



# **Town of Bourne Comprehensive Wastewater Management Plan**

**Alternatives Analysis Public Presentation**



# Agenda

- Review Workshop Goals
- Provide Technology Overview
- Review Evaluation Process and Results
- Present Alternatives by Watershed
- Review Next Steps & Schedule
- Discussion



## Workshop Goals

- Provide Technology Overview
- Review Evaluation Criteria
- Discuss Recommended Technologies by Watershed



## Refresher: What is a Comprehensive Wastewater Management Plan?

- Town-wide water quality assessment and solutions
- Aligns with 2019 Local Comprehensive Plan Goals for growth and development
- 20-year planning to meet water quality goals



## What is the goal of our alternatives analysis?

- Remove nitrogen based on the goals set in our Needs Assessment
  - TMDLs
  - 25% Reduction across Nitrogen Impaired Watersheds
- Objectives
  - 208 Plan Compliant solutions
  - Alignment with Town Goals
- Process
  - Started with Cape Cod Commission Technology Matrix
  - Drafted evaluation criteria
  - Process of Elimination through Wastewater Advisory Committee

Watersheds	Total Nitrogen Load Values, kg-N/year		Bourne Total Removal (kg-N/yr.)
	Wastewater	Total	
Megansett-Squeteague Harbor	7,611	11,658	564
Phinneys Harbor	5,948	8,730	1,706
Buttermilk Bay	4,058	5,610	1,402
Pocasset Harbor	7,958	12,479	3,120
Pocasset River	3,762	5,157	1,289
Buzzards Bay	16,830		TBD
Cape Cod Canal	164,028		TBD
Total			8,072



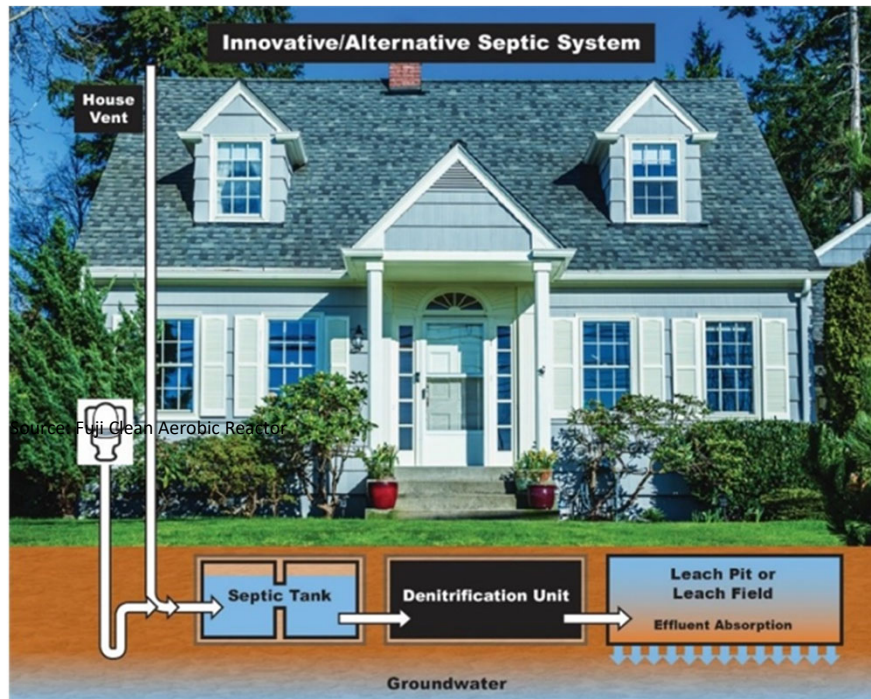
## Alternatives Approach

- Identifies management strategies for achieving the TMDL goal for each watershed
- Focuses on on-site and limited sewerage approaches
- Does not consider a Buzzards Bay outfall
- Concept strategies to demonstrate that the TMDL goals can be achieved
  - Broad scale and conceptual at this point
  - Specific approaches to be developed in next CWMP phase
  - Will recognize existing I/A systems as part of the solution
- More detailed alternatives will develop costs (construction and O&M) and cost allocation strategies
- EP and the Town are aware and involved in the Title 5 regulation change process with MassDEP

