Issue 27, Spring/Summer 2024

Barnstable Clean Water Coalition

COALITION Quarterly

Subsidize To Equalize

Faster, Cheaper, Fairer

BCleanWater.org

A Note From The Helm

SUBSIDIZE TO EQUALIZE CLEAN WATER FOR EVERYONE

We all know water pollution is a problem on Cape Cod. Living on what is essentially a sand bar with a sole source aquifer we are surrounded by sea and peppered with ponds and lakes. Sadly, we have mistreated this treasure, relying largely on antiquated waste and wastewater disposal approaches.

Our disregard has come home to roost. Most of our estuaries, lakes and ponds are impaired or worse, unusable due to harmful algal blooms. Elevated nitrogen levels in our drinking water indicate the creeping contamination from wastewater. The best line of defense has been the treatment of our drinking water. We think it makes sense for everyone to have an activated carbon water filter container for drinking water. PFAS contamination may be the "canary in the coal mine" with its "slippery" nature making it hard to eliminate at its source. The dangers from chemicals like PFAS have only recently been recognized and they may well be sentinels for the toxic soup of medicines, personal and household products we routinely pour down the drain.

Our groundwater and surface water will be compromised for decades. We must do better but can't let perfect be the enemy of good. Expanding centralized municipal wastewater collection and treatment systems (sewers) must be part of the "clean up" effort even as new individual treatment systems and other nature-based approaches emerge. Meanwhile, costs are rising in terms of both money and time making large scale treatment more challenging. Climate change and warmer weather worsens the impact of water pollution.

State regulations now mandate reducing nitrogen loads on most of Cape Cod for estuary protection while our local boards of health are tasked with protecting us in our towns.

One way or another the cost of cleaning up our water falls on all of us. Whether it is fees, taxes, or direct payments, we must pay. Shouldering such a burden is almost impossible unless we spread the load AND involve everyone. If everyone pays, everyone should benefit.

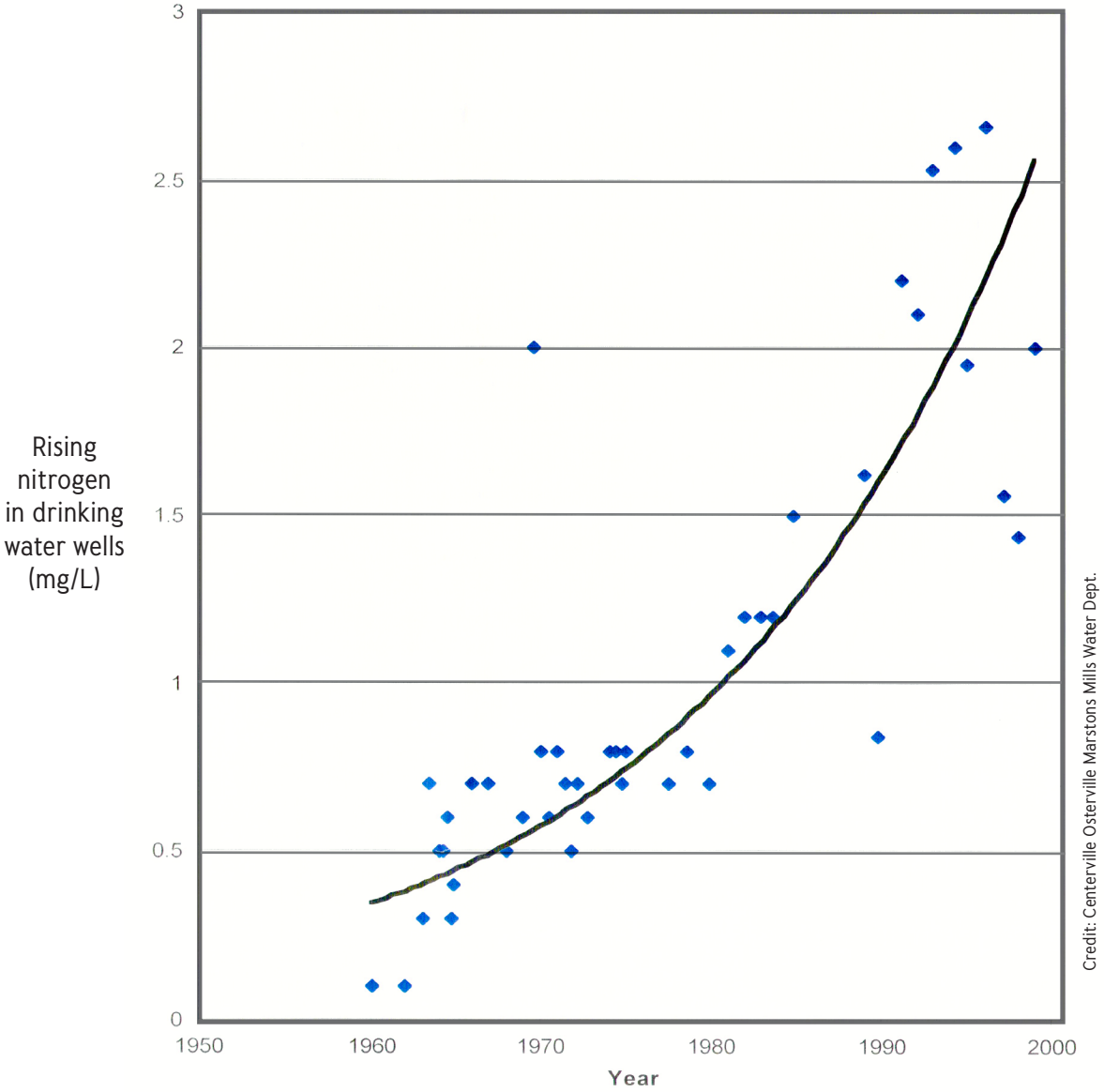
In recent newsletters we have shown that new individual on-site wastewater treatment systems are emerging. Some of these systems perform at levels equal to the best municipal systems. The cost of these systems can be a fraction of sewer expansion which may enable a "clean water for all" approach. In addition, distributed individual wastewater treatment could assist in mitigating our housing crisis by allowing the addition of ADUs (accessory dwelling units) while still reducing per parcel wastewater loads by 75% or more!

