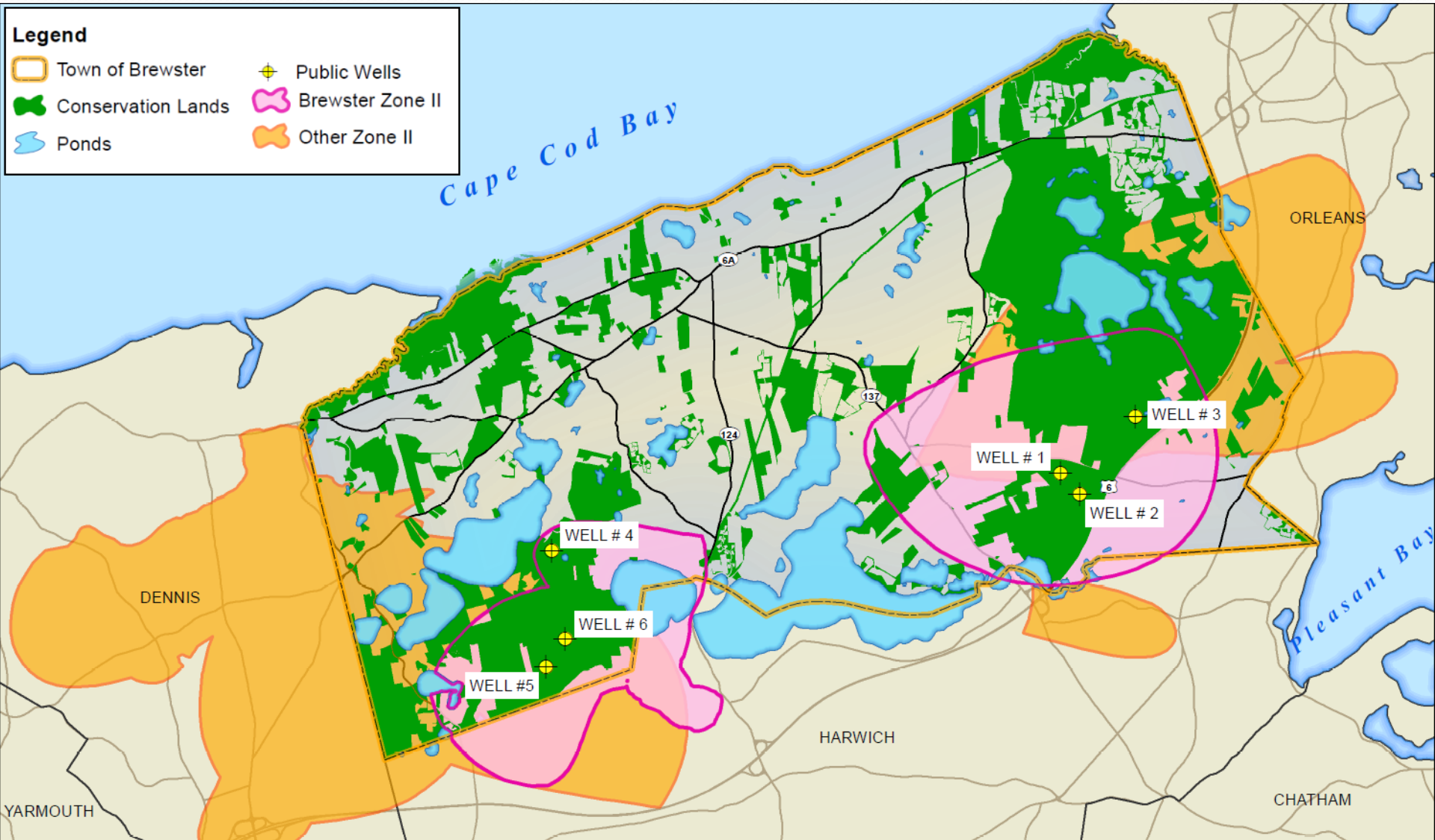
Integrated Water Resource Management Planning 2022 Update

Horsley Witten Group, Inc.

