



# Suzanne Woodland, Esq.

Acting Deputy City Manager / City Attorney  
Portsmouth, NH

## Structures of Collaboration

Session 5

Great Bay Total Nitrogen General Permit  
2<sup>nd</sup> Panel Discussion

# Structures for Collaboration

- Intermunicipal Agreement
  - Allows communities to work more efficiently together toward Permit compliance



- Settlement Agreement Between Conservation Law Foundation and Cities of Dover, Rochester and Portsmouth
  - Avoided appeal of the Permit, improves dialogue and establishes more robust reporting

# Intermunicipal Agreement

- Created Municipal Alliance for Adaptive Management (MAAM)
- 7 Permittees have become Members
- Coordinates investments in monitoring and analysis
- Allows sharing of resources - efficiencies
- Common point of communication



# Settlement Agreement

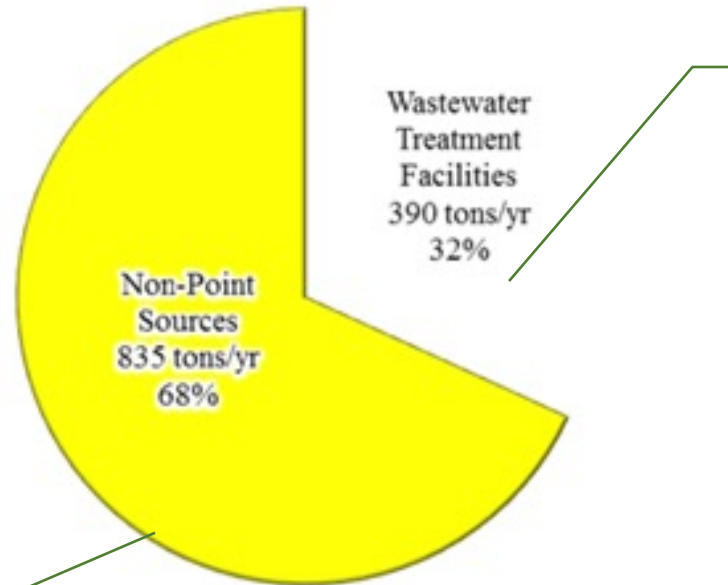
- Allowed CLF and stakeholder participation in MAAM meetings



- Municipalities subject to increased level of reporting on progress of nitrogen reducing/water quality projects
- Municipalities commit to pollutant tracking
- Petition for individual permits as remedy

# Implementation Opportunities For the City of Dover

- Potentially less \$
- Additional pollutant removal (TSS, TP, others)
- Secondary benefits such as flood mitigation and infrastructure rehabilitation



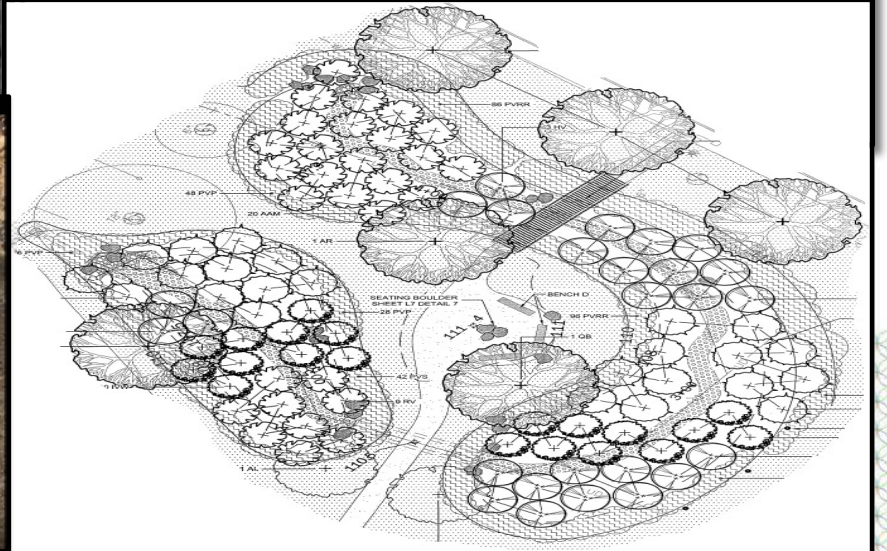
- Already invested substantially in 2015
- Another >\$30,000,000 to take the WWTP to Limit of Technology
- No co-benefit to doing this work

