

Mid 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

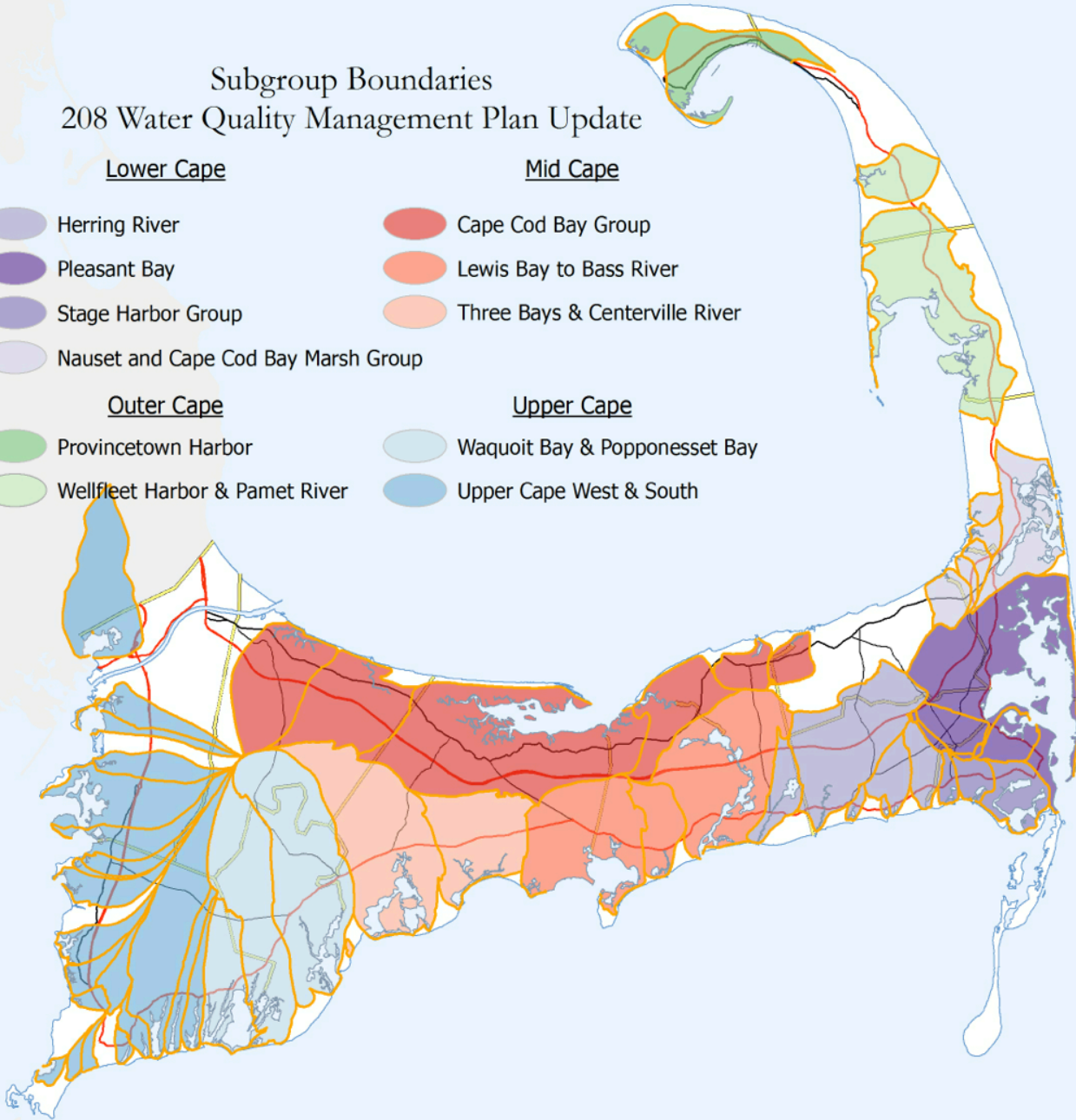
- Cape Cod Bay Group
- Lewis Bay to Bass River
- Three Bays & Centerville River

