

September 17, 2019

Update to Board of Selectmen

Yarmouth Wastewater Planning Efforts

**CDM
Smith**[®]

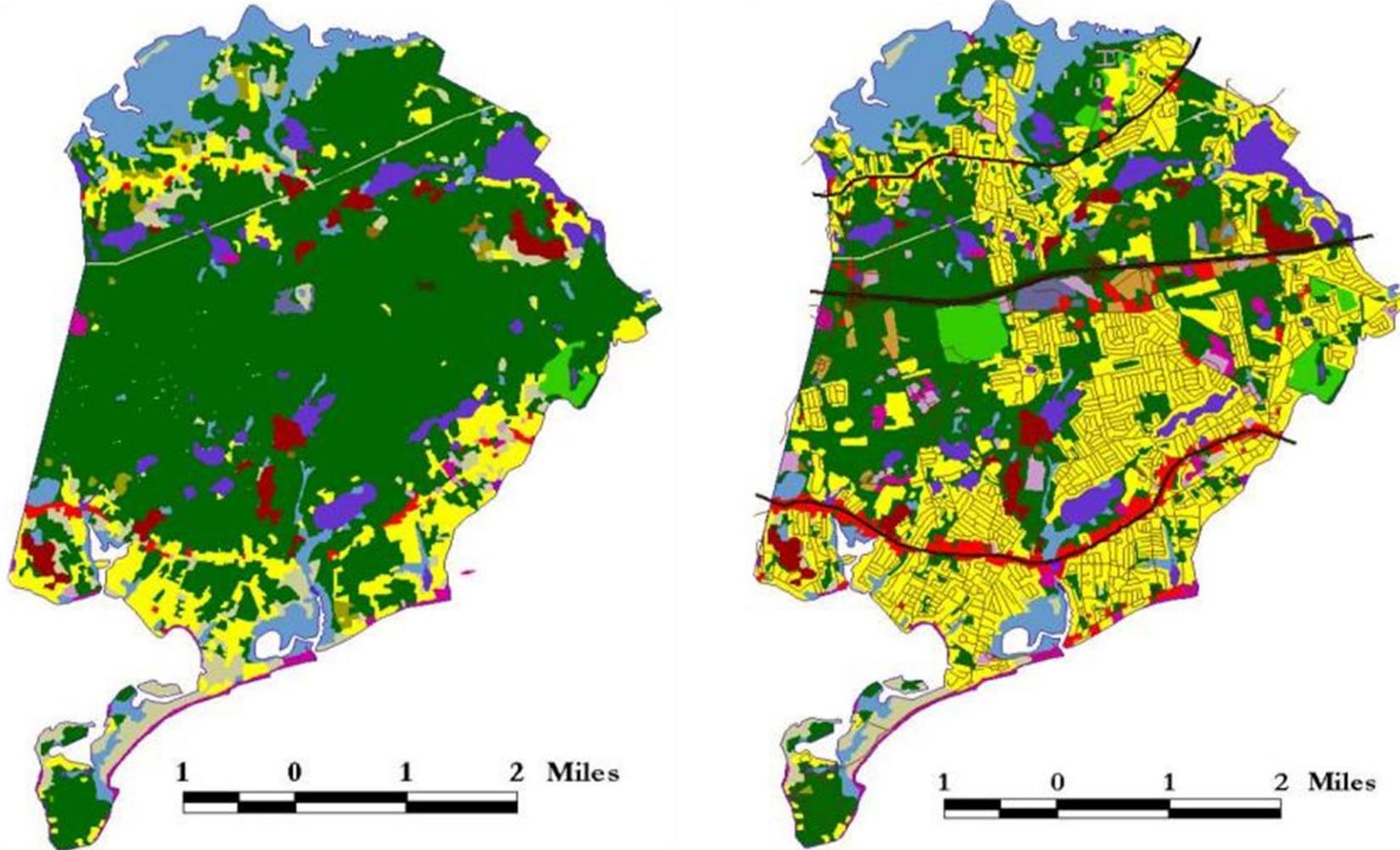
Presentation Agenda

- Overview of Proposed Yarmouth Wastewater Program
 - Nitrogen removal needs
 - Projected wastewater flows
- Proposed Phase 1 Plan
- Proposed Costs: TOY vs DHY
- Status and Overview of Draft DHY Agreement
- Draft Cost Recovery Program
- Schedule and Potential Next Steps
- Questions and Comments

YARMOUTH'S WATER RESOURCES ADVISORY COMMITTEE

MEMBER	REPRESENTING
Curt Sears, Chairman	Member-at-Large
Renie Hamman	Northside Area Representative
Paul O'Bryan	Board of Health Representative
George Perkins	Parker's River Area Representative
Tom Roche	Bass River Watershed Representative
John Deliso	Lewis Bay Area Representative
Tom Durkin	Conservation Commission Representative
Lee Rowley	Planning Board Representative
Spyro Mitrokostas	Member-at-Large

Yarmouth Has Changed !!!



1951 – Pop. 3,297

Population Densities

722% Increase

2010 – Pop. 23,793

Our Nitrogen Issue Exists.