# Ability to Get Creative (and cost effective)



## Dover plans first-in-NH environmental project

Jeff McMenemy *Fosters Daily Democrat*  
Published 4:53 p.m. ET Oct. 20, 2020



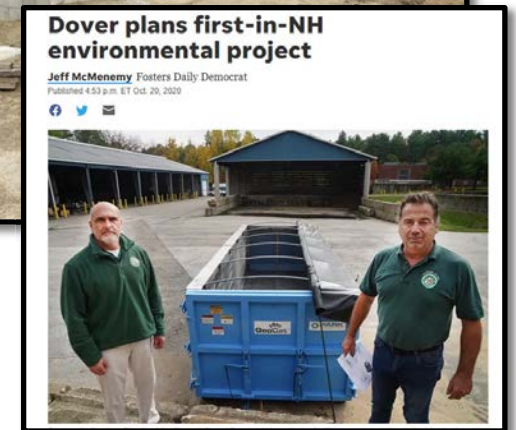
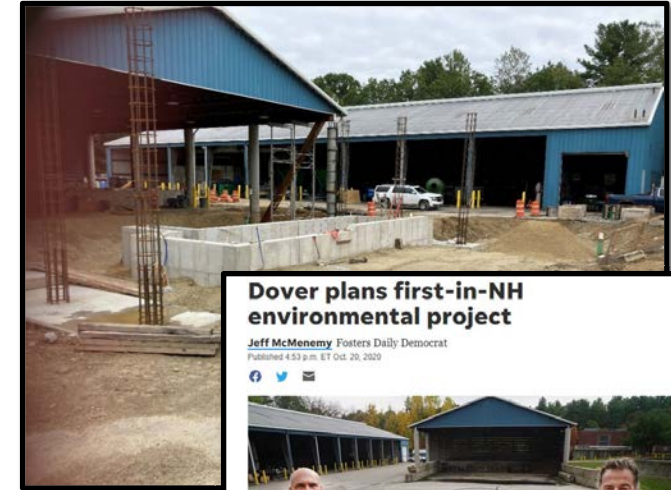
# Incorporate BMP's into CIP projects

- Incorporate BMP as standard practice.
- Reduce impervious area where it makes sense.
- Address flood mitigation.
- Rehab undersized systems.
- Improve parks, municipal parking lots, and other common areas.

**Water floods**  
**Broadway area in Dover**



# Improve/Enhance city services



- Rake to road leaf pick up program (766 lbTN/yr)
- Organic/ Slow release nitrogen fertilizer(800 lbTN/yr)
- Removes decant water from catchbasins and pre-treatment areas (195+ lbTN/yr)



# Take a closer look at funding strategies

- City Ad-Hoc Committee to identify fair and equitable funding for stormwater and flood resiliency
- Initial findings  $\pm$ \$1M funding now,  $\pm$ \$3.5M actual need
- 14 months of committee meetings to review current practices and potential alternatives
- Committee unanimously recommends perusing a stormwater utility





