

# Wastewater Treatment Facilities Update and Total Nitrogen General Permit Approach to Great Bay Estuary

Portsmouth City Council Meeting

March 18, 2019

# Peirce Island WWTF Construction Update

- Schedule
  - Consent Decree Deadlines On Schedule
  - Meet Permit April 2020
  - Construction Complete September 2020
- Construction Costs
  - Original Contract \$72.8 Million
  - Change Orders To Date \$1.7 Million
  - Construction To Date \$74.5 Million

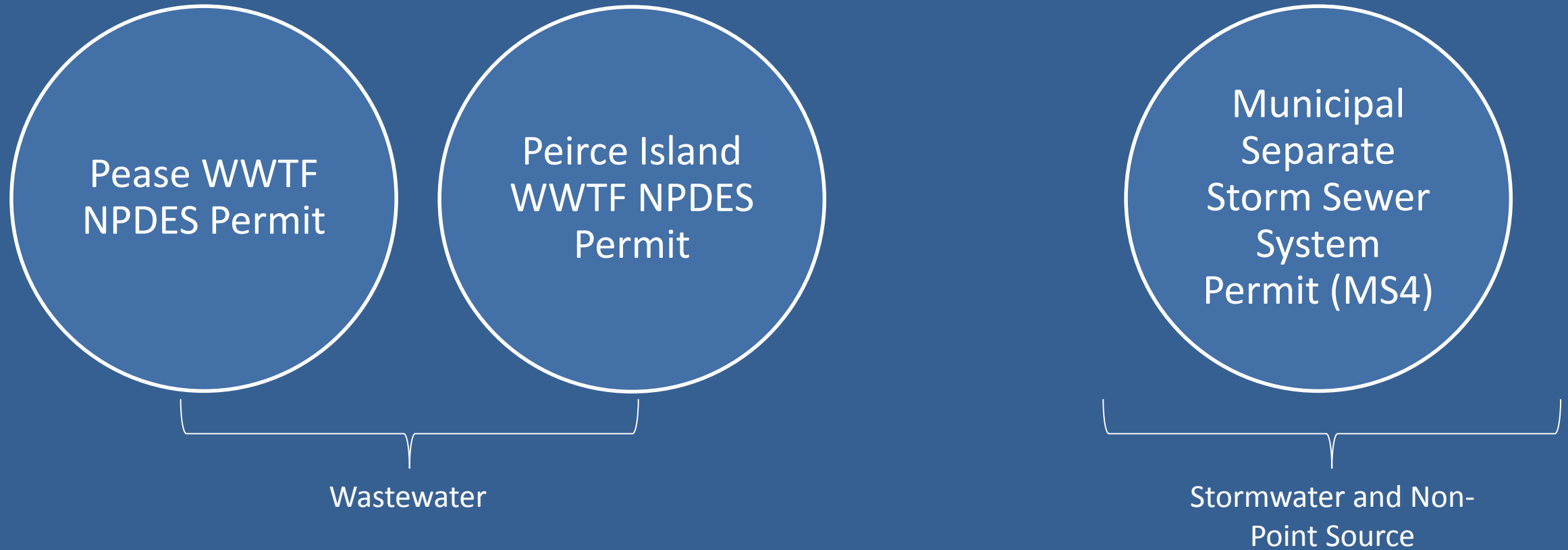


# Pease Wastewater Treatment Facility

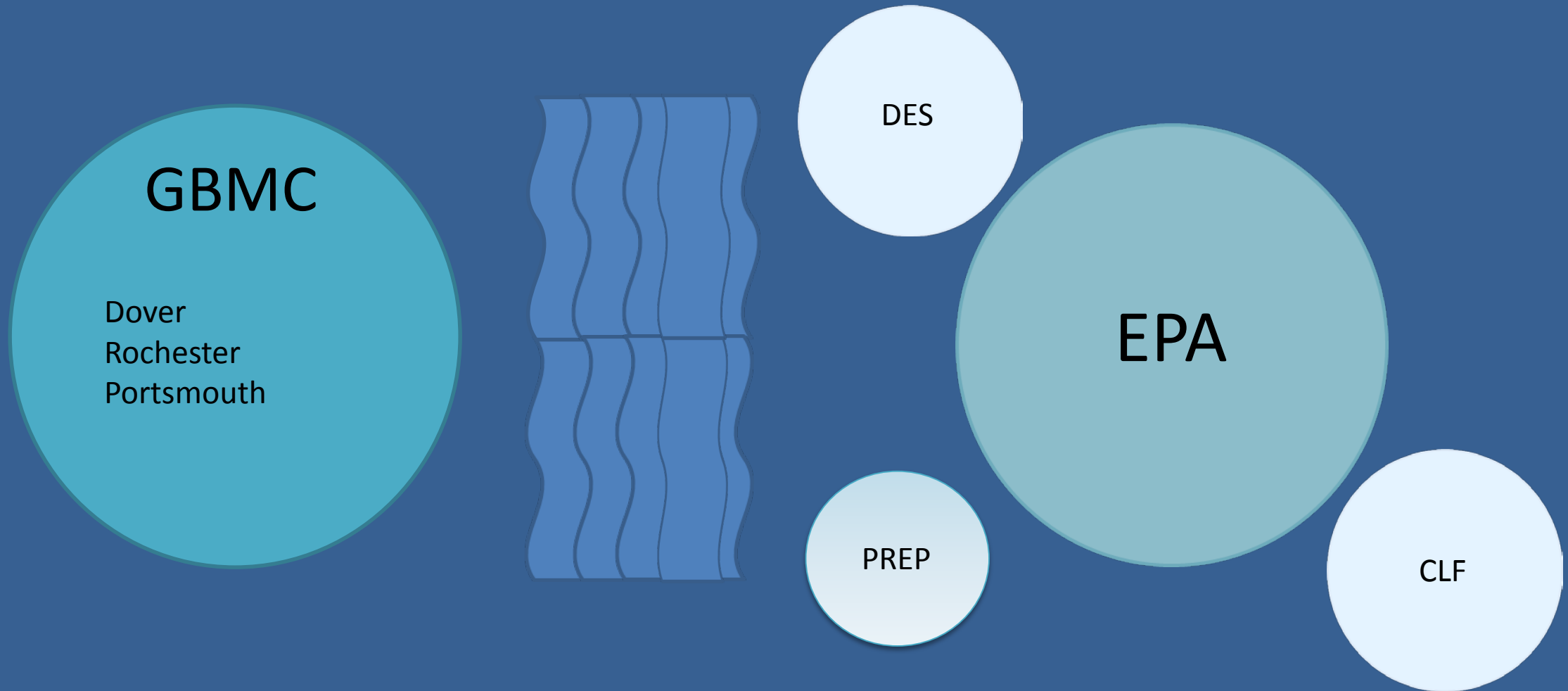
- Design Flow Increase from 1.2 MGD to 1.7 MGD
  - Supports Future Tradeport Buildout Including Lonza
- Requires Treatment Facility Upgrade
  - Multiple Studies In Progress
  - Development of Cost Estimates for Improvements
  - Will Incorporate Current Plans (Headworks Underway, UV Disinfection, Sludge Processing Improvements)