In the rest of this newsletter, we illustrate some possibilities. Our goal is to challenge the community to think creatively and adaptively. We seek a blended approach. Sewer in high density areas, close to treatment plants; subsidize and incentivize individual & cluster systems, institute "time to travel" considerations to target where and how to prioritize our efforts.

Everyone Deserves Clean Water

The image on this page shows the nitrogen load in a municipal drinking water well in the town of Osterville from 1960 to 1999. This one well (there are dozens in Osterville and across the Cape) illustrates how water quality is deteriorating. Many water wells, and even municipal systems, now record nitrogen levels of 5 mgs or more. According to scientist Scott Horsley, such levels indicate that as much as 20% of our drinking water is coming from wastewater.

Exhibit 1: Osterville Well Data Arena Wells 1960 to 1999



Driven by housing density, development, and population

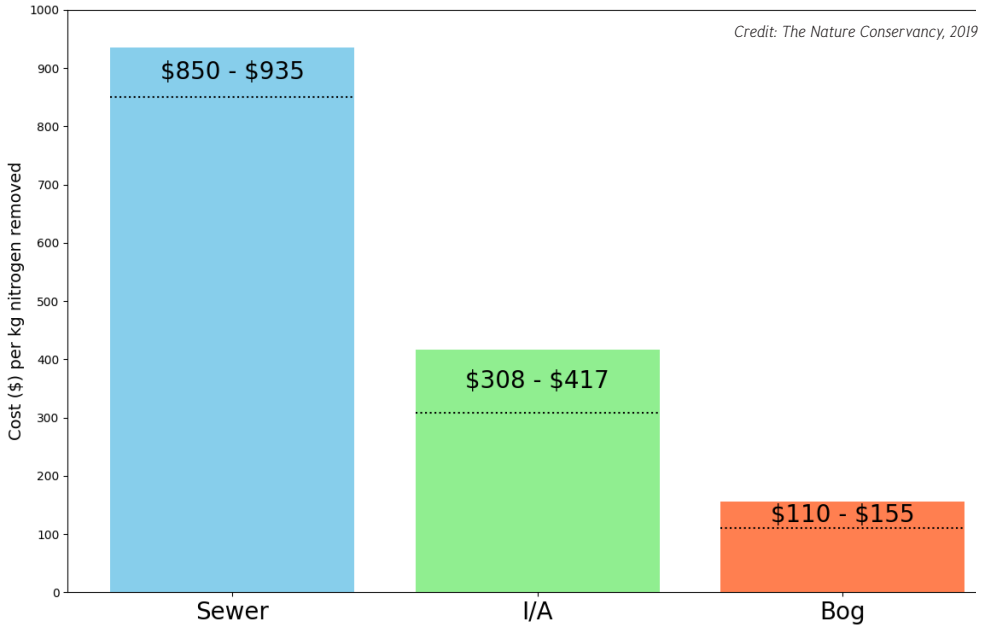
The Cost of Clean Water

We are beginning to understand more about the costs of dirty water as our community faces regulatory mandates to control nitrogen pollution in our estuaries. Further deterioration of water quality, harmful algal blooms in our lakes and ponds, and PFAS contamination in our drinking water result in rising costs. Our sewer expansion plan is principally targeting our estuaries, many of our lakes and ponds are treated with "Alum" as a stop gap, and our drinking water costs will continue to rise as we install more giant, activated carbon treatment systems to control PFAS* (and its related family of chemicals).

