

# **Outer Cape Sub Regional Group**



Meeting 1

# Approach to the 208 Plan Update

Watershed  
Based

Stakeholder  
Engagement

Maximize Benefits  
of Local Planning

No Optimal  
Solutions

## **Goal:**

To generate a series of approaches in each watershed that will meet water quality standards

# Subgroup Boundaries

## 208 Water Quality Management Plan Update



### Lower Cape

- Herring River
- Pleasant Bay
- Stage Harbor Group
- Nauset and Cape Cod Bay Marsh Group

### Mid Cape

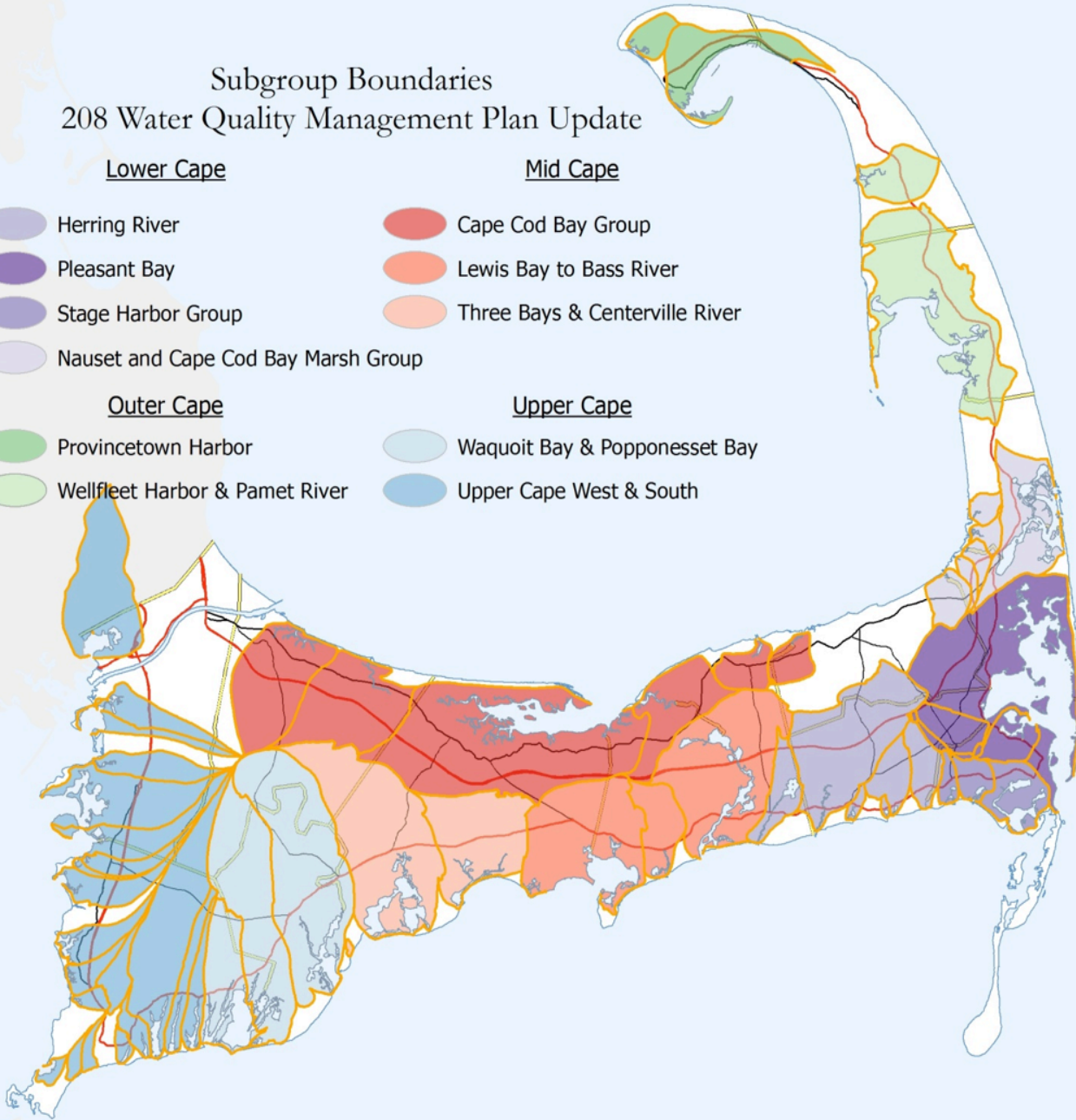
- Cape Cod Bay Group
- Lewis Bay to Bass River
- Three Bays & Centerville River