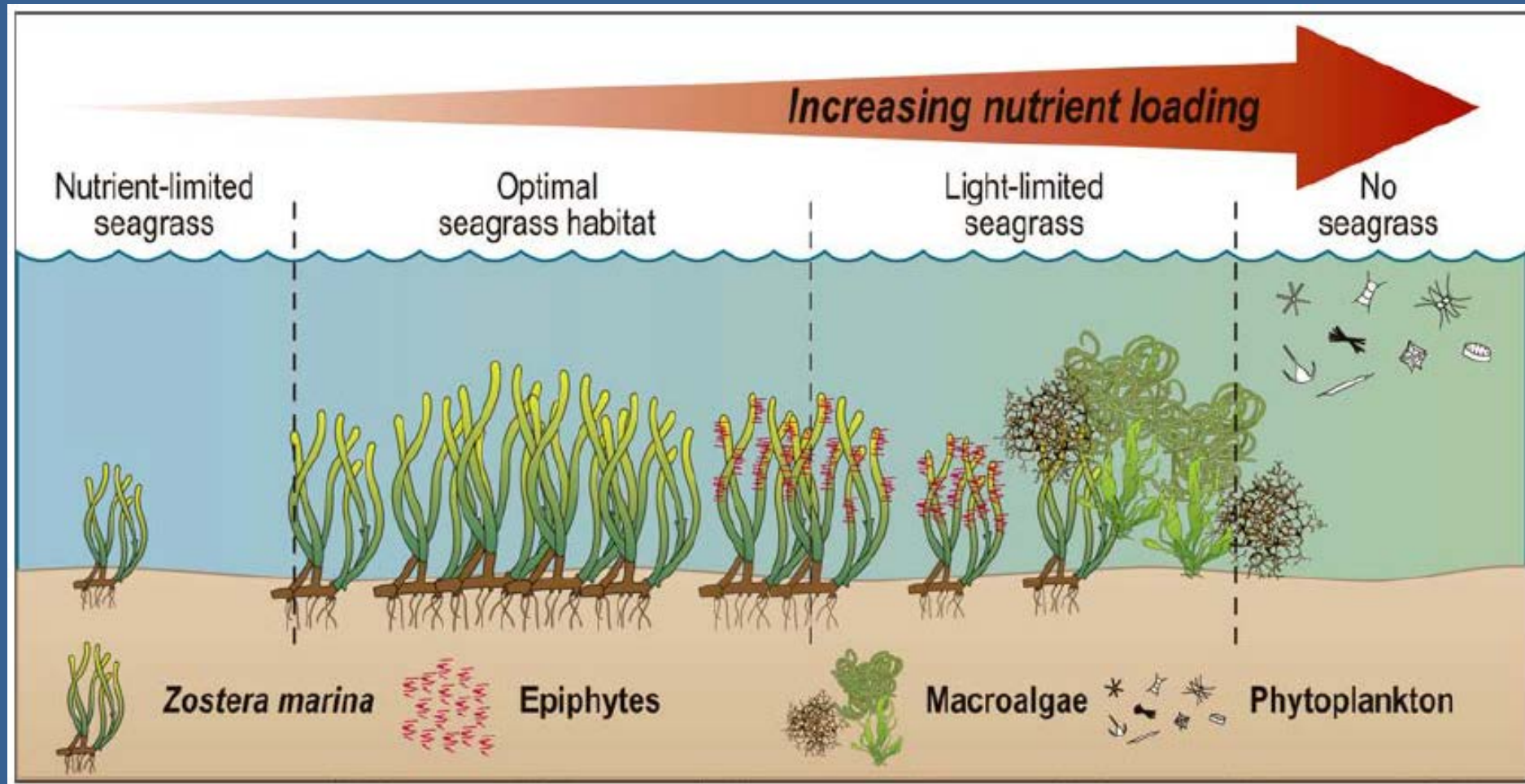
# NPDES Permits



# Historical Positions on Nitrogen



# Model for Impairment Due to Nitrogen



# Introduction of TN General Permit Concept

- In Fall 2018 EPA and DES Introduced the TN General Permit Concept to Great Bay Municipal Coalition
- Initial Concept Appeared Unachievable
- Once Additional Details were Provided the Concept Appeared Achievable for Portsmouth



# NPDES Permits

## TN General Permit

Pease WWTF  
NPDES Permit

Peirce Island  
WWTF NPDES  
Permit

Municipal  
Separate  
Storm Sewer  
System  
Permit (MS4)

