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BARNSTABLE, MASSACHUSETTS 02630



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CAPE COD  
COMMISSION

**Minutes  
DRI Hearing  
Harwich Comprehensive Wastewater Management Plan (CWMP)  
April 28, 2016  
Harwich Town Hall, Griffin Room  
732 Main Street, Harwich, MA**

Subcommittee Members Present: Richard Roy (Chair), Jacqueline Etsten, John McCormack Jr., Michael Skelley, Elizabeth Taylor, and Kevin Grunwald (Alternate)

Commission Staff Present: Patty Daley (Deputy Director), Tom Cambareri (Technical Services Director/Water Resources), Jonathon Idman (Chief Regulatory Officer), Jeffrey Ribeiro (Regulatory Officer), and Michele White (Regulatory Officer)

Others Present: Larry Ballantine (Harwich Finance Committee), Diane Chamberlain (Dennis Comprehensive Wastewater Management Task Force), Charleen Greenhalgh (Harwich Assistant Town Manager), Peter Hughes (Harwich Board of Selectmen), Angelo LaMantia (Harwich Board of Selectmen), Michael MacAskill (Harwich Board of Selectmen), Carmen Scherzo (Brewster Board of Health), and David Young (CDM Smith)

**Minutes Summary**

The Cape Cod Commission (Commission) Harwich CWMP Subcommittee (Subcommittee) held a hearing to review the Final Environmental Impact Report (FEIR) on the CWMP proposed by the Town of Harwich as a Development of Regional Impact (DRI). The Subcommittee was presented with the CWMP and took public testimony.

**Presentation and Commission Comments**

Richard Roy called the hearing to order at 5:03PM. He thanked the Harwich Board of Selectmen for hosting the hearing. He asked Jonathon Idman, Commission Chief Regulatory Officer, to read the hearing notice, which Mr. Idman did. Mr. Roy asked the Subcommittee members to introduce themselves, and they did so. Mr. Roy then asked David Young of CDM Smith to present the CWMP on behalf of the town.

Mr. Young provided an overview of the CWMP with the assistance of a PowerPoint presentation, which is attached hereto. He described the Town's wastewater problems, the planning process

undertaken to this point, current strategies being implemented, and future activities anticipated to be needed to address wastewater issues in the Town.

Mr. Roy then asked Mr. Idman to present the comments from Commission staff. Mr. Idman said Commission staff recommends certification of the FEIR. He said Commission staff intends to provide a comment letter to MEPA stating as such while incorporating comments from the Subcommittee and the public. He said the same Subcommittee will also review the CWMP as a DRI. He said that during DRI review the Commission would look more closely at the plan for consistency with the Commission's Regional Policy Plan (RPP). He said the CWMP has been changed since the Draft Environmental Impact Report (DEIR) was submitted to be consistent with the Clean Water Act Section 208 plan update (208). He said 208 encourages both traditional and non-traditional solutions to wastewater treatment, and the CWMP incorporates both. He said the CWMP addresses individual watersheds and assumes responsibility for shared watersheds. He said the Muddy Creek project was nearing completion and the CWMP contains other projects focused on natural attenuation and growth management.

Mr. Idman said the CWMP contains an Adaptive Management Plan (AMP), which is a primary component of the 208 process. He said the Commission will continue to monitor the CWMP throughout the life of the plan through the AMP. He said the Commission will continue to look for further coordination between towns to deal with shared watersheds as well as continued public engagement with a focus on costs of implementation. Mr. Idman then introduced Patty Daley, Deputy Director of the Commission, for brief comments.

Ms. Daley thanked Mr. Young for working closely with the Commission throughout the 208 planning process. She commended the Town for working with the neighboring towns of Dennis and Chatham in developing the CWMP. She said shared infrastructure will help lower costs for all Cape Cod towns.

Mr. Roy then asked the Subcommittee for questions.

Elizabeth Taylor asked if the Town had chosen to implement any fertilizer management or stormwater bylaws. Mr. Young replied that the town did not choose to do a fertilizer management bylaw but instead would focus on education efforts. He said the Town's Department of Public Works is implementing stormwater Best Management Practices (BMPs) throughout the Town.

Ms. Taylor asked if the Town had considered the use of permeable reactive barriers (PRBs) beyond the single site identified in the CWMP. Mr. Young said that no other locations were identified where PRBs would be practical or cost effective.

Ms. Taylor asked if DEP was recognizing PRBs as a solution to wastewater treatment. Mr. Young said the DEP had worked to study the effectiveness of PRBs in Falmouth. He said PRBs are still new technology, used primarily for large-scale, low concentration applications.

Ms. Taylor asked if the Town had considered Title V septic system regulations near freshwater ponds. Mr. Young said that that was not part of the Harwich CWMP.

Kevin Grunwald asked if the 40 year timeframe of the CWMP would deal with the environmental issues fast enough. Mr. Young said that there is no such thing as an immediate response. He said the phasing of the plan is discussed at length in the document and the timeline for total excess nitrogen removal would be based on a build-out analysis and could be adjusted through the AMP.

Mr. Grunwald asked if connecting to the sewer would be optional in the portions of the Town to be sewerred. Mr. Young replied that connections would be mandatory. He said a date would be determined and connections would have to be made within one year of that date.

Mr. Grunwald asked if seeded shellfish areas were included in the CWMP. Mr. Young replied that they are not formally included but are strongly encouraged in addition to the measures outlined in the CWMP.

Ms. Taylor asked if the Town had a list of land it was interested in taking out of development through purchase. Mr. Young said the Town was beginning to look at that possibility and that there was one such purchase on the warrant for Harwich's upcoming 2016 annual town meeting.

Mr. Roy asked if dredging at Saquatucket Harbor was included in the plan. Mr. Young replied that it was not because it was not a form of source removal. He also discussed nitrogen TMDLs in terms of the nature of the functioning harbor. He said that dredging does not always improve conditions, and a dredging project at Allen Harbor made nitrogen-related issues worse because it did not improve flushing.

Jacqueline Etsten asked if sewerage is being considered for portions of Harwich Port. She said that high groundwater in that area forces many homeowners to consider mounded Title V septic systems. Mr. Young replied that two areas with high numbers of Title V septic waivers in areas of high groundwater are included in the sewerage program. He said those two areas are Harwich Port and the area around the campgrounds.

### **Public Comment**

Mr. Roy then asked for public comment. Hearing no comment from federal or state officials, he asked for comment from local officials.

Peter Hughes introduced himself as the Chair of the Harwich Board of Selectmen (BOS). He said the Town had been in negotiations with Chatham for the past year about use of their Wastewater Treatment Facility (WWTF). He said that planning efforts were not ready for the Annual Town Meeting warrants related to funding for sewerage, and, accordingly, the BOS had pulled the warrant article from the Annual Town Meeting. He said the BOS hopes to have the article ready for a Special Town Meeting in the fall. He said the Town's current focus is on the East Harwich/Muddy Creek area, and noted that a land purchase was on the Town Meeting warrant in that section of the Town. He said most people present at the hearing were those who have been involved in the process so far, and the Town would welcome initiatives and suggestions to further engage the public as planning continues. He said he hopes education on fertilizer management can bring new people into the wastewater planning process.

Mr. Roy noted that Charleen Greenhalgh, Harwich Assistant Town Manager, had marked on the sign-in sheet that she wished to speak. Ms. Greenhalgh said that Mr. Hughes had covered the topics she intended to speak about.

Using the sign-in sheet, Mr. Roy asked for comment from the general public.

Carol Miller said she would like to be assured that any infrastructure proposed as part of the CWMP would remain owned by the Town. She said she was concerned if public sewer infrastructure was to be privatized. She also said she would like more information about how the CWMP would be financed, including information on debt to be taken on by the Town.

Carole Ridley congratulated the Town on the CWMP. She asked for clarification on commercial wastewater flows stated in the CWMP for East Harwich. Mr. Young replied that the numbers referenced by Ms. Ridley had been changed from the DEIR to the FEIR. He said the current assumptions could be found in section 13.2.1.1. He said he would be happy to provide any further clarification on these numbers to Ms. Ridley.

Hearing no other members of the public wishing to provide comment, Mr. Roy asked for further comment from the Subcommittee.

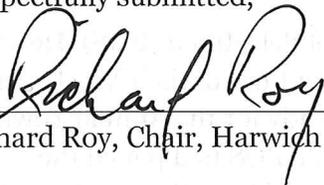
Michael Skelley said that inter-town cooperation is very important. He said the CWMP is a positive step in wastewater planning efforts.

Mr. Roy said that the cooperation between towns is starting to come together. He said economical solutions will require cooperation. He said the AMP is a positive aspect of the plan, and he said he hopes future technologies can be utilized to further reduce the cost of the CWMP.

John McCormack Jr. said that 40 years was a long planning period but efforts would be starting immediately. He said that additional financing options for wastewater planning efforts have to be identified.

Mr. Roy congratulated the Town on developing the CWMP. He asked if there were any further comments from Commission staff. Hearing none, the hearing was adjourned at 6:17PM.