Outer Cape

- Provincetown Harbor
- Wellfleet Harbor & Pamet River

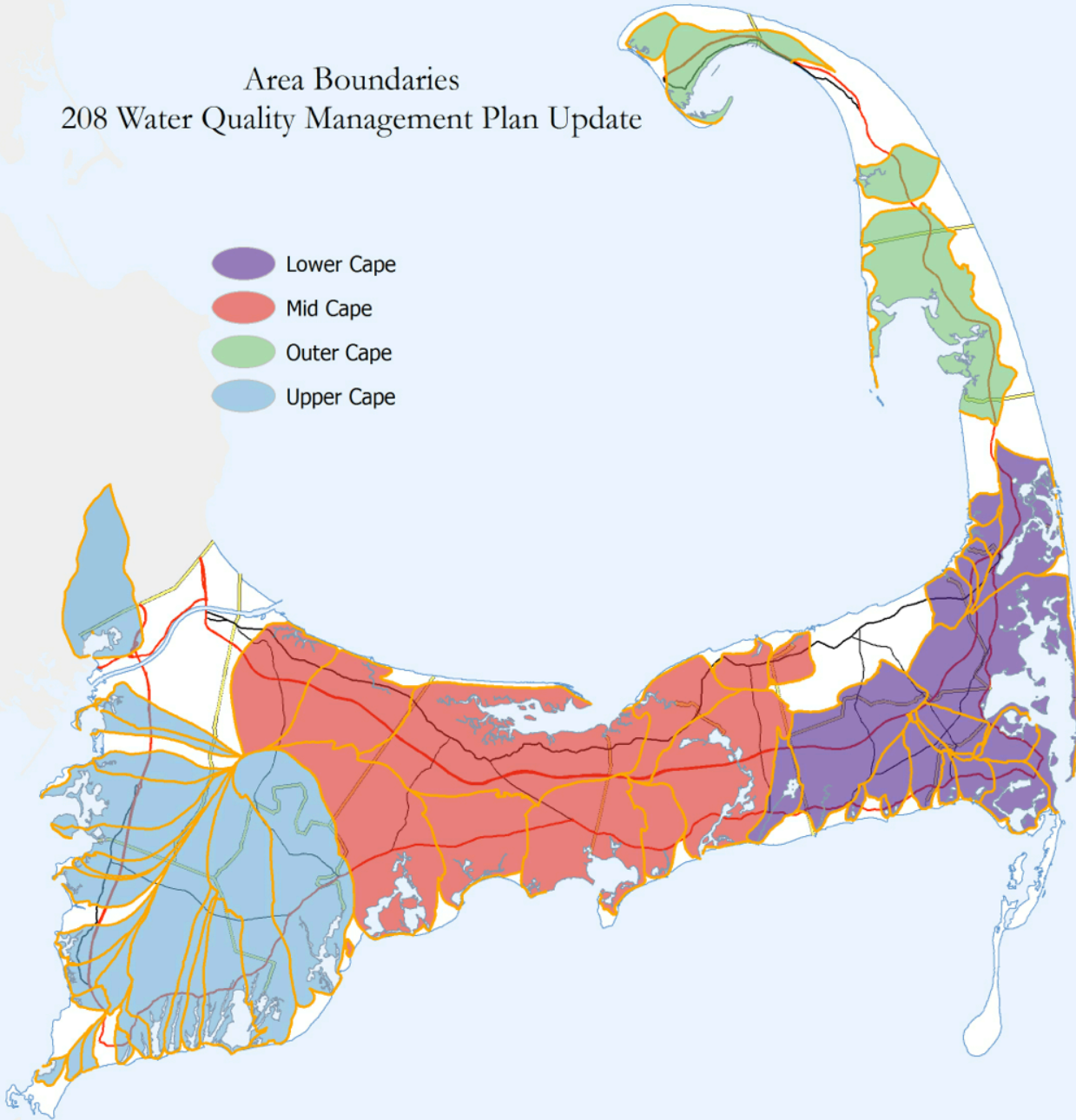
Upper Cape

- 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

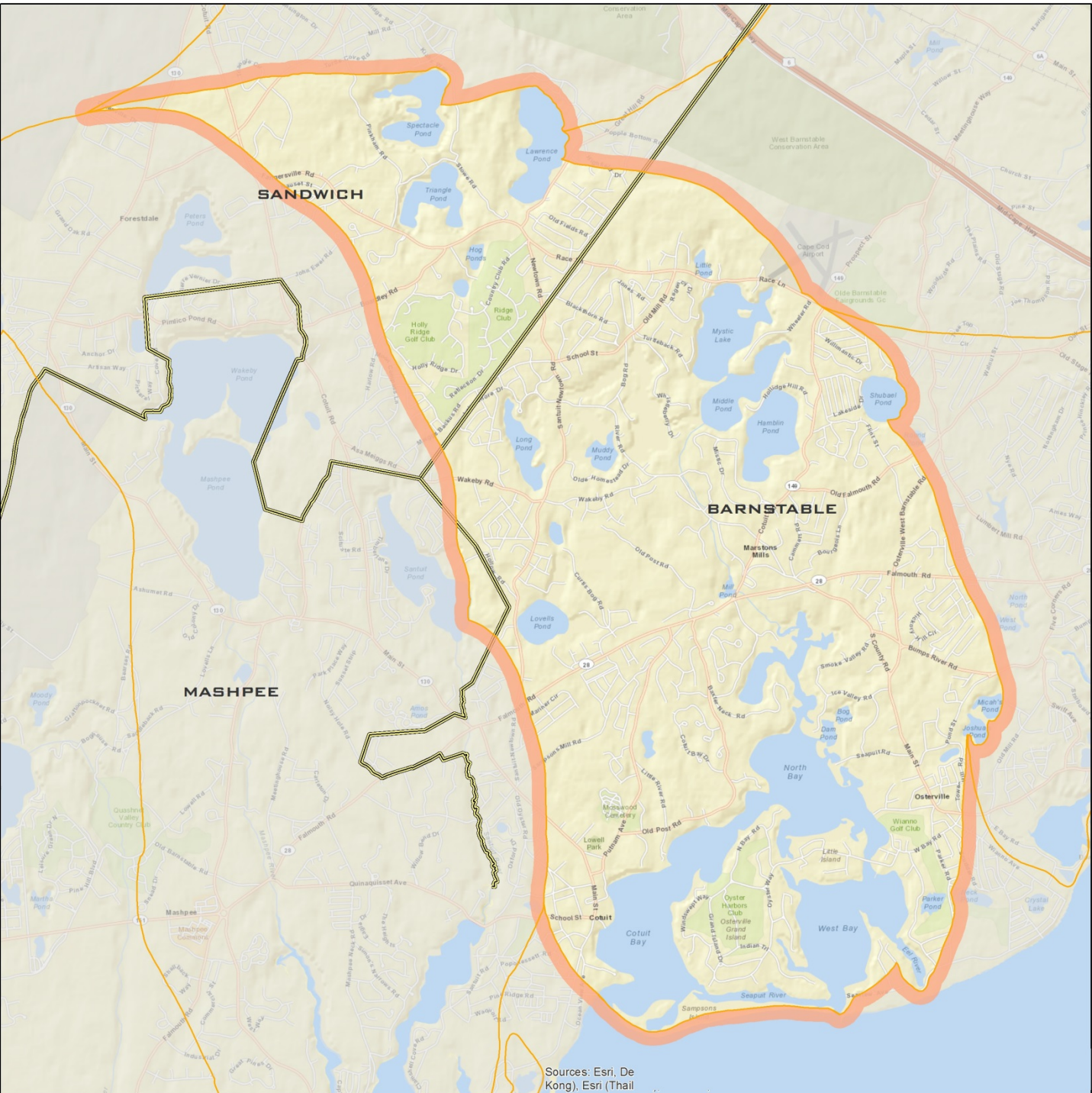
Meeting 1 Goals:

