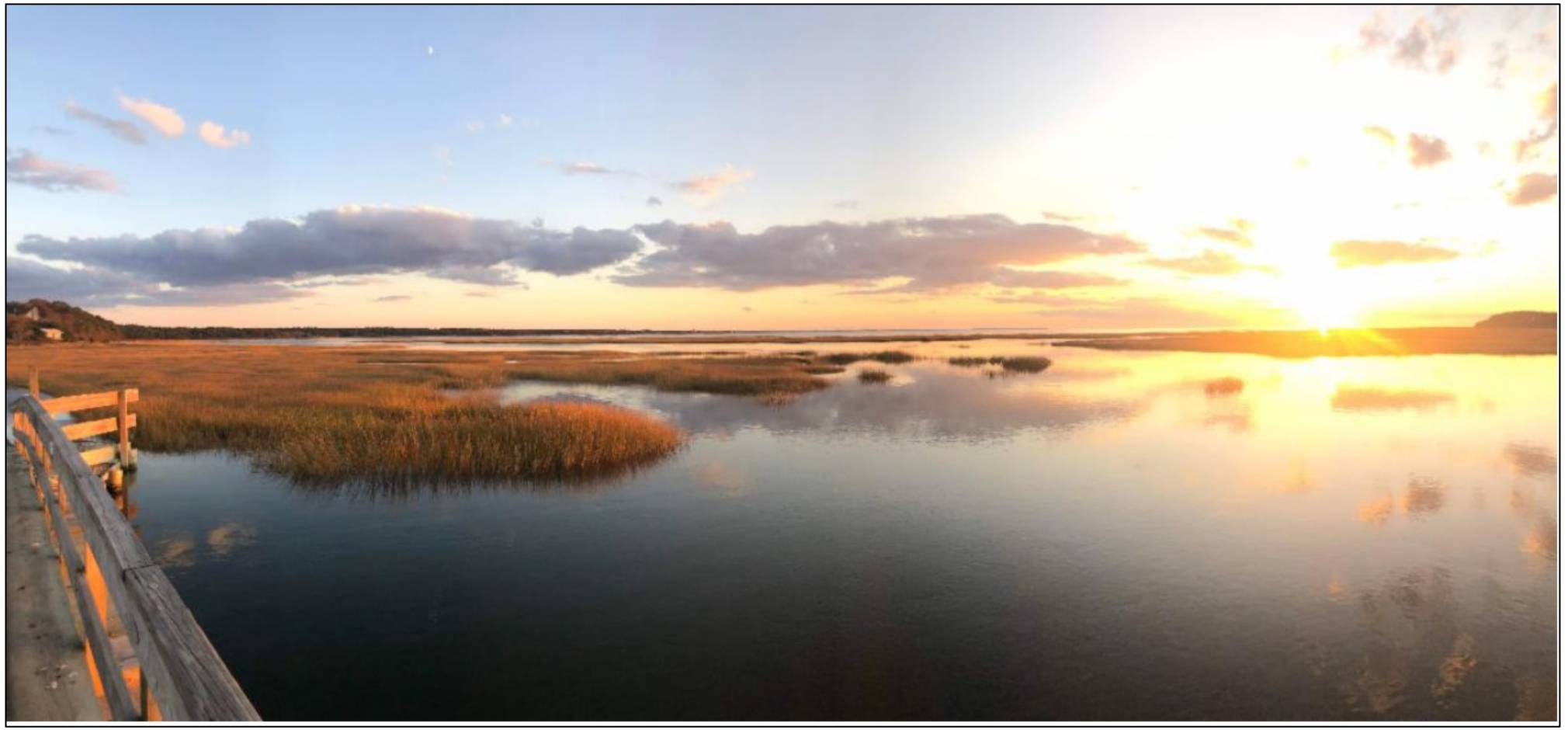


Wellfleet Targeted Watershed Plan

July 6, 2023

Scott Horsley, Water Resources Consultant

Title 5 Changes effective July 7, 2023 (tomorrow)

1. any watershed to an embayment or sub-embayment that on July 7, 2023 is the subject of a nitrogen Total Maximum Daily Load (TMDL) approved by the EPA and an Area Wide Water Quality Management Plan approved by the EPA for Cape Cod in 2015 pursuant to Section 208 of the Federal Clean Water Act, 33 U.S.C. § 1251 *et. Seq*. ("208 Plan"), addressing nitrogen pollution. For any such watershed that is subject to an approved nitrogen TMDL and an approved 208 Plan as of July 7, 2023, the effective date of designation is July 7, 2023. A Nitrogen Sensitive Area designation for watersheds subject to the 208 Plan that receive an EPA-approved TMDL after July 7, 2023 becomes effective on the date EPA approves the TMDL.