For the most part all water is connected on Cape Cod. We have a sole source aquifer. Our lakes and ponds provide windows into the aquifer and are connected to them. Our ground and surface waters travel to the sea (our estuaries, Nantucket Sound, and Cape Cod Bay) over time. We rely on a "recharge" by way of rainfall, to support our community's freshwater use. Rainfall on Cape Cod averages around 48 inches a year. However, we also "recharge" our freshwater resource with wastewater every time we take a shower or flush the toilet. This recharge has led to the conditions illustrated on the previous page showing rising levels of nitrogen in our water wells.

As noted, these rising nitrogen levels indicate that a growing portion of our groundwater is infiltrated with wastewater. Throughout most of the Cape, approximately 10-20 percent of our drinking water has gone through a septic system. The dirty little secret is that we simply don't know what (besides PFAS) may lurk in our water. (Exhibit 1)

Exhibit 2: Approximate Cost Comparisons for Nitrogen Mitigation Approaches

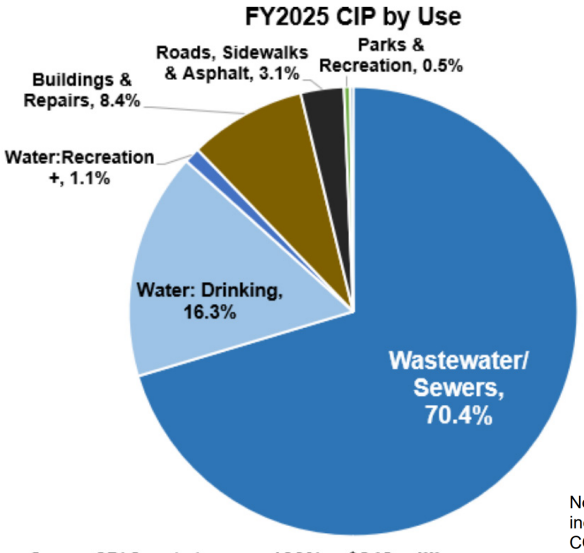


Because wastewater is being discharged into our groundwater (aquifer), BCWC believes all wastewater should be treated to a higher standard to protect all water resources for future generations and for all of us.

Sewer Expansion Is Critical, But That Alone Will Not Address All Our Wastewater Challenges

#1

OUR CAPITAL INVESTMENT PLAN (CIP) FOR THE TOWN IS MAINLY WATER AND WASTEWATER RELATED. THE COSTS ARE ENORMOUS.



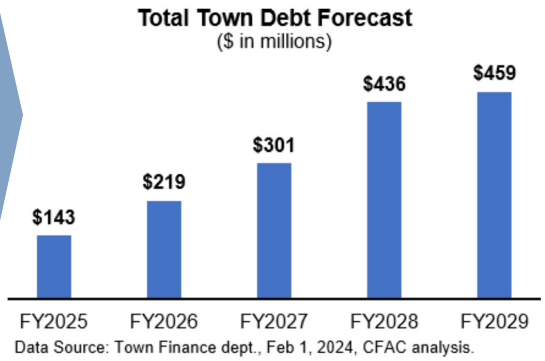
Source: CFAC analysis.

100% = $242 million

Note: "Water: Drinking" CIP includes only Hyannis and not the COMM, Cotuit, Barnstable village or West Barnstable water districts.

#2

SEWER EXPANSION FINANCING WILL DRIVE TOWN DEBT UP DRAMATICALLY.

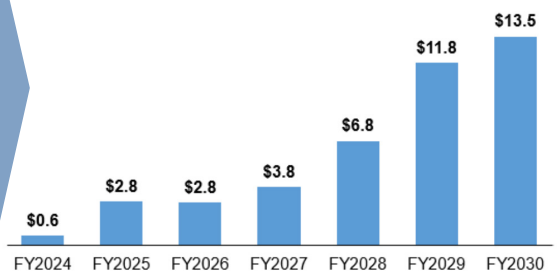


Data Source: Town Finance dept., Feb 1, 2024, CFAC analysis.

AND

#3

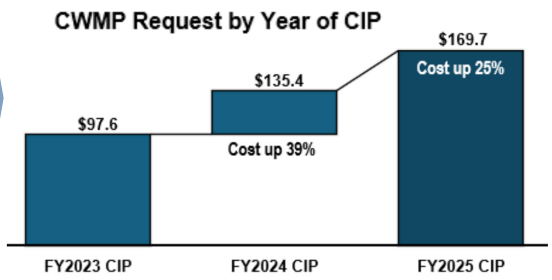
CWMP ANNUAL DEBT SERVICE EXPLODES FROM CURRENT LEVELS



* This projection only includes exisiting CWMP loans and those expected to be taken out in 2025 and 2026.