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

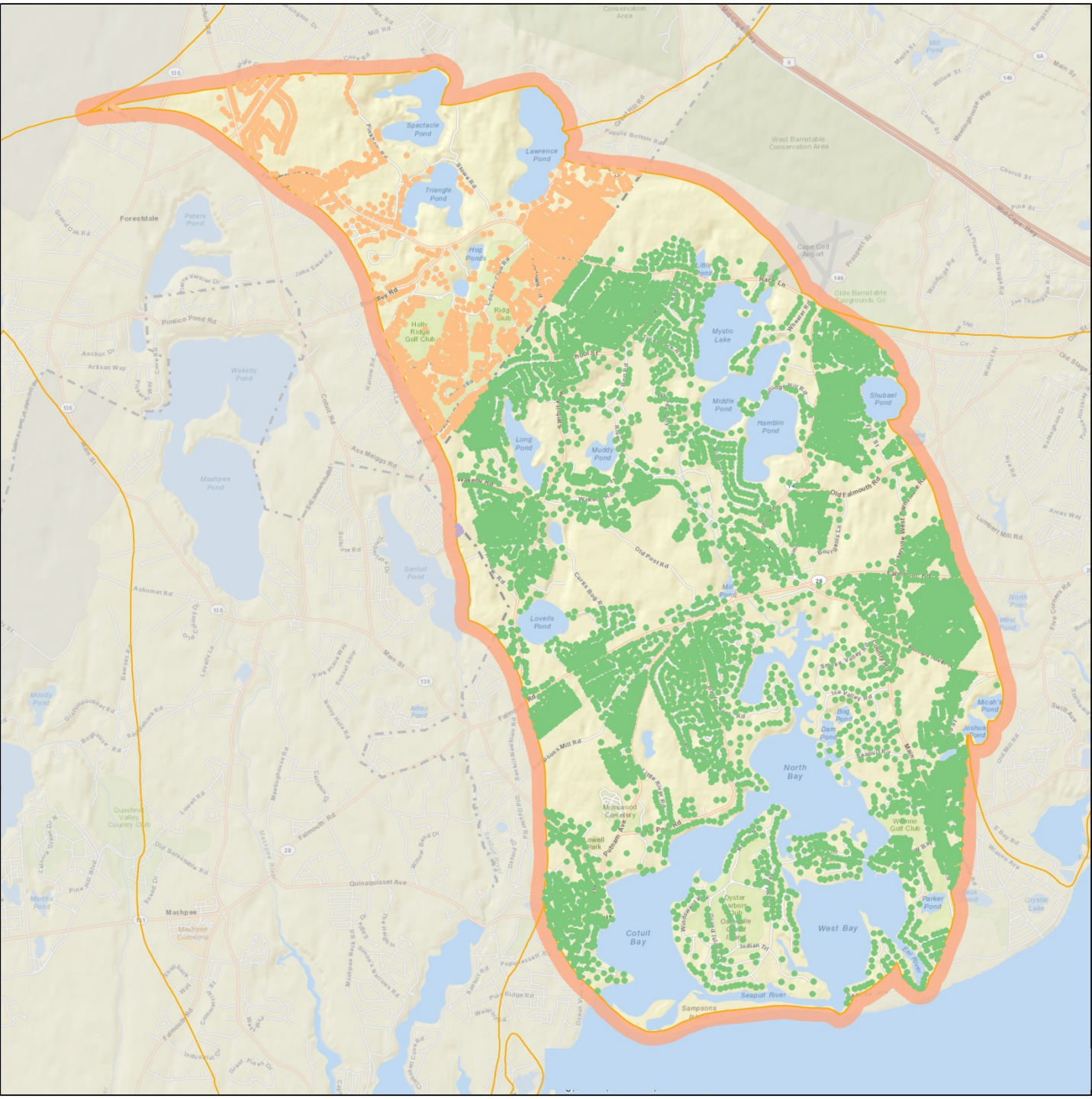