### Outer Cape

- Provincetown Harbor
- Wellfleet Harbor & Pamet River

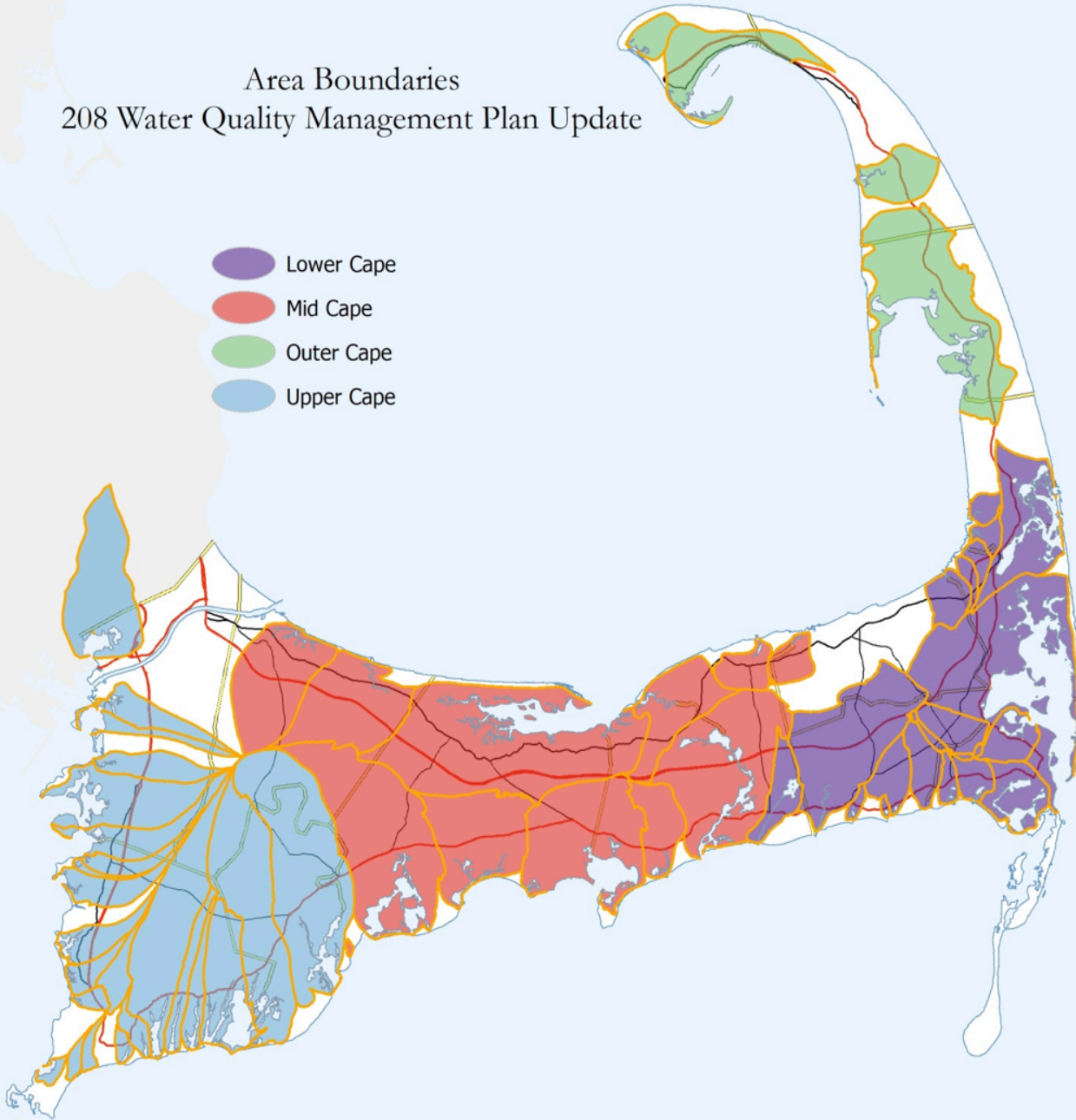
### Upper Cape

- Waquoit Bay & Popponesset Bay
- Upper Cape West & South



# Area Boundaries 208 Water Quality Management Plan Update

- Lower Cape
- Mid Cape
- Outer Cape
- Upper Cape



## Public Meetings

## Watershed Working Groups

Goals,  
Work Plan  
& Roles

Affordability,  
Financing

Baseline  
Conditions

Technology  
Options  
Review

Watershed  
Scenarios

July

August

September

October

December

# Watershed Working Group Process

# Standing Sub Regional Meeting Topics

Scenario  
Planning

Regulatory,  
Legal,  
Institutional

Implementation

Mtg. 1

One representative  
watershed

Challenges & opportunities  
associated with permitting the  
watershed scenario

Adaptive management  
plans

Mtg. 2

All shared watersheds  
& TBL model

Tools to support  
intermunicipal cooperation

Monitoring

Mtg. 3

Subregional scenarios  
& TBL model

Structures for permitting

Financing &  
affordability

# Standing Sub Regional Meeting Topics

Scenario  
Planning

Regulatory,  
Legal,  
Institutional

Implementation

## Meeting 1 Goals:

Identify regulatory, legal, and institutional challenges, constraints, and opportunities associated with the 208 Plan approach for water quality