Mill Creek Algae Bloom May 2011



Parkers River Fish Kill

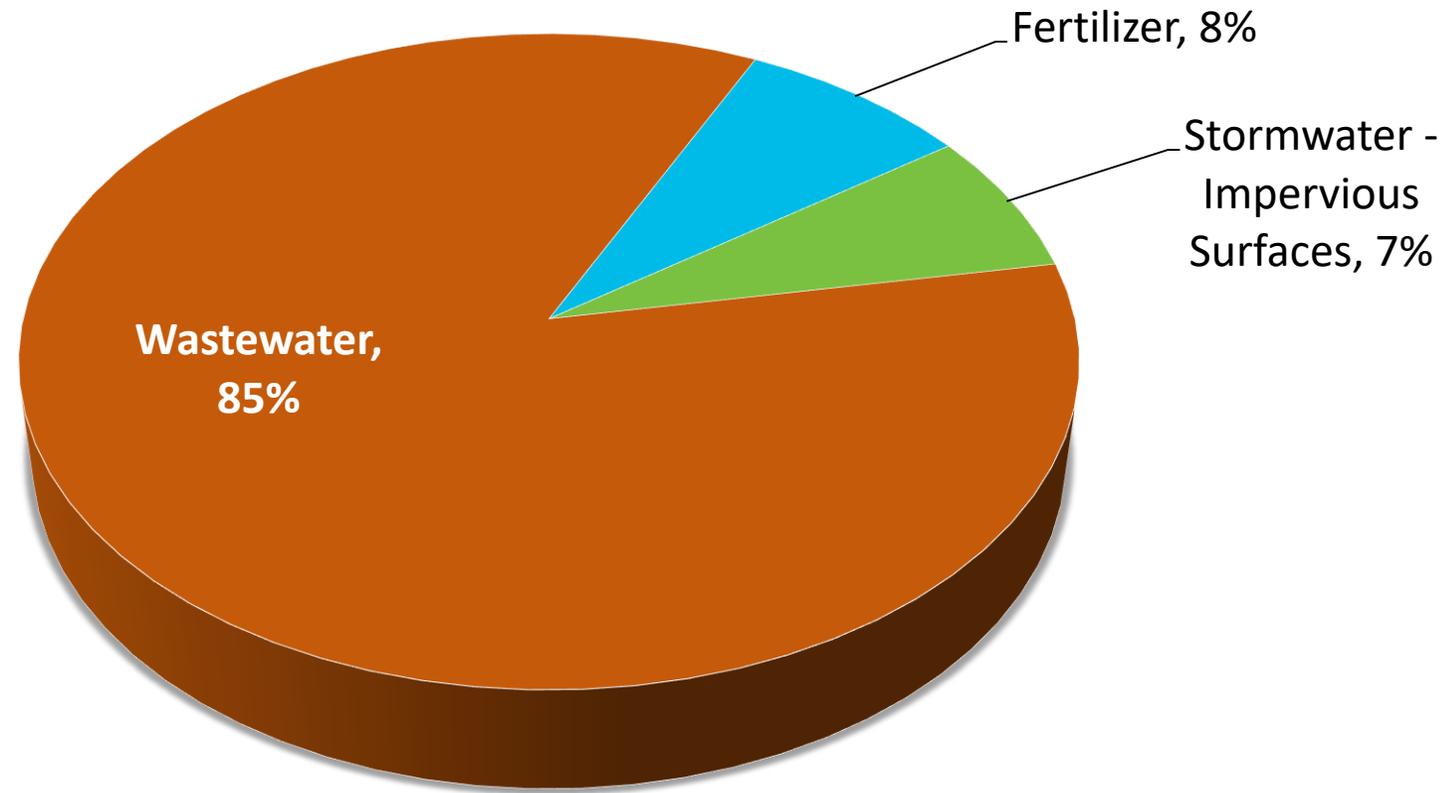
Loss of Eelgrass in Yarmouth



1995 → 2013

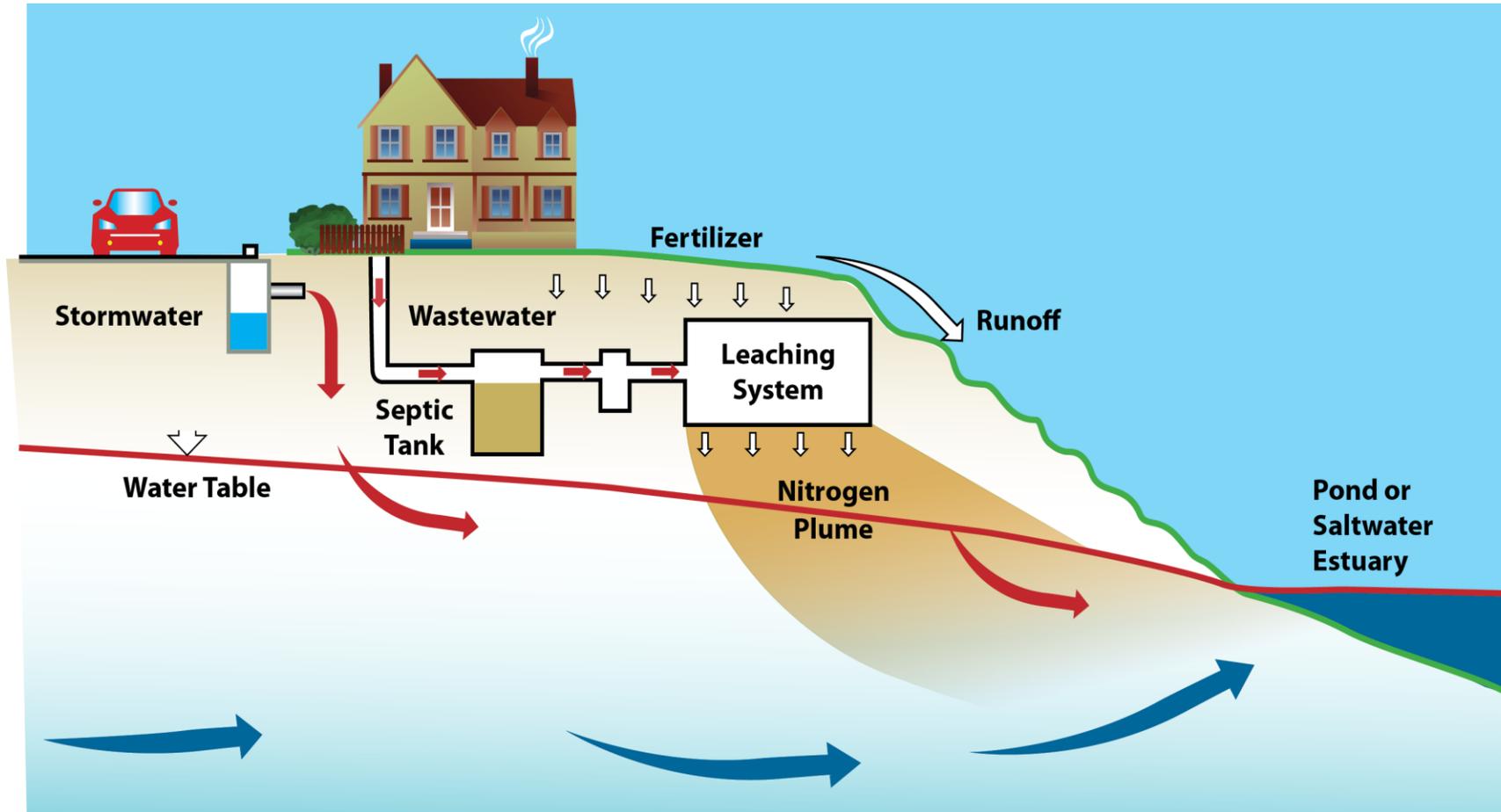


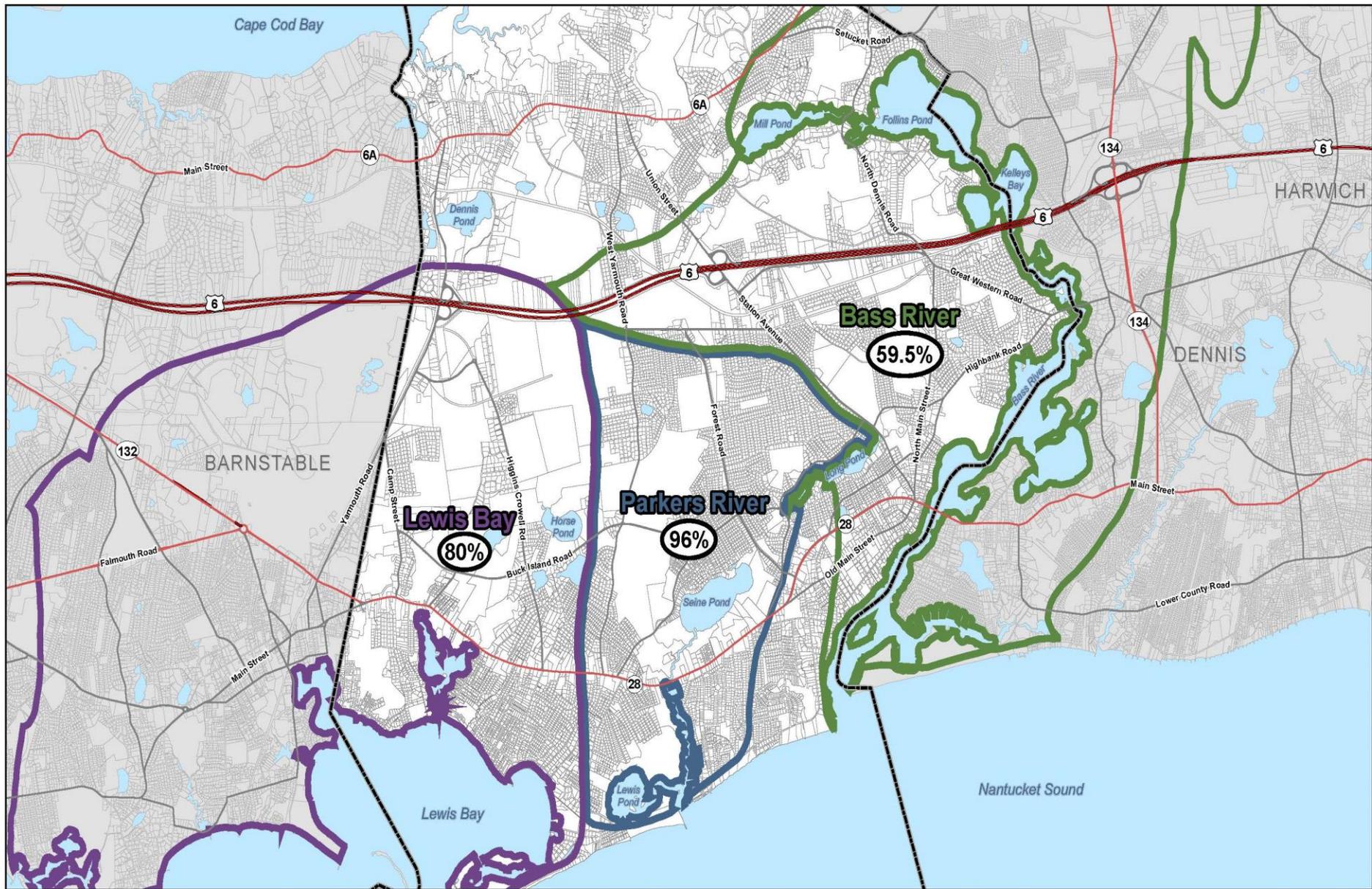
Controllable Nitrogen Around Us



We Are Responsible For Reducing This Nitrogen

Nitrogen Entering Our Groundwater from Title 5 Septic Systems is Our Biggest Issue





- Watersheds**
- █ Bass River
 - █ Lewis Bay
 - █ Parkers River
 - Septic Load Decrease to Meet Threshold