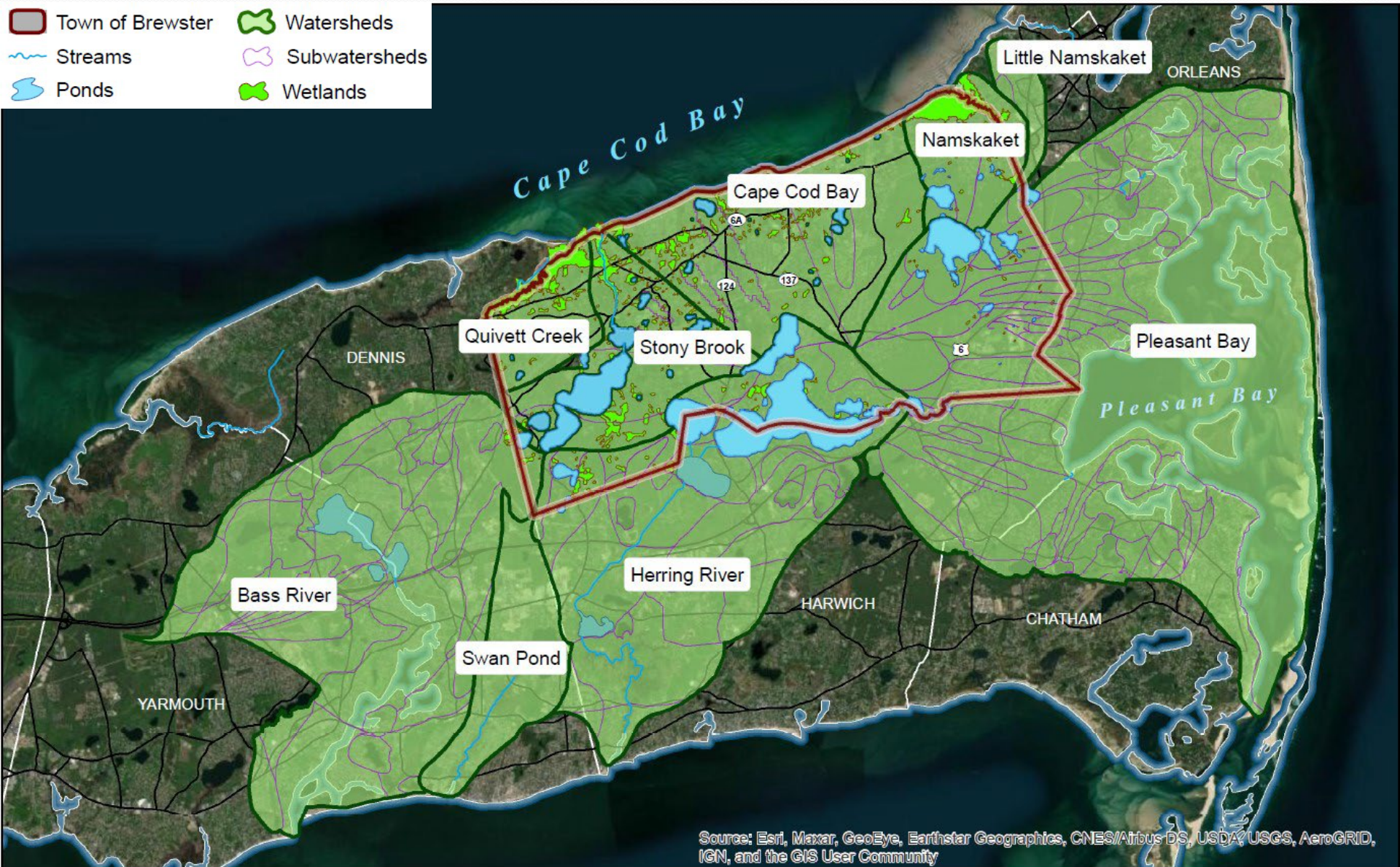
The Big Picture…
Protecting the Town's Waters

- Protecting Public and Private Drinking Water Supplies
- Managing Nitrogen Loads to Coastal Embayments
- Protecting and Restoring Fresh Water Ponds
- Improving Stormwater Management