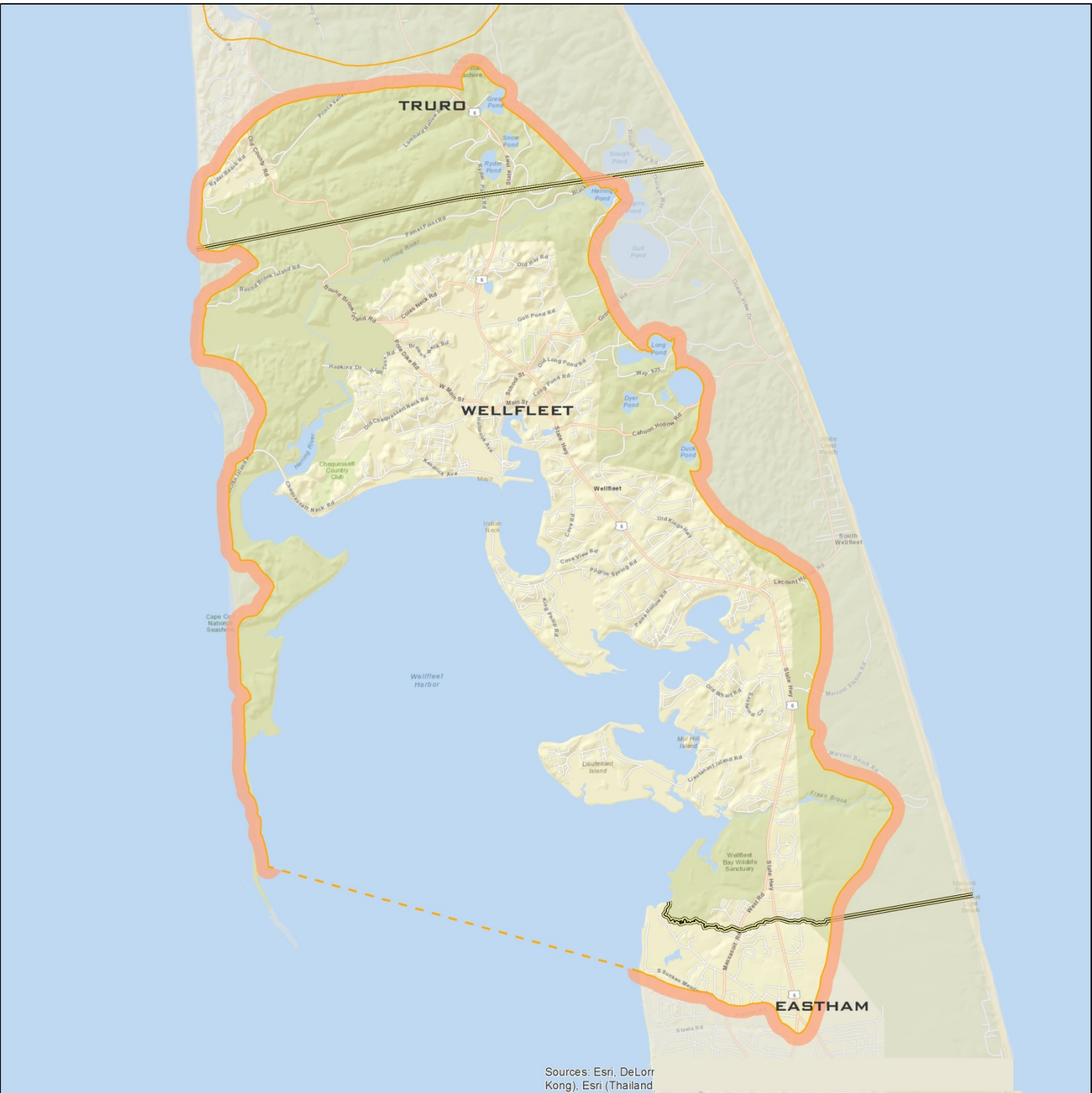
Clarify the definition and components of an adaptive management plan that can be permitted

# Scenario Planning

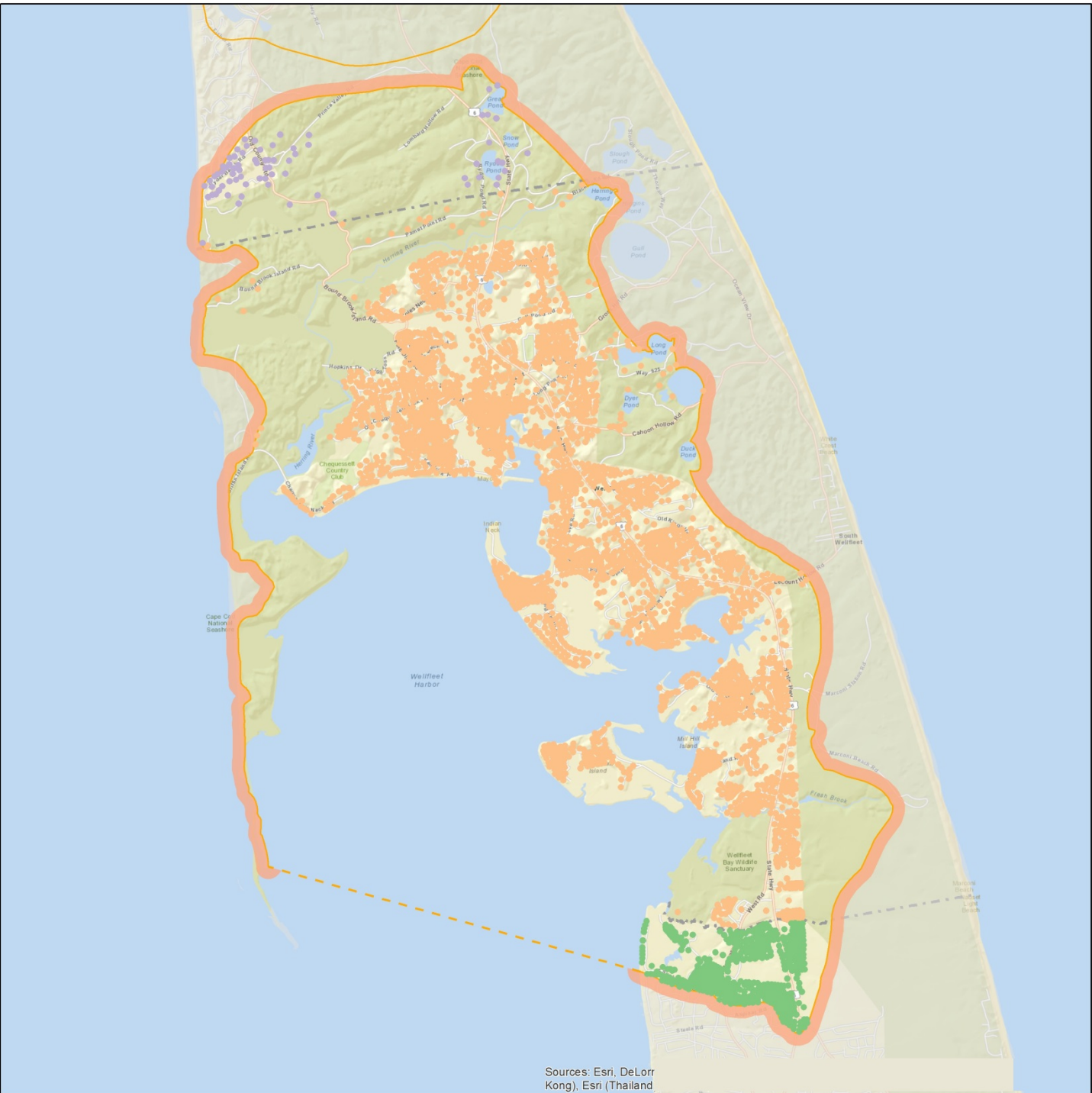
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**Wellfleet Harbor**