#4

INFLATION CONTINUES TO DRIVE SUBSTANTIAL COST INCREASES



Sources: CIP reports, CFAC analysis.

Credit: Town of Barnstable Comprehensive Financial Advisory Committee (CFAC) Report, Approved: March 15, 2024. CFAC email: CFAC@town.barnstable.ma.us

Sewer Expansion Plan Update

TOWN OF B

COMPREHENSIVE WASTEWATER MANAGEMENT

WHERE DO

0-10 Years

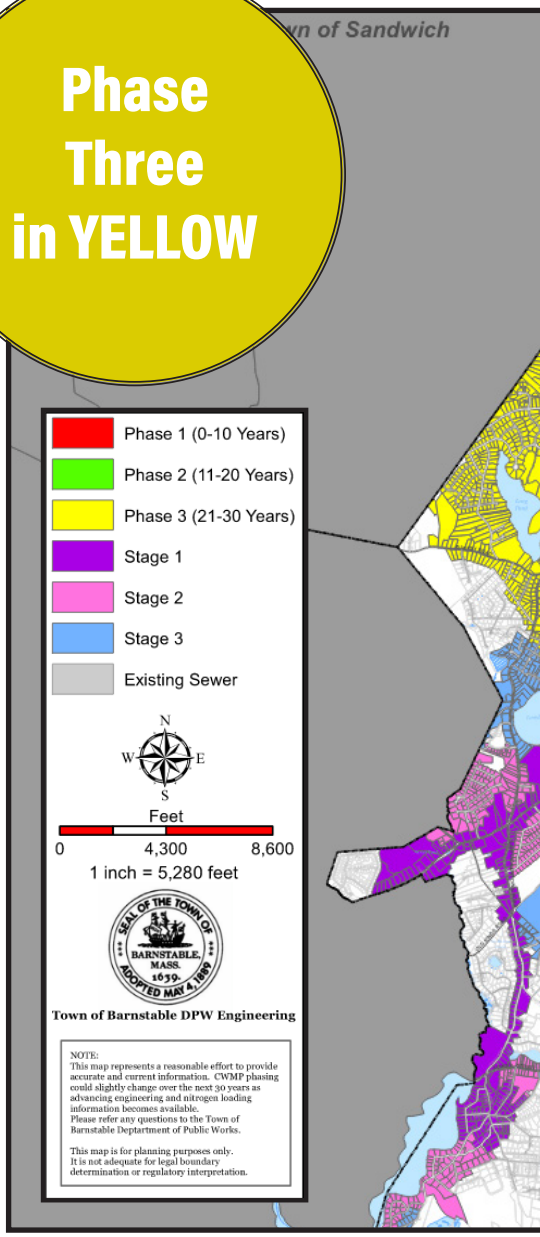
Phase One is RED area on the Map

10-20 Years

Phase Two in GREEN

20-30 Years

Phase Three in YELLOW



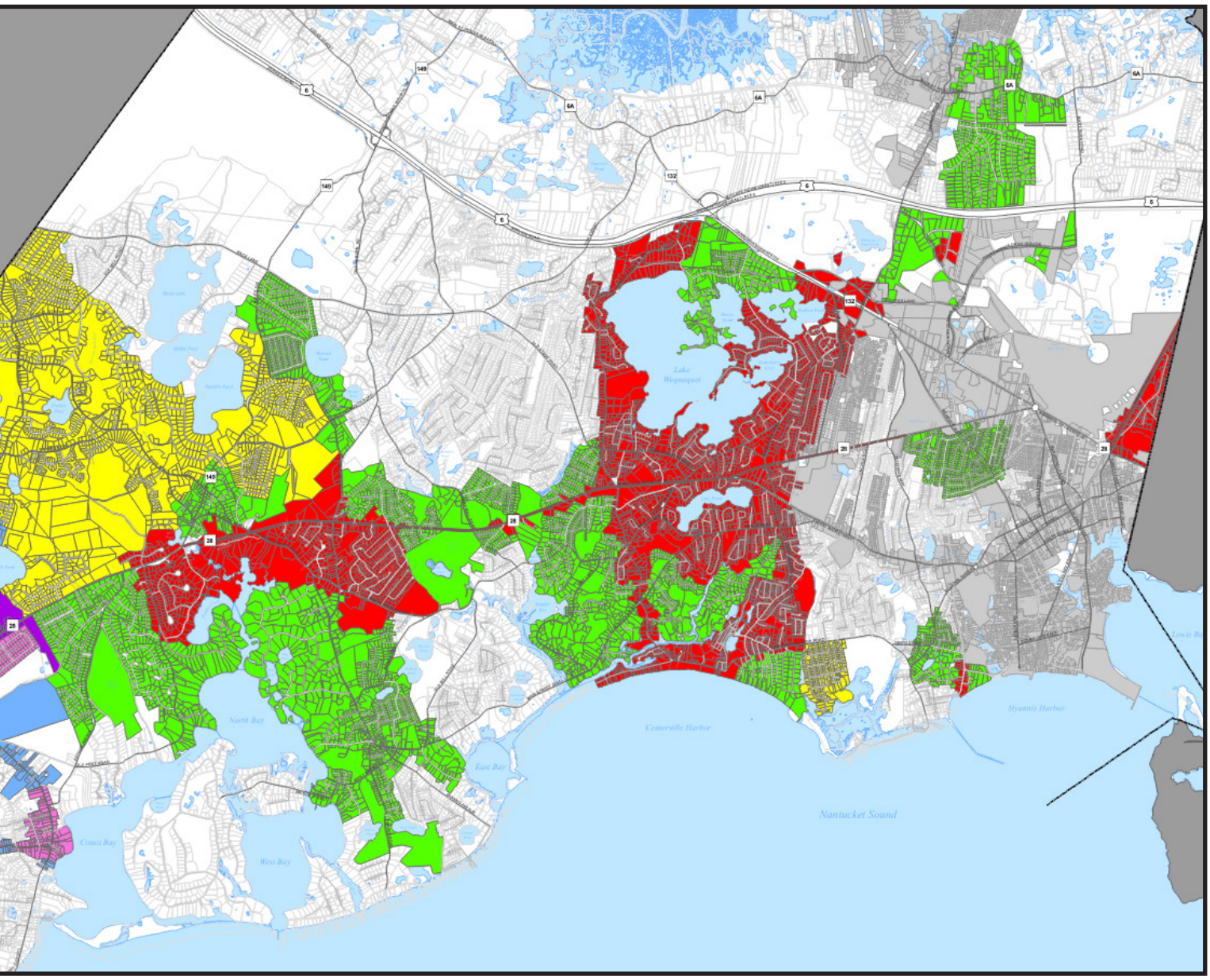
Most alarming is that the areas in WHITE, representing almost half of the households, receive no upgraded wastewater treatment

EVERYONE DESERVES CLEAN WATER

ARNSTABLE

PLAN FY2023 SEWER EXPANSION PLAN UPDATE

YOU LIVE?



Proposition Overrides