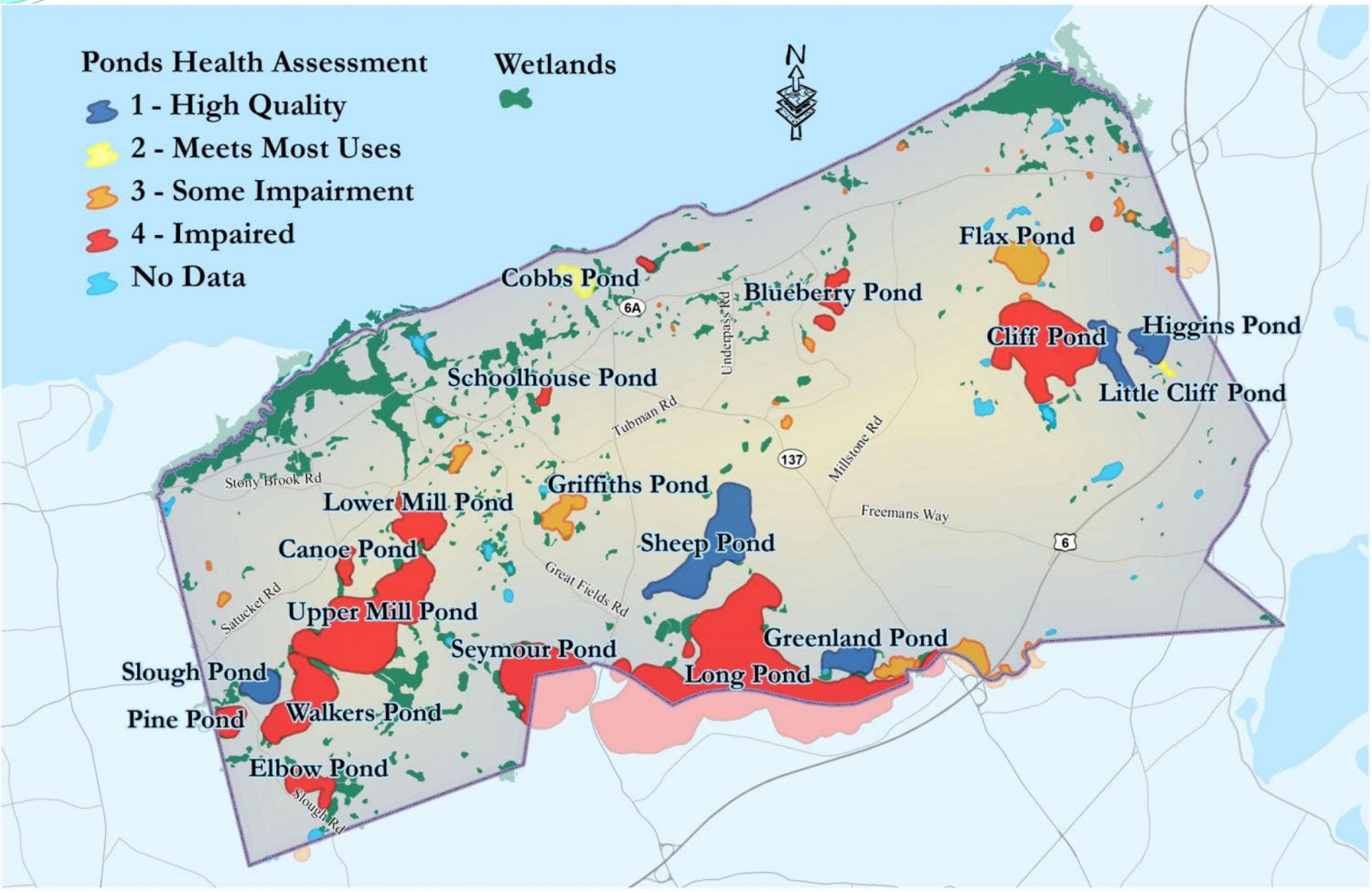
Brewster's Conservation Lands and Zone II Areas