Sources: Esri, DeLorr Kong, Esri (Thailand)



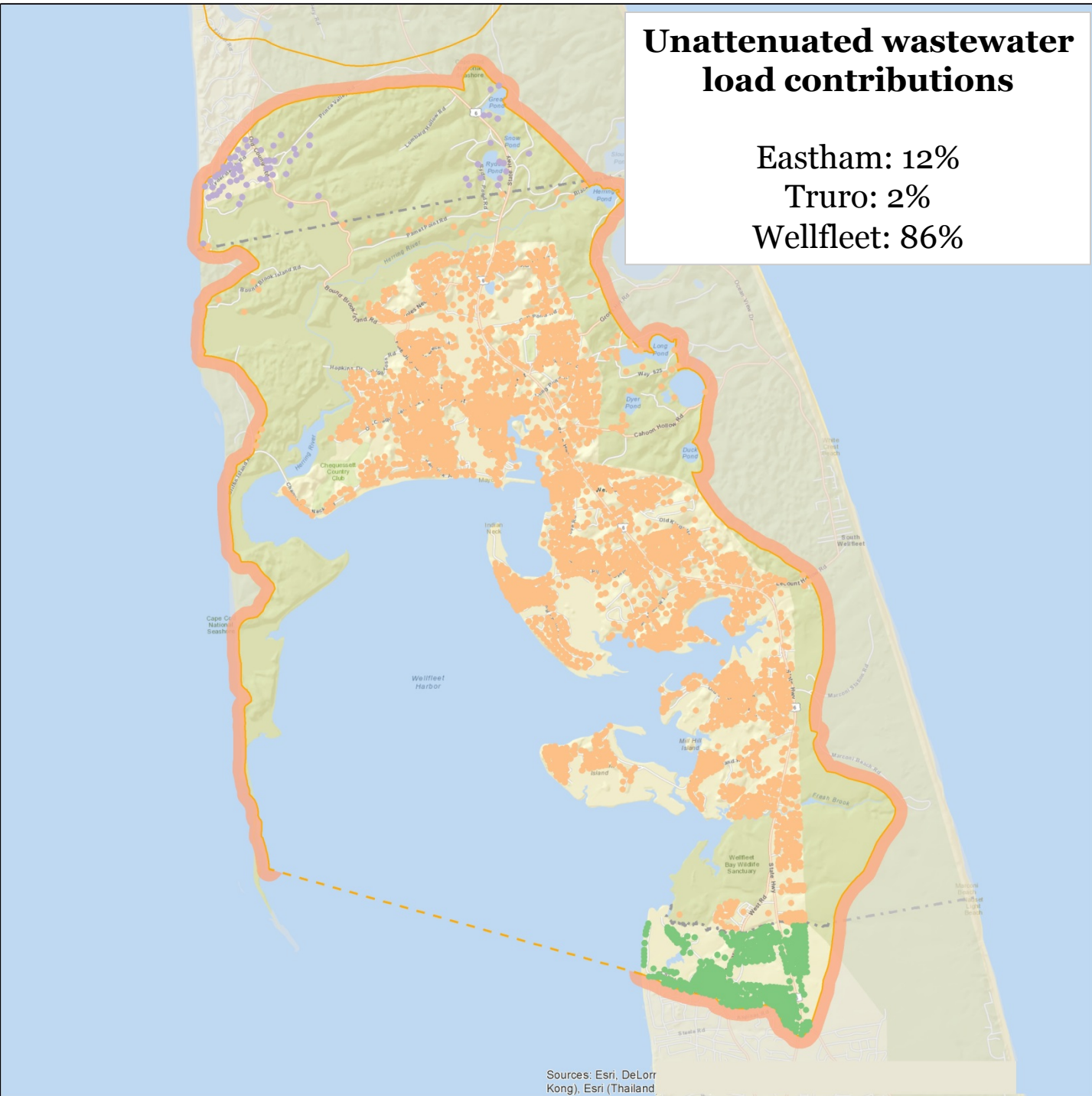
Sources: Esri, DeLorr Kong, Esri (Thailand)