Three Bays



SANDWICH

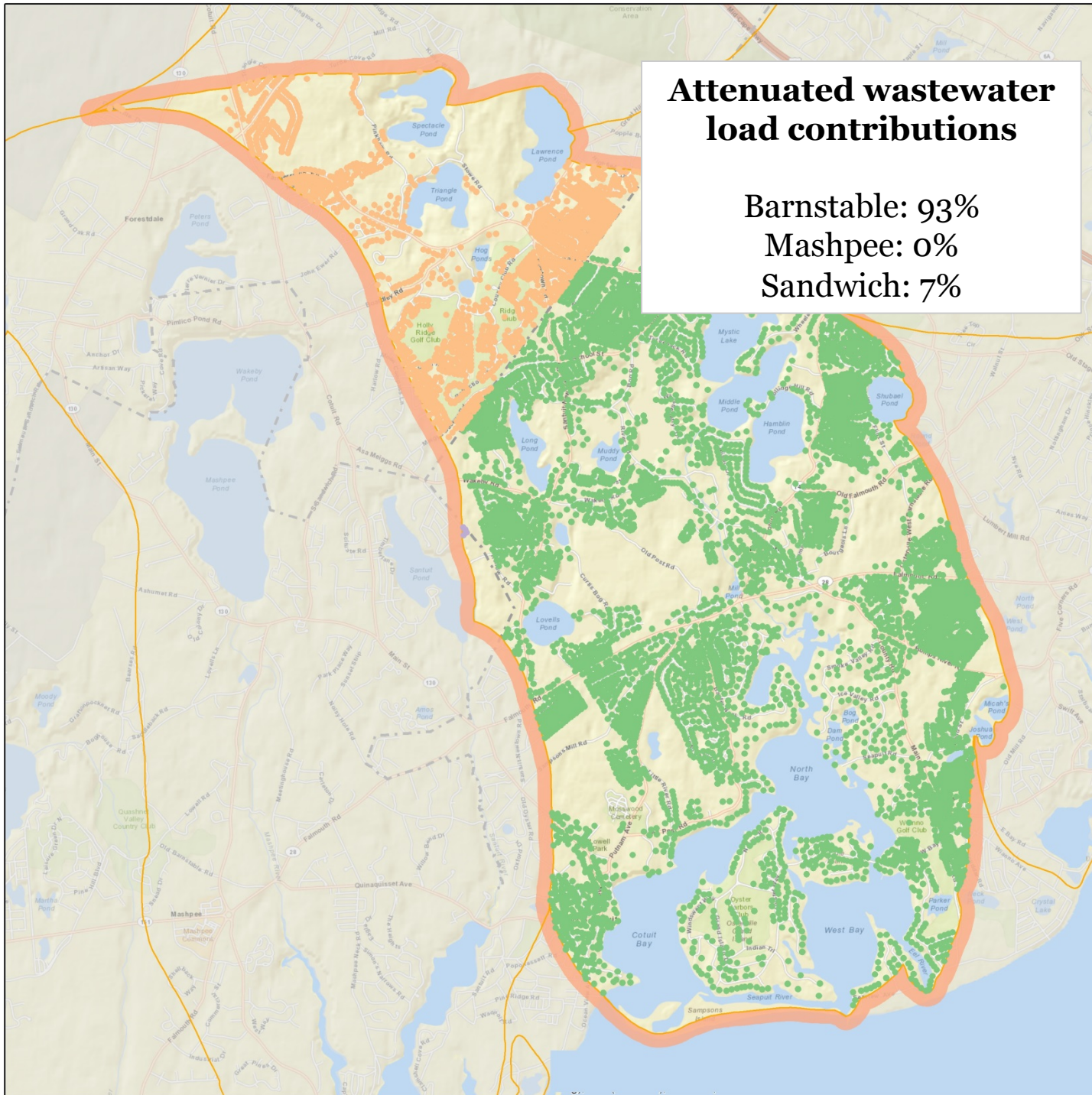
BARNSTABLE

MASHPÉE

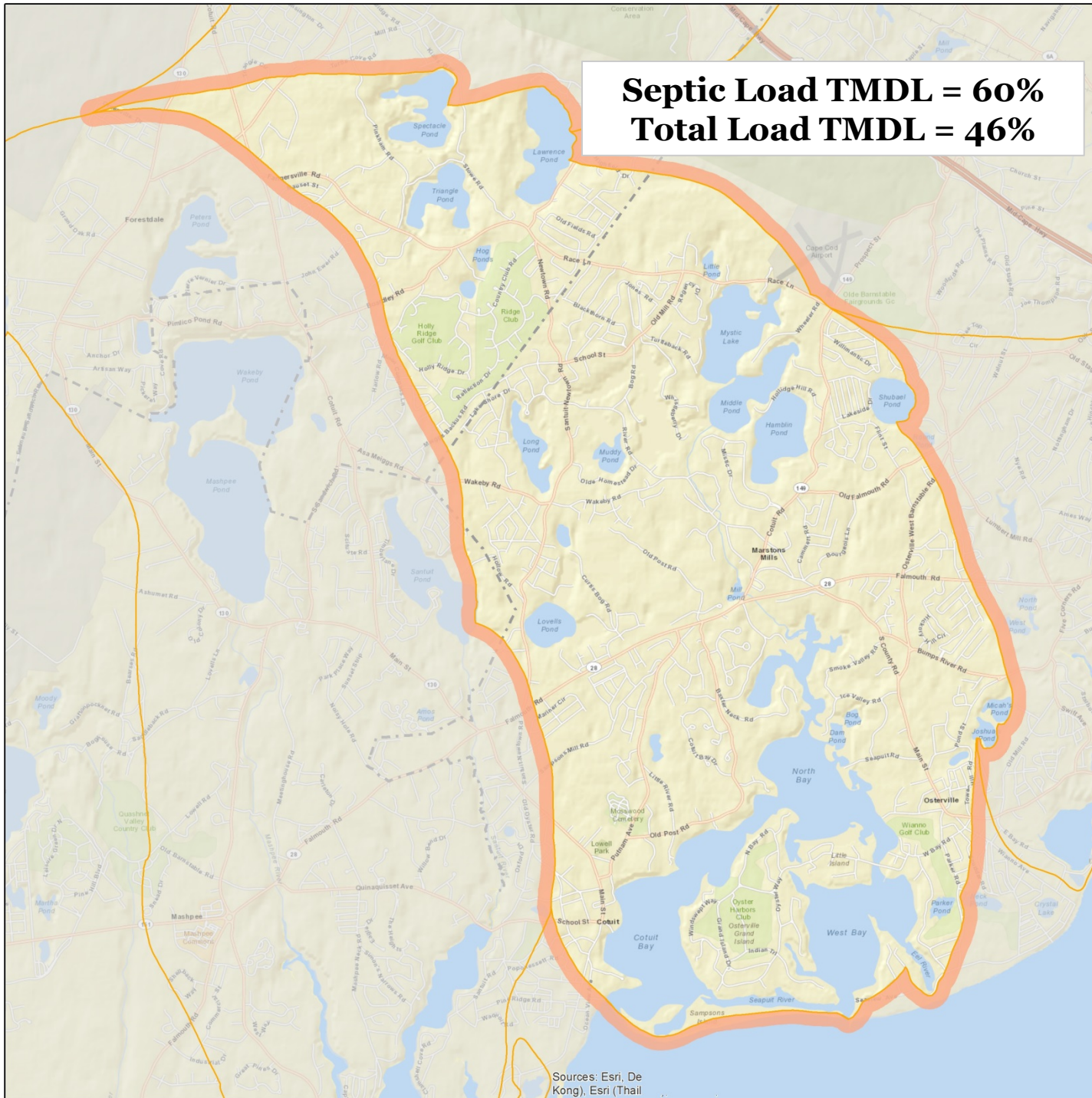