## City of Rochester, NH – Great Bay Permit Collaboration and Compliance Approach

- Introduction
- City's Distance from the GBE & Impact on Compliance

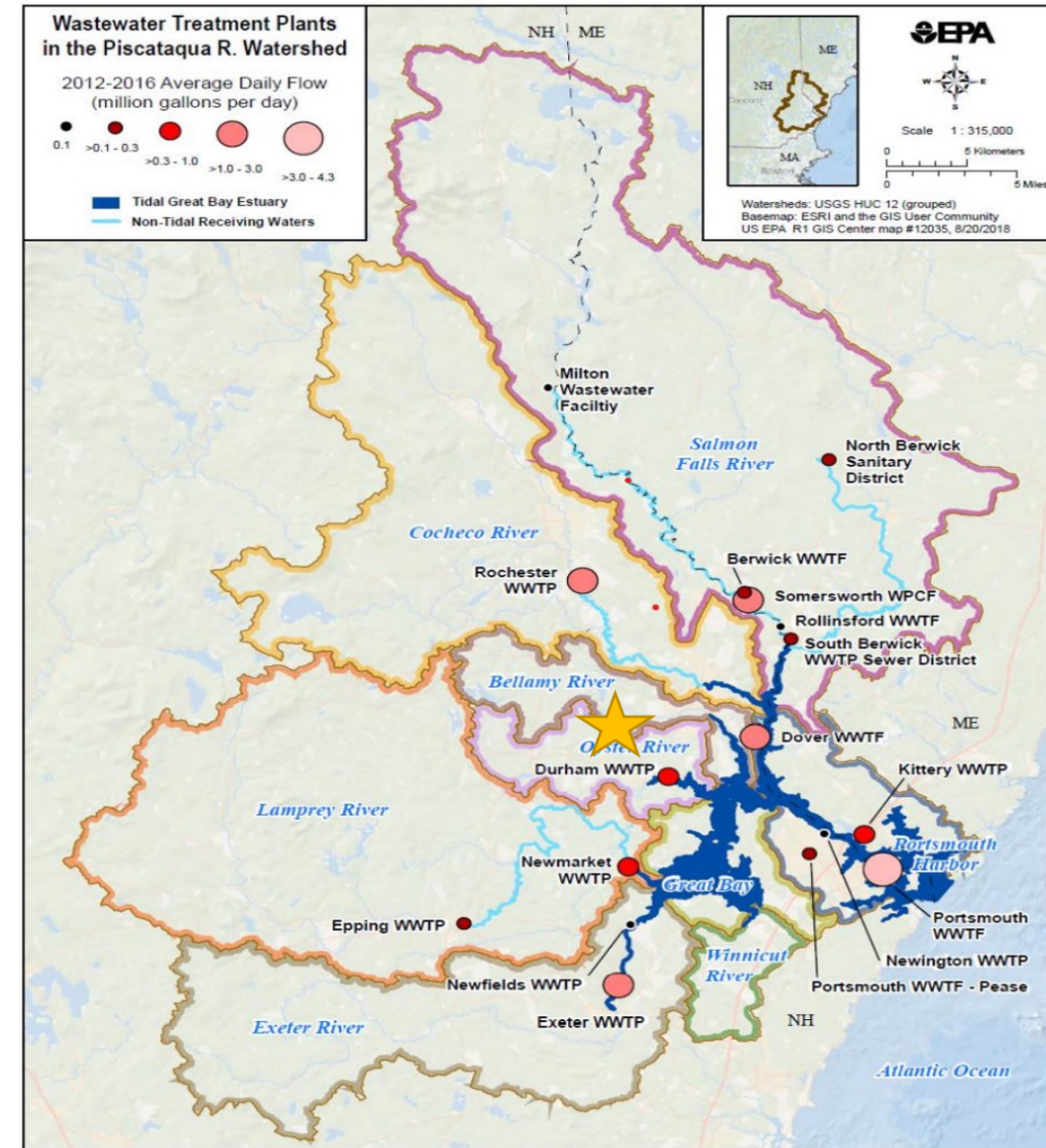
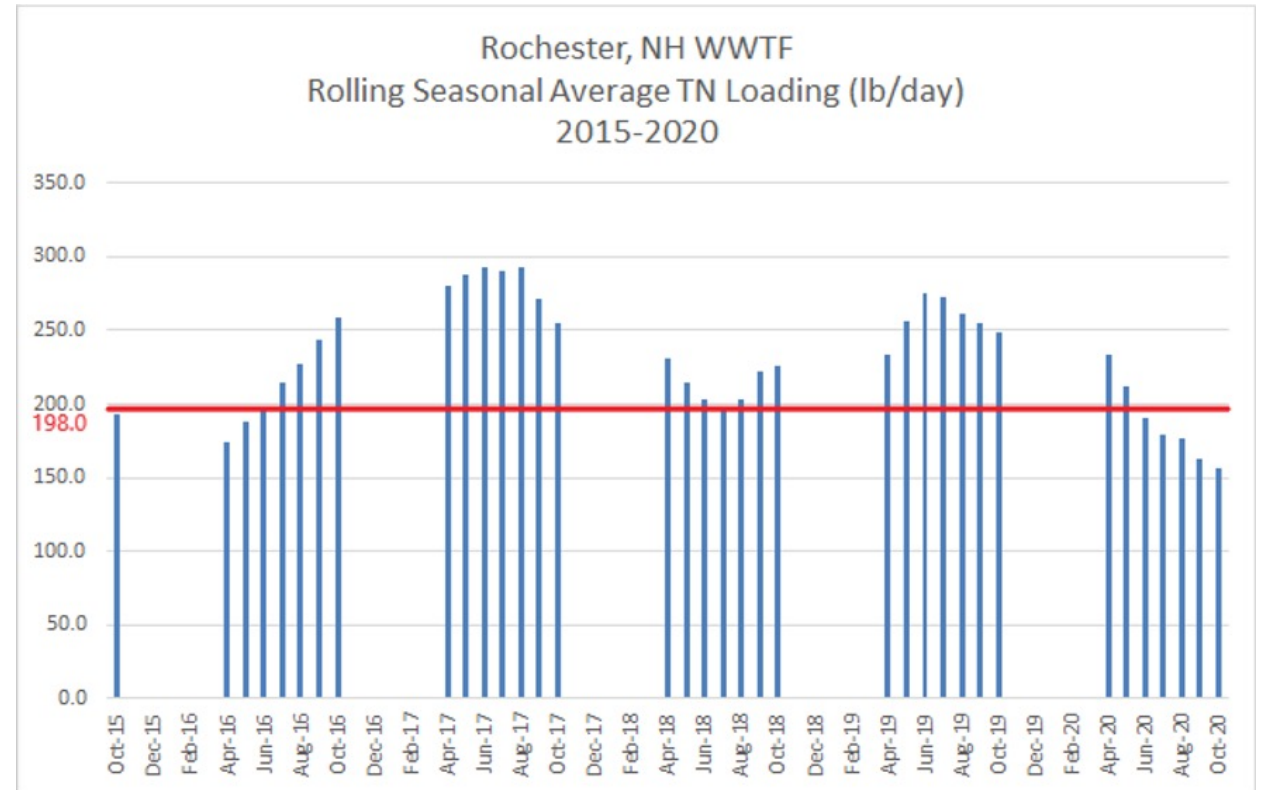