(a) Existing Systems. The owner of a system serving, or approved to serve, an existing facility as of the effective date of the Nitrogen Sensitive Area designation shall upgrade the system pursuant to 310 CMR 15.401 through 15.405 to incorporate the Best Available Nitrogen Reducing Technology within five years of the date on which the Notice of Intent and Application Period ends unless:

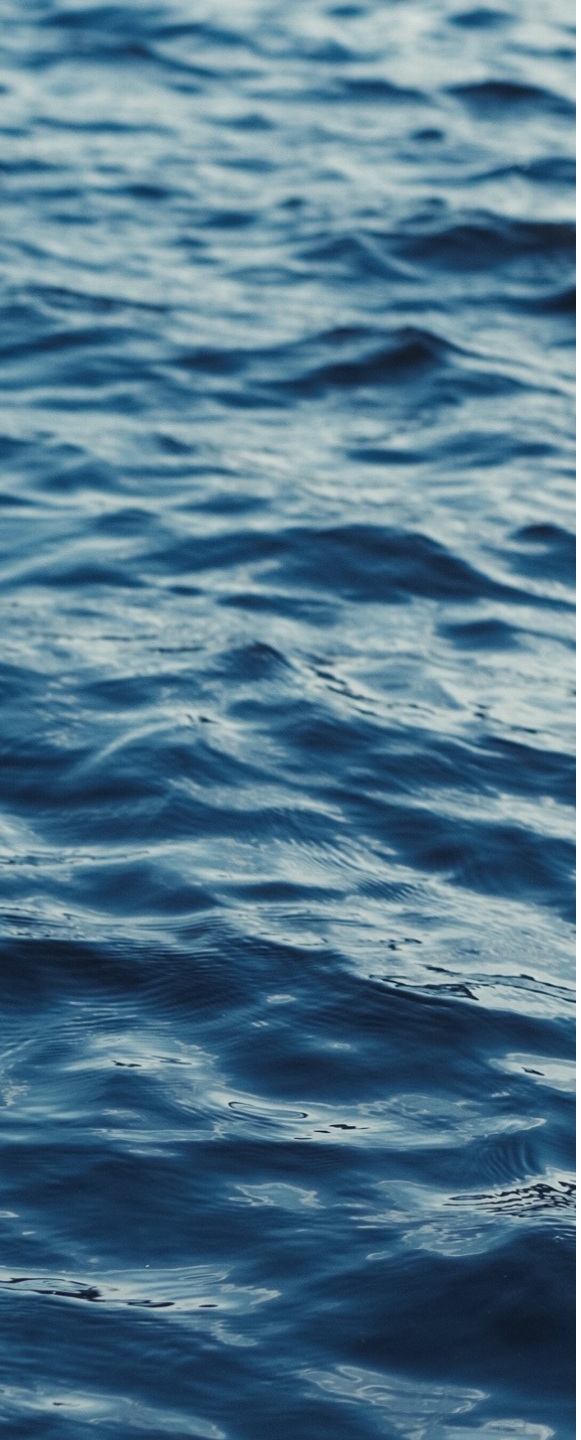
1. Except as otherwise provided in 310 CMR 15.215(2)(c)4. and 314 CMR 21.12(5), a Notice of Intent, a Watershed Permit application, or a De Minimis Nitrogen Load Exemption application is filed for the area during the Notice of Intent and Application Period pursuant to 310 CMR 15.215(2)(c), 314 CMR 21.03, or 314 CMR 21.12, respectively; or

Best Available Nitrogen Reducing Technology –

(1) An alternative system(s) which has a Total Nitrogen effluent performance value of 10 mg/L or less and is certified by the Department for general use pursuant to 310 CMR 15.288 when the Disposal System Construction Permit application is filed and has been approved for the type and design flow of the facility where it is to be used; or