Respectfully submitted,

  
Richard Roy, Chair, Harwich CWMP Subcommittee

7/27/2016  
Date

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BARNSTABLE, MASSACHUSETTS 02630



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**HEARING AND MEETING SIGN-IN SHEET**

DATE: APRIL 28, 2016  
LOCATION: HARWICH TOWN HALL, GRIFFIN ROOM, 732 MAIN ST, HARWICH, MA  
PROJECT: HARWICH COMPREHENSIVE WASTEWATER MANAGEMENT PLAN

NAME	ORGANIZATION AND/OR ADDRESS	DO YOU WISH TO SPEAK?
MARY ROMEYN	61 CONTINENTAL DR HARWICH	
→ Carol MILLER	61 Continental Dr / Harwich	poss?
Deborah Beale	411 Pleasant Lake Ave.	
Carm Scherzo	Brewster Board of Health	
Bill Galvin	Cape Cod Chronicle	
* Michael MacASKILL	BOS	
* Gary Ballantyne	Fish Com	
David Young	Carm Smith	✓
* Peter Hushes	Harwich Board of Selectmen	✓
Diane Chamberlain	Dennis Wastewater	
→ * Charleen Greenhalgh	Harwich Abst. Town Adm.	✓
* Angelo La Mantia	Harwich Selectmen	
* CAROLE RIDGELY	115 Kendrick Rd, HARWICH, MA	✓
→ = WISHES TO SPEAK		
* = PUBLIC OFFICER		

# Overview of Harwich Final CWMP for CCC Public Hearing

Town of Harwich, Massachusetts



David Young, P.E.  
CDM Smith

Presentation on  
April 28, 2016

**CDM  
Smith**<sup>®</sup>

# Wastewater Implementation Committee (WIC)



- WIC Members:
  - Peter de Bakker, Chair
  - Chris Harlow, Vice Chair
  - Allin Thompson, Clerk
  - Jeremy Gingras
  - Sharon Pflieger
  - Heinz Proft
  - Bob Cafarelli
- Liaisons: Michael MacAskill, Chris Clark, Noreen Donahue
- Consultant: CDM Smith (David Young)

# Presentation



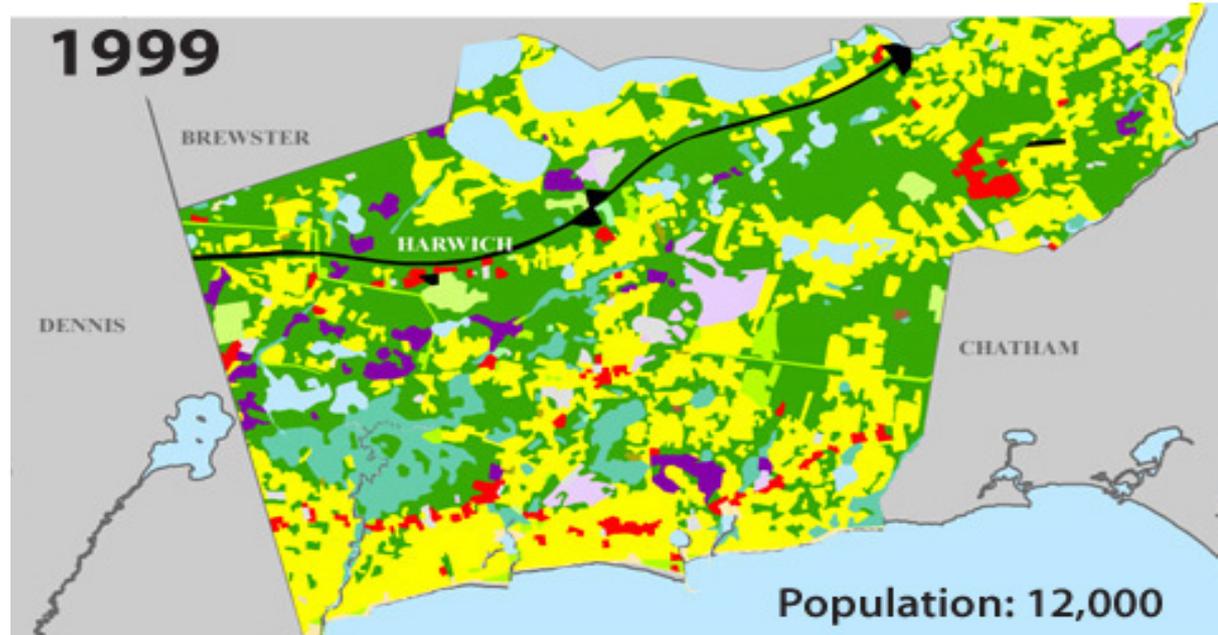
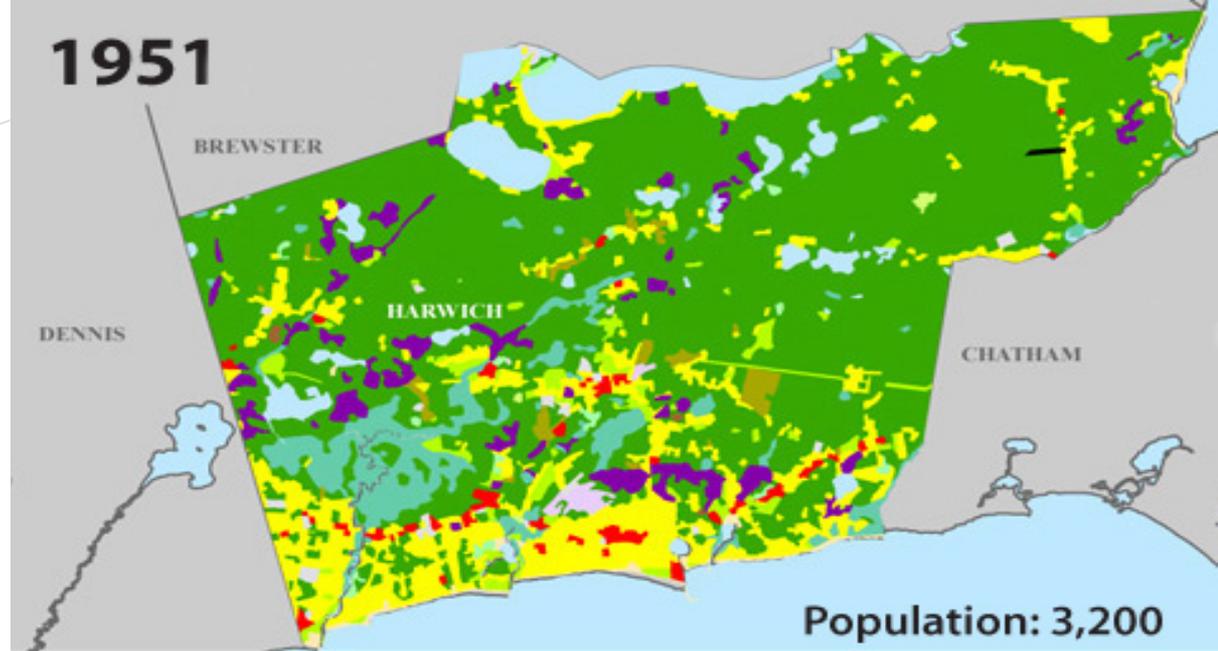
- What is the issue?
- What are the solutions?
- What is the Harwich recommended program?
- Questions and comments.