Yarmouth, MA

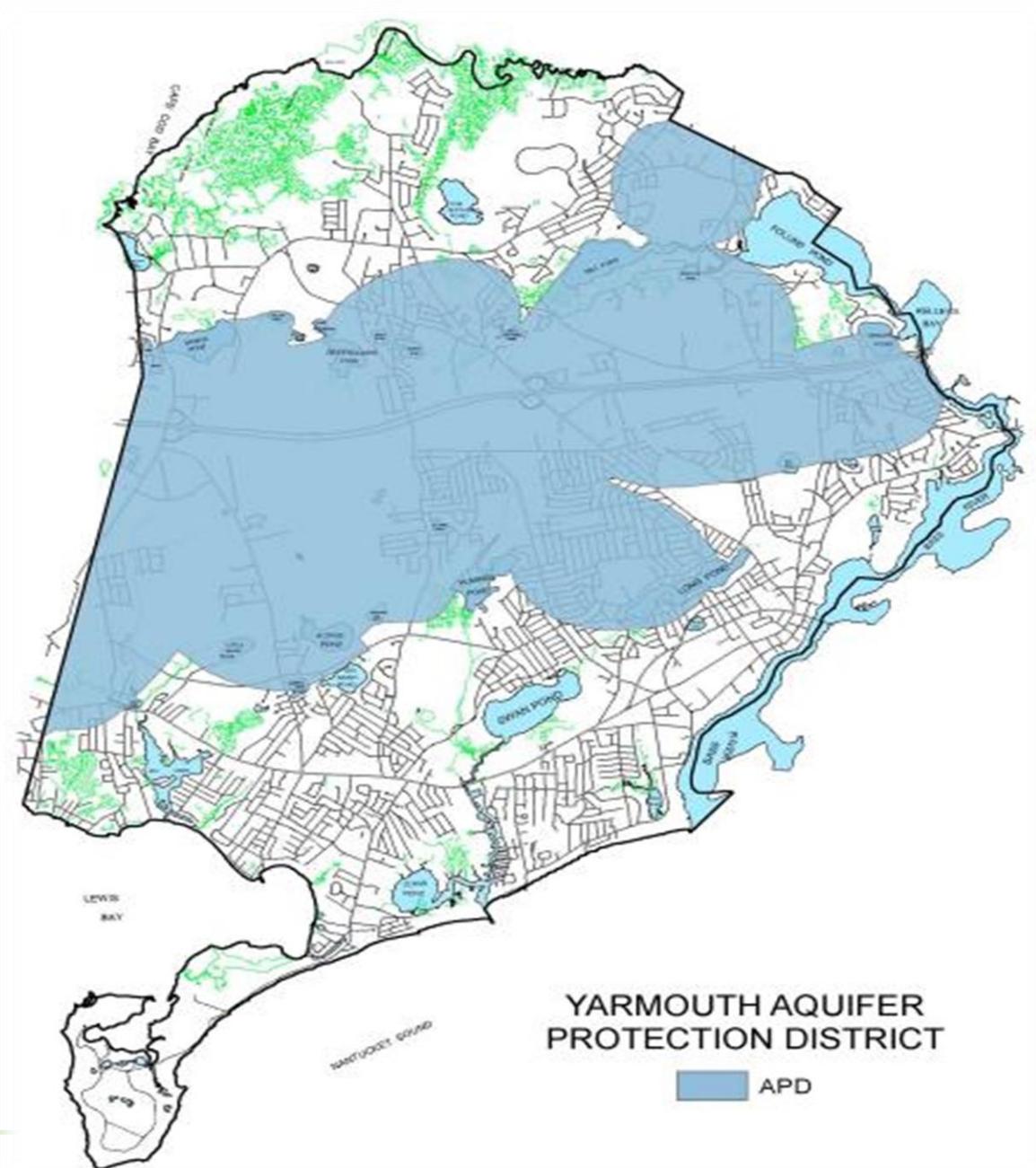


Yarmouth Watersheds
 Reductions in Attenuated Septic Loads
 to Meet Nitrogen Criteria

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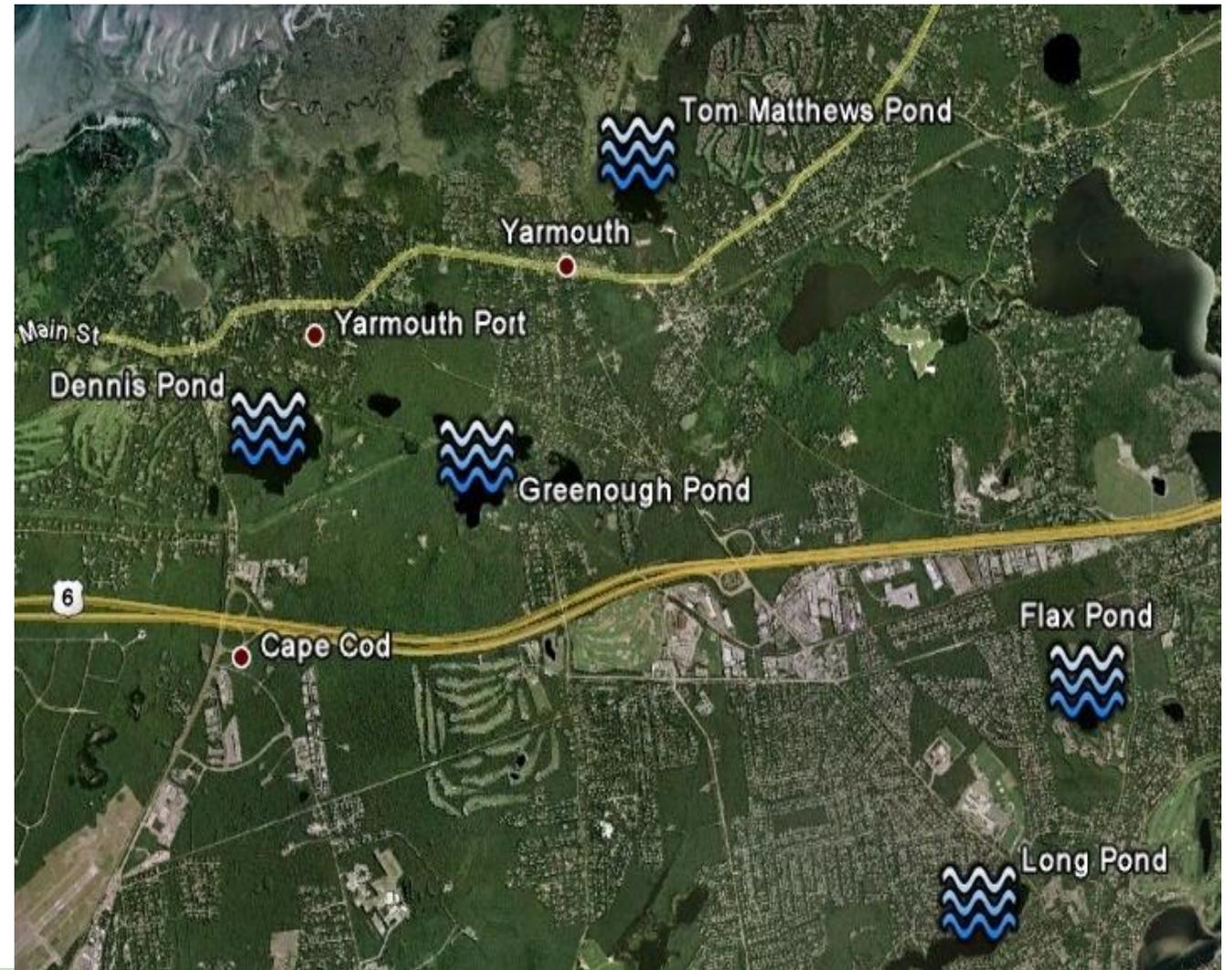
Drinking Water Nitrogen Study Shows Negative Impacts

Aquifer Protection District



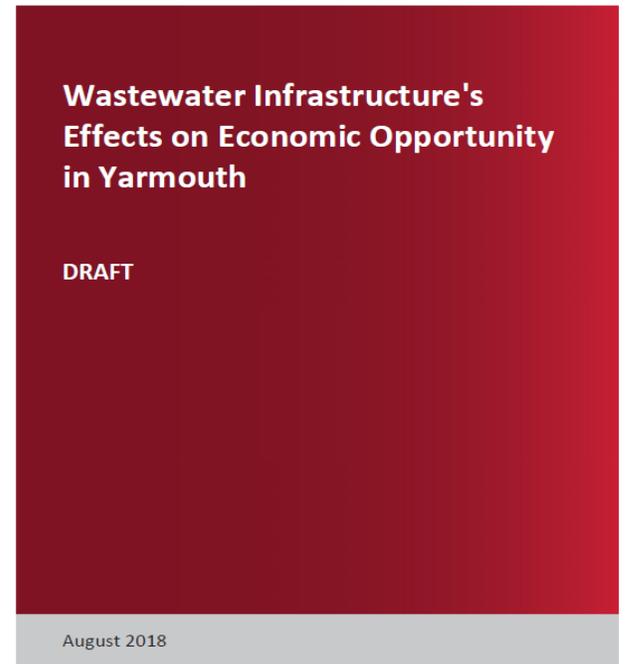
Pond Health Assessment

- The five ponds examined have differing water quality
- Only Long Pond identified as requiring sewerage at this time



Effects On Economic Development

- Pent up demand for development
- Businesses do not want to be in the wastewater business – on-site systems are expensive, limit expansion
- Businesses constrained from reaching market potential
- Continued stagnation/decline of commercial tax base and tourism
- Underperformance on rooms/meals tax.
- 35% decline in non-residential values over 10 years
- Anemic “new growth” rate for property tax base of .77%
- #1 impediment to significant redevelopment ... absence of Wastewater treatment