Wastewater

Stormwater and Non-  
Point Source





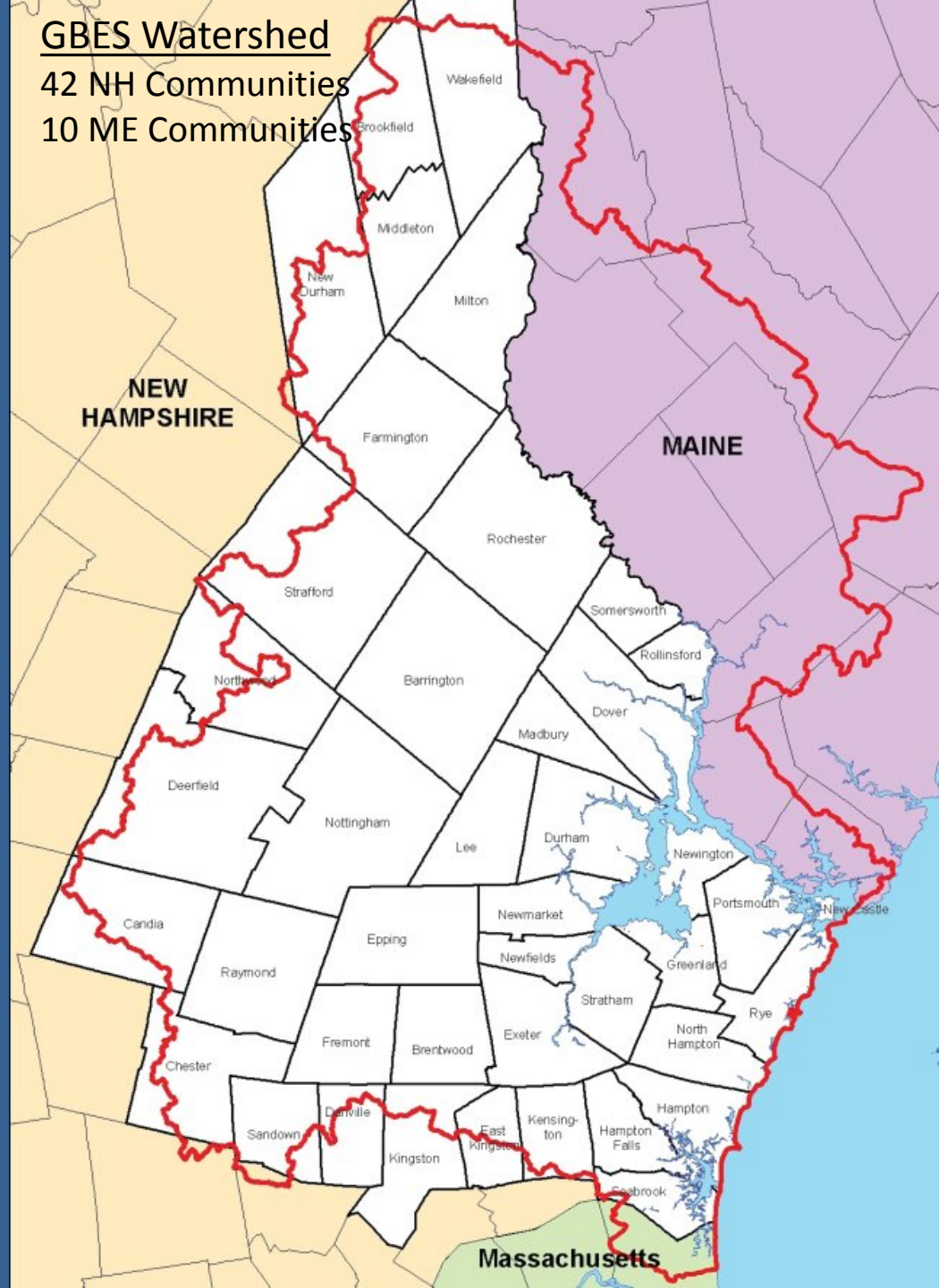
# Total Nitrogen General Permit

- Establishes Estuary Wide Total Nitrogen Load Target
  - What is Load?  $\text{Load} = \text{Flow} \times \text{Concentration}$
  - Proposes Overall Reduction of TN Load Estuary Wide
- EPA to Establish Allowable TN Load for Each Community
- Sources of Nitrogen
  - Point Sources (Wastewater Treatment Facility Outfalls)
  - Non-Point Sources (Septic Systems, Agriculture)
  - Stormwater (Runoff, Drain Outfalls)



# TN General Permit Structure

- 52 Communities in GBES Watershed
- Communities Immediately Regulated Under Permit
  - 13 NH Communities with WWTFs and MS4 Requirements Under Permit
  - 4 ME Communities with WWTFs Under Permit



# How Does A Community Meet The Permit?

- Develop a Plan to Reduce Nitrogen Input to Estuary (23 Yrs)
  - Wastewater Treatment Facilities Upgrades and/or Optimization
  - Other Non-point Source Controls Such As Installing Sewers, Controlling Fertilizer(s), Reducing Atmospheric Deposition
  - Implement Stormwater Treatment Technologies for Nitrogen Removal
- Details Of Compliance Will Not Be Firm Until A Draft Is Available
  - Anticipated October 2019




# How Might Portsmouth Comply?

- Peirce Island Wastewater Treatment Facility
  - Complete Construction and Place Online
  - Take Advantage of Nitrogen Removal Below Consent Decree Requirement Of 8 mg/L Seasonal
- Pease Wastewater Treatment Facility
  - Include Nitrogen Removal in Proposed Upgrade
- NPS and Stormwater
  - Continue Planned Projects and Develop a Plan



# Other Requirements of the Permit

- Tracking Of Accounting Of Nitrogen Inputs (plus and minus)
  - Testing of Wastewater Effluent Characteristics
