a major infrastructure upgrade. The Town commissioned Zion's Bank to conduct a Culinary Water Rates Analysis, which they delivered in August of 2025. The analyses concluded that the Town was undercharging the users based on the increasing system maintenance needs and to support servicing a loan payment. In anticipation of the necessity to obtain a loan for the upcoming infrastructure upgrades a substantial increase in the water rates was passed by the Town Council in the fall of 2025. A tiered schedule is used (Section 5.2) to encourage controlled consumption and reflect the addition burden high usage places on the system.

6.5 Analyzing

The Town conducted a risk-based lifecycle analysis to determine when components are most likely to reach end of useful life and prepare for their refurbishment/replacement prior to their actual failure. Every individual subsystem was identified, the individual components reviewed as to whether they can be refurbished or have to be replaced, and an estimate of their remaining useful life estimated. This information was combined with an estimate of the severity of their failure to the system's operation to determine a risk-based repair/refurbish/replace schedule.

6.6 Remediating

The town has an aggressive repair approach when a leak is found. Most are fixed with several days. The majority of supply (between the main line and the meter) water leaks are beyond the capability of the Town maintenance department and are contracted out. Residential leaks can usually be addressed within two working days.

In the treatment plant, remediation steps have been evaluated for failure/accident scenarios determined to possess a high enough likelihood to exceed a determined risk level to determine if additional operational measures/procedures needed to be considered for the plant. Time to remediate is a critical factor was also determined because the plant can only be out of production for a short period of time (ten days on average) before the reservoir will no longer supply the Town's needs.

The ongoing maintenance schedule is determined by the repair/refurbish/replace schedule and routine exercising of valves, instrument calibration, sampling, visual inspection, etc. A daily log is maintained to track trends and record maintenance activities, noticed abnormalities, etc. Special attention is giving to daily effluent (water from the plant to reservoir), and distribution (water from the reservoir to town) to identify any indication of leaks or unusual operational symptoms.

7.0 Certification of Adoption

I, Richard Sorensen, Mayor of Huntsville Town, hereby certify that this Water Conservation Plan has been adopted by the Huntsville Town Council on February 5, 2026.

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Richard L. Sorensen Date