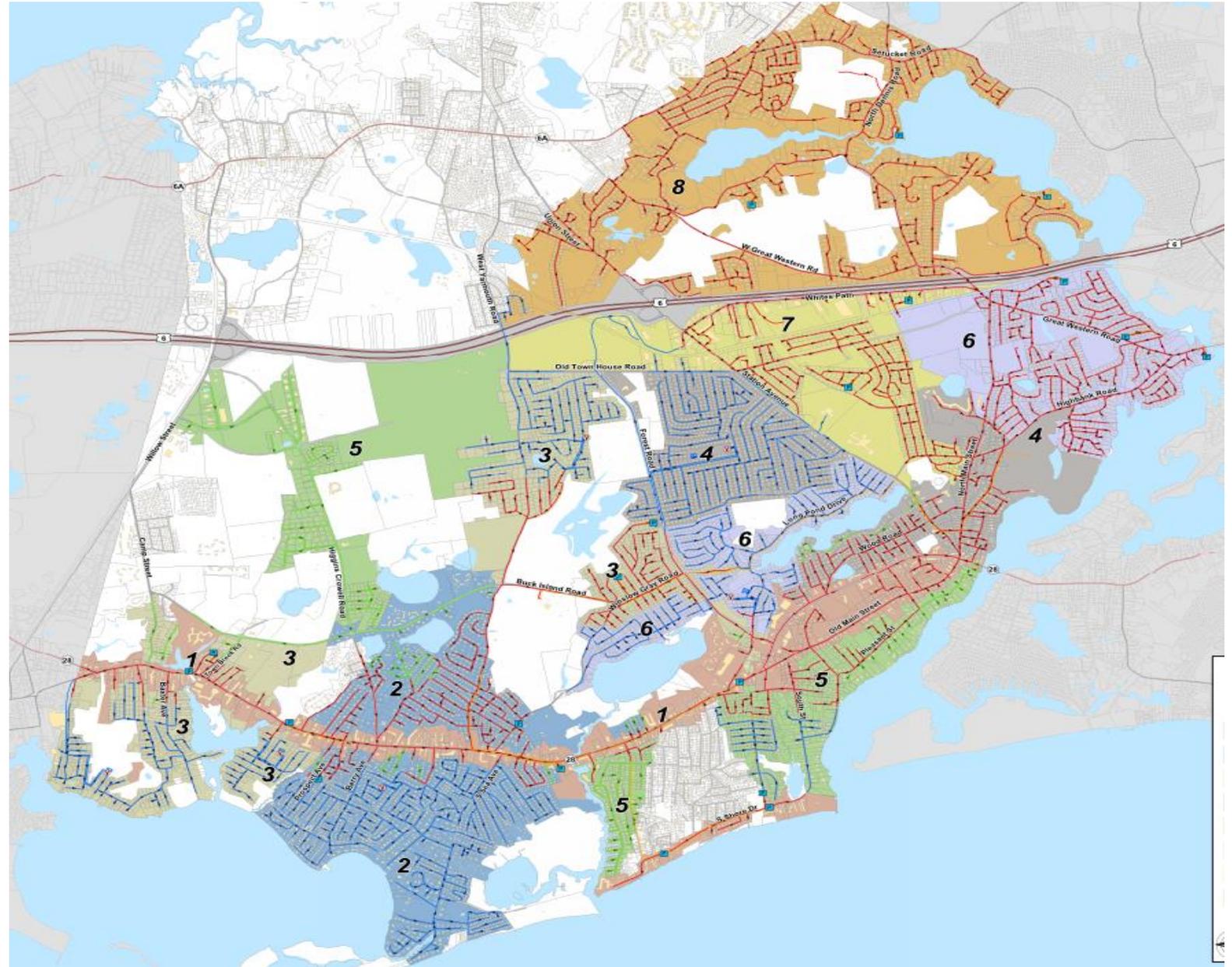
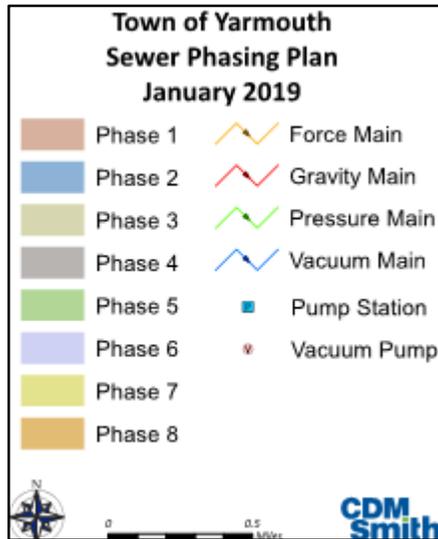


Primary WRAC Conclusions to date

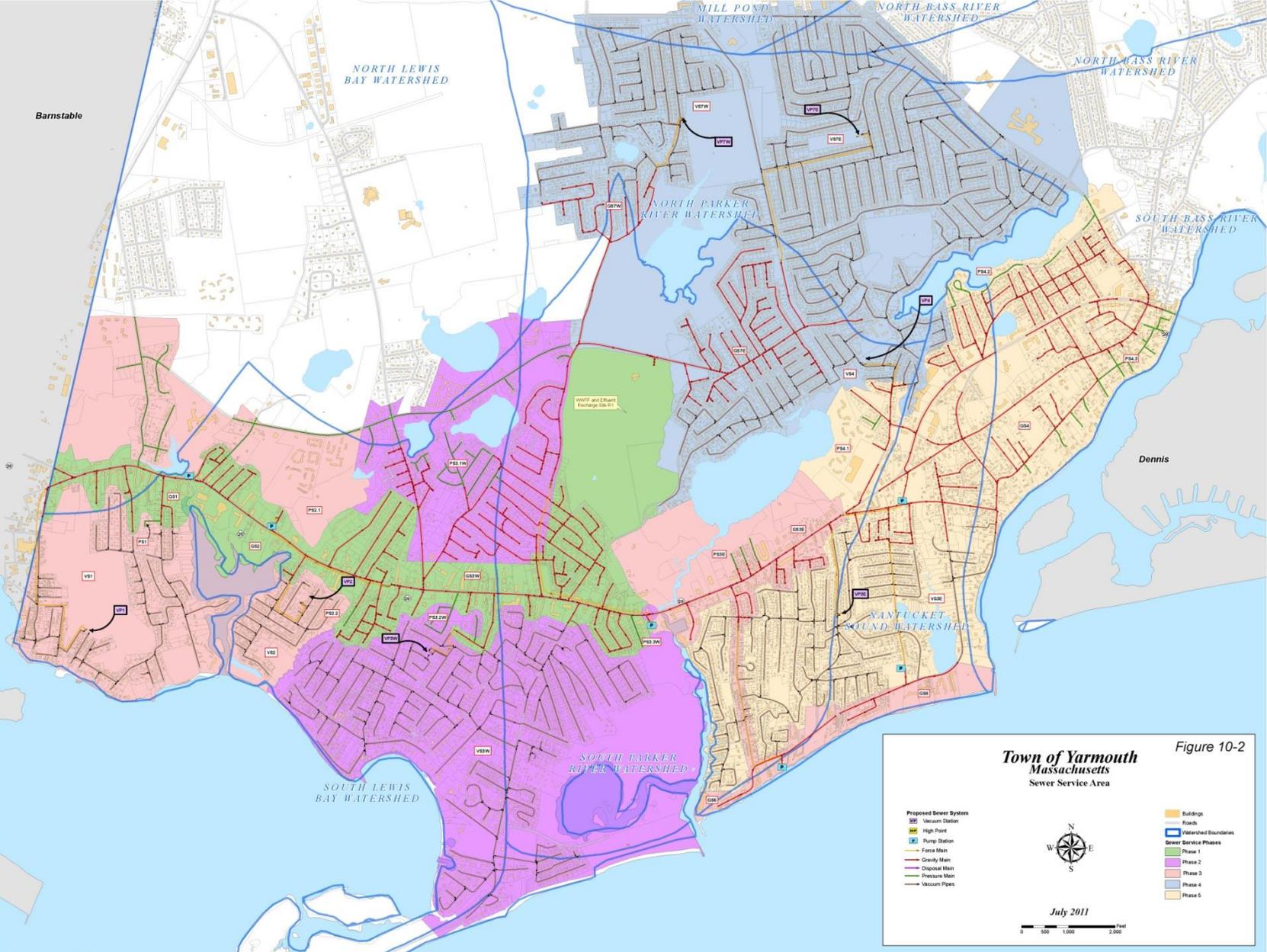
Centralized wastewater treatment is:

- Most cost-effective solution across the community
 - For capital investment, and
 - For ongoing operation and maintenance costs
- Achieves the best nitrogen removal results
- Has the ability to address Contaminants of Emerging Concern (CEC)
- Provides substantial value to homeowners and businesses
- Potential to provide significant economic development opportunities