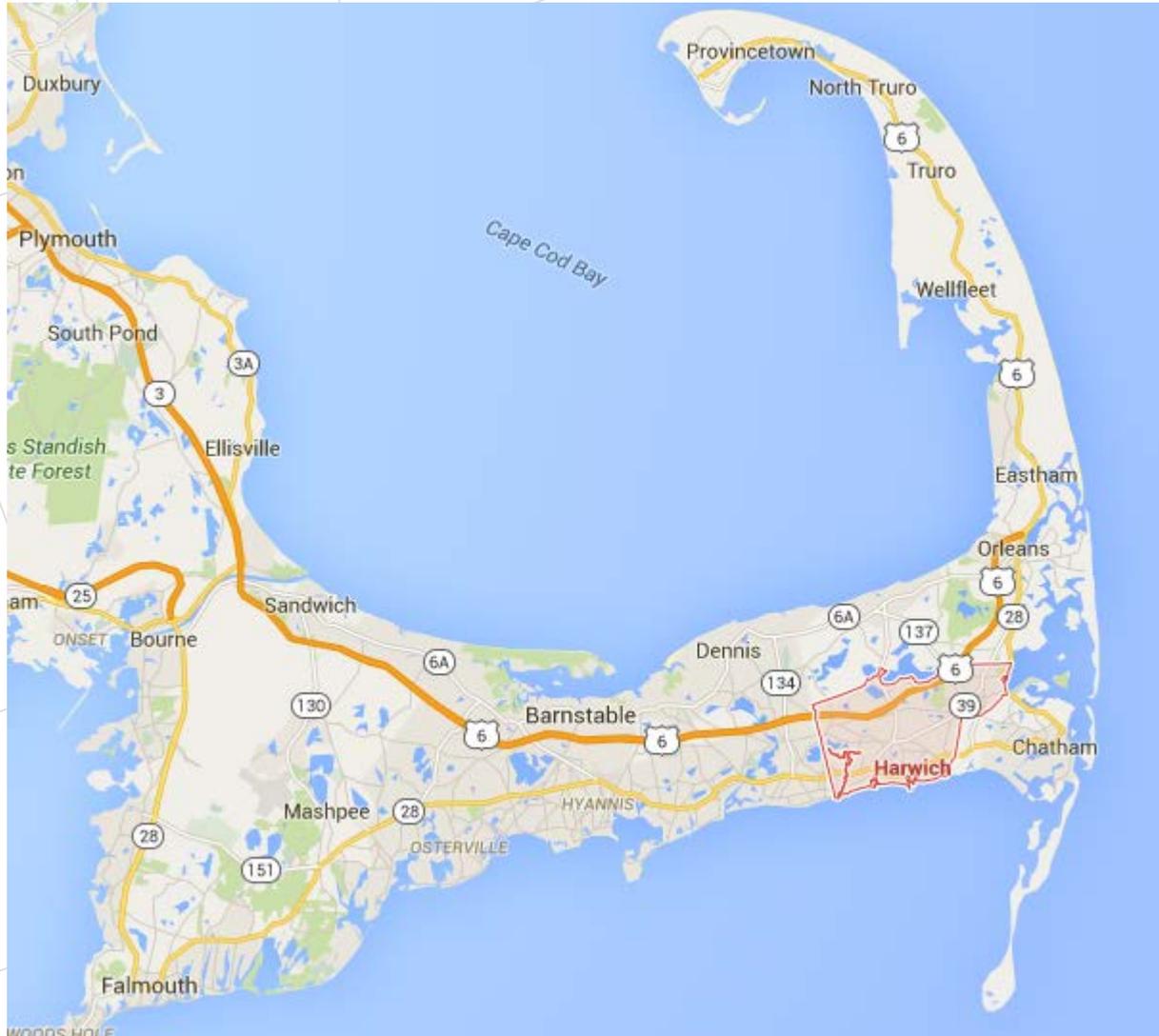


What is the issue?

# Harwich Land Use Development 1951 and 1999

- 400% population growth from 1951 to 1999





- Cape Cod represents 4% of the state's population, but 20% of the state's septic systems.

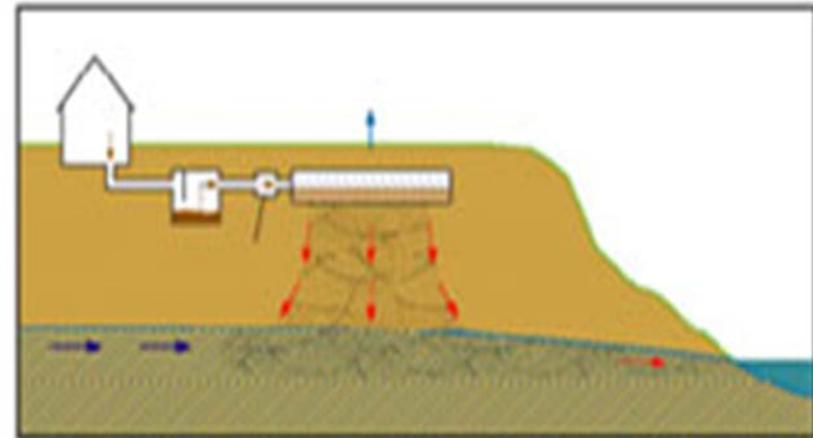
# Nutrients From Title 5 Septic Systems Is Our Biggest Issue



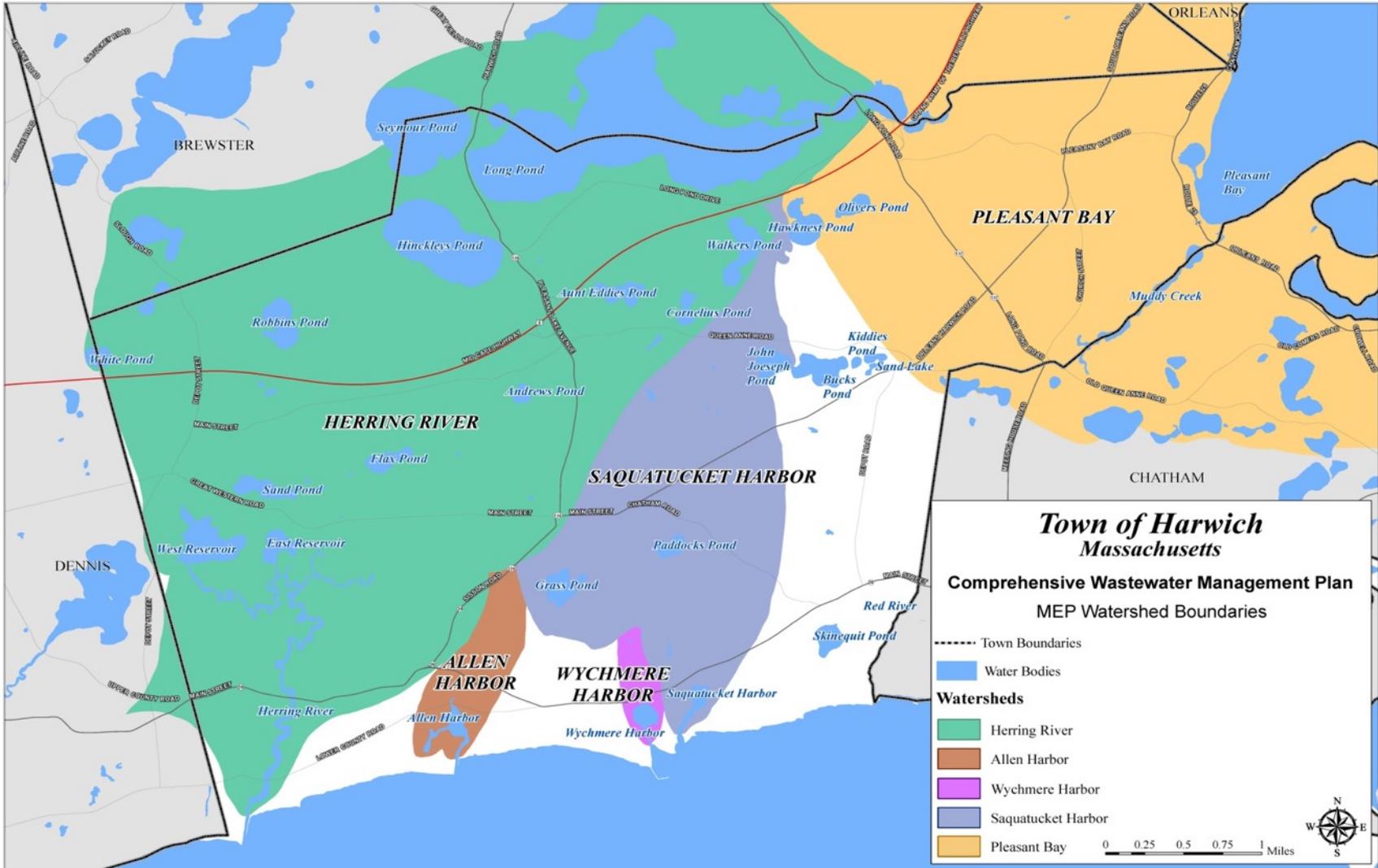
## Septic Systems Permit Nitrogen to:

Invade Our Ground  
Water

Travel with  
Groundwater to the  
Beaches & Rivers



# What is a watershed?



**Town of Harwich  
Massachusetts**

**Comprehensive Wastewater Management Plan  
MEP Watershed Boundaries**

----- Town Boundaries

Water Bodies

Watersheds

- Herring River
- Allen Harbor
- Wychmere Harbor
- Saquatucket Harbor
- Pleasant Bay