# Unattenuated wastewater load contributions

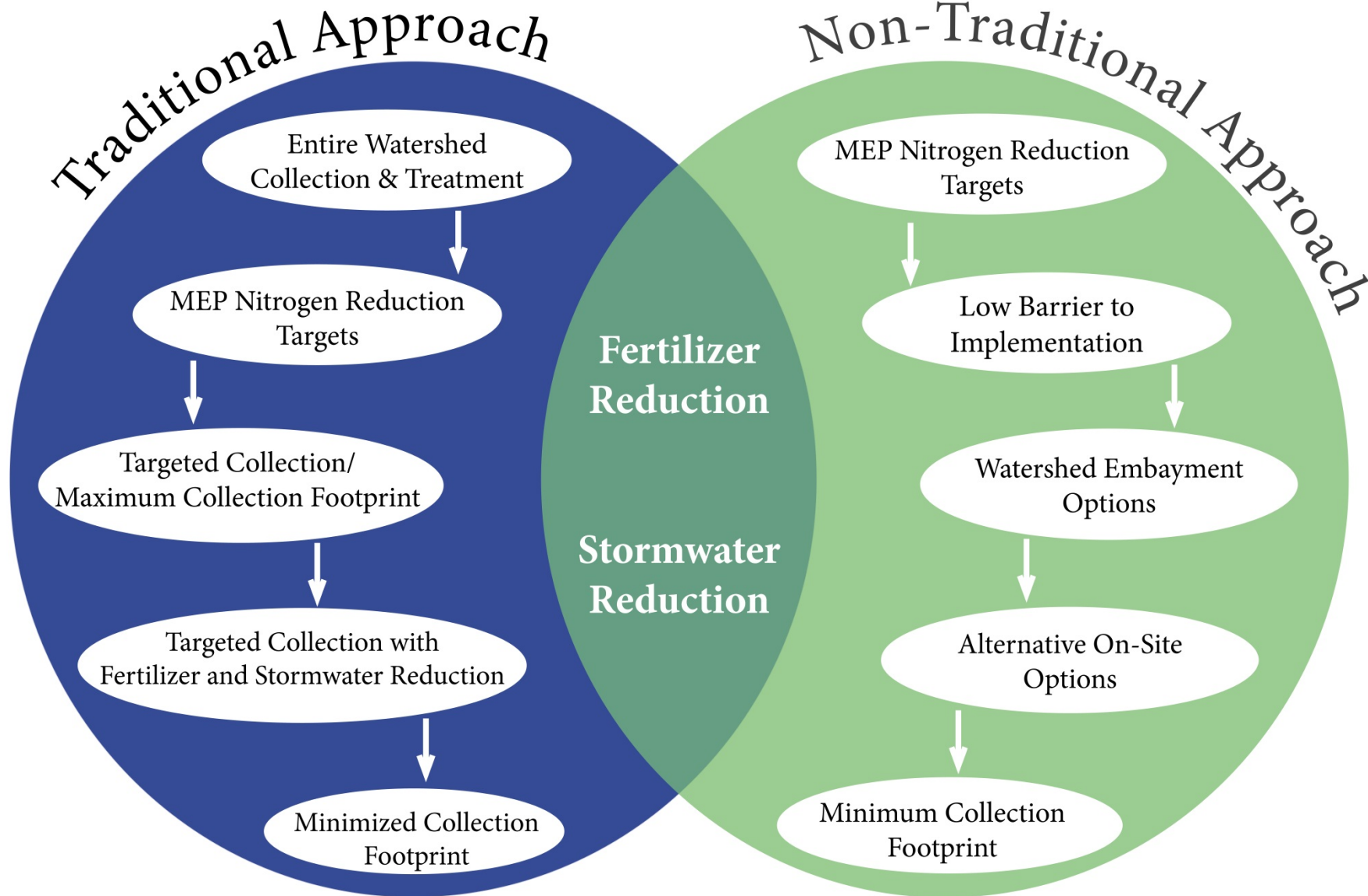
Eastham: 12%

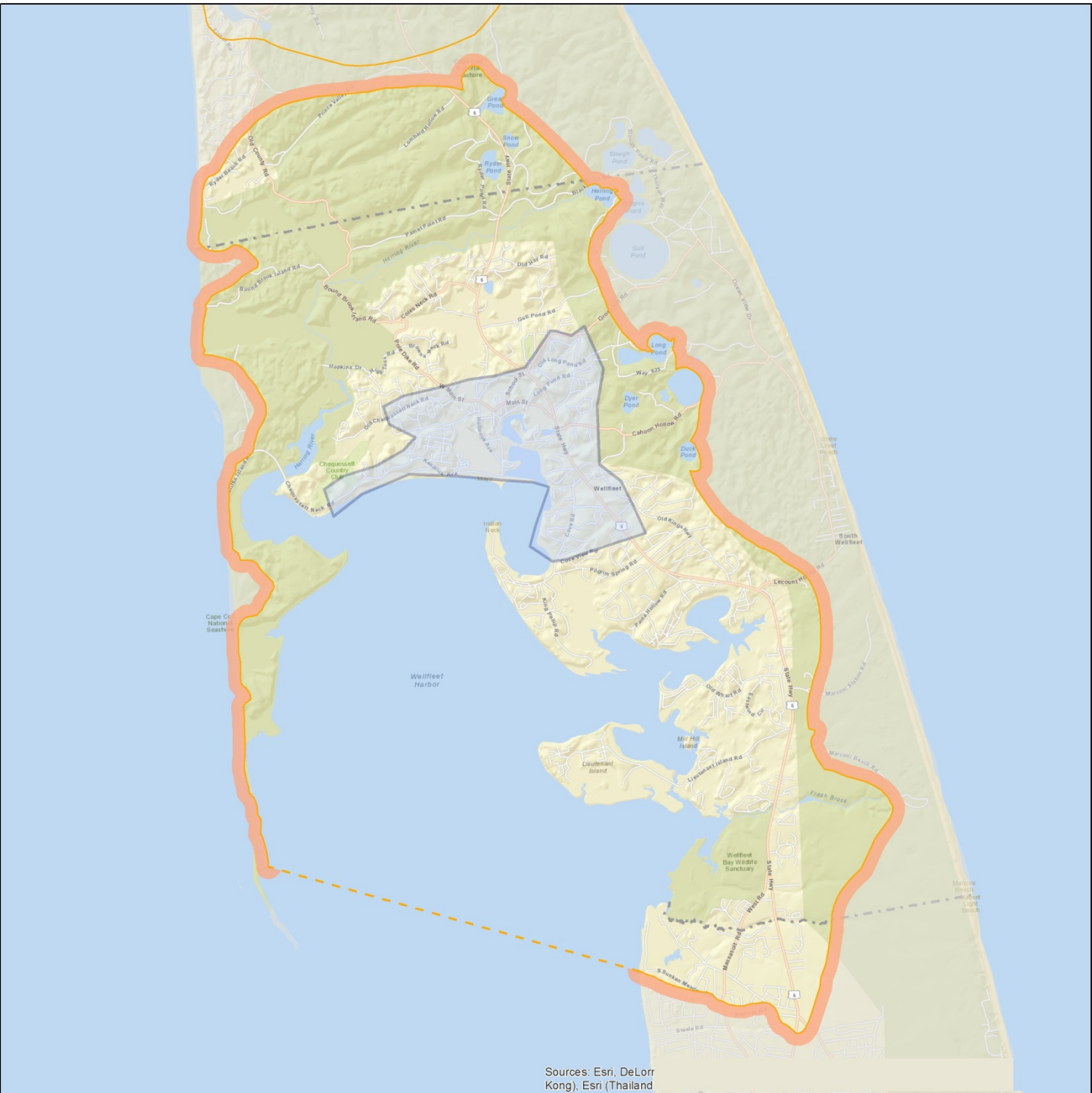
Truro: 2%

Wellfleet: 86%

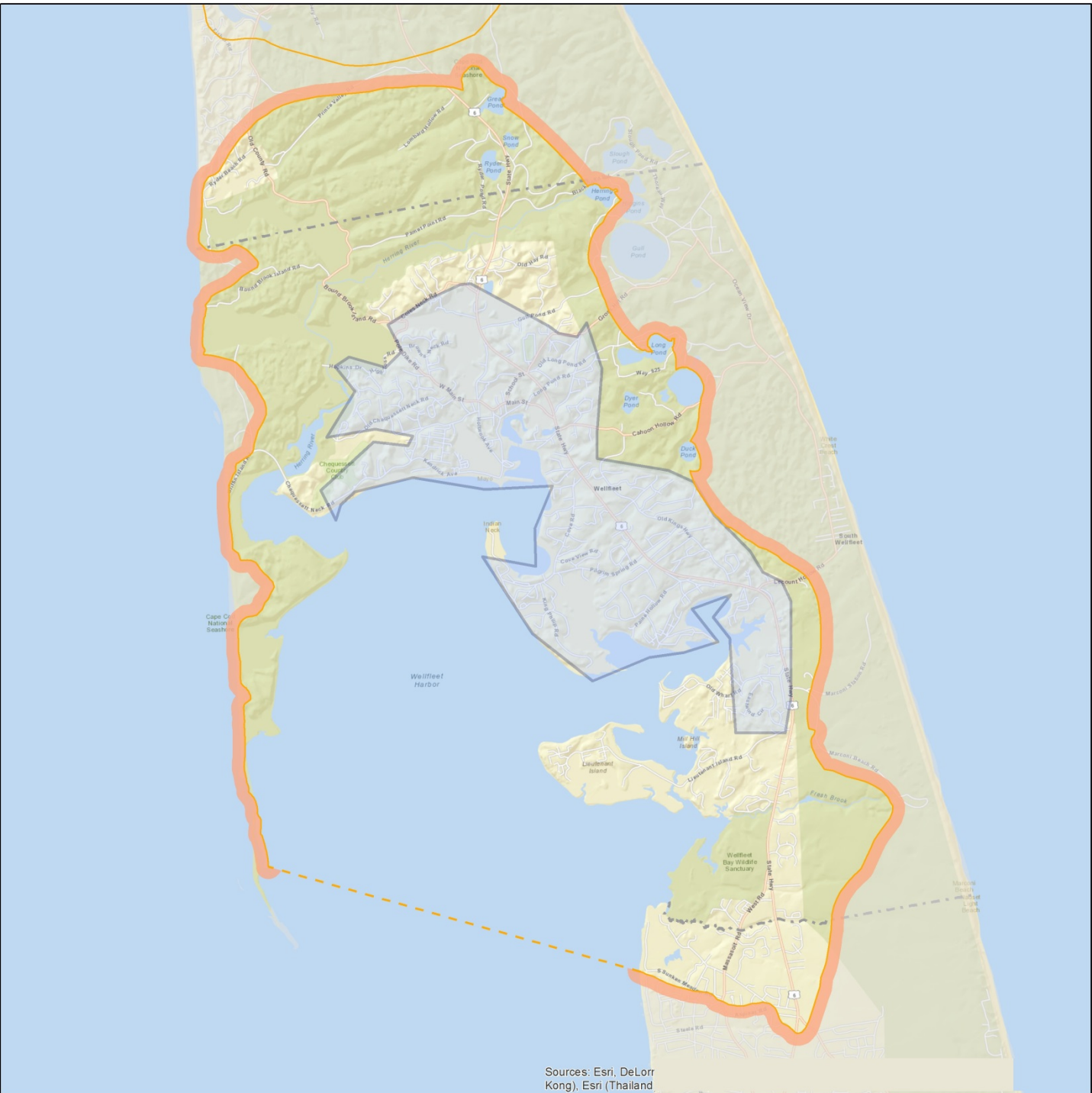


Sources: Esri, DeLorr Kong, Esri (Thailand)





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# Site Scale

# Neighborhood

# Watershed

# Cape-Wide

Prevention

- Remediation of Existing Development
- Fertilizer Management
- Transfer of Development Rights
- Stormwater BMPs
- Compact Development

Reduction

- Standard Title 5 Systems
- Conventional Treatment
- I/A Title 5 Systems
- Cluster & Satellite Treatment Systems
- Advanced Treatment
- I/A Enhanced Systems
- Wastewater Collection Systems
- Effluent Disposal Systems
- Toilets: Urine Diverting
- Constructed Wetlands: Surface Flow
- Toilets: Composting
- Constructed Wetlands: Subsurface Flow
- Toilets: Packaging
- Stormwater: Bioretention / Soil Media Filters
- Toilets: Incinerating
- Stormwater: Wetlands
- Phytoirrigation
- Eco-Machines & Living Machines