Yarmouth's Conceptual Phasing Plan



2011 - CWMP Recommended Phasing Program



WRAC Proposed Phase 1 Plan

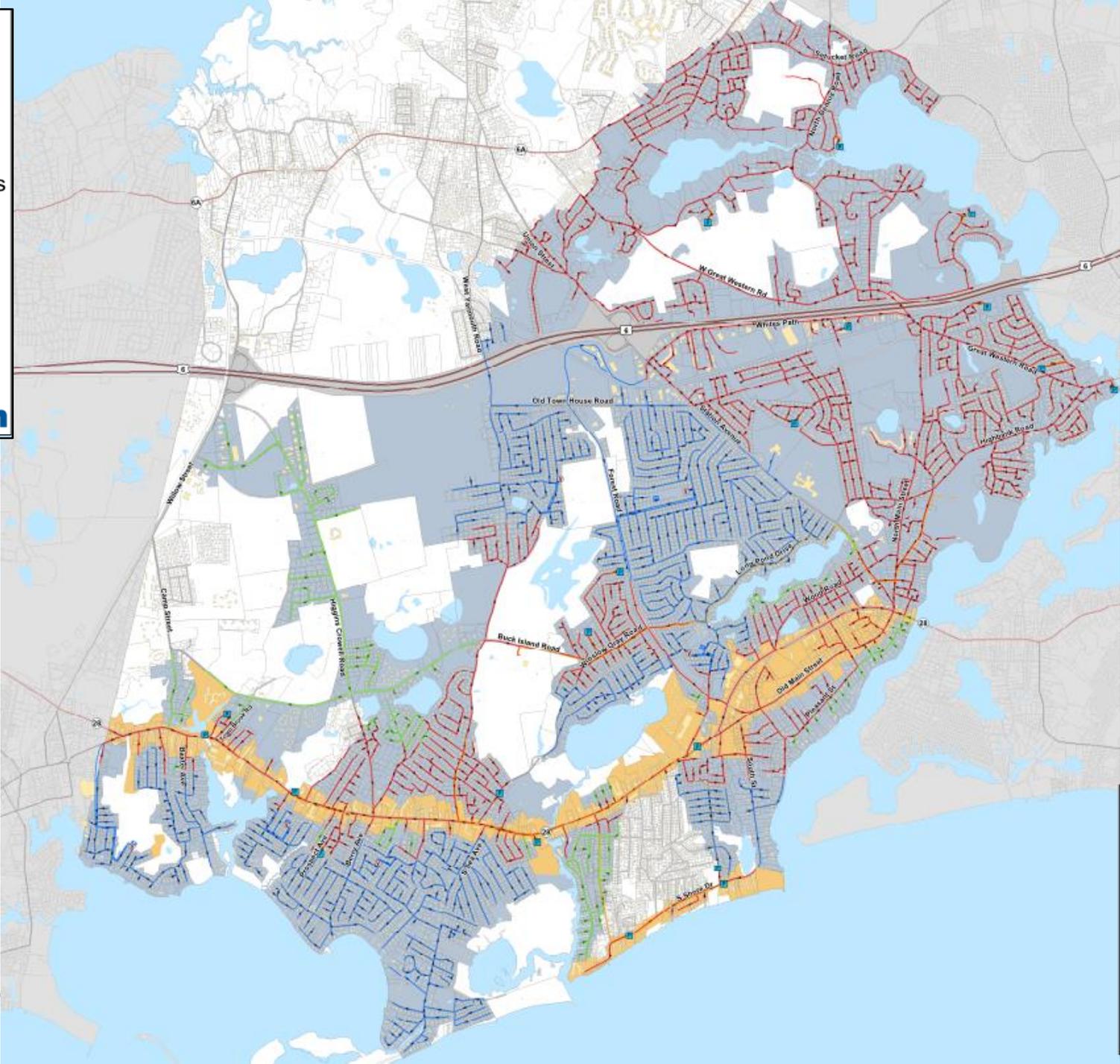
- Addresses nitrogen in all three watersheds of immediate concern.
- Serves as system spine and sets the stage for future phases.
- Provides for significant Economic Development opportunities.
- Provides flexibility for adaptive management opportunities and cost savings.

**Town of Yarmouth
Sewer Phasing Plan
March 2019**

-  Force Main  Phase 1
-  Gravity Main  Other Phases
-  Pressure Main
-  Vacuum Main
-  Pump Station
-  Vacuum Pump







Yarmouth – Parcels and Flow by Phase

Phase	Watersheds	Number of Parcels	Buildout Flow (GPD)
1	Bass River, Direct Discharge, Lewis Bay, Parkers River	604	909,147
2	Direct Discharge, Lewis Bay, Parkers River	2,474	485,258
3	Bass River, Lewis Bay, Parkers River	2,126	434,409
4	Bass River, Parkers River	1,449	289,658
5	Bass River, Direct Discharge, Lewis Bay, Parkers River	1,175	279,776
6	Bass River, Parkers River	2,029	481,109
7	Bass River	696	225,868
8	Bass River, Direct Discharge	1,646	431,413
Total	-	12,199	3,536,638

DHY Website

- Website developed: www.dhycleanwaters.org
 - Overview
 - Special Legislation
 - Draft Agreement
 - Meeting Minutes
 - Presentations



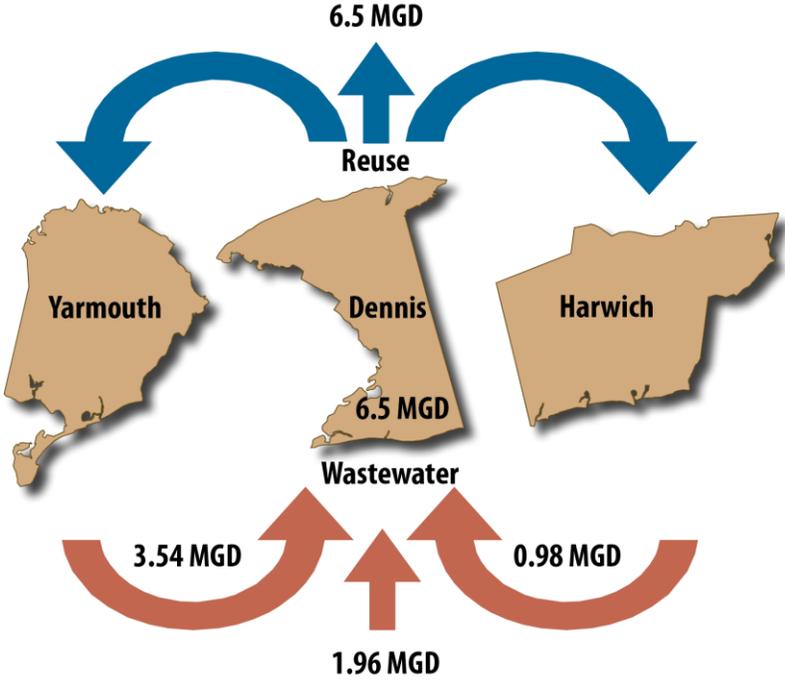
DHY Clean Waters Community Partnership -Status

- DHY Subgroup formed - June, 2017
- Three Town Meetings authorized filing of Special Legislation to potentially create partnership – May, 2018
- Towns approved Special Legislation filing – September, 2018
- Subgroup developed Draft Agreement – Oct/Nov, 2018
- Individual subgroups review Draft Agreement – Nov, 2018
- Joint community meeting/ input – Nov/ Dec, 2018
- Special Legislation refiled – Jan, 2019
- Local Town information meetings – Jan/ Feb, 2019
- Special Legislation revised based on subgroups– April, 2019
- Special Legislation approved by House– Aug, 2019
- Special Legislation approved and signed – Fall, 2019
- Town Meetings to address DHY Agreement – Spring, 2020.

Estimated Wastewater Flow by Town

	Wastewater Flow at Buildout	% of DHY WWTF
Dennis	1.96 MGD	30%
Harwich	0.98 MGD	15%
Yarmouth	3.54 MGD	55%
Total	6.5 MGD	