(2) If no such alternative system(s) meeting 10 mg/L or less has received general use approval at the time the Disposal System Construction Permit application is filed, then an alternative system(s) with the lowest Total Nitrogen effluent performance value certified by the Department for general use when the Disposal System Construction Permit application is filed and has been approved for the type and design flow of the facility where it is to be used; or

(3) An alternative system(s) granted provisional approval by the Department pursuant to 310 CMR 15.286 or an alternative system(s) approved by the Department for piloting pursuant to 310 CMR 15.285; provided that for an alternative system(s) granted provisional approval or an alternative system(s) approved for piloting such system(s) is approved for the type and design flow of the facility and has a Total Nitrogen performance value less than or equal to 10 mg/L; or, if no system(s) with a Total Nitrogen performance value less than or equal to 10 mg/L has received general use approval, then a system(s) with a Total Nitrogen effluent performance value less than or equal to the lowest alternative system(s) certified by the Department for general use pursuant to 310 CMR 15.288 when the Disposal System Construction Permit application is filed.

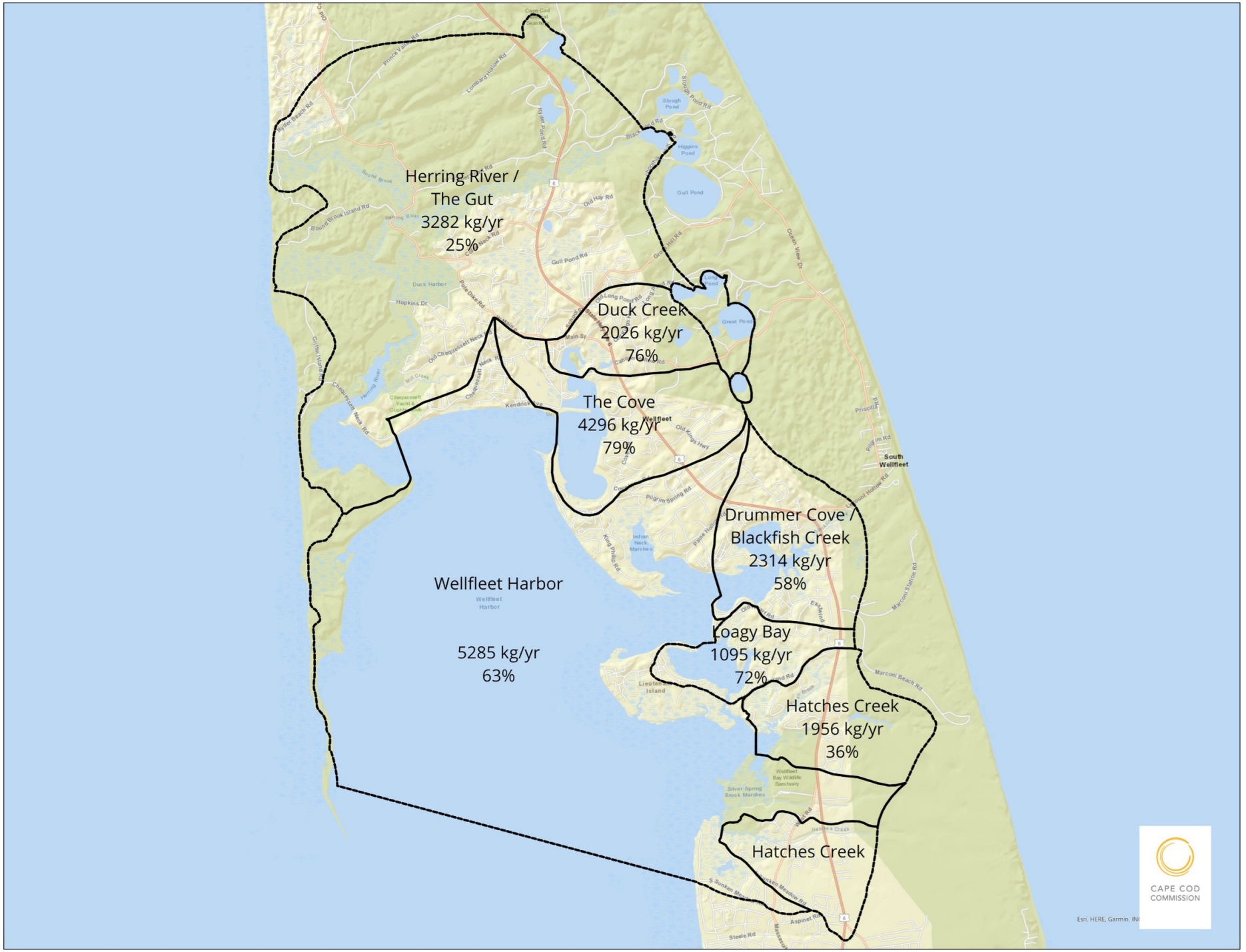


Goals of Targeted Watershed Plan

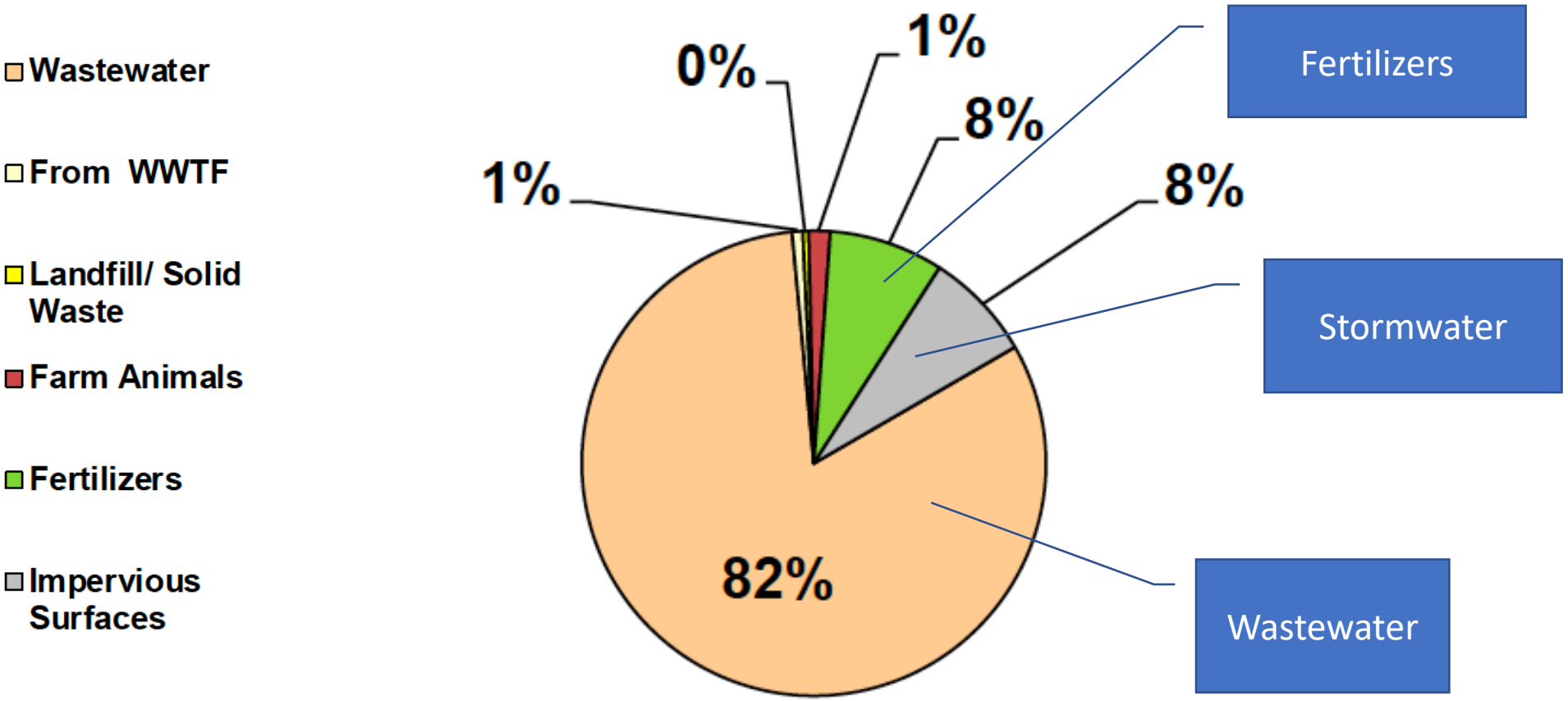
- Restoration of Ecosystems & Water Quality
- Compliance with Clean Water Act
- Quicker Results
- Reduced Costs
- Promote Affordable Housing
- Maximize Local Co-Benefits (including jobs)
- Minimize Climate Impacts

