Let's Talk Water

Brewster Water Department Daily Operations and Future Challenges





What are we covering today?

- Where do we get our water?
- >How is it supplied to the community?
- > How is a water department managed?
- >How do we pay for it?
- >PFAS and other emerging contaminants
- >How do we protect our water?



Water 101: The Blue Planet



Breakdown of Earth's Water (%)Oceans96.5Permanent Ice & Snow1.7Groundwater1.7Lakes & Rivers0.014Atmosphere0.0001

Breakdown of Fresh Water (%)Permanent Ice & Snow68.7Groundwater30.1Lakes & Rivers0.3

Source: USGS

Quabbin Reservoir

Established in 1939

-Quabbin Reservoir is one of the largest unfiltered water supplies in the United States. Along with the Wachusett Reservoir and Ware River, it is the source of high quality water for the Massachusetts Water Resources Authority water supply system. The 412 billion gallon reservoir covers 39 square miles with 181 miles of shoreline. Recreational activities are regulated and limited to protect 3 million people's drinking water.

Four Towns Relocated Dana, Enfield, Greenwich and Prescott



Cape Cod Sole Source Aquifer

+ The Cape Cod aquifer formation alone conservatively holds approximately 2,000 billion gallons of water. This is four times the volume of Quabbin and Wachusett Reservoirs combined; over 11 years of average recharge is stored in the Cape Cod aquifer like a multi-year surface water reservoir. (Sustainable Water Management Initiative)





Zone 2









USGS Monitoring Well Nickerson State Park

Water Conservation

	DROUG	TOWN OF BREWSTER	US	
	ACTION LEVEL	RESPONSE	CURRENT CONDITION	
	NORMAL	NORMAL WATERING CONDITIONS	o	
	MILD	0		
1	SIGNIFICANT	MANDATORY: ODD/EVEN Watering restrictions	U	
	CRITICAL	MANDATORY: 2 DAY PER WEEK OUTDOOR USE & OFF-PEAK HOURS	э	
	EMERGENC	Y MANDATORY: BAN ON ALL NON- ESSENTIAL OUTDOOR WATER USE		



Current Water Restrictions

- In response to drought conditions, the Brewster Water
 Commission recently voted to reimpose mandatory restrictions
 on outdoor watering in accordance with <u>Town bylaws</u> and relevant state permits.
- +Effective Monday May 16, these restrictions establish an alternating (odd/even) schedule for outdoor watering based upon house number and calendar date. Properties with odd number street addresses may water on odd number calendar days and properties with even number addresses may water on even number calendar days (example: 53 is ODD, 54 is EVEN). Outdoor watering done during periods of water restriction shall occur from 4:00AM to 8:00AM and from 5:00PM to 9:00PM.

WEIIS







Operations of Brewster Water

 Funded independently of Brewster Town Government
 Annual budget supported by Water Revenues
 Residents are billed 2x a year in February and August
 Independent rate studies are conducted every 3 to 5 years
 Rates support Salaries, Debt Service, Operational Expenses, Capital Expenses (not borrowed) and Indirect Costs

Findings

2	

Financially Sound

 Fund Balance
 6/30/19
 \$1,727,828 – Not too much considering capital needs

Capital Needs Will Drive the Rates Moving Forward

- Generator Project -\$1,200,000 Bond
- \$320,000 Average per Year
- Funded by Reserves
- Extensive Capital Needs Beyond FY 2025

Consumption has Decreased by 3% Since last Study (2015)

Capital Improvement Plan – Funded by Reserves

	FISCAL YEAR	FISCAL	FISCAL	FISCAL	FISCAL YEAR
	2021	YEAR 2022	YEAR 2023	YEAR 2024	2025
WATER DEPARTMENT					
Water Construction Account	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000
Vehicle	\$60,000	\$60,000	\$60,000	\$60,000	\$90,000
Pump Replacement for Well No. 3	\$40,000				
Pump Replacement for Well No. 4			\$40,000		
Pump Replacement for Well No. 6	\$40,000				
Well No. 3 Cleaning Project	\$40,000				
Well No. 4 Cleaning Project			\$40,000		
Well No. 6 Cleaning Project	\$40,000				
Water main - Red Top, North		\$125,000			
Construction Generators Project - Bond	\$1,200,000				
TOTAL	\$400,000	\$365,000	\$320,000	\$240,000	\$270,000