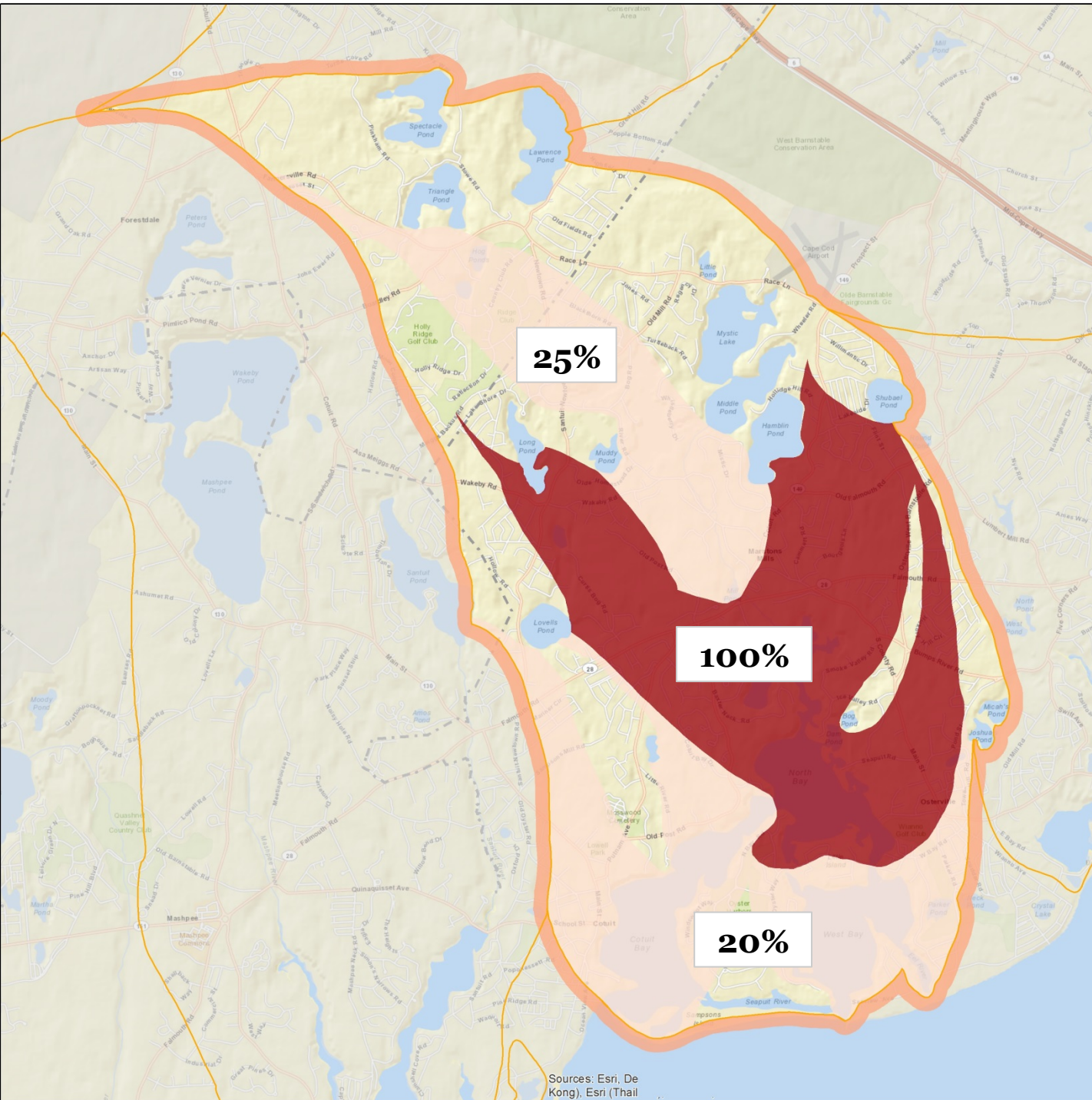
Attenuated wastewater load contributions