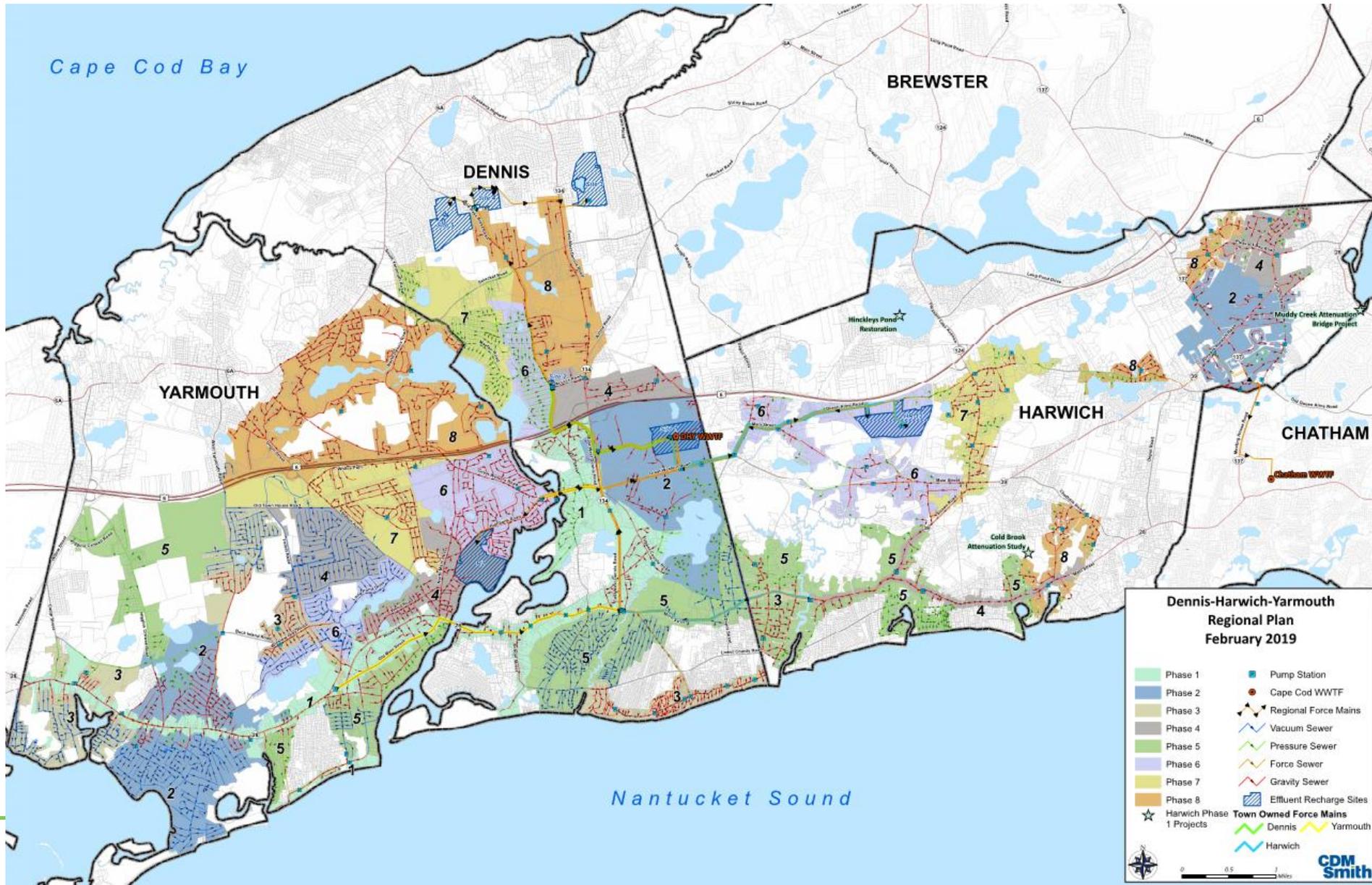
Community Partnership – Dennis, Harwich, and Yarmouth



Summary of Shared Utilities

- The DHY Wastewater Treatment Facility (WWTF) will be located at Dennis DPW site;
- Piping to convey to multiple recharge/reuse sites in each community; and
- Shared effluent recharge/reuse sites:
 - Dennis DPW (Site No. 1)
 - Yarmouth Bass River Golf Course
 - Harwich Site HR-12 (DPW)
 - Dennis Crowell Road (Site No. 2)
 - Dennis Pines Golf Course (Site No. 3)
 - Dennis Highland Golf Course (Site No. 5)

DHY Community Partnership - Wastewater



DHY Shared Infrastructure Costs and Savings

DHY Shared Conveyance, WWTF, and Effluent Recharge Cost Comparison	Capital Costs		O&M Costs		Equivalent Annual Costs		Annual Savings	
	Town	Regional	Town	Regional	Town	Regional	\$ / year	%
Dennis	\$90 M	\$64 M	\$4.5 M	\$2.6 M	\$8.5 M	\$5.5 M	\$3.0 M	36%
Harwich	\$68 M	\$33 M	\$2.1 M	\$1.5 M	\$5.1 M	\$3.0 M	\$2.2 M	41%
Yarmouth	\$132 M	\$116 M	\$8.9 M	\$4.8 M	\$14.8 M	\$9.9 M	\$4.8 M	33%
Total	\$290 M	\$213 M	\$15.5 M	\$9.0 M	\$28.4 M	\$18.4 M	\$10.0 M	35%

*EAC assumes 30 year loan at 2% interest

Yarmouth	Capital Costs		O&M Costs		Equivalent Annual Costs		Annual Savings
	Town	Regional	Town	Regional	Town	Regional	\$ / year
Collection System	\$324 M	\$334 M	\$3.7 M	\$3.7 M	\$18.2 M	\$18.6 M	-\$435,978
Shared Conveyance to WWTF	\$0 M	\$8 M	\$0.0 M	\$0.2 M	\$0.0 M	\$0.6 M	-\$598,277
WWTF	\$105 M	\$81 M	\$8.6 M	\$4.2 M	\$13.3 M	\$7.8 M	\$5.5 M
Effluent Recharge with PRB	\$26 M	\$27 M	\$0.3 M	\$0.3 M	\$1.4 M	\$1.5 M	-\$60,559
Non-Traditional Technologies	\$224,000	\$224,000	\$11,400	\$11,400	\$21,402	\$21,402	\$0
Total	\$456 M	\$450 M	\$12.6 M	\$8.5 M	\$33.0 M	\$28.6 M	\$4.4 M

Overall Wastewater Program Costs: Together vs. Go it Alone

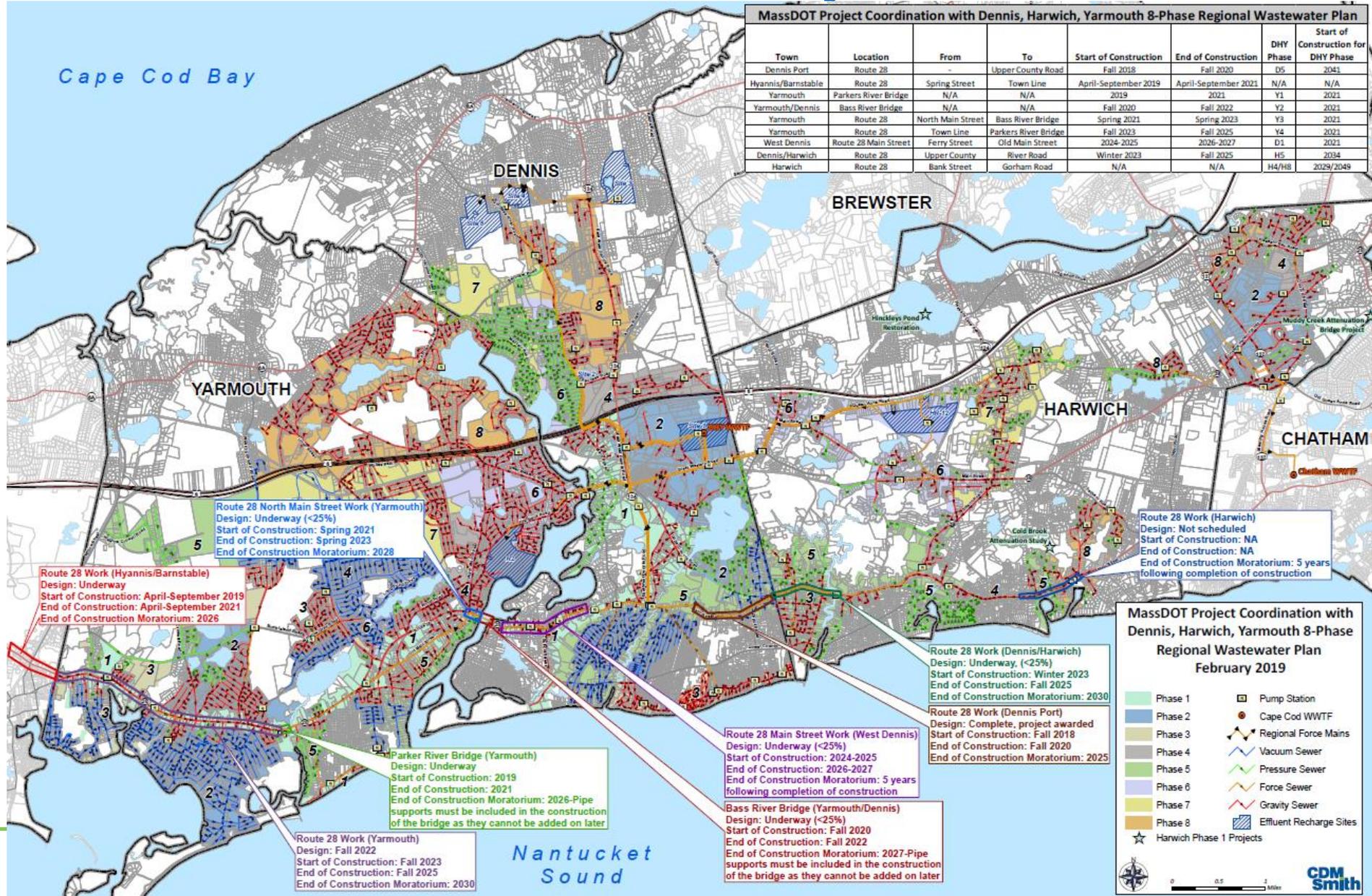
Wastewater Program Cost Comparisons	Capital Costs		O&M Costs		Equivalent Annual Costs		Annual Savings	
	Town	Regional	Town	Regional	Town	Regional	\$ / year	%
Dennis	\$313 M	\$282 M	\$6.9 M	\$4.7 M	\$20.8 M	\$17.3 M	\$3.5 M	17%
Harwich	\$314 M	\$289 M	\$4.6 M	\$4.6 M	\$18.6 M	\$17.5 M	\$1.1 M	6%
Yarmouth	\$456 M	\$450 M	\$12.6 M	\$8.5 M	\$33.0 M	\$28.6 M	\$4.4 M	13%
Total	\$1083 M	\$1020 M	\$24.1 M	\$17.8 M	\$72.4 M	\$63.4 M	\$9.0 M	12%