5 Year Average Budget- \$3,297,302



Proposed Rates

BREWSTER WATER DEPARTMENT

Current vs Proposed Rates & Charges

	Current	Proposed	Dollar	Percentage	Proposed	Proposed	Proposed	Proposed
	Rates	Rates FY 2021	Increase	Increase	Rates FY 2022	Rates FY 2023	Rates FY 2024	Rates FY 2025
Semi-annual Basic System Fee (Minimum Charge)								
Up to 1" Meter	\$60.00	\$60.00	\$0.00	0.00%	\$65.00	\$70.00	\$75.00	\$75.00
1" Meter	\$115.00	\$115.00	\$0.00	0.00%	\$125.00	\$135.00	\$150.00	\$150.00
1 1/2" Meter	\$145.00	\$145.00	\$0.00	0.00%	\$160.00	\$170.00	\$175.00	\$175.00
2" Meter	\$175.00	\$175.00	\$0.00	0.00%	\$200.00	\$210.00	\$225.00	\$225.00
3" Meter	\$225.00	\$225.00	\$0.00	0.00%	\$250.00	\$275.00	\$300.00	\$300.00
Dollar Increase to 1" Meter			\$0.00		\$5.00	\$5.00	\$5.00	\$0.00
Semi-annual Step Rates								
1st Step: 0-5,000 Gallons, per 1,000 gallons	\$2.27	\$2.43	\$0.16	7.00%	\$2.48	\$2.53	\$2.58	\$2.63
2nd Step: Over 5,000 Gallons, per 1,000 gallons	\$4.86	\$5.20	\$0.34	7.00%	\$5.30	\$5.41	\$5.52	\$5.63
Step Rate Percentage Increase				7.00%	2.00%	2.00%	2.00%	2.00%
Backflow Testing								
Per Test	\$0.00	\$75.00	\$75.00		\$75.00	\$75.00	\$75.00	\$75.00
Annual Private Fire Protection								
2" Connection	\$80.00	\$80.00	\$0.00	0.00%	\$80.00	\$80.00	\$80.00	\$80.00
4" & Larger Connection	\$160.00	\$160.00	\$0.00	0.00%	\$160.00	\$160.00	\$160.00	\$160.00





Infrastructure

≻5 Wells ➢ 4 Treatment Facilities >Two Storage Tanks ▶135 Miles of Water Main ≻7200 Service Connections >1188 Fire Hydrants > Operated by SCADA System



Well 6



Well 6







Mixing System



Vent Hatch Holes for Scaffolding



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Town of Brewster Massachusetts, SCADA System, Main Screen





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SCADA-02

Town of Brewster Massachusetts, SCADA Overview Screen





Maintenance / Programs

Cross Connection Program





Hydrant Flushing



Water Main Repair and Replacement





Great Fields Road Installation



Hydration Stations





Types of Hazards Chemical **Electrical** Equipment **Confined Space Trench Safety**



Chemical Hazards









Electrical Hazards





Equipment Hazards









Confined Space Hazards







Threats to Drinking Water

- Septic Systems
- Nitrogen Loading
- ≻MCL 10 ppm
- ➢ Projected range at buildout 0.6 to 1.57
- ➢Use of fertilizer
- >Improper disposal of hazardous waste

When?

2nd Saturday of the month from May to October Harwich Transfer Station



Cleaners & Chemicals • Gasoline • Mercury Products • Pool Chemicals Oil-based Paints, Polishes & Stains • Pesticides and Lawn Chemicals

Are you a small business and do you use chemicals? To make your state required disposal arrangements and obtain pricing, contact Kalliope Chute, HazMat Environmental Specialist, at #508-375-6699.