All town taxpayers will be asked to shoulder the burden of sewer expansion. If all 3 phases are included, multiple tax increases will be needed. Yet the town's history of Proposition 2½ overrides is not comforting:

Appendix 2
Barnstable Proposition 2½ Voting History since the year 1999

Prop. 2½ Debt Exclusion Votes (data on amounts not provided)

Vote Date	Description	Department	Result	Yes	No
9/19/2017	Bond To Construct New School At Cape Cod Rths**	School	Approved	1,749	890

Prop. 2½ Stabilization Fund Override Votes

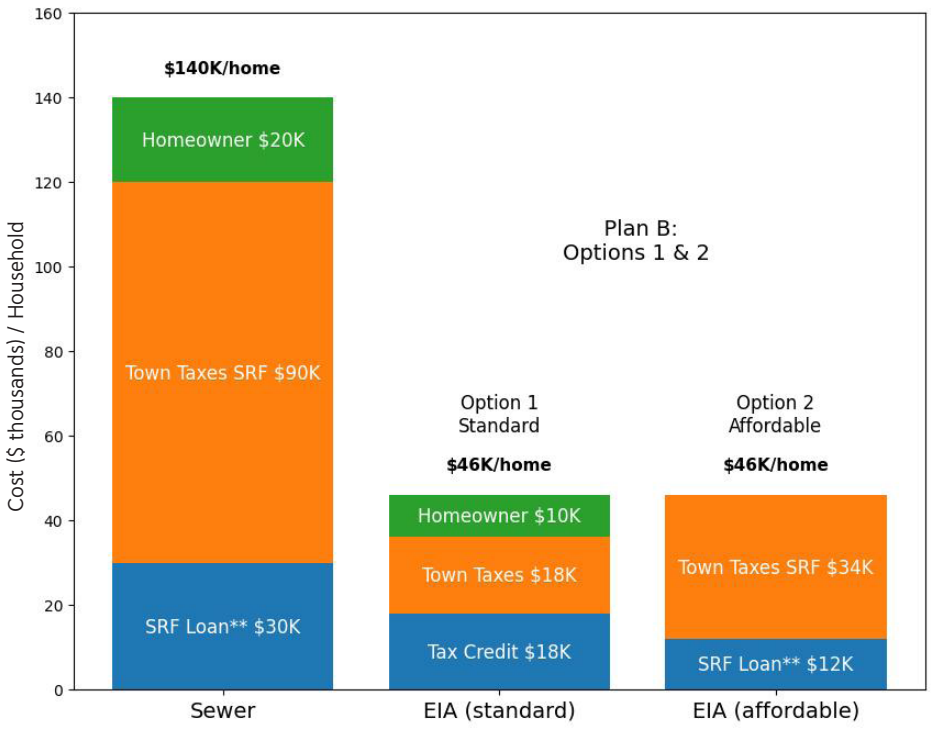
Vote Date	Description	Department	Result	Yes	No
11/2/2010	$3 mm to Take of Private Ways As Town Ways	DPW	Disapproved	3,469	15,612
11/2/2010	$0.75 mm to Fund Sewer System Stabilization Fund	DPW	Disapproved	5,235	13,862