Barnstable: 93%
Mashpee: 0%
Sandwich: 7%



Septic Load TMDL = 60%
Total Load TMDL = 46%

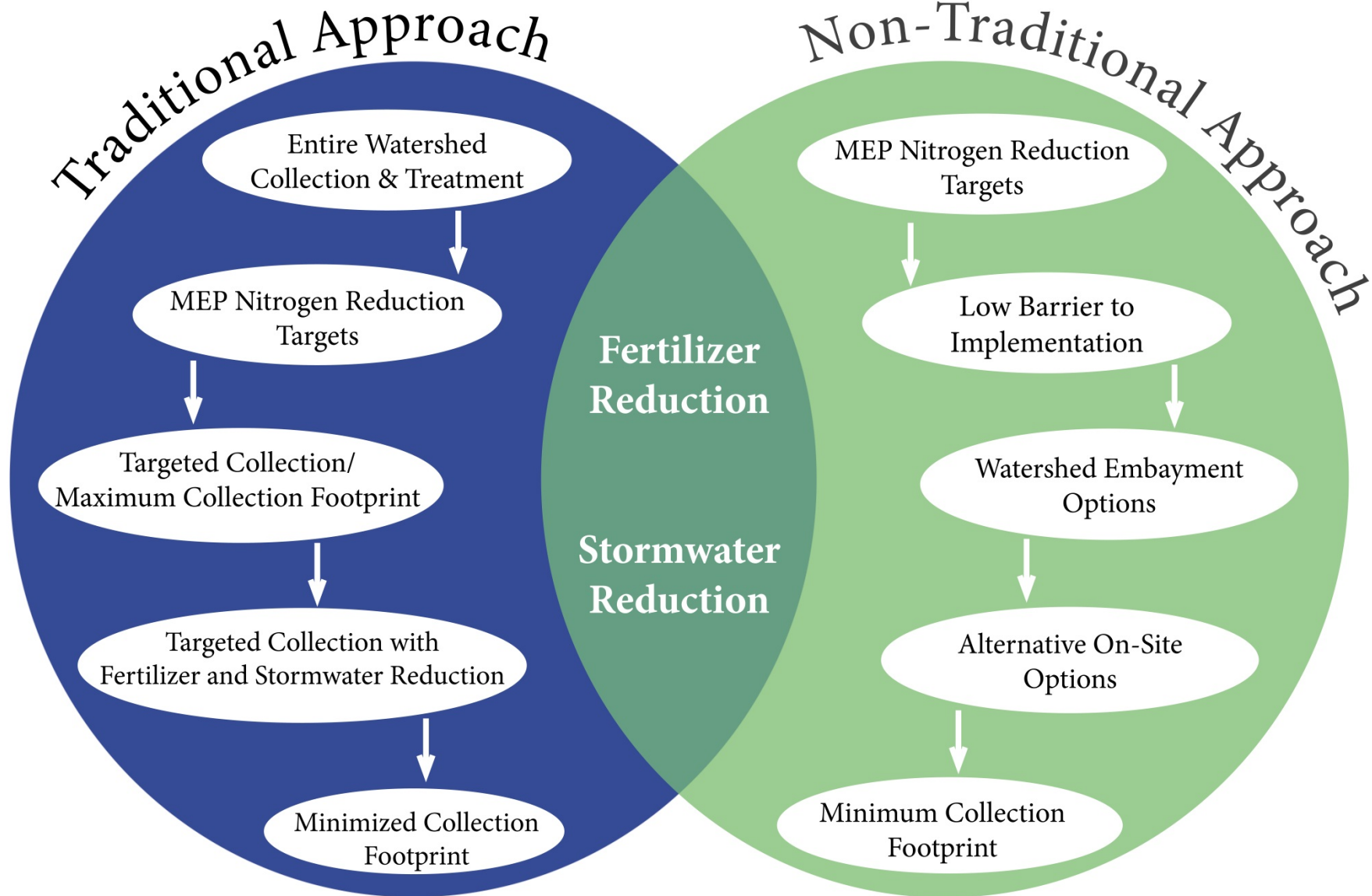


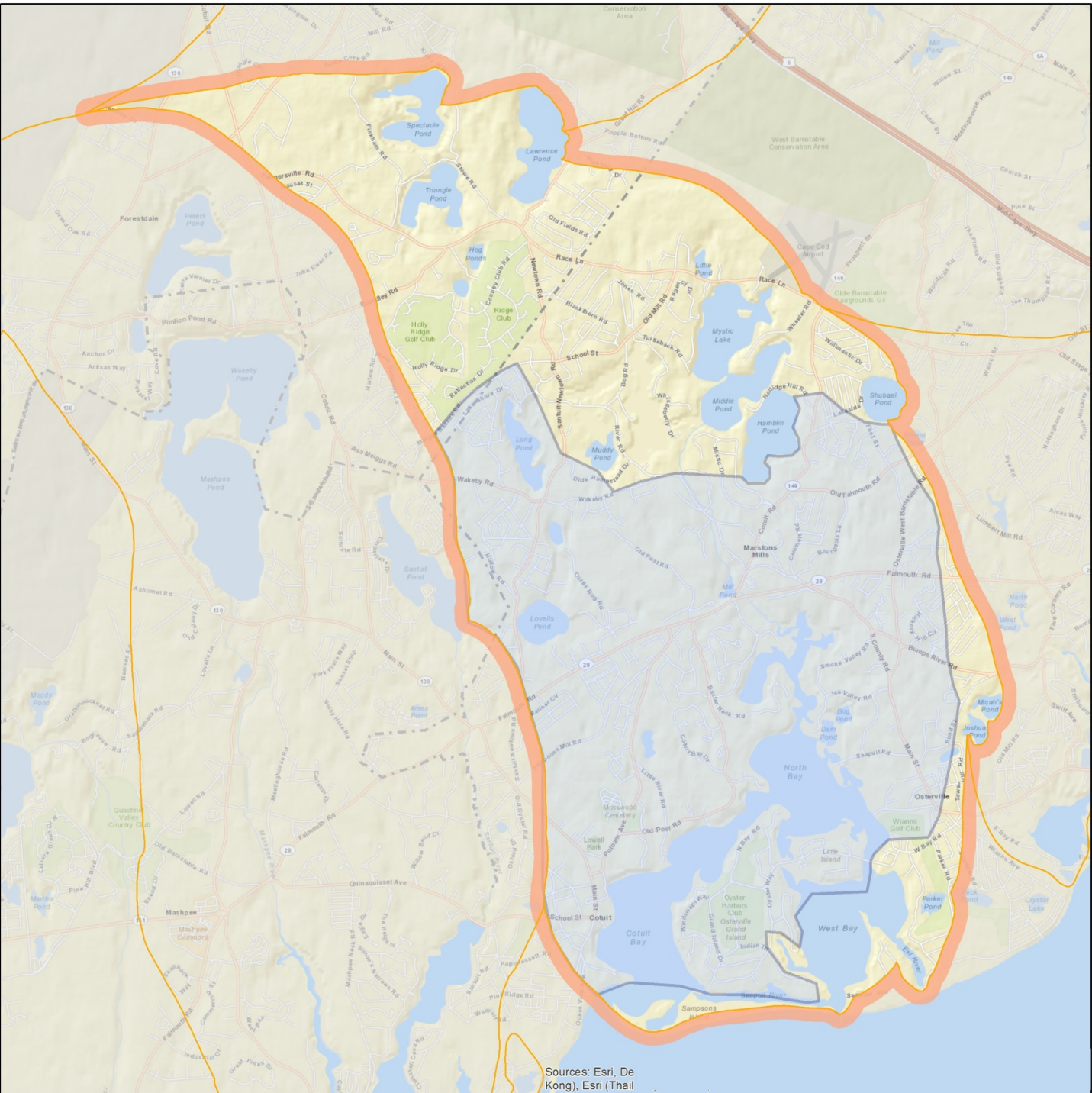