Coastal Watersheds



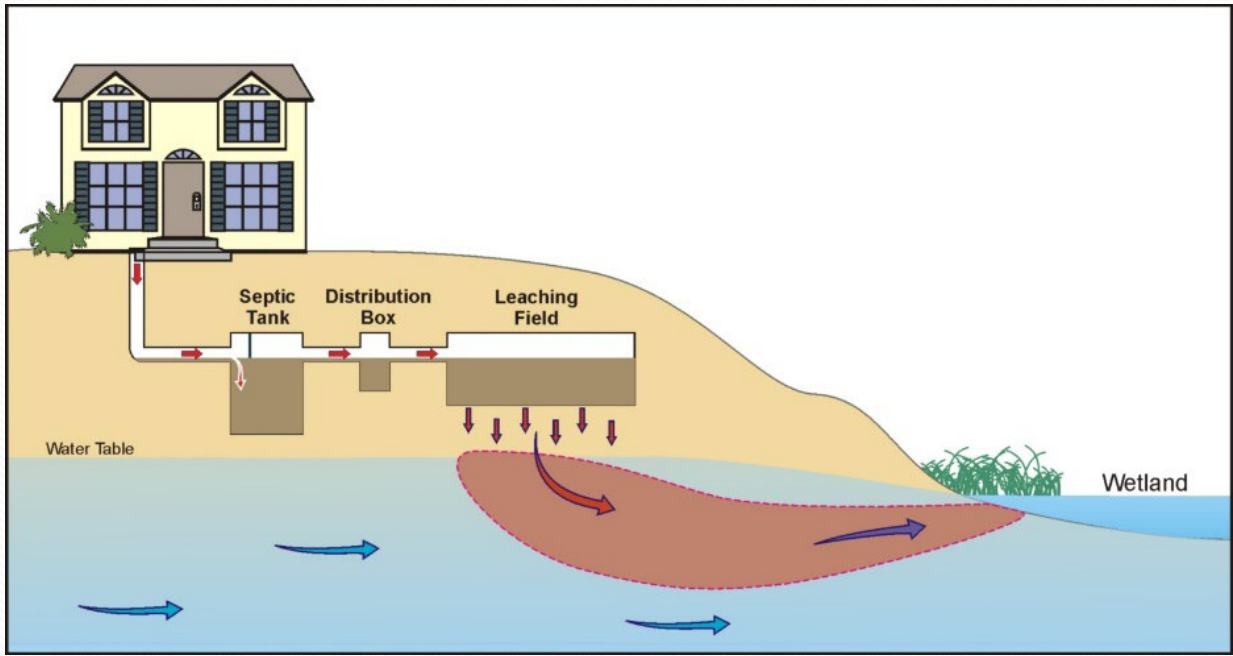
Status of Brewster's Ponds - 2009



Water Quality Issues - Nitrogen

- Impacts Drinking Water, Coastal Waters and Fresh Water Ponds

- SOURCES – Septic Systems, Fertilizers, Road Runoff