Prop. 2½ Override Votes

Vote Date	Description	Department	Result	Yes	No
5/25/1999	$3 mm for Education Costs	School	Disapproved	3,315	6,055
11/4/2003	$7.2 mm for Municipal And School Budget	General Government	Disapproved	5,903	9,461

* Data Source: Mass DLS, Dept. of Revenue, Data Analytics and Resources Bureau. ** News report said the bond would cost each tax payer $23 per year.

Exhibit 3: Cost Comparison Sewers and Enhanced Innovative & Alternative (EIA) Septic Systems



**In many cases, SRF loans are eligible for forgiveness.

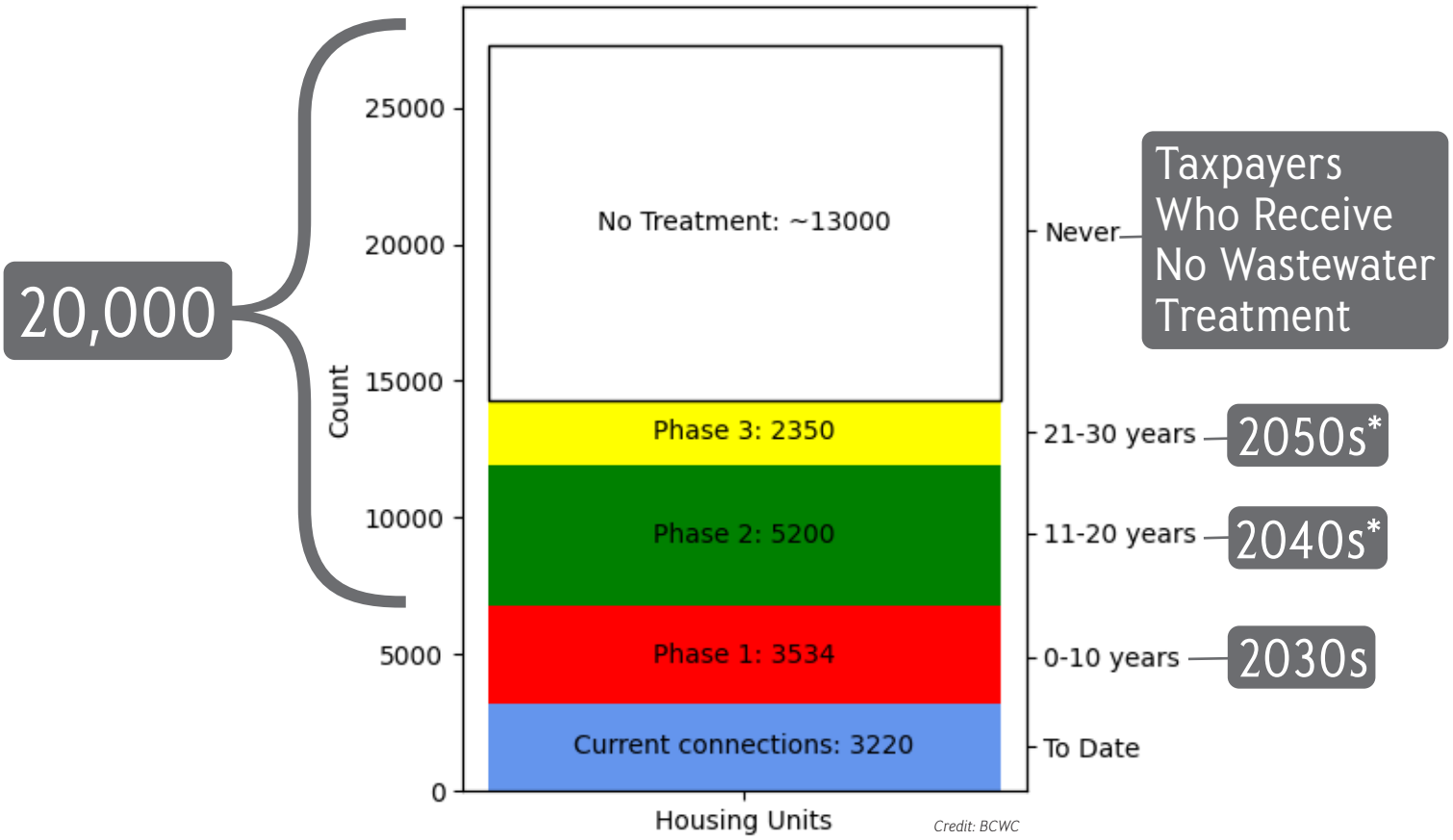
Adaptive Management and Plan "B"