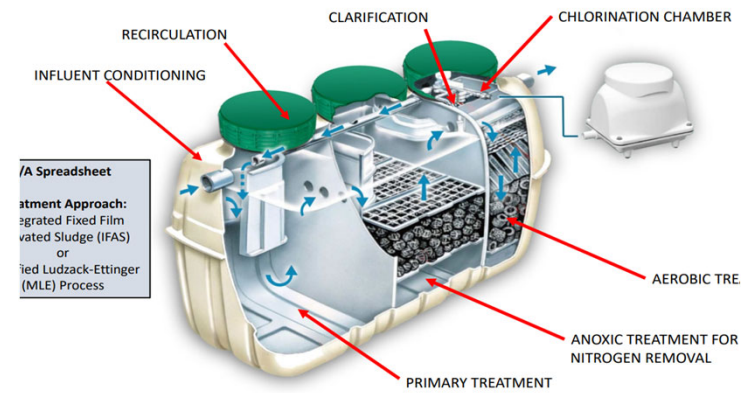


# Technology Toolbox

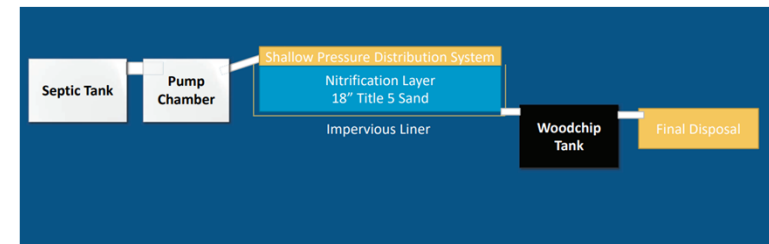
# Innovative/Alternative Onsite Systems



Source: EPA



Source: Fuji Clean



Source: "Layer Cake" passive system





## Responsible Management Entities (RMEs):

- Requires a regulatory agent/avenue for oversight
- Provides monitoring and oversight for each individual system
- MassDEP requires use of RMEs