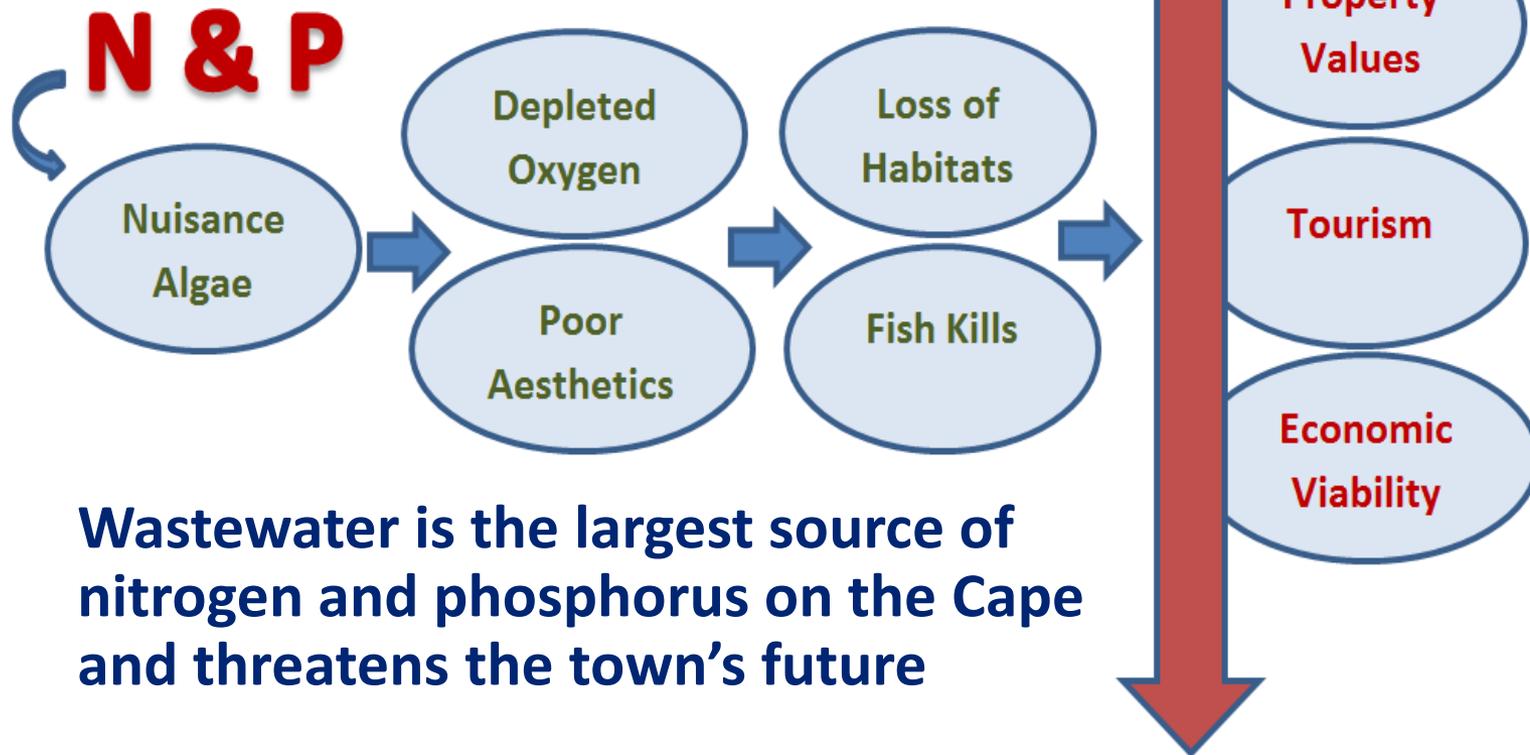
0 0.25 0.5 0.75 1 Miles

# What is the Massachusetts Estuaries Project (MEP)?



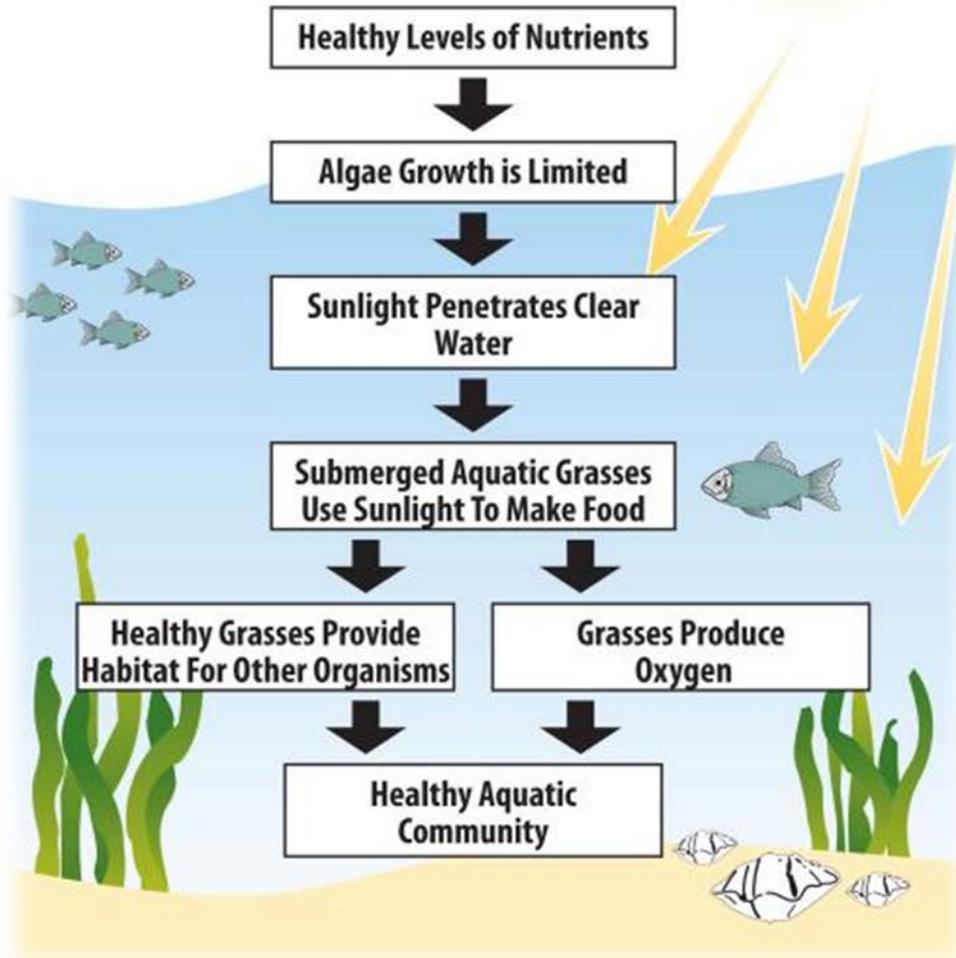
- Partnership
  - Massachusetts DEP (Department of Environmental Protection)
  - UMASS/Dartmouth School of Marine Science and Technology (SMAST)
  - Local communities
  - Also CCC and USGS
- Ongoing program to protect/improve coastal water quality
- Monitoring and evaluating environmental health of coastal embayments

# The Issue...



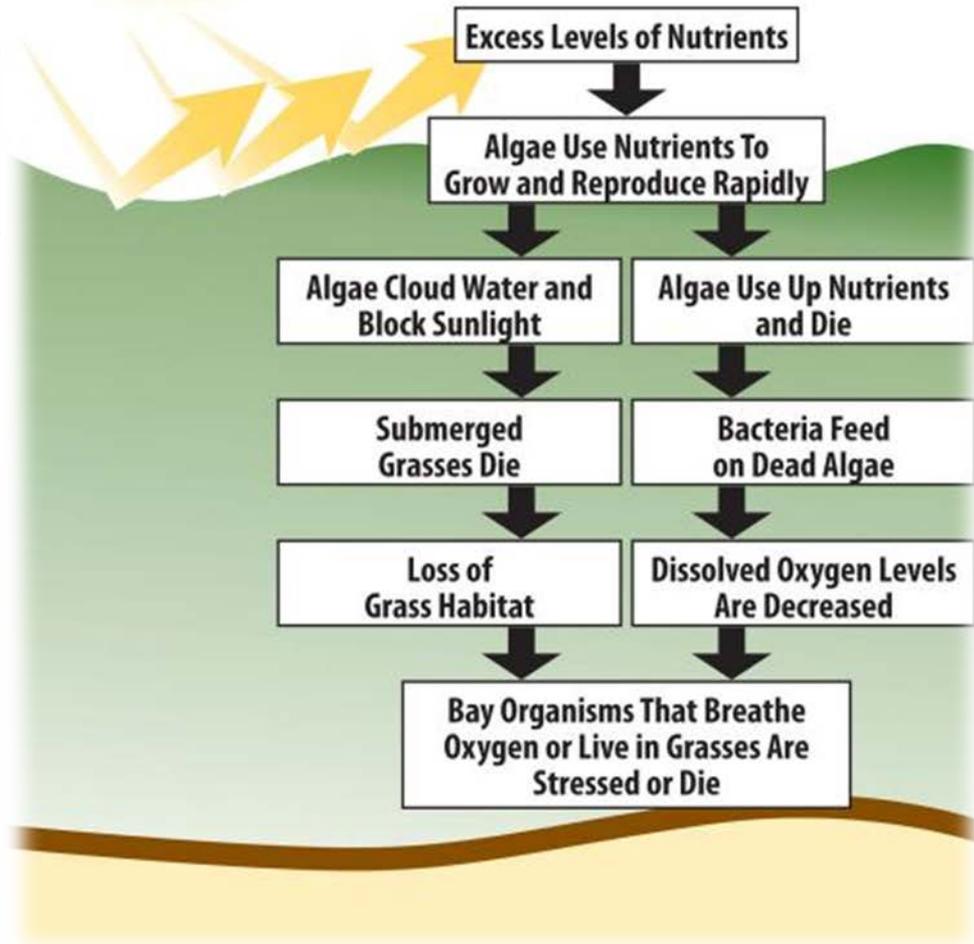
# Beaches, Rivers & Harbors Are Severely Impacted By Nutrients