Funding for the 30-year sewer plan is far from certain. That is why we need a "Plan B". For our wastewater challenges in Barnstable and on Cape Cod, only flexible, creative and adaptive thinking can get us to a place where we can all enjoy clean water.

On the previous pages we illustrated the precipitous rising costs of sewer expansion in the town of Barnstable. Furthermore, the regulations to date are focused on estuary protection, not on our freshwater assets like lakes and ponds. Drinking water is "safe" according to current standards, but the issues with the forever chemicals known as PFAS has taught us a lesson about how things change, and a rising percentage of our drinking water assets are being "recharged" with wastewater. How safe can that be?

BCWC believes we must do our best to address all wastewater on our peninsula. Everyone deserves treated wastewater and clean water and the map on the previous page shows the limits of the current plan in Barnstable. The three-phase plan will require town wide support and multiple Proposition 2 ½ tax overrides. According to our math, decades and billions of dollars on, almost half of Barnstable's households will not have upgraded wastewater treatment. How will these citizens vote?

Tax Payers, Sewer Connections and Housing Units



*** The town has indicated that the three phase, 30-year sewer plan will connect approximately 11,100 homes. Here we adjust the connections in Phases 2 and 3 to account for the CFAC Phase 1 connection forecast of 3,534 down from last year's 4,039 and a previous number of 4,571.*

PLAN B: Subsidize to Equalize – Faster, Cheaper, Fairer

Let's "stop the clock" at the end of Phase 1 in 2031 or so and see how a different approach to our wastewater problem might work. The bar chart on page 9 shows that at the end of Phase 1 (10 years ends 2031), approximately 3,535 new households are connected to sewer and 20,000 will have no treatment.

Total costs for the sewer connections will currently run to about $140,000 per household with the individual homeowner responsible for $20,000 (direct "home passed" fee of $10,000 plus average connection cost of $10,000). The plan is for homeowners to be able to fund these portions with low cost, State Revolving Fund (SRF) loans. In this model, the community at large shoulders a subsidy of $90,000 per connection. Although $140,000 may seem like a lot, estimates for sewers on Long Island are currently $120,000 - $200,000 per connection.

Plan B: Faster, Cheaper, Fairer

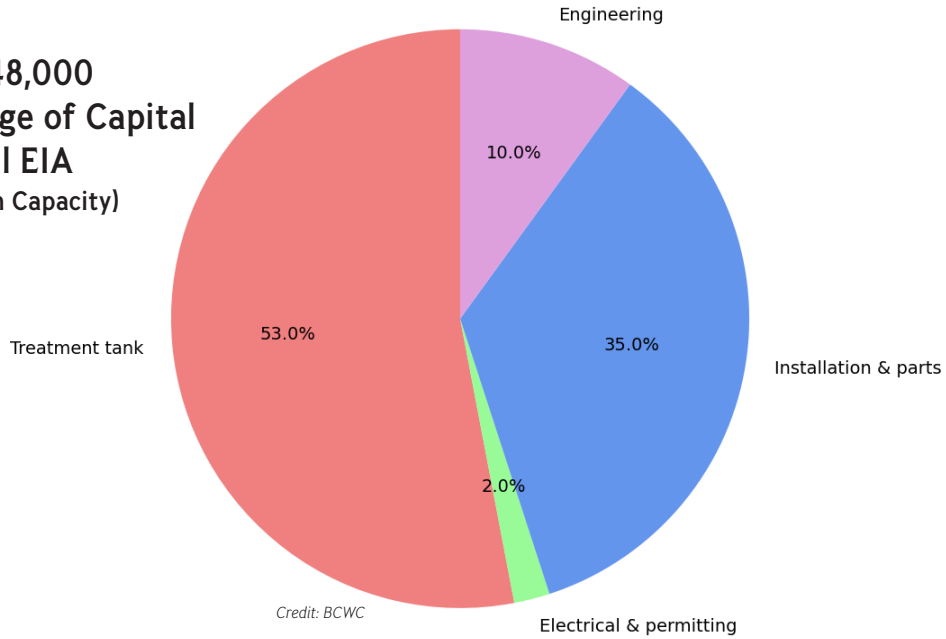
Even as sewer expansion occurs over the next decade, new distributed wastewater treatment technology will emerge. Already two Enhanced Innovative/Alternative (EIA) systems are performing at levels equal to "best in class" municipal wastewater treatment plants. They were recently approved by MADEP as a 'Best Available Nitrogen Reducing Technology" (BANRT). These new systems hold great promise for the future offering a road map like the changes we have all seen in technology as centralized computing has given way to individual laptops and cellphones. Distributed technology!