Water Quality Issues - Nitrogen

- Septic System Discharge 35 mg/L

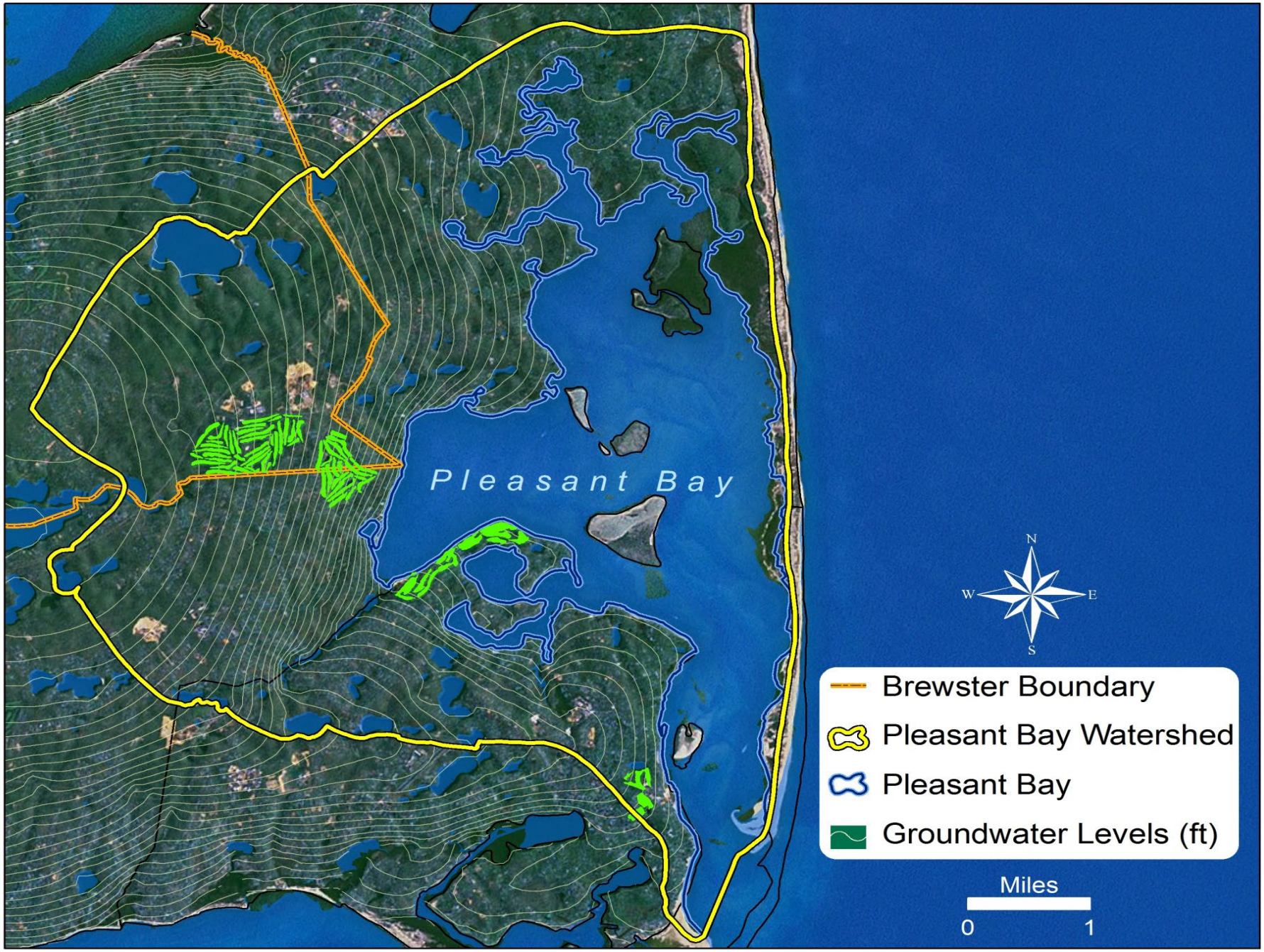
- Drinking Water Standard 10 mg/L
- State DW Planning Standard 5 mg/L
- Brewster Drinking Water < 1 mg/L