Healthy  
Nutrient Levels



# Beaches, Rivers & Harbors Are Severely Impacted By Nutrients

Unhealthy  
Nutrients Levels

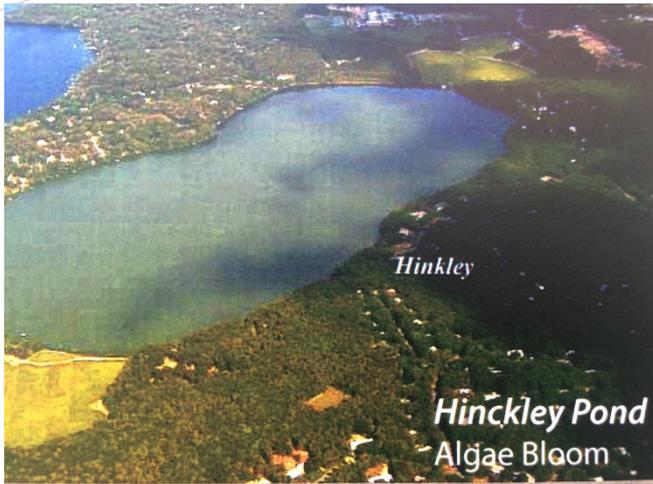


# Total Maximum Daily Load (TMDL) for Total Nitrogen



- MassDEP (Department of Environmental Protection) has issued draft TMDLs for total nitrogen for the Herring River Estuarine System and the Allen, Wychmere and Saquatucket Harbor Embayment Systems.
- TMDLs based on information presented in the MEP reports.
- Final TMDLs to be issued by EPA in near future.
- Authority is provided by Federal Clean Water Act (CWA)

# Algae Blooms in Harwich waters



Hinckleys Pond (P)



Allen Harbor (N)

- Both fresh and salt water areas have been affected by algae blooms.
- Excessive nutrients in water bodies can cause algae blooms
- When the algae dies it decomposes and depletes dissolved oxygen levels which results in an unhealthy environment for fish and other organisms.