Figure 1 – Wastewater Treatment Plants in the Great Bay Watershed – EPA 2020 Draft Permit

# Challenges Faced by Rochester

- Historical Seasonal Discharges Over 198 lbs/day
- Flow
  - Permit TN Load Based on 59% Capacity to Achieve Seasonal Load Limit
  - Potential Restrictions on Future Growth
- Costs / Impacts of a Traditional WWTF Upgrade
- Innovative Alternatives to a Traditional Upgrade



# Collaboration with EPA & NHDES

- Impact of Permit and Need for Collaboration
- Administrative Order on Consent
- Key Optimization Efforts:
  - Pilot Septage Facility Upgrade & Study
  - Septage Receiving Facility Upgrade
  - Carbon Storage and Feed Building
  - Aeration Automation
  - Sewer System Master Plan
  - Nitrogen Reduction Report



Sept 2012 by Alexius Horatius - commonswiki

# Ongoing Collaboration and Compliance Efforts

- Active Engagement with MAAM
- Adaptive Management Plan
- Structural BMPs
- Non-Structural BMPs





# City of Portsmouth, NH

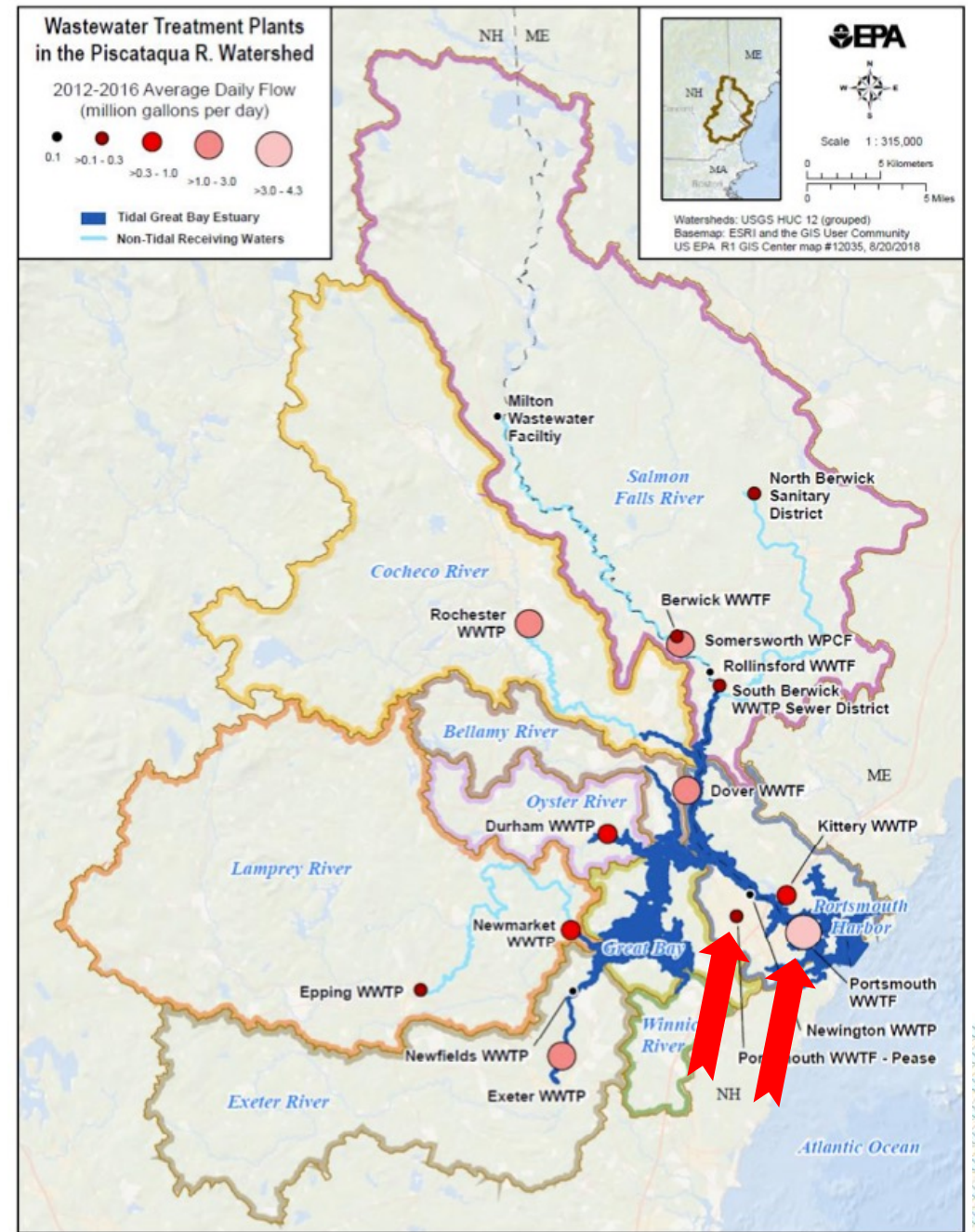
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Panel Discussion

Terry Desmarais, P.E., City Engineer

# About Portsmouth

- Two WWTFs
  - Pease WWTF (1.2 MGD)
  - Peirce Island WWTF (6.1 MGD)
  - TN Limit Combined
- Combined Collection System
- Largest WWTF in Estuary