Remediation

- Phytobuffers
- Fertigation Wells
- Permeable Reactive Barrier
- Shellfish and Salt Marsh Habitat Restoration
- Aquaculture/Shellfish Farming
- Inlet / Culvert Widening
- Pond and Estuary Dredging
- Constr. Wetlands - Groundwater, Salt Water, Floating

# Problem Solving Approach

Wastewater
  Existing Water Bodies
  Regulatory

# 1

## Identify Current N Removal Needs (Targets/Reduction Goals)

**Present Load:** X kg/day    **Target:** Y kg/day    **Reduction Required:** N kg/day  

$$X \text{ kg/day} - Y \text{ kg/day} = N \text{ kg/day}$$

# 2

## Additional N Removal Needs

- A. Title 5 Problem Areas
- B. Pond Recharge Areas
- C. Growth Management

# 3

## Low Barrier Technologies

- A. Fertilizer Management
- B. Stormwater Mitigation

# 4

## Watershed Alternative Technologies

- A. Permeable Reactive Barriers
- B. Inlet/Culvert Openings
- C. Constructed Wetlands
- D. Aquaculture

# 5

## On-Site Alternative Technologies

- A. Eco-toilets (UD & Compost)
- B. I/A Technologies
- C. Enhanced I/A Technologies
- D. Shared Systems

# 6

## Priority Collection/Sewer Areas

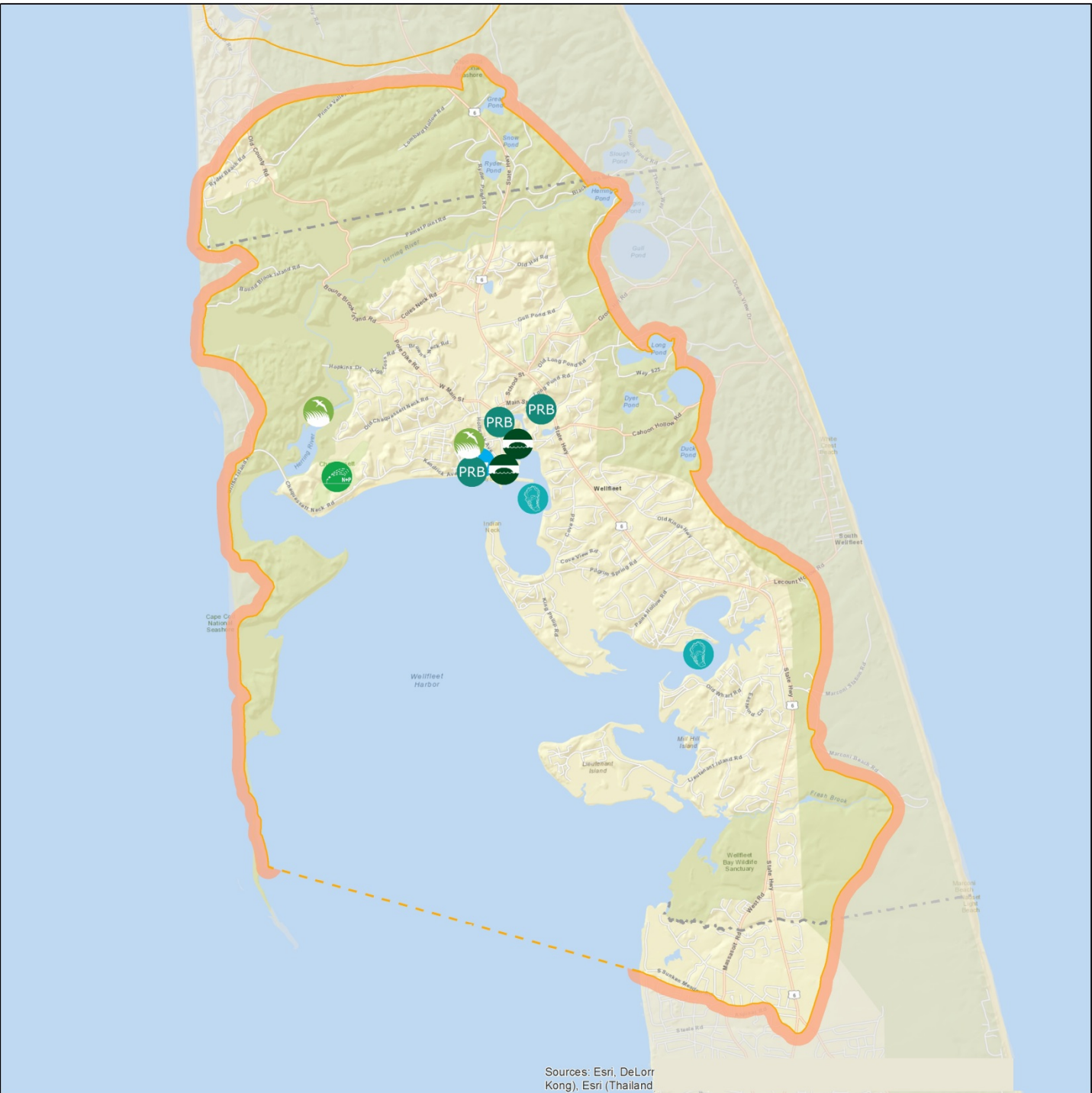
- A. Greater Than 1 Dwelling Unit/acre
- B. Village Centers
- C. Economic Centers
- D. Growth Incentive Zones