# MassDEP Eel Grass Mapping

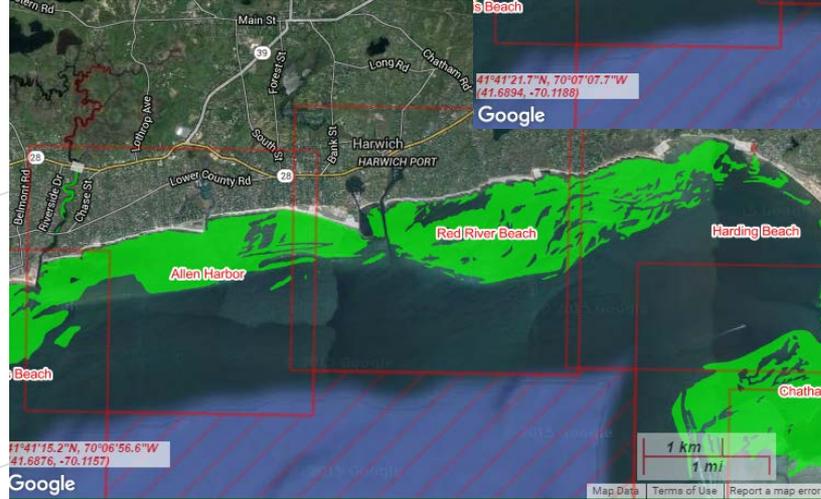
2001



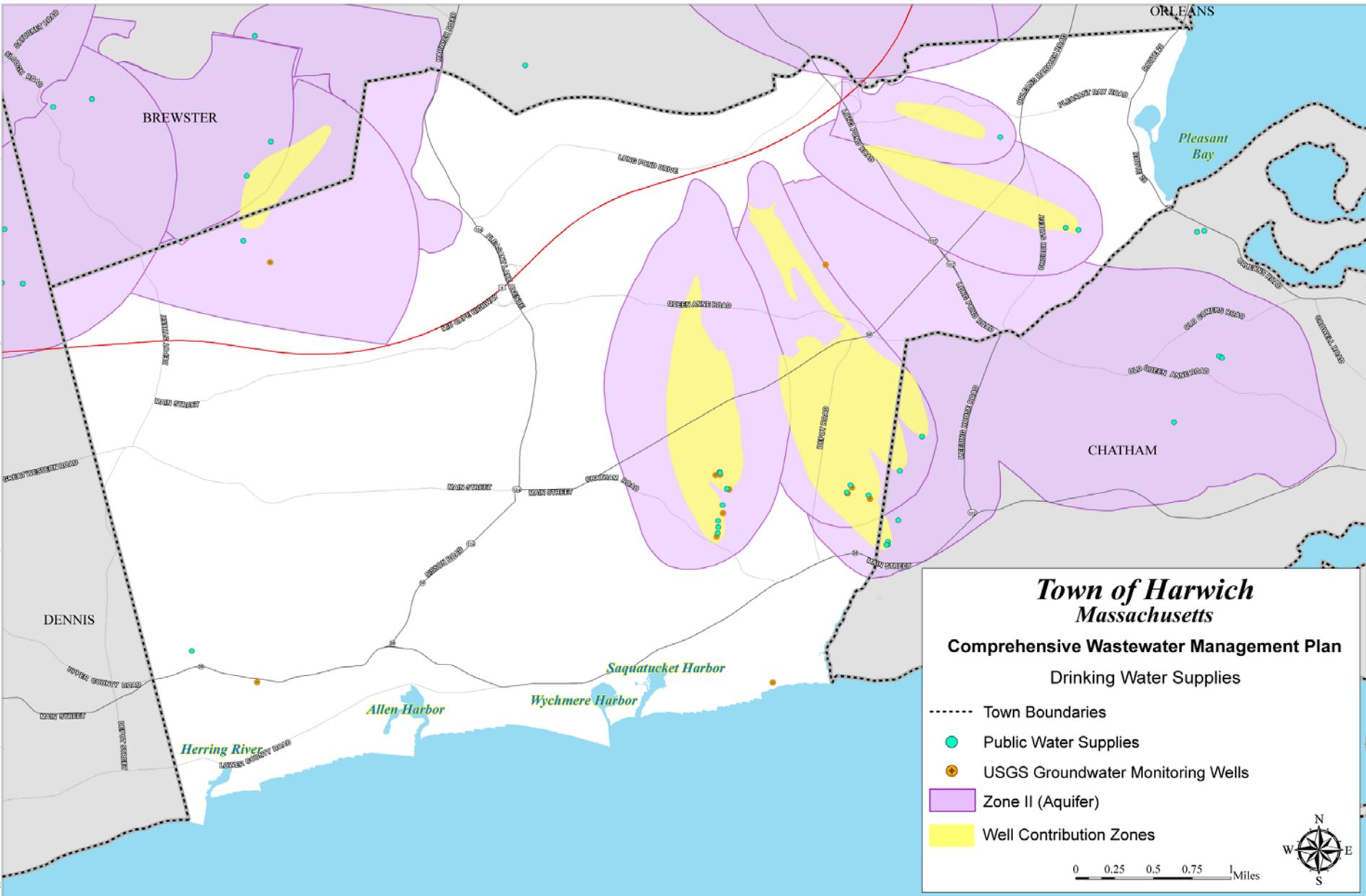
2010-2013



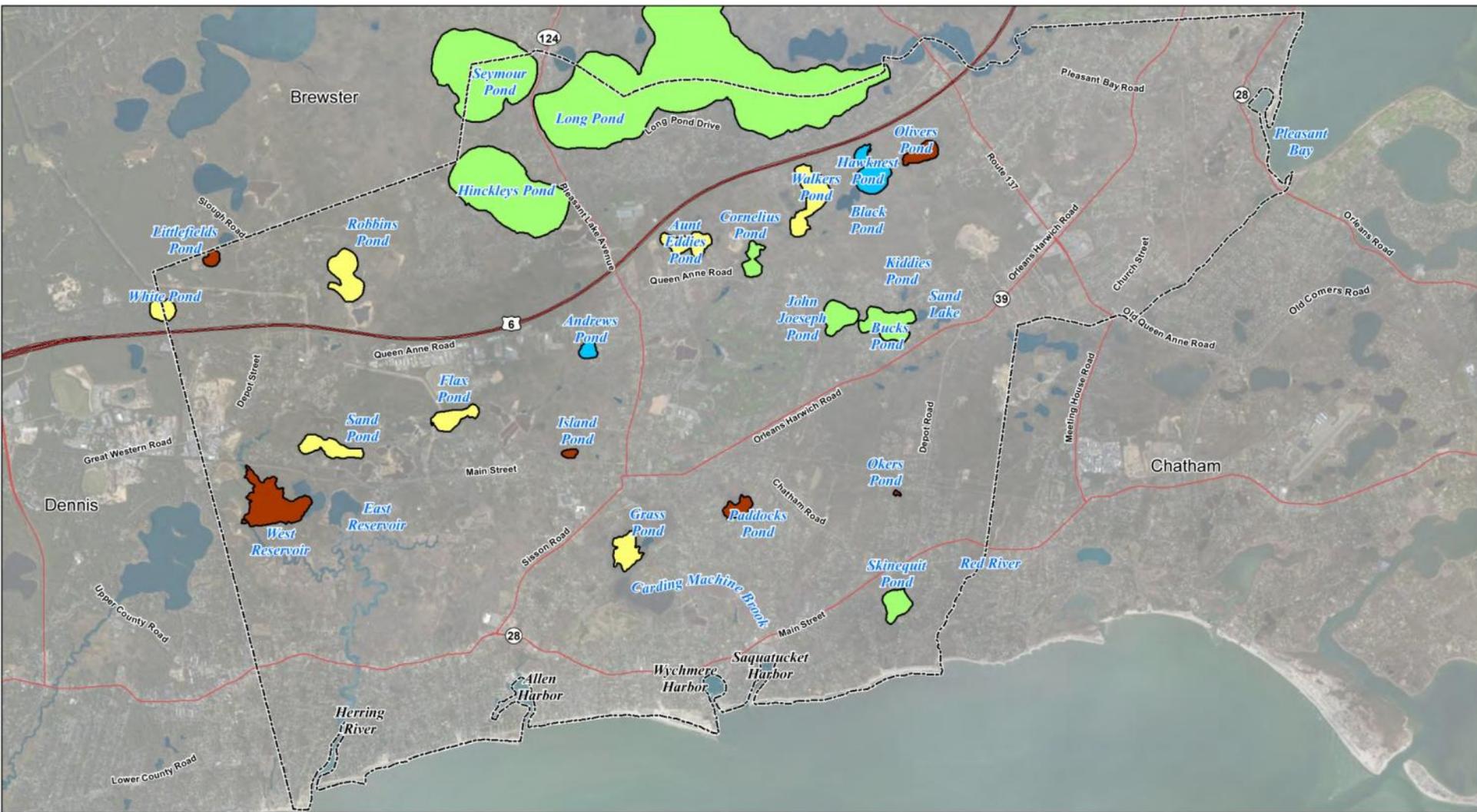
1995



# Existing Conditions – Drinking Water Supplies

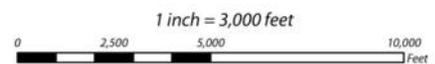


# Impaired Fresh Water Ponds in Harwich



### Legend

- Additional Data Required
- High Quality Pond
- Pond With Some Water Quality Impairment
- Impaired Pond Water Quality



Town of Harwich CWMP  
Impairment Status of Fresh Water Ponds in Harwich

Figure 5-2





What are the solutions?

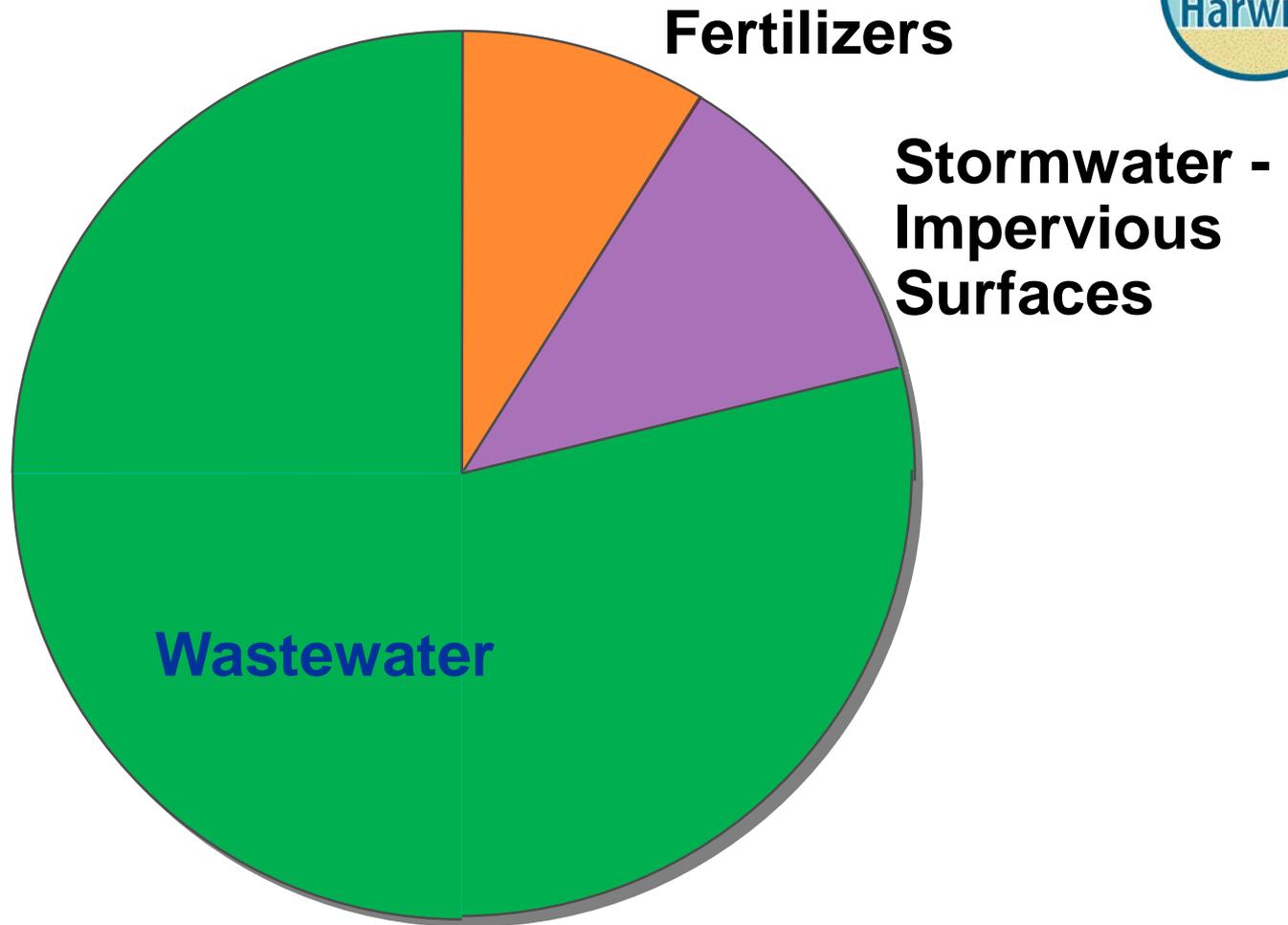
# What is a Comprehensive Wastewater Management Plan (CWMP)?



- Addresses Town-wide Wastewater Management Needs
  - Nitrogen Management (MEP)
  - Pond Water Quality (P)
  - Drinking Water (N,CEC)
  - Title 5 Issues
  - Socio – Economic