# Peirce Island WWTF

Baseline  
Enhanced  
Primary  
Treatment

4.5 Years Construction and \$92M

Upgraded  
Biological  
Aerated Filter

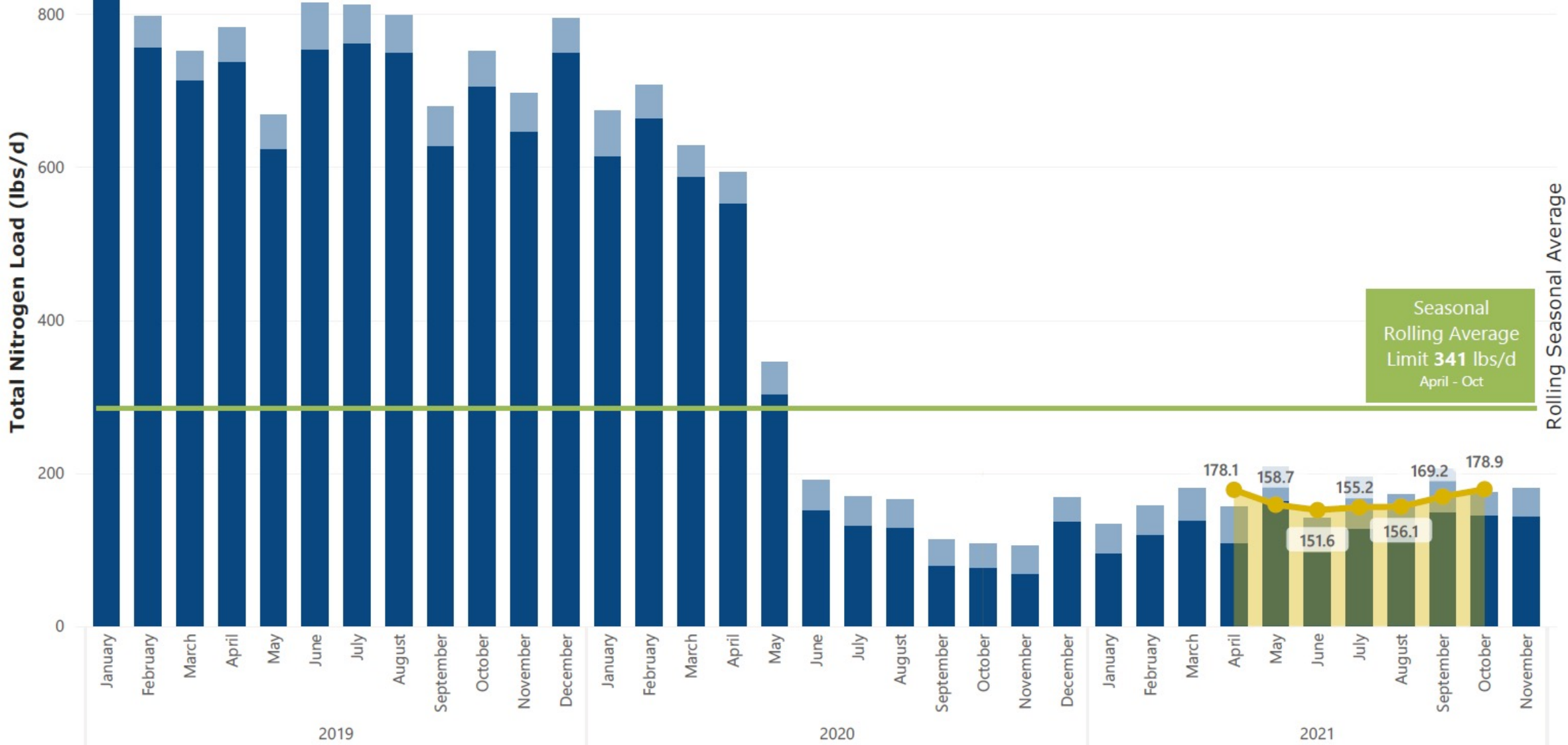




# TOTAL NITROGEN EFFLUENT LOAD (lbs/day)

Total Nitrogen (lbs/day) = avg monthly total nitrogen conc (mg/L) \* avg monthly flow (MGD) \* 8.345