# 7

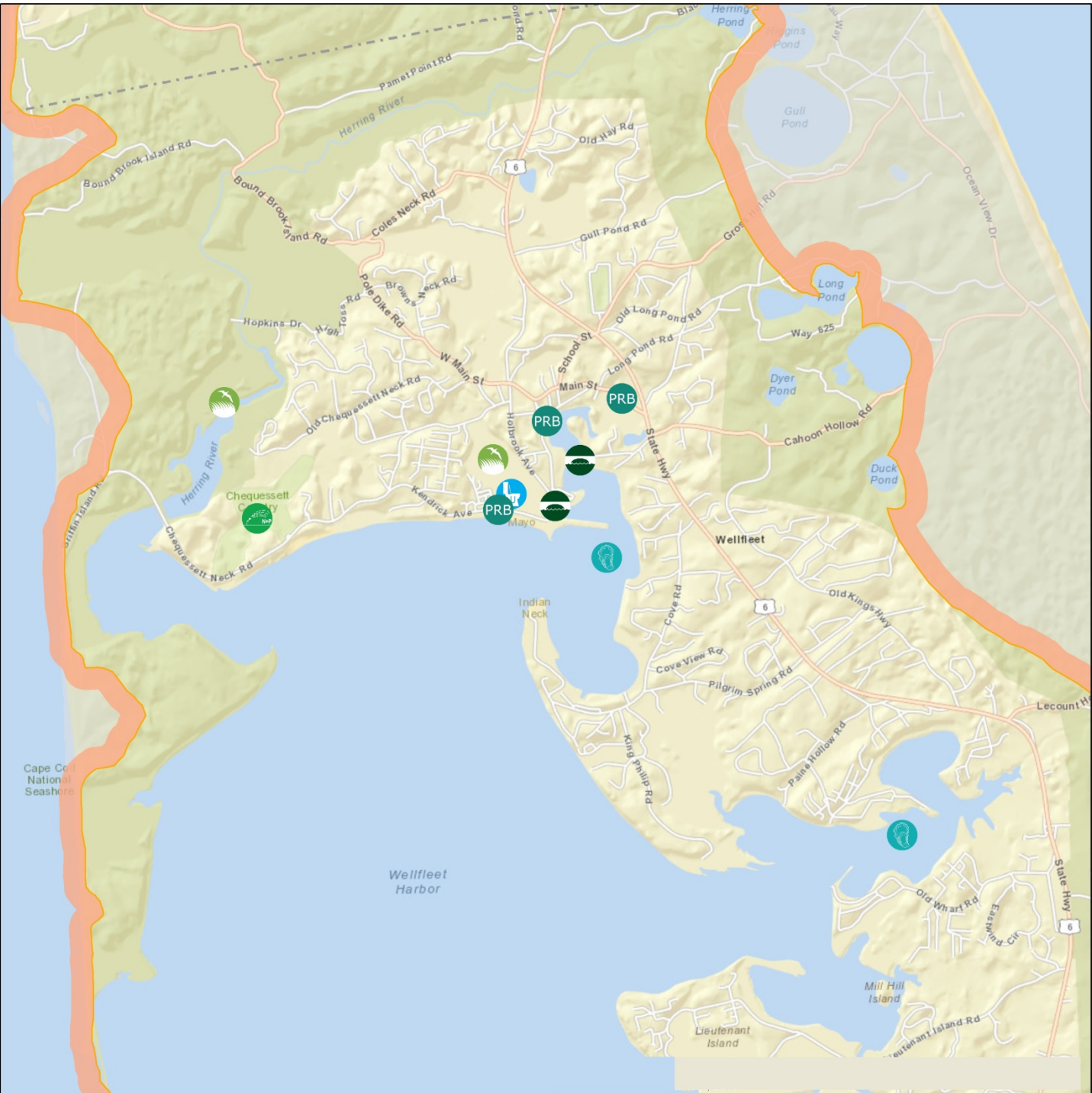
## Supplemental Collection / Sewer Areas


































Sources: Esri, DeLorr Kong, Esri (Thailand)



**ACOE****DEP****BOH****ConComm****MEPA***401/404**GWDP**WMA**I&A**Title 5**WPA**Thresholds*

<b>Technology/Approach</b>							
Stormwater Mngmnt							
Fertilizer Mngmnt							
Oyster/Aquaculture							
Ecotoilets							
PRBs							
Constructed Wetlands							
Fertigation Wells							
Phytoremediation							
Habitat Restoration							
Inlet Widening							
Dredging							

Additional permits may apply. Other agencies involved could include:

- MA Natural Heritage and Endangered Species Program
- MA Historical Commission
- US Fish & Wildlife Service/MA Division of Marine Fisheries
- MassDOT

# **Regulatory, Legal, and Institutional Interactions**

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**What are some of the hurdles and opportunities associated with permitting the above scenarios?**

# Regulatory Purposes

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**MEPA**  
**CCC**  
**DEP**

**Traditional technology permitting path**

**Fertilizer and stormwater reduction credit**

**Alternative technology permitting paths**

## **Need for Permitting Flexibility**

# MEPA Certificate for Falmouth CWMP

“Adaptive management acknowledges the uncertainties in design and implementation of projects, carefully monitors outcomes, assesses progress in a transparent fashion and requires recalibration of plans and projects as necessary.”

“The FEIR represents and evolution towards the development and implementation of a Targeted Watershed Management Plan for each of the Town’s coastal watersheds and includes concrete commitments to projects...that will provide significant reductions in nitrogen loading.”

The Secretary certified the plan “to support the towns adaptive management approach to developing long-term solutions and in acknowledgement of the town and its residents concrete support for projects that will reduce nitrogen in the short-term.”

“MassDEP comments indicate that an approvable TWMP will satisfy SRF requirements necessary to secure 0% financing.”



# **MEPA/CCC Special Review Procedure**

# Implementation

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**What components of an adaptive management plan are needed to achieve permit-ability and water quality goals?**

# Adaptive Management

## Definition

A structured approach that monitors outcomes for meeting water quality goals, assesses progress over time, and requires recalibration of plans and projects, as necessary, based on review and evaluation of monitoring.

**All materials and resources for the Outer Cape  
Sub Regional Group will be available on the Cape  
Cod Commission website:**



<http://watersheds.capecodcommission.org/index.php/watersheds/outer-cape>