# Controllable Sources of Nitrogen



**Local Control – Typical Percentages**

Site Scale

Neighborhood

Watershed

Cape-Wide

Prevention

### Nitrogen Removal Possibilities



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



Phytobuffers



Fertigation Wells



Permeable Reactive Barrier



Shellfish and Salt Marsh Habitat Restoration



Aquaculture/Shellfish Farming

Remediation



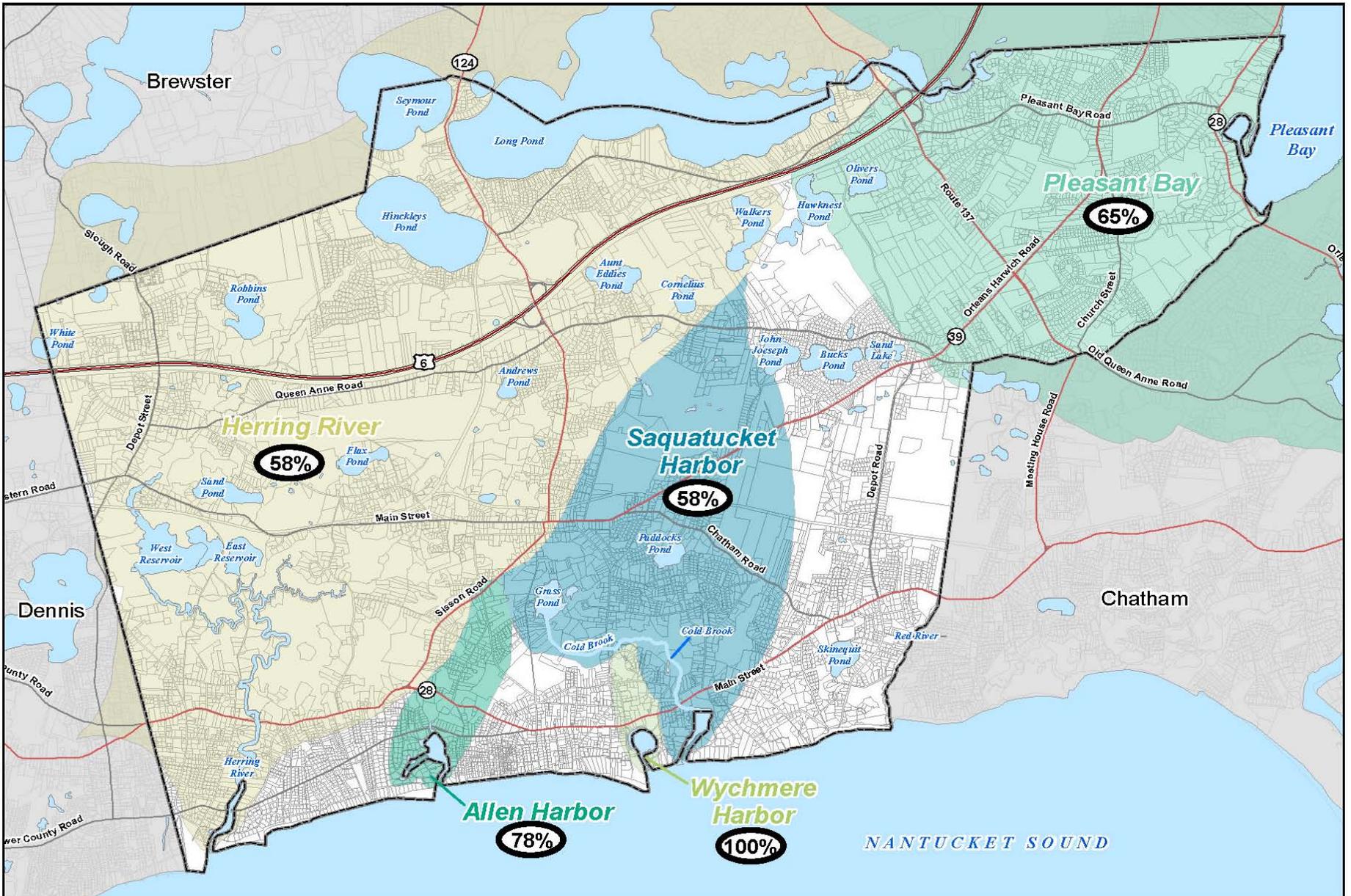
Inlet / Culvert Widening



Pond and Estuary Dredging



Construct. Wetlands, Groundwater, Salt Water, Floating

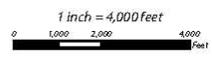


**Legend**

**Watersheds**

-  Allens Harbor
-  Herring River
-  Pleasant Bay
-  Saquatucket Harbor
-  Wychmere Harbor
-  78% Septic Load Decrease to Meet Threshold

**Town of Harwich  
Comprehensive Wastewater  
Management Plan**



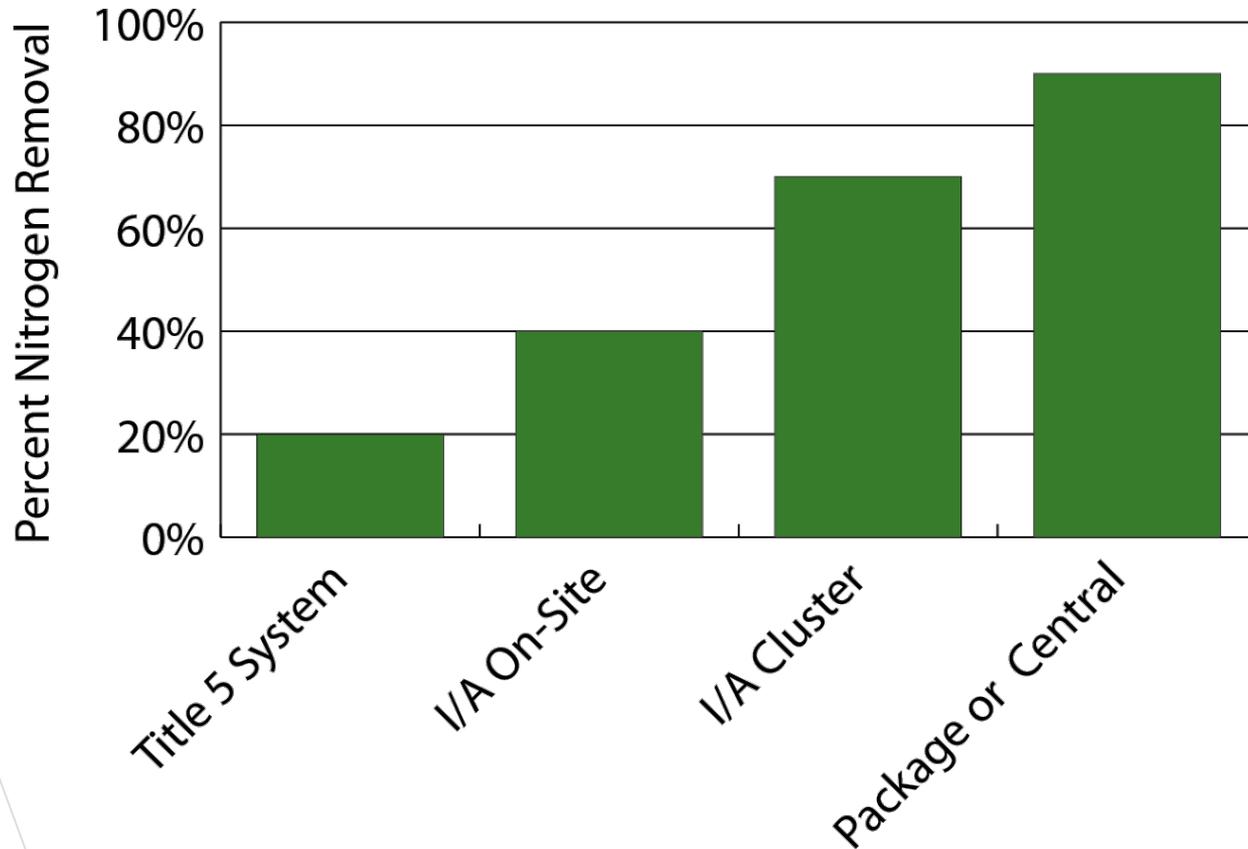
**Figure 13-2**  
Watershed Septic Load Reductions



# Nitrogen Removal By Technology



## Effluent Nitrogen Levels of Treatment



# Summary of Wastewater Scenarios and Effluent Recharge Sites



<i>Wastewater Service</i>	<i>Herring River Recharge Site</i>	<i>Saquatucket Harbor Recharge Site</i>	<i>Pleasant Bay Recharge Site</i>	<i>Outside MEP Watershed Recharge Site</i>	<i>Treatment Only At HR-18 : Ocean Used for Recharge</i>
<i>Scenario</i>	<i>HR-12</i>	<i>SH-2</i>	<i>PB-3</i>	<i>OW-2</i>	<i>Outfall</i>
<b>1A</b>	X	X	X		
<b>2A</b>	X	X	X		
<b>3A</b>	X				
<b>4A</b>	X		X		
<b>5A</b>	X		X		
<b>6A</b>	X	X	X	X	
<b>7A</b>	X	X	X	X	
<b>8A</b>					X



What is the Harwich recommended program?