- Coastal Estuary Threshold ~0.3 mg/L

Phosphorus and Ponds

Key Issues in 2022

- Pleasant Bay Nitrogen Management to Comply with Watershed Permit
- Development and Implementation of Strategies to Protect and Restore Fresh Water Ponds


Pleasant Bay
N
W
E
S
Brewster Boundary
Pleasant Bay Watershed
Pleasant Bay
Groundwater Levels (ft)
Miles
0
1

Pleasant Bay Watershed Permit

- Permit Signed in August 2018.
- Requires Brewster to remove of 2,262 kg of nitrogen per year and address future development.
- The town has already removed 56% of this load through changes in fertilizer practices at Captains Golf Course.

Nitrogen Management Alternatives to Meet Permit Goals

- Additional Captains Golf Course Fertilizer Management
- Neighborhood WWTP
- I/A Septic Treatment Systems
- Nitrogen Trading

Golf Course Fertilizer Leaching Rate Evaluation

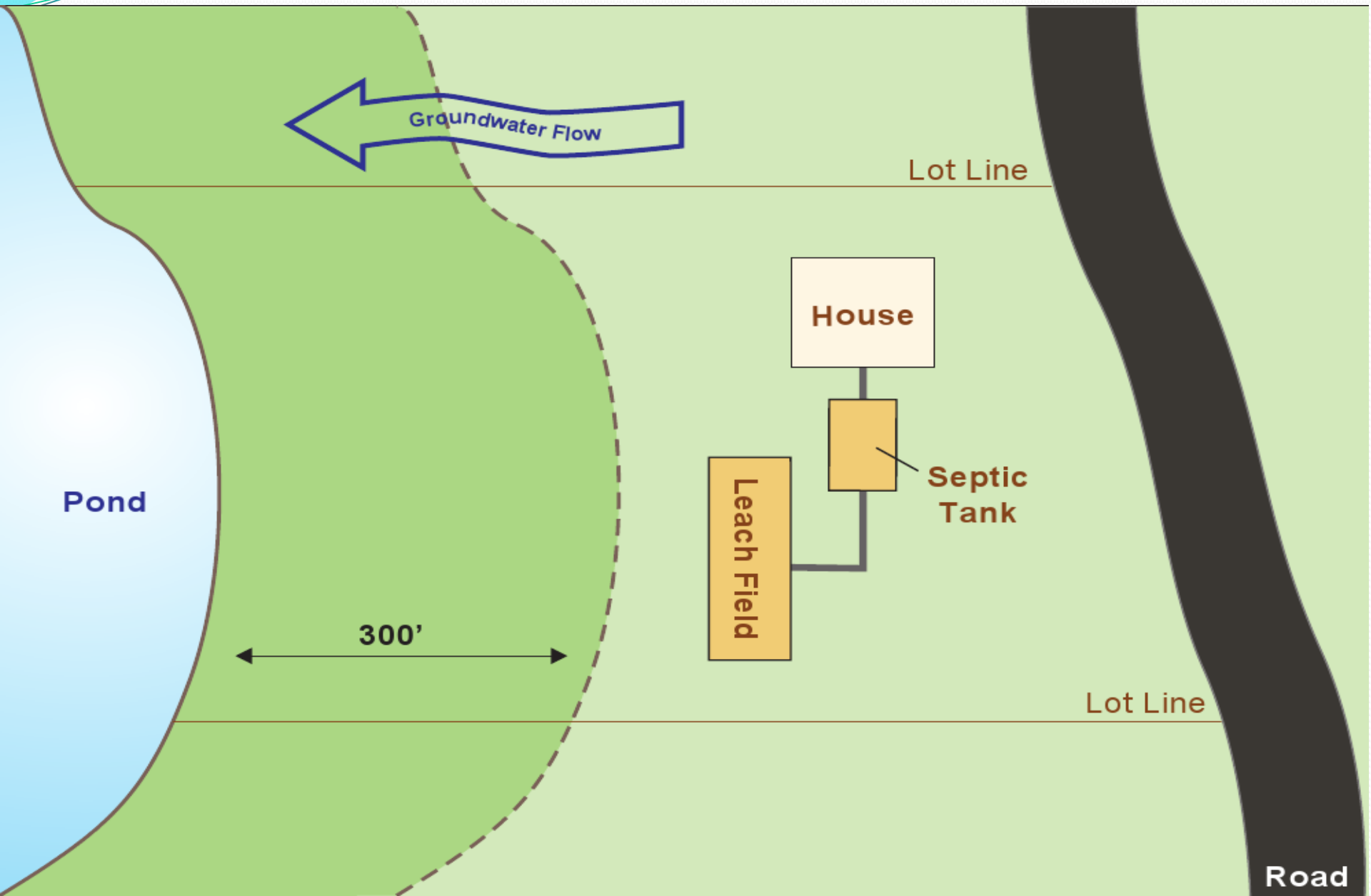
Golf Course Fertilizer Leaching Rate Evaluation

- Results of this study – completed in 2023 - will determine what additional nitrogen load must be managed using other techniques