ESTIMATED SAVINGS ON PHASE 1 AND 2 (FIRST 10 YEARS OF PROGRAM)

Town of Yarmouth	Capital Costs		O&M (after Phase 2)		Equivalent Annual Cost	
	Town	Regional	Town	Regional	Town	Regional
Collection System	\$99.2 M	\$104.1 M	\$1.1 M	\$1.1 M	\$5.5 M	\$5.8 M
Shared Conveyance to WWTF	\$0.0 M	\$8.4 M	\$0.0 M	\$0.1 M	\$0.0 M	\$0.5 M
WWTF	\$74.2 M	\$54.5 M	\$3.4 M	\$1.7 M	\$6.7 M	\$4.1 M
Effluent Recharge with PRB	\$10.5 M	\$11.3 M	\$0.1 M	\$0.1 M	\$0.6 M	\$0.6 M
Non-Traditional Technologies	\$0.1 M	\$0.1 M	\$0.0 M	\$0.0 M	\$0.0 M	\$0.0 M
Total	\$184.0 M	\$178.3 M	\$4.7 M	\$3.0 M	\$12.9 M	\$11.0 M

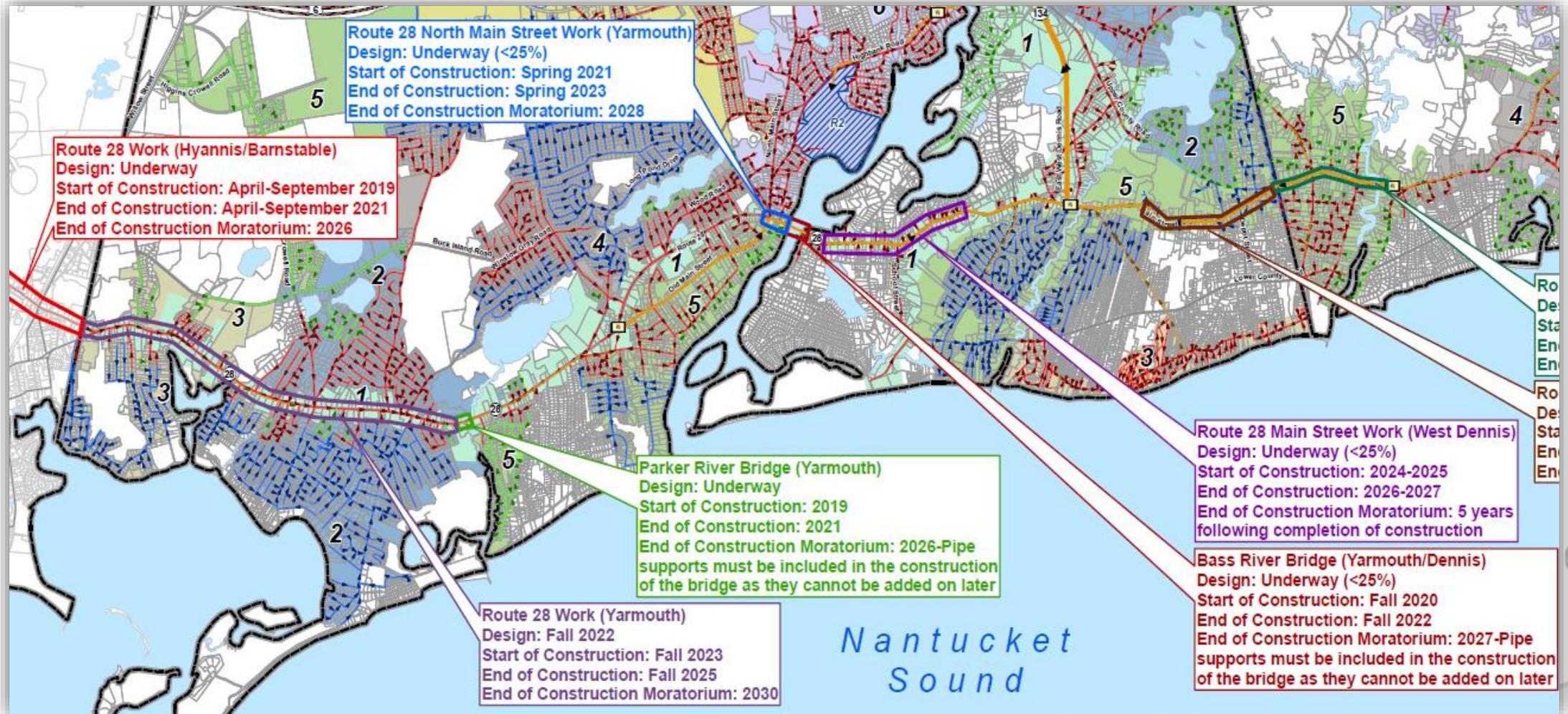
Savings on capital based upon 2% interest costs – a zero % loan, or a subsidy, increase projected capital savings.

Coordination with MassDOT Projects



Route 28 road project coordination

potential savings opportunity or program delay?



State Revolving Fund (SRF) Loan Program

- Competitive Process for Zero Percent interest loans
- Five Criteria:
 - Prevent nutrient enrichment
 - Not subject to enforcement or court orders
 - Approved Comprehensive Wastewater Management Plan
 - Consistent with regional water resources plan
 - Community has adopted land use controls
- Two percent loans also an option
- Regional approach gains more points
- Principal forgiveness may be available

DHY Draft Agreement - General

- Economy of scale – one treatment plant versus three treatment plants.
- This is a separate entity under Massachusetts General Law that deals only with wastewater treatment and effluent recharge. Each community remains in control of its own collection system which is about 75% of the cost of their program.
- Model template – MFN Regional Wastewater District formed in 2014 for Mansfield, Foxborough and Norton.

Partnership Governed by Commission

- Proposed Seven (7) Member Commission:
 - Three (3) from Yarmouth (BOS)
 - Two (2) from Dennis (BOS and Moderator)
 - Two (2) from Harwich (BOS)
- Board of Selectmen or designated authority acting as sewer commissioners would appoint commissioners in both Yarmouth and Harwich. Board of Selectmen and Moderator would each appoint one commissioner in Dennis.
- Executive Director to oversee day to day operations.

Partnership Commissioners

- Commissioners appointed from:
 - Town Administrator
 - DPW Director
 - Wastewater superintendent or equivalent
 - Sewer Commissioner
 - Board of Selectmen
 - Finance Committee
 - Qualified Town Resident
- Three-Year terms (rotating).
- Commissioner can be removed by their appointing authority.

Budget Process

- November 1st Draft Fiscal Year budget (majority vote) distributed to three communities. Also 5-yr budget plan.
- Commission discusses budget with communities during November/December.
- Commission and member towns conduct a joint three-town Board of Selectmen meeting to approve Draft Partnership budget by majority vote of those present or reject for further Commission review. A quorum for this meeting shall be at least two selectmen from each town and at least eight selectmen present from the three towns.
- January 15th Final Fiscal Year budget (2/3rds vote) adopted by Commission based on Selectmen vote and send to town treasurers by February 1st. Also 5-yr budget plan.
- Commission issues three bills to Member Towns (quarterly). Can seek payment through Cherry Sheet if nonpayment.

Quorums

- Non-Financial Issues – Requires four (4) Commissioners be present with a representative from each community.
- Financial Issues (over \$30K) – Requires five (5) Commissioners be present with a representative from each community.
- Executive Director has authority to act on financial matters less than \$30K.

Apportionment of Costs

- Capital and Operating Costs
- Capital costs apportioned based on percent of average daily flow capacity owned in the treatment plant.
- Operating costs split into two components:
 - Semi-Fixed Costs – apportioned based on percent of average daily flow capacity owned in treatment plant (staff, overhead, etc.).
 - Flow Variable Costs – apportioned based on percentage of actual wastewater flow from a community treated at the treatment plant (electricity, chemicals and solids disposal).
- Cost increases not subject to Prop 2 ½.

Phase 1 Cost Estimates

- Yarmouth only option COST ESTIMATE approximates \$112 million for treatment plant, collection system and recharge facilities
 - Opportunities for cost reduction through: Regional opportunities; Road work coordination; and design.
- Zero interest loan/30 year amortization = \$3.73 million annual debt service
 - 0% vs. 2% interest provides interest savings of up to \$35m over the life of the loan.
- Developing a plan to fund these costs **without a general tax rate impact**
 - For frame of reference purposes only, if it were on tax rate:
 - impact would be 64 cents per thousand, or \$64 per one hundred thousand of valuation.