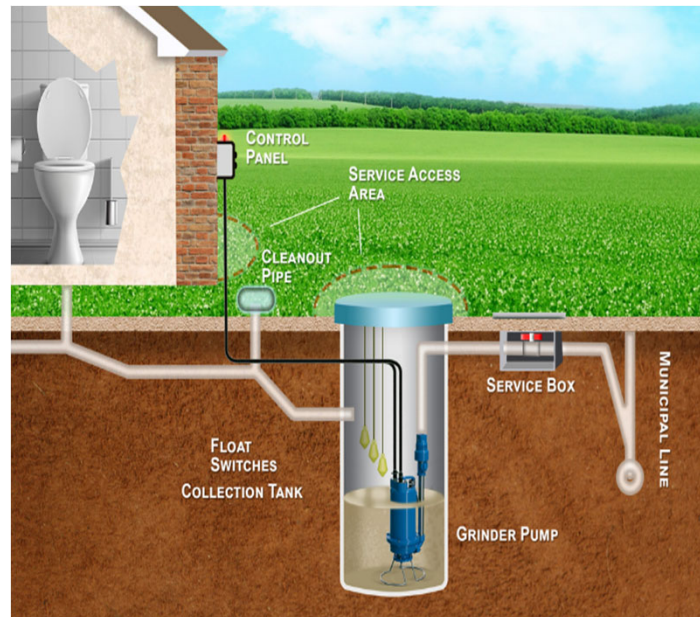


# Stormwater Best Management Practices (BMPs)

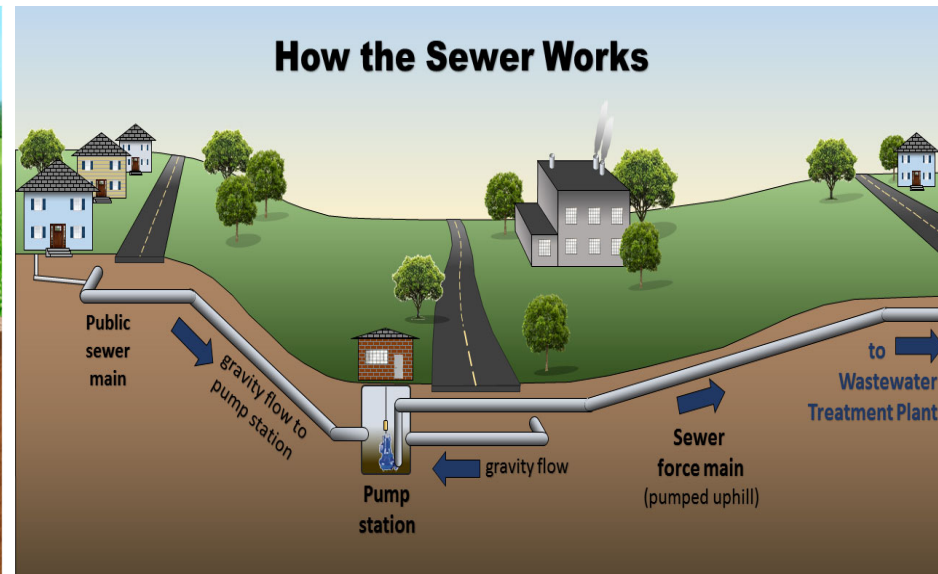
## Bioretention Areas & Rain Gardens



## Collection Systems



Source: Empowering Pumps & Equipment



Source: City of Caldwell





## Wastewater Treatment



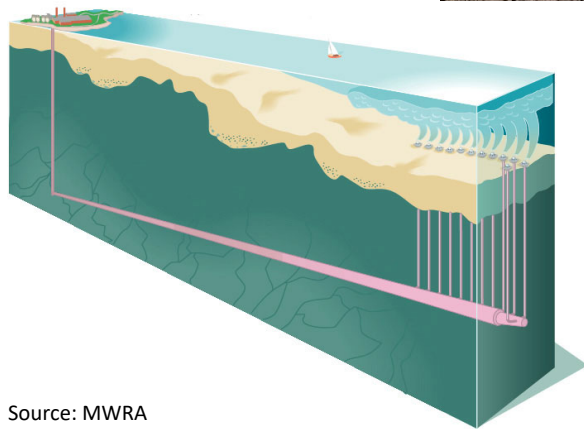
Source: Daniel Ackerman, CAI



Source: Carlin Contracting, Inc.

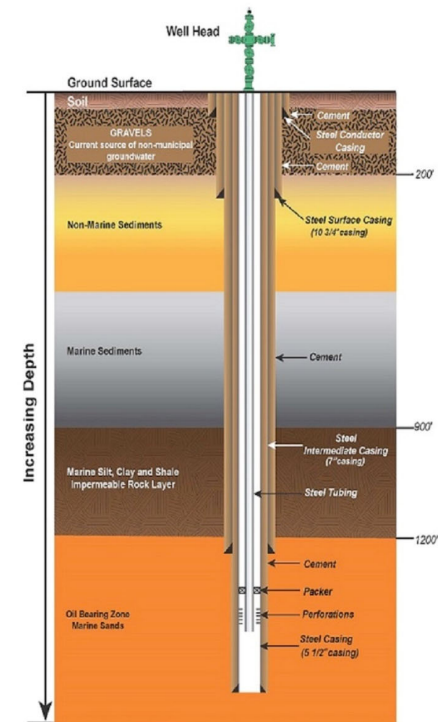


# Effluent Disposal



Source: MWRA

Injection Well Diagram



Source: CA Department of Conservation



## Alternatives by Watershed

## Reminder

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# Megansett-Squeteague Harbor