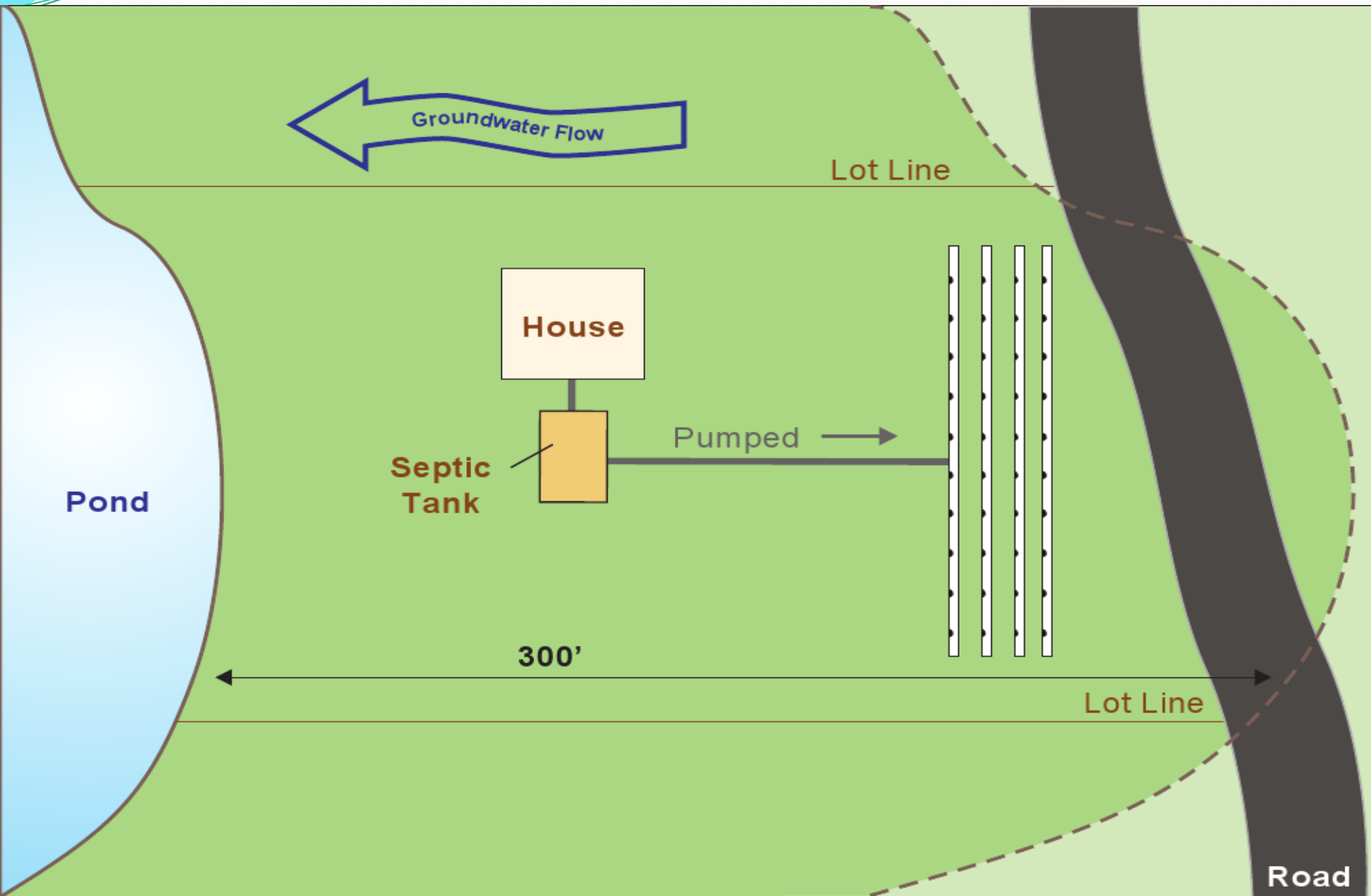
Summary

- 75% of Brewster's obligations can be achieved at Captains Golf Course with Minimal Cost.
- A successful study of leaching rates will further reduce the town's obligation.
- Options to manage the rest includes:
  - Neighborhood WWTP
  - Onsite Septic Upgrades
  - Nitrogen Trade