Phase 1 Cost Recovery Options

What is Yarmouth's path to funding without tax rate impact?

We have done this before with our water infrastructure!

- Grant opportunities – including potential project subsidy (10%)
- Municipal Water Infrastructure Investment Fund
 - Up to 3% (\$1.7 million) property tax surcharge, similar to CPA
- Cape & islands water protection trust
- Flow-based betterment program
- 25% capital surcharge on operating rate
- Dedicate Short-term rental bill revenues
- Other local revenues – i.e. solar pv receipts or savings
- Septage plant receipts or water operation cost sharing
- BOS Financial management policies regarding new growth
- Debt drop off

Summary of potential wastewater capital cost funding plan

All amounts are estimates and carry variable levels of certainty

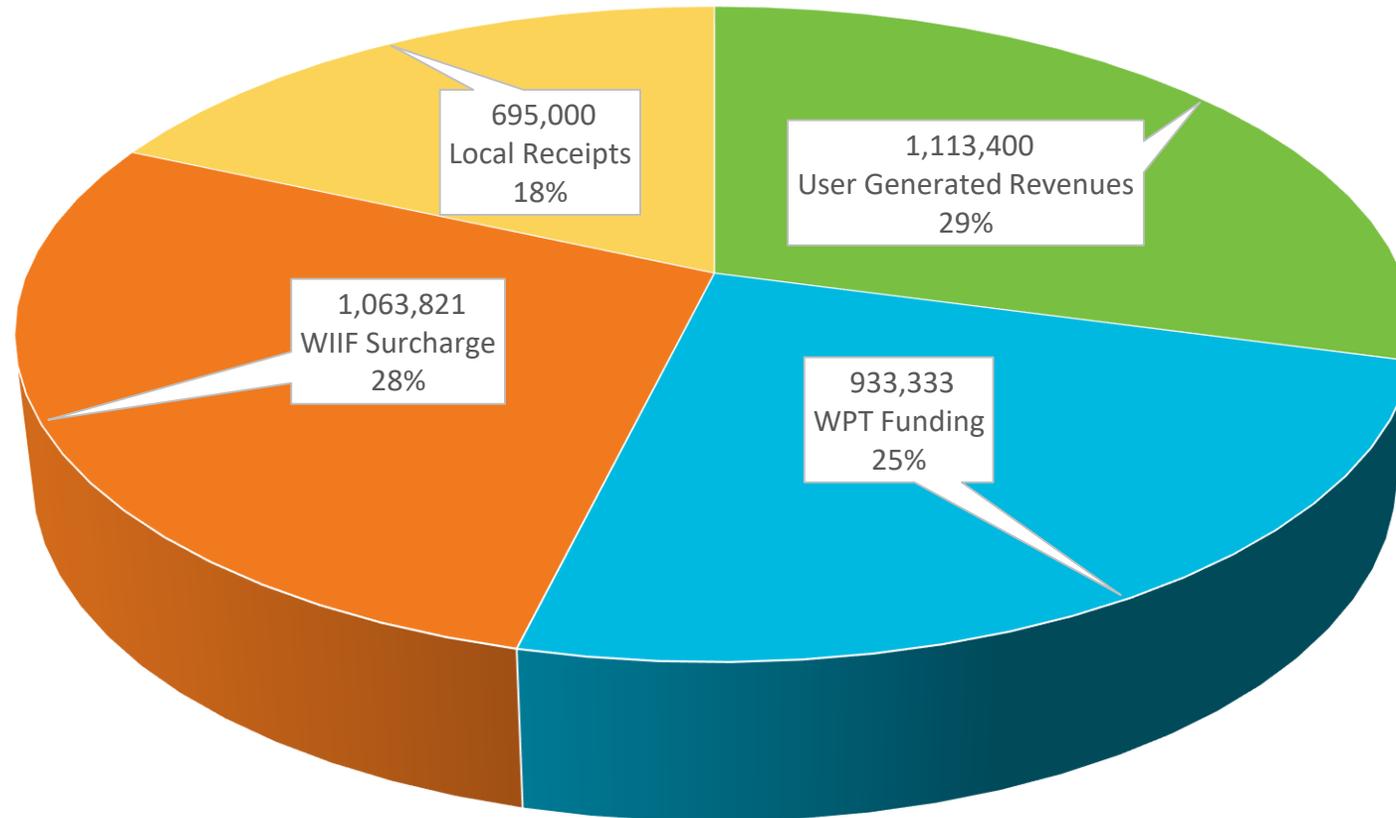
Assumptions: Phase 1 costs of \$112,000,000, payable over a 30 year, zero interest loan (represents a savings of up to \$35,000,000 on interest costs)

ELEMENT	AMOUNT	%
Annual debt service cost	\$ <u>3,733,333</u>	<u>100%</u>
Estimated Funding:		
User Generated Revenues: <small>Septage plant funding; 25% capital surcharge on sewer rates; Betterment program on 20% of collection system costs. High level of certainty.</small>	1,113,400	30%
Water Infrastructure & Investment Fund: <small>1.5% property tax surcharge. High level of certainty as to amounts, moderate as to passage of surcharge.</small>	1,063,821	28.5 %
Dedicated Local Receipts: <small>New Short-term rental tax revenues (\$570,000) and estimated savings on solar PV projects (\$125,000). Moderate level of certainty.</small>	695,000	16.5 %
Cape & Islands Water Protection Trust: <small>Yarmouth's participation in the Trust, estimate of 25% of project costs covered. Low level of certainty.</small>	933,333	25%

Summary of potential wastewater capital cost funding plan

All amounts are estimates and carry variable levels of certainty

Contemplated Phase 1 Funding Plan



■ User Generated Revenues ■ WPT Funding ■ WIIF Surcharge ■ Local Receipts

Summary of potential wastewater capital cost funding plan

Other matters and considerations

- Begin pre-funding of plan in FY 2021 to establish a capital reserve to smooth out any shortfalls in plan funding in any one year due to actual costs & revenues differing from the estimates
- Contemplating a combined water resource enterprise fund to allow for carrying over of surpluses and maintenance of capital reserves.
- Surplus capital contributions that are unused would be set-aside to seed funding of future phases.
- Additional cost avoidance/recovery opportunities:
 - Real estate transfer tax; debt drop-off; “new growth” due to economic development
 - Grant and subsidy opportunities resulting from having a “shovel ready” project.
 - How do we “back stop” the plan in the event actual results do not meet estimates.

Schedule and Potential Next Steps

- Three Town DHY Meeting September 19, 2019
- Subgroup meetings continue to be held monthly
- Some communities holding informational meetings
- October 2019: Fall Town Meetings
 - Dennis: 10/29/2019 – Potential wastewater cost recovery articles
 - Harwich: Waiting till spring 2020
 - Yarmouth: 10/29/2019 – Potential wastewater cost recovery articles
- May 2020: Each community to address DHY at Town Meeting and funding for first phase of design.
- June/July 2020: DHY Agreement signed
- June/July 2020: Communities submit Final CWMP/Notice of Project Change to MEPA Office
- June/July 2020: Communities appoint DHY Commissioners
- Summer 2020: Access to \$1,000,000 Environmental Bond Bill
- Summer 2020: DHY Commissioners select a part-time Executive Director
- Two-year design followed by three years of construction/connections

Summary Thoughts

- Keep your focus on the big picture of regionalization versus the special interests of each community.
- Focus on 90% you can agree upon versus the 10% you may never agree upon.
- DHY Clean Waters Community Partnership is an exciting opportunity and should prove very beneficial to each of the communities.
- Each community will have different benefits and will view the various benefits differently.....but that is okay.

QUESTIONS?

To view informational documents and reports related to the Town's wastewater planning efforts please visit:

<https://www.yarmouth.ma.us/1754/Water-Resources>

<p>Why Should I Have to Contribute?</p> 	<p>Economic Impact of Wastewater Infrastructure</p> 	<p>Why Are We Talking About Wastewater?</p> 	<p>Yarmouth Water Resources FAQs</p> 
<p>Chronicle Segment on Cape Cod Water (3/27/19)</p> 	<p>Board of Selectmen Update (1/29/19)</p> 	<p>Economic Impact Study</p> 	
<p>DHY 8 Phase Plan Map</p> 	<p>Yarmouth Phase 1 Map</p> 	<p>RT 28 Project Status</p> 	

Get updates about water resource initiatives!

Send your email address by text message:

Text **YARMOUTHWATER** to **22828** to get started.



Message and data rates may apply.

QUESTIONS?

Visit our WRAC webpage for information, meeting minutes/materials, and a link to our YouTube Channel for meeting videos:

<https://www.yarmouth.ma.us/1754/Water-Resources>

Contact: Rich Bienvenue at 508-398-2231 ext. 1297 or via email at rbienvenue@yarmouth.ma.us