The pie chart below shows the current estimated costs for replacing a cesspool or Title 5 system with one new EIA technology. Some costs illustrated here may rise but some may fall (cleaner effluent should mean smaller leach fields). On average, we use $46,000 for this Plan B exercise.

If we use math similar to what was used for the sewer connection (in this case individual homeowners responsible for $10,000, potentially financed with SRF funds), then the community burden would drop to below $30,000 rather than the $120,000 it was for sewer.

But wait, it could get better! New state tax incentives are now in place to provide a tax credit of up to $18,000 over four years for full time residents of Cape Cod for a septic system upgrade. For this cohort, the community burden would drop to $18,000. We estimate that about half of the residents in our town are eligible for this tax incentive.

$44,000 – $48,000
Average Range of Capital Costs for Full EIA
(3- or 4-Bedroom Capacity)



Credit: BCWC

New Math:
Wastewater Treatment for Everyone

While there are many moving parts to solving our wastewater challenge, for this exercise we will keep things simple. It is true that the "devil is in the details" but a simple approach provides a great starting point!

Town of Barnstable total housing units:	**27,000**
End of Phase 1 (From CFAC Report) year 2030-2033: *(new sewer connections)*	**3,534**
Current sewer connections:	**3,220**
NO wastewater treatment:	**20,000**

Phase 1 is estimated to cost the town $500 million dollars. Phases 2 & 3, which are slated for years 10 to 30 of the plan (2033 t0 2053), may cost well over $2 billion when you adjust for financing costs and inflation.

In this plan, the ~13,000 homes which exist in the "white space" in the map on pages 6 & 7, receive no wastewater treatment. Many of these homes are also on private household water wells. For these families, their household water wells, and waste disposal cesspools or Title 5 septic systems are often only about 100 ft. apart.

Comparative Analysis Using Bar Graph (Exhibit 2, Page 8)

Massachusetts Estuary Plan with Sewer Only

- Current Phase 1 estimate: 3,534 sewer connections= $500 million.
- BCWC projections for Phases 2 & 3: 7,550 connections= $2 billion.
- Current Town sewer connections: 3,220.
- Total Town sewer connections: 3,220 (Current) + 3,534 (Phase 1) + 7,550 (Phase 2&3) = 14,304. This represents 53% of the Town's current households.
- **Total projected cost: $2.5 Billion.**
- **Untreated households: 12,696 or 47%.**

Holistic Plan using Enhanced Individual Alternative systems (EIA)

- Current Phase 1 estimate of 3,534 sewer connections= $500 million.
- Current Town sewer connections: 3,220.
- Plan B. Option 1: STANDARD OPTION - 10,000 EIAs at cost to Town of $180 million.

($46,000 per household. Homeowner pays $10,000, state tax credit of $18,000, Town SUBSIDY of $18,000.)

- Plan B. Option 2: THE AFFORDABLE OPTION - 10,000 EIAs at a cost to town of $340 million.

($46,000 per household. Homeowner pays monthly finance charge of $60 to cover $12,000 of SRF borrowings. Town SUBSIDY of $34,000.)

All 27,000 households receive wastewater treatment.

Total cost: $1,040,000.

Simply put:

Phase 1 connects 3,534 households for $500 million and New Math postulates 20,000 EIA wastewater treatment systems for $520 million dollars!

A CARROT AND A STICK

Cape Cod should not have any cesspools or Title 5 systems. Estuary protection regulations from Mass DEP are a start, but only that. Local municipalities and boards of health should work to a higher standard and provide incentives as well as regulations to promote clean water for all.

Disclaimer: Data referenced in this newsletter is based on available data at time of publication. The amount of any State Revolving Fund (SRF) subsidy and/or credit is unknown.

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Mission Statement

Barnstable Clean Water Coalition works to restore and preserve clean water in Barnstable. BCWC utilizes science as its foundation to educate, monitor, mitigate and advocate for clean water.

Save The Date

Clean Water Challenge
GOLF TOURNAMENT

Monday, October 21st
Hyannisport Golf Club

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BCleanWater.org

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