Septic Management Near Ponds

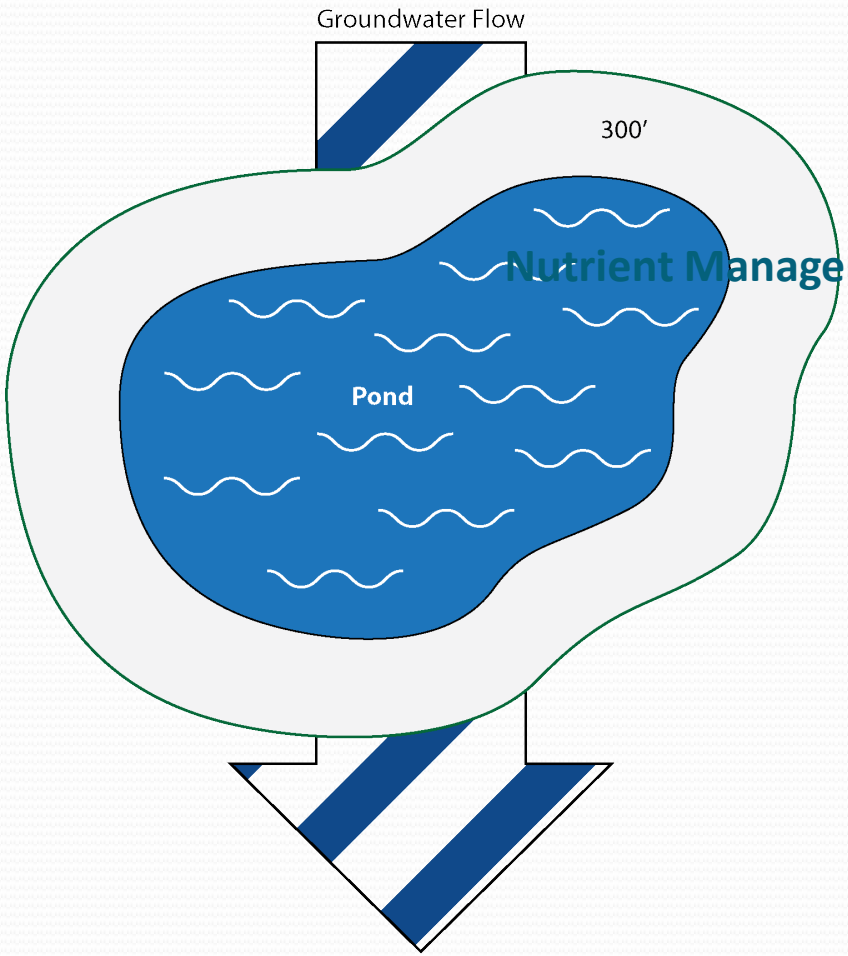


Septic Management Near Ponds

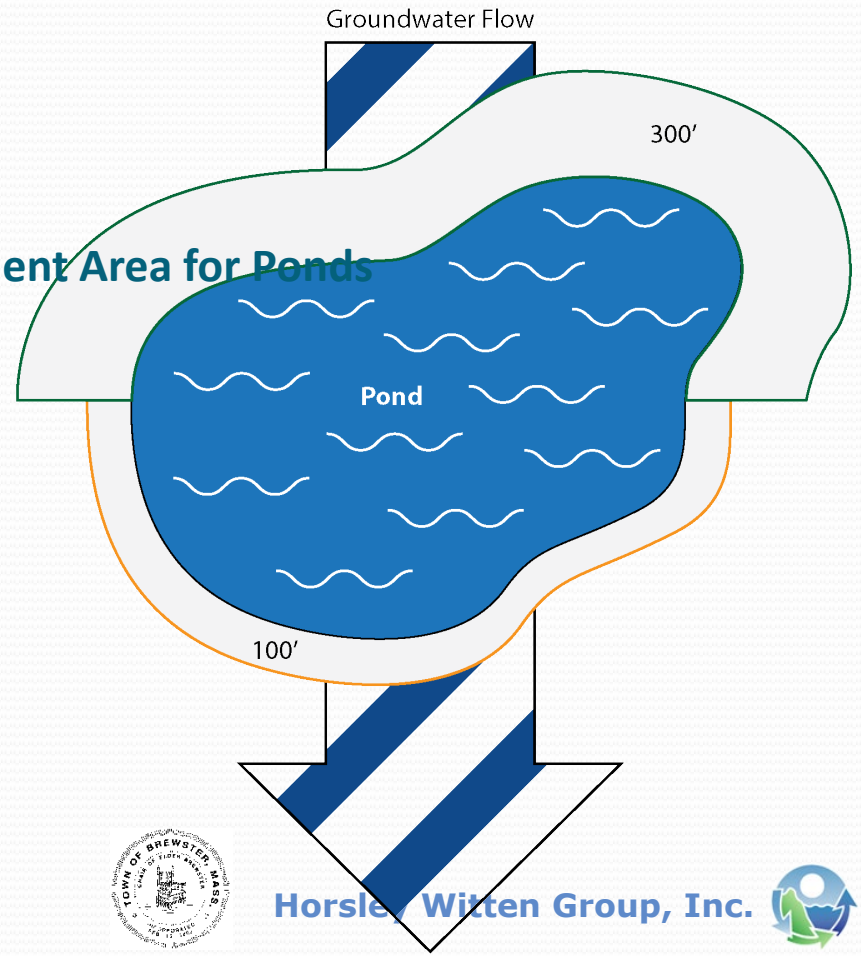


Pond Nutrient Management Areas

Current Regulation



Proposed Regulation



Nutrient Management Area for Ponds

Horsley Witten Group, Inc.

Water Resource Atlas - Fresh Water Ponds

Draft Health Reg for Ponds

- Reset septic buffer
  - 300 feet upgradient
  - 100 feet downgradient
- Require phosphorus treatment units or shallow leach fields to capture phosphorus in iron rich soils
- Require nitrogen treatment as well

How Many Properties Affected?

- Estimate up to 600 Homes Would Require an Upgrade

- Total Cost at $20,000-$25,000 per Property = $12,000,000 to $15,000,000

Pilot Project Proposed

- Installing and Testing I/A Septic Systems for Phosphorus and Nitrogen Treatment Would Answer Many Implementation and Performance Questions.

- Estimate Pilot Cost - $300,000

Questions?