IA Systems



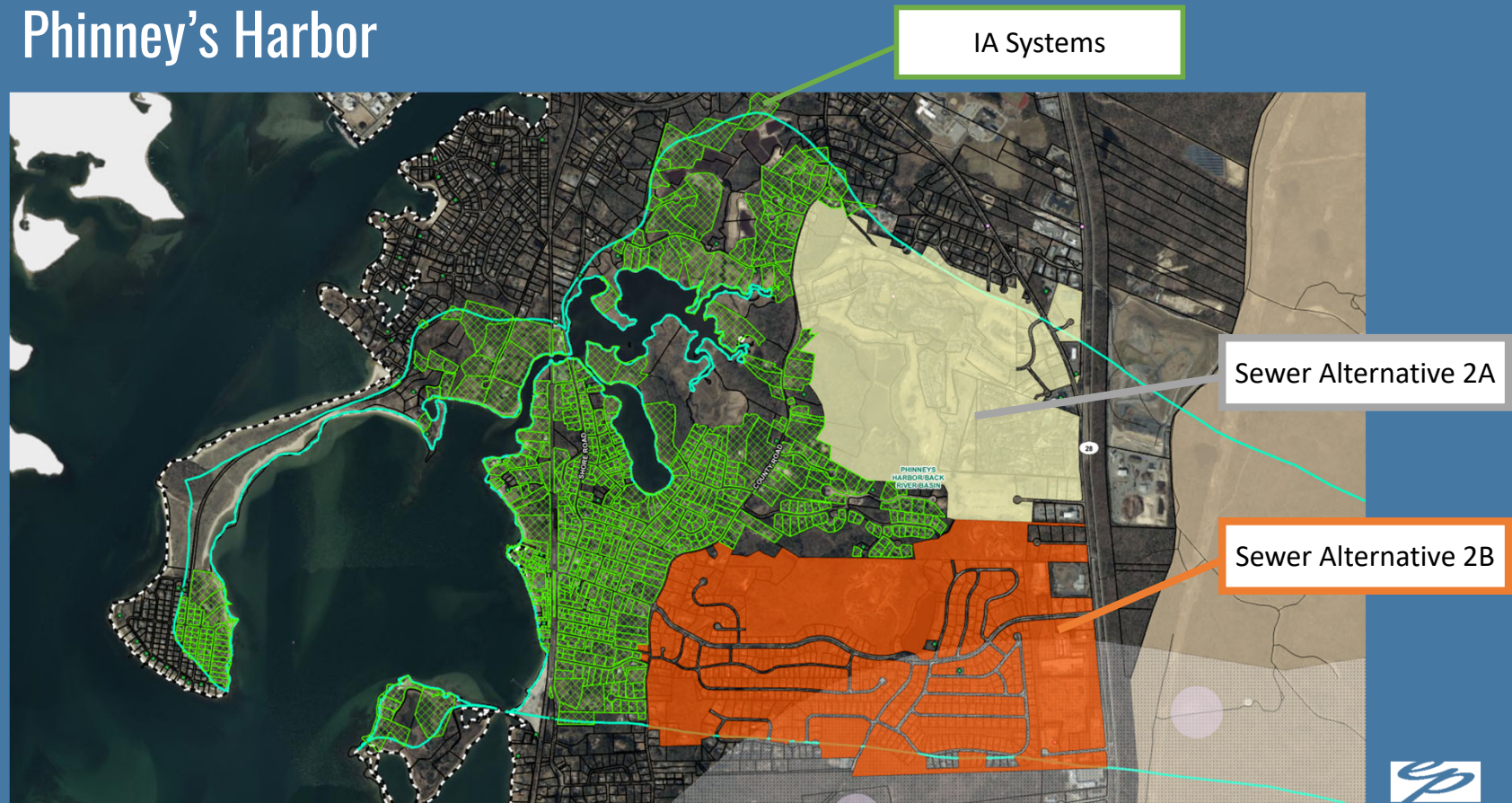


## Megansett-Squeteague Harbor

Alternative	Number of Parcels	Nitrogen Reduction Predicted (kg N/y)
I/A General Use System	483	545
Stormwater BMP	-	219
<b>Total Estimated Removal</b>		<b>764</b>
<i>TMDL Removal Requirement</i>		600
<i>Removal Goal Met?</i>		Yes



# Phinney's Harbor



## Phinney's Harbor

Alternative	Number of Parcels	Estimated Nitrogen Reduction (kg N/y)
I/A General Use System	646	729
Sewer Alternative 2A	18	60
Sewer Alternative 2B	481	1,598
Stormwater BMP	-	383
<b>Total</b>		<b>2,770</b>
<i>TMDL Removal Goal</i>		<i>1,706</i>
<i>Removal Goal Met?</i>		<i>Yes</i>