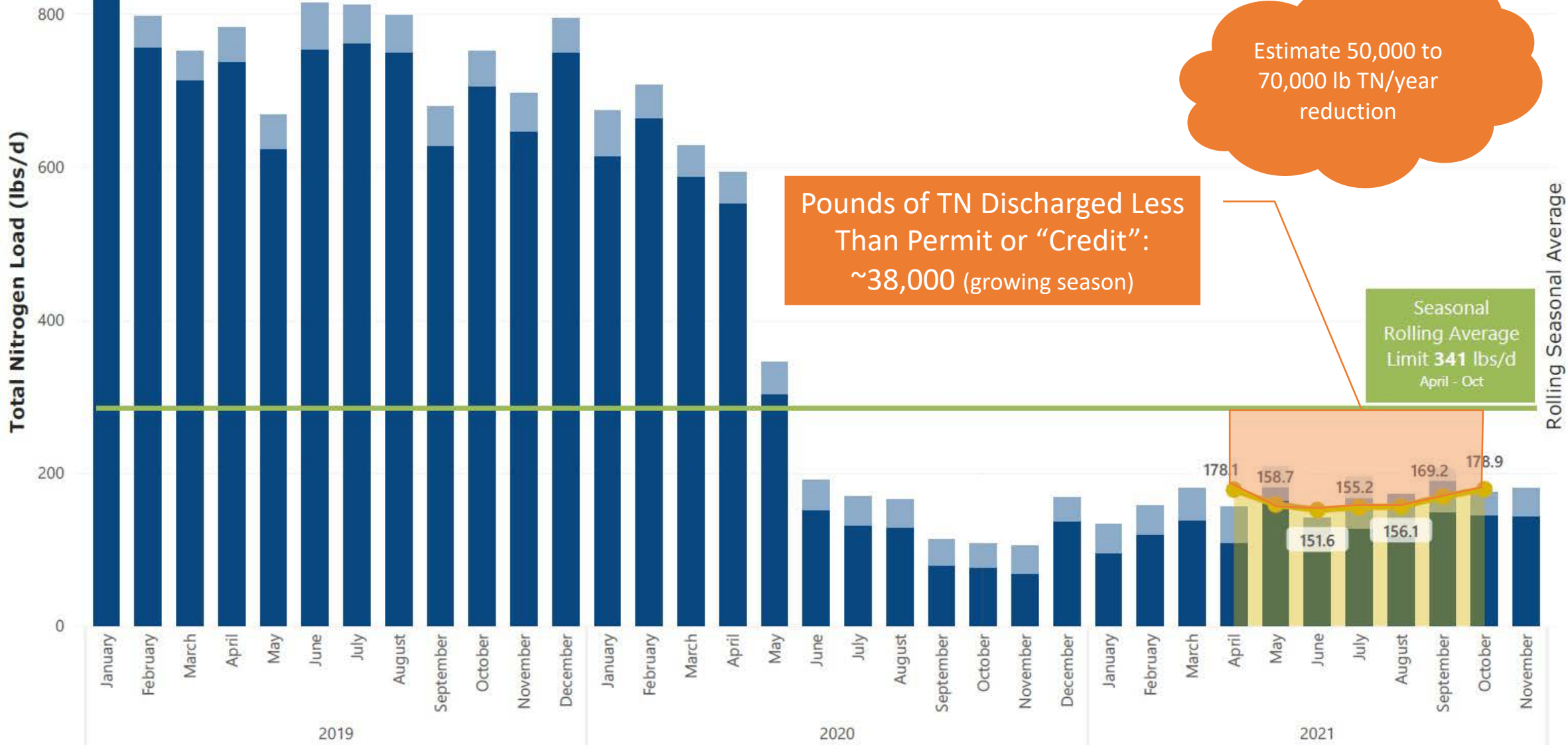
● Peirce Island WWTF ● Pease WWTF ● Rolling Seasonal Average