25%

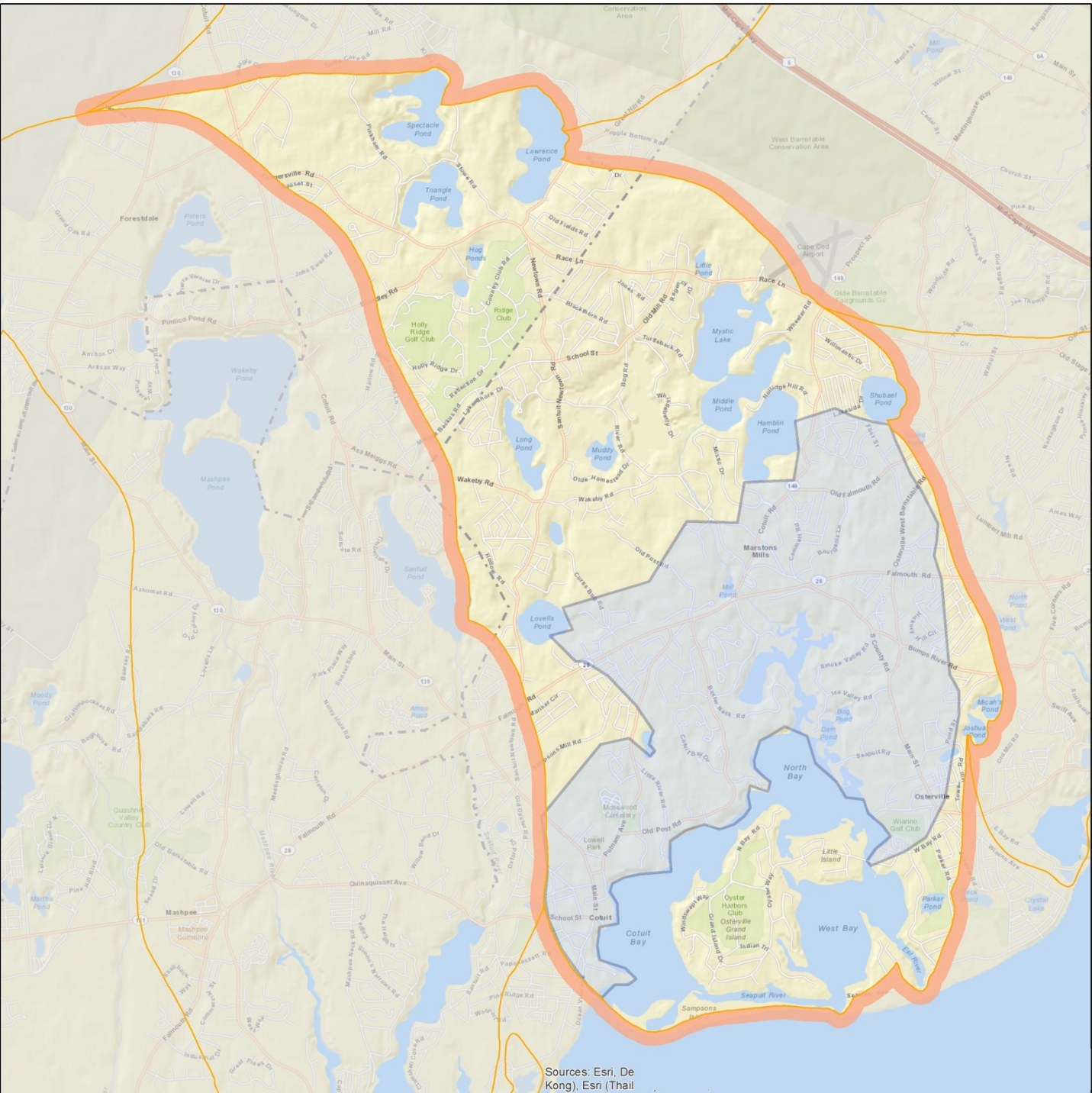
100%

20%





Sources: Esri, De
Kong, Esri (Thailand)



Sources: Esri, De
Kong, Esri (Thai)