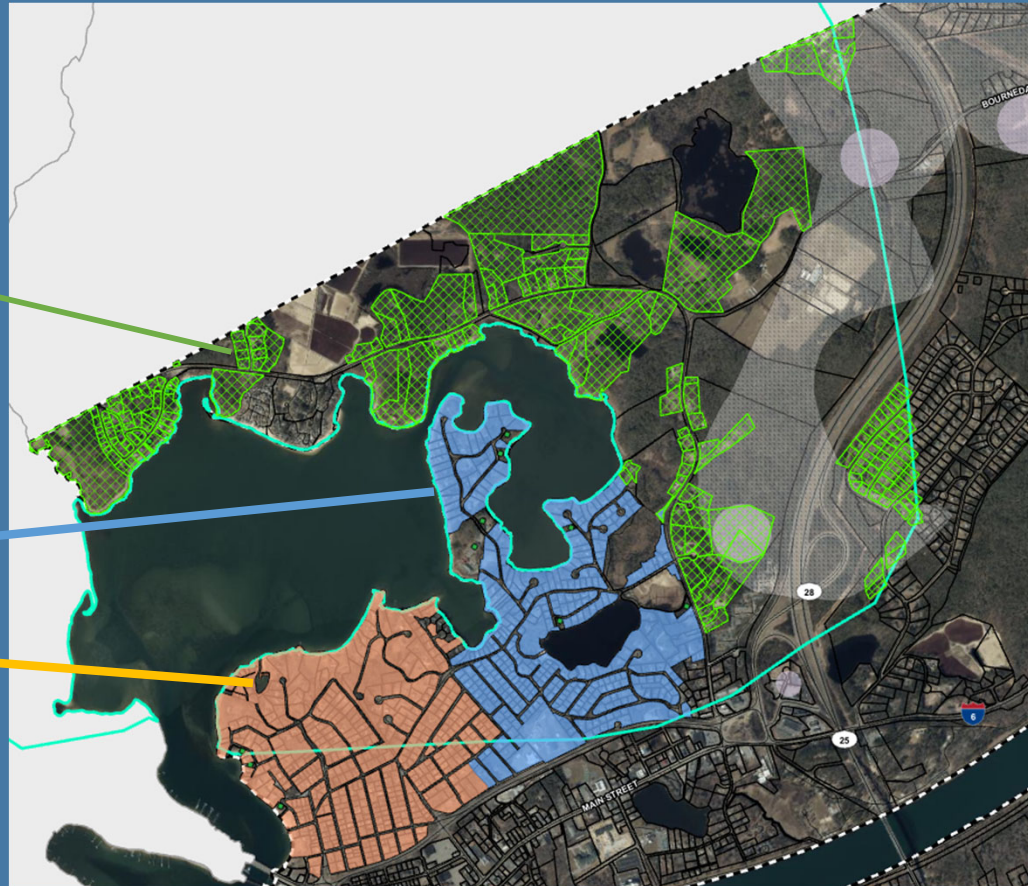


# Buttermilk Bay

IA Systems

Sewer Alternative 1A

Sewer Alternative 1B



## Buttermilk Bay

Alternative	Number of Parcels	Estimated Nitrogen Reduction (kg-N/y)
I/A General Use System	266	266
Sewer Alternative 1A	349	1,029
Sewer Alternative 1B	187	551
Stormwater BMP	-	177
<b>Total</b>		<b>2,023</b>
<i>Nitrogen Removal Goal</i>		<i>1,402</i>
<i>Removal Goal Met?</i>		<i>Yes</i>