Download your brochure and find more info at our website.

www.loveyourlocalwater.org



Cape Cod Cooperative Extension www.capecodextension.org

	Waste Category	Container Size	Quant	Price	Line Total			
	Acids	55 gallon drum	1	\$320.00	\$320.00			
/	Acids	5 gallon pail	0	\$112.00	\$0.00			
	Aerosols	55 gallon drum	8	\$220.00	\$1,760.00			
/	Alkaline	55 gallon drum	1	\$320.00	\$320.00			
	Asbestos	30 gallon drum	0	\$131.25	\$0.00			
	Bleach	55 gallon drum	1	\$330.00	\$330.00			
	Gas	55 gallon drum	9	\$135.00	\$1,215.00			
	Lab pack, caustic	15 gallon drum	0	\$200.00	\$0.00			
	Lab pack, incineration	5 gallon pail	0	\$200.00	\$0.00			
	Latex paint	CYB	2	\$270.00	\$540.00			
	Latex paint	15 gallon	0	\$148.50	\$0.00			
	Mercury waste	5 gallon pail	0	\$250.00	\$0.00			
	Oil	55 gallon drum	4	\$100.00	\$400.00			
	Organic Peroxide	5 gallon pail	0	\$125.00	\$0.00			
	Oxidizers	5 gallon pail	1	\$115.50	\$115.50			
	Canned gas	1 unit	0	\$10.00	\$0.00			
	Paint sludge	55 gallon drum	4	\$175.00	\$700.00			
	Paint	55 gallon drum	0	\$135.00	\$0.00			
	Paint sludge	CYB	13	\$430.00	\$5,590.00			
	Pesticides	CYB	2	\$1,220.00	\$2,440.00			
	Pesticides	55 gallon drum	8	\$305.00	\$2,440.00			
	Lamps		0	\$0.65	\$0.00			
	VSQG & Non-resident		0	\$0.00	\$0.00			
	Invoice sub-total				\$16,170.50			
	Brewster Invoice Amo	ount			\$4,668.42			
						Town	Percentage	Amount
	Town of Brewster	Resident volume: 28.87%	0	\$4,668.42		Harwich	39.75%	\$6,427.78
		Police detail %		\$0.00		Brewster	28.87%	\$4,668.42
		Please pay:		\$4,668.42		Chatham	31.38%	\$5,074.30
							100.00%	\$16,170.50

Emerging Contaminants

- + UCMR- Unregulated Contaminant Monitoring Rule
- + PPM, PPB, PPT
- + What's out there?
- + Health impacts?
- + How to remove it?
- + PFAs



PFAS

Class of chemicals

- Sover 12,000 different chemicals in its class
- >Breakdown very slowly over time (Forever Chemical)
- ➢Were developed in the 1940's and have been used in industry and consumer products since the 1950's
- Used on nonstick surfaces, stain resistant and fire extinguisher foams as well as other applications
- >Found in the blood of people and animals worldwide

EPA Website

+What We Don't Fully Understand Yet

- EPA's researchers and partners across the country are working hard to answer critical questions about PFAS:
 - How to better and more efficiently detect and measure PFAS in our air, water, soil, and fish and wildlife
 - How much people are exposed to PFAS
 - How harmful PFAS are to people and the environment
 - How to remove PFAS from drinking water
 - How to manage and dispose of PFAS
- This information will help EPA and state, local, and tribal partners make more informed decisions on how best to protect human health and the environment.

Granulated Activated Carbon and Ion Exchange Resins



Brewster's Current Status

2 rounds of sampling at all wells with no detects
 Sampled for 6 regulated and 12 unregulated PFAS
 Current MCL 20ppt
 EPA recommending 0.004 for PFOA and 0.02 for PFOS

≻500,000% decrease

>Can labs detect at such low levels?

What's the Takeaway

+Science +Improve quality of life +Convenience - Money +Can we versus should we +Consumer steers the ship +Protect the ground water +Purchase land





Thank You!!





Thank you for joining us.





BrewsterConservationTrust.org