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

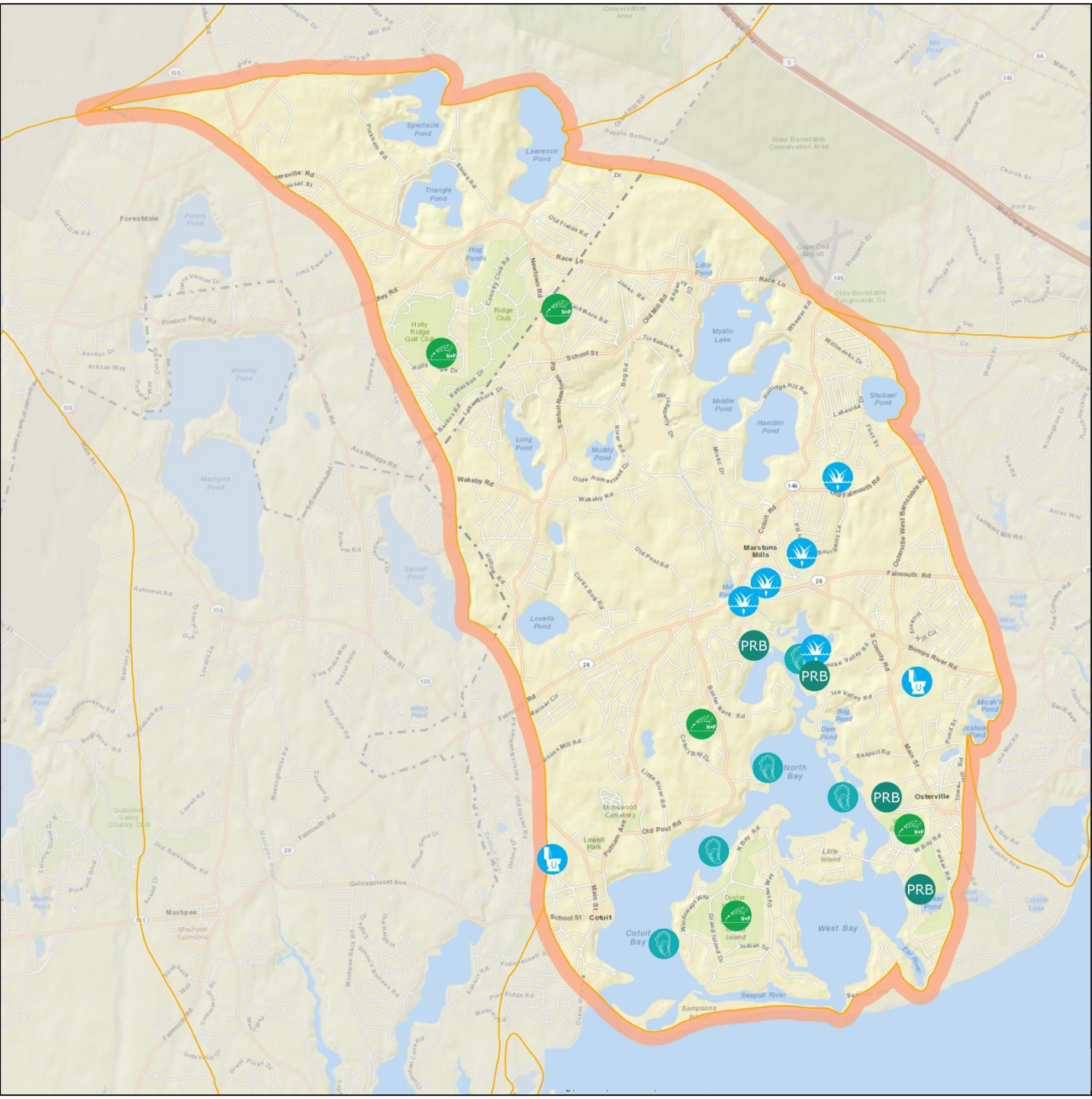
Priority Collection/Sewer Areas

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

7

Supplemental Collection / Sewer Areas





Technology/Approach	Federal		DEP		MADOT	BOH	ConComm	MEPA
	<i>CWA</i>	<i>GWDP</i>	<i>WMA</i>	<i>I&A</i>		<i>Title 5</i>	<i>WPA</i>	<i>Thresholds</i>
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/Division of Marine Fisheries

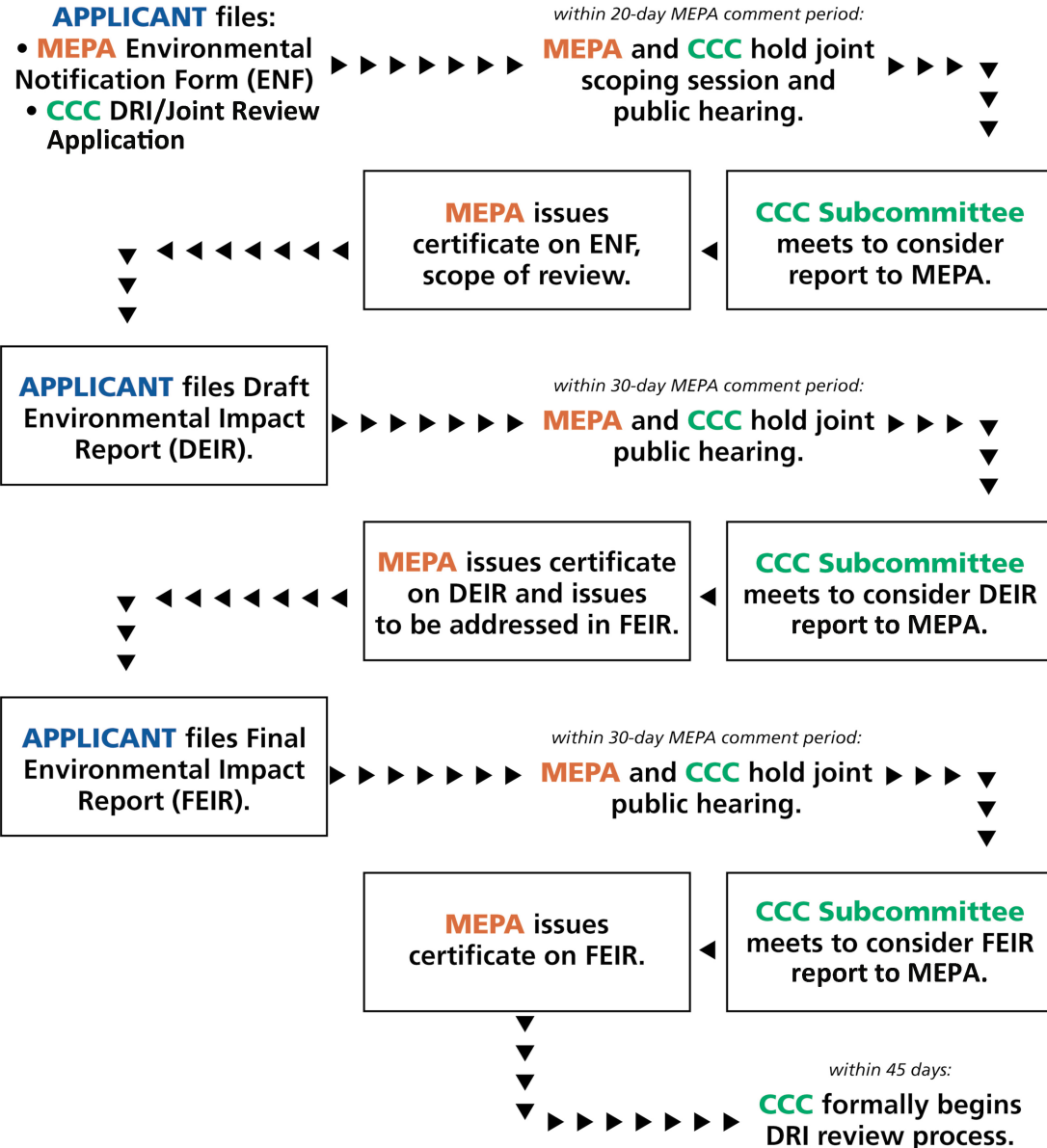
Regulatory, Legal, and Institutional Interactions

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

Regulatory Purposes

MEPA
CCC
DEP

Joint MEPA/CCC Review: Projects Requiring Environmental Impact Report (EIR)



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 an 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

Regulatory, Legal, and Institutional Interactions

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

Implementation

What components of an adaptive management plan are needed to achieve permitability 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 Mid Cape Sub
Regional Group will be available on the Cape Cod
Commission website:**



<http://watersheds.capecodcommission.org/index.php/watersheds/mid-cape/regional-stakeholder-group-mid-cape>