# Pocasset Harbor



Sewer Alternative 3B

Sewer Alternative 3A

Sewer Alternative 4A

IA Systems

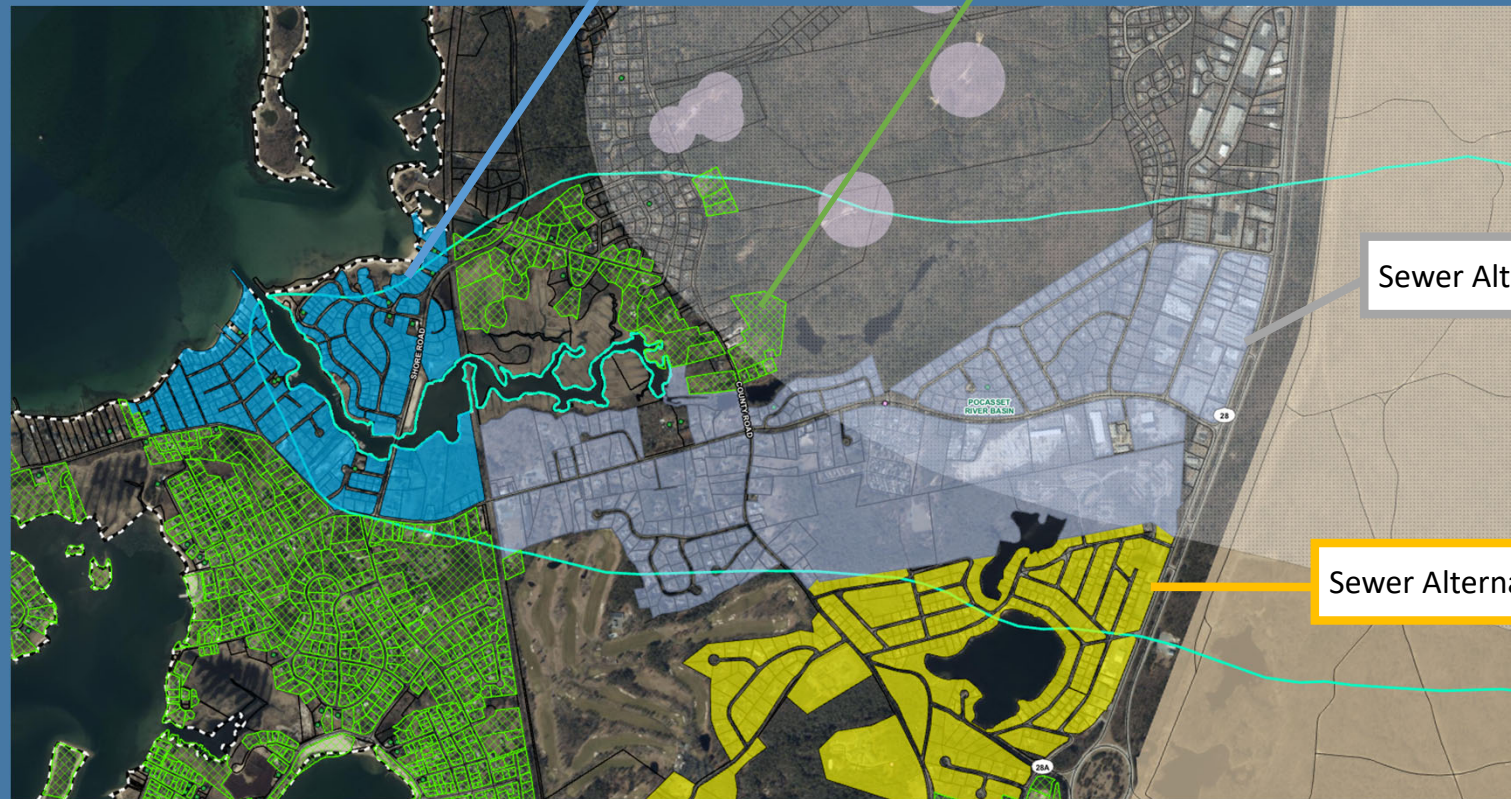


# Pocasset Harbor

Alternative	Number of Parcels	Estimated Nitrogen Reduction (kg-N/y)
I/A General Use System	1,107	1,249
Sewer Alternative 3A	12	40
Sewer Alternative 3B	70	232
Sewer Alternative 4A	359	1,192
Stormwater BMP	-	470
<b>Total</b>		<b>3,183</b>
<i>Nitrogen Removal Goal</i>		3,129
<i>Removal Goal Met?</i>		Yes



# Pocasset River



Sewer Alternative 3B

IA Systems

Sewer Alternative 3A

Sewer Alternative 4A





## Pocasset River

Alternative	Number of Parcels	Estimated Nitrogen Reduction (kg-N/y)
I/A General Use System	45	51
Sewer Alternative 3A	260	864
Sewer Alternative 3B	197	654
Sewer Alternative 4A	108	359
Stormwater BMP	-	215
<b>Total</b>		<b>2,143</b>
<i>Nitrogen Removal Goal</i>		<i>1,289</i>
<i>Removal Goal Met?</i>		<i>Yes</i>



## Next Steps

Project Schedule and Phase IV

## Next Steps: Project Team



## Next Steps: Residents & Stakeholders

- Email questions and feedback
  - [Bourne.CWMP@envpartners.com](mailto:Bourne.CWMP@envpartners.com)
    - Don't forget the dot!
- Visit the following Town Webpages
  - CWMP Page
    - <https://www.townofbourne.com/comprehensive-wastewater-management-plan-cwmp>
  - Wastewater Advisory Committee
    - <https://www.townofbourne.com/wastewater-advisory-committee>



# THANK YOU

Questions or feedback?

Email the project team:

[Bourne.CWMP@envpartners.com](mailto:Bourne.CWMP@envpartners.com)