# Nitrogen Reduction via Increased Flushing at Muddy Creek



# Nitrogen Reduction by Natural Attenuation at Cold Brook Bogs – Bank Street



# Chatham Wastewater Treatment Plant (1.1 million gallon per day average flow with open infiltration basins)



# Seeded Shellfish Areas



Herring River



Allen's Harbor

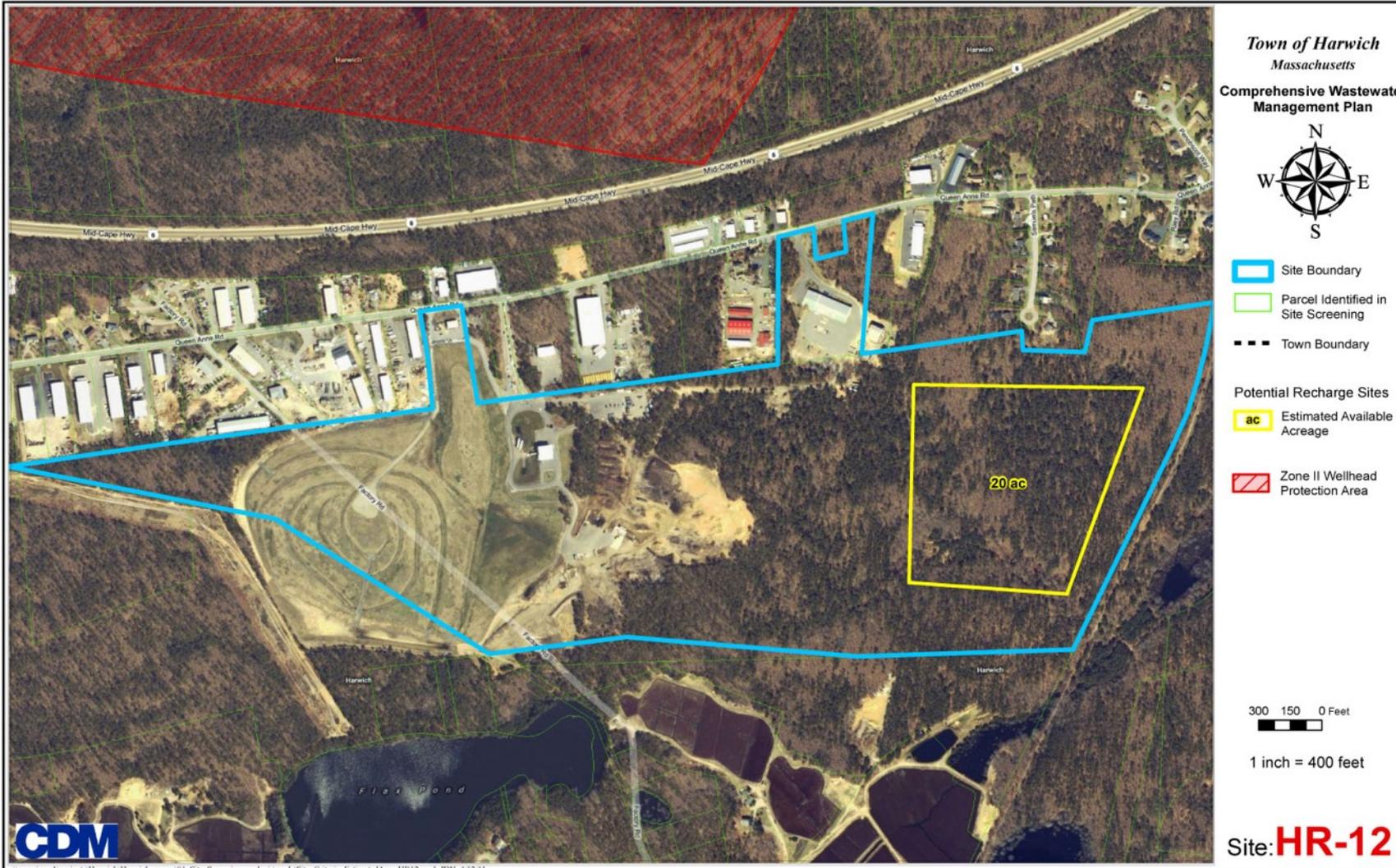


**CDM Smith** Round Cove/Pleasant Bay

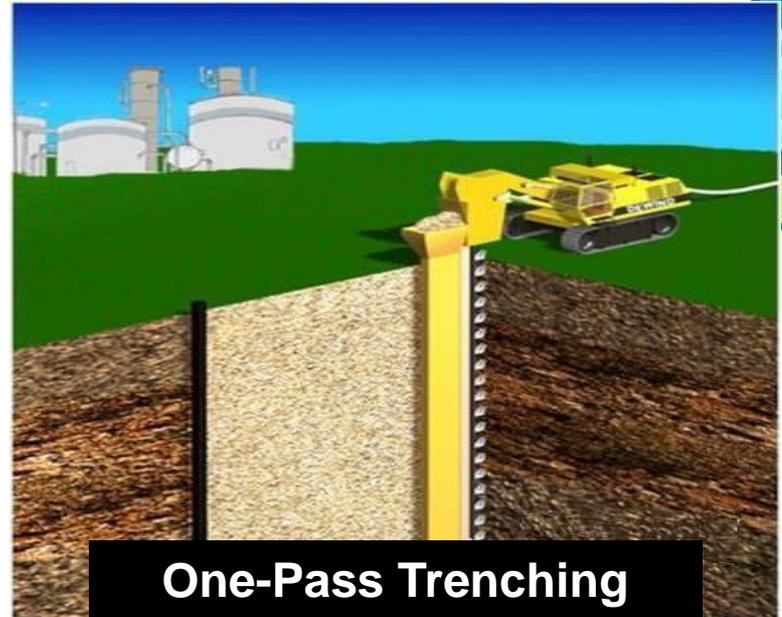


Wychmere Harbor

# HR-12 – Adjacent to Former Town Landfill In the Herring River Watershed

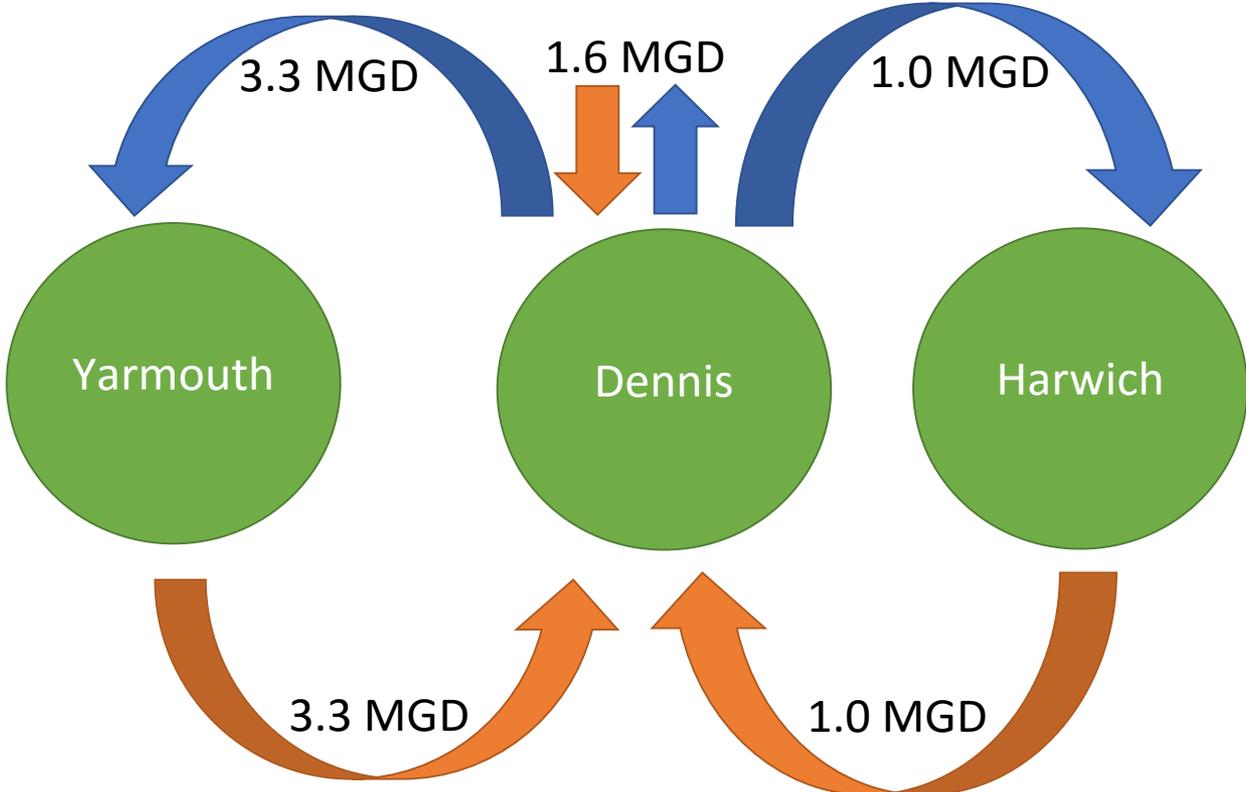


# PRB - Construction Techniques





# Community Partnership – Dennis, Harwich, and Yarmouth



MGD = million gallons per day

# Summary of Harwich Utility



- 180 Miles of Utility Pipes
- 5 Pumping Stations
- 3 Storage Tanks
- Treatment Facility
- Administration Offices and Maintenance Garages
- Capital Cost Range (Today's Dollars):

**\$215 to \$255  
Million**



# Recommended WIC Cost Recovery Model Components



- Infrastructure investment fund
- Town-wide property tax
- Sewer enterprise account/ water use surcharge

# Program Status



- The CWMP is intended to be a living document that will adapt depending on results of earlier implementation phases.
- Muddy Creek – June 2016 completion
- Harwich/Chatham IMA under negotiation
- Final CWMP filed with regulatory agencies – March 2016
- Cold Brook Natural attenuation study – May 2016
- Begin the Cape Cod Commission (DRI) Development of Regional Impact review process – likely 3 to 6 months+
- June 2016 file for each watershed with CCC how the town intends to meet the TMDLS. CCC has a template to fill out. CCC will file this with the EPA.

# Program Summary



- This is a complex planning process – one that will continue indefinitely – as things will change – adaptive management.
- The CWMP is intended to be a living document that will adapt depending on results of earlier implementation phases.
- Most properties in town contribute to the problem – not just those along a water body or those proposed for sewerage.
- All benefit from improved water quality.

# The Consequences...

- “The cost of doing nothing is economically devastating to every Cape homeowner.”
  - Cape Cod Commission – 208 Plan, 2014



Algae Bloom in Allen Harbor, Harwich, Swan Pond, Dennis and Mill Creek, Yarmouth

# Questions and Comments:



Water  
Quality  
Harwich