  - Accounting For Land Use Changes
- Assessment
  - Costs of Annual Sampling Paid by Communities
  - Assessment of Sampling Results Performed by the Regulators



The screenshot shows the University of New Hampshire logo and name at the top. Below it is a dark blue navigation bar with the text "UNH Stormwater Center" and a hamburger menu icon. The main content area has the heading "PTAPP" and a large photograph of a lake at sunset. To the right of the photo is a text box with the following content:

**NHDES Pollutant Tracking and Accounting Pilot Project**

We are excited to announce that the PTAPP database is ready for testing. Here are the steps for accessing the database, registering, and testing!

# Unknowns

- Costs of Annual Monitoring
- If EPA Will Lower The Load Target Within The 23 Year Implementation Timeframe
  - Would Require Additional Costs
- If EPA Will Regulate Other Watershed Communities (35)



# Why This May Not Work For Other Communities

- Existing WWTFs May Not Have High Level Nitrogen Removal
- NPS and Stormwater Nitrogen Removal Is Not Efficient
  - Technologies And Understanding of Performance Are Developing
- Land Use Control Issues
- Some Communities Don't Believe This Will Improve Eelgrass
- Complex and Costly



# Why This May Work For Portsmouth

Peirce Island WWTF  
Technology Provides  
Opportunity to Meet Load  
Reduction





# Proposed Council Action

- Authorize The City's Further Engagement In The Total Nitrogen General Permit Concept For The Great Bay Estuary
  - Foregoing At This Time Legal Action Regarding Nitrogen
  - Reducing Level Of Engagement With Dover And Rochester Under the Great Bay Municipal Coalition



# Questions and Answers