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# AMP: “Non-point Source” and Stormwater

## Structural Best Management Practices



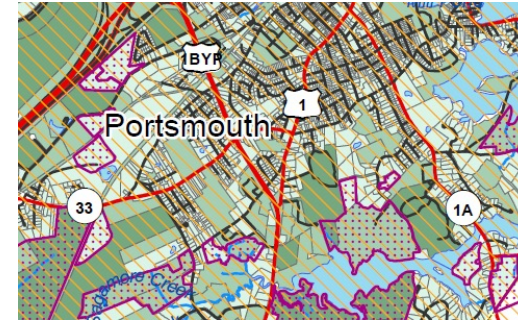
### Infrastructure Upgrades:

- 4.0 miles roadway reconstruction
- ~40 acres connected catchment area



### Bioretention and Gravel Wetlands:

- >75 acres impervious connected area
- 406 lb TN/yr removed



### TN Hot Spot Mapping:

- Identify projects to capture highest concentrations
- Consider land areas outside of municipal control

# AMP: "Non-point Source" and Stormwater

Non-Structural Best Management Practices  
More Than 1,230 lb TN/yr Reduction



Impervious Disconnects



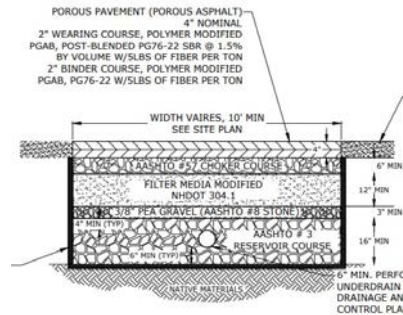
Leaf Litter Management



Street Sweeping



Fertilizer Alternatives



Regulations



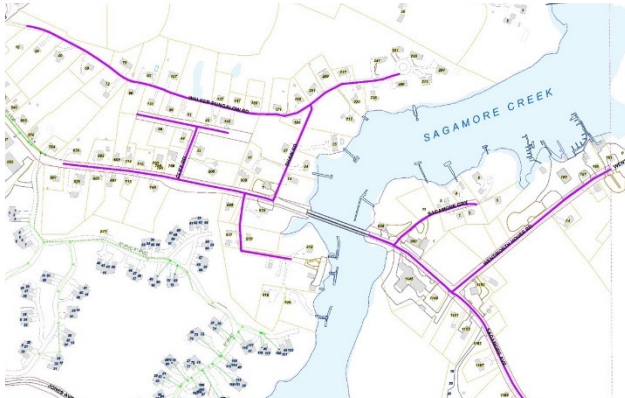
Catch Basin Cleaning



Outreach & Education

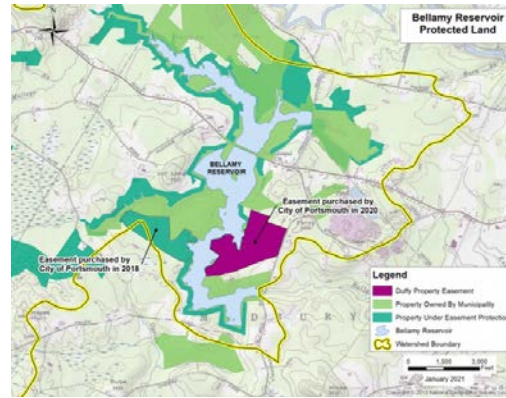
# AMP: “Non-point Source” and Stormwater

Other Efforts  
More Than 3,880 lbs TN/yr



Sagamore Sewer Extension:

- 88 Connections
- 260 lb TN/yr removed



Land Protection Around Bellamy Reservoir (Madbury):

- 180 acres
- 1,010 lbs TN/yr removed

Atmospheric Reductions

Stormwater Utility

Tracking Post-Development BMP Inspection & Maintenance

# Portsmouth Approach To Compliance

- Maximize TN Reductions Where Most Efficient
- Build A Culture Around Stormwater and NPS
- Continue Leadership and Participation
- Share Experience
- “Adapt” Over Time