MEP Subwatersheds

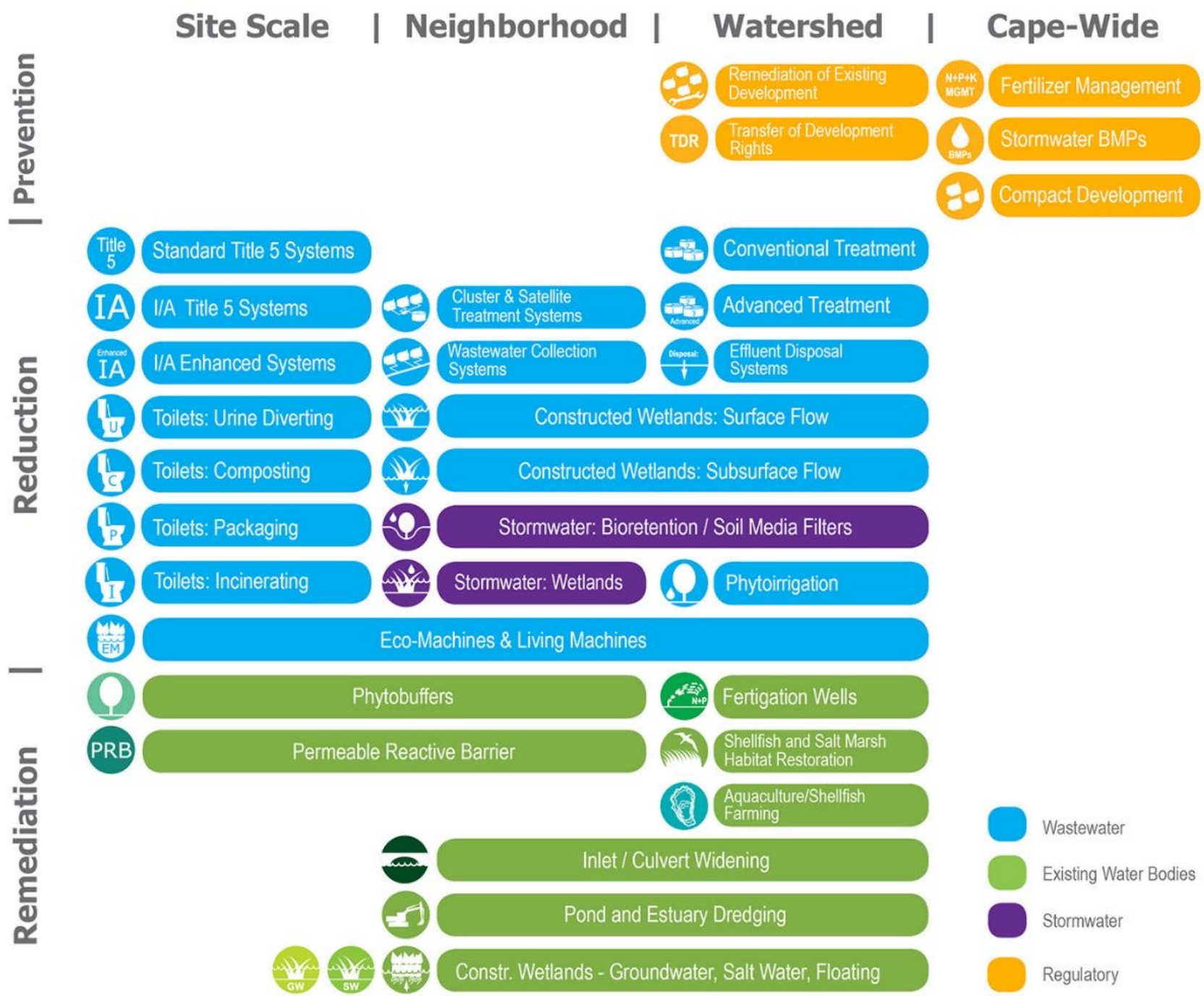
Nitrogen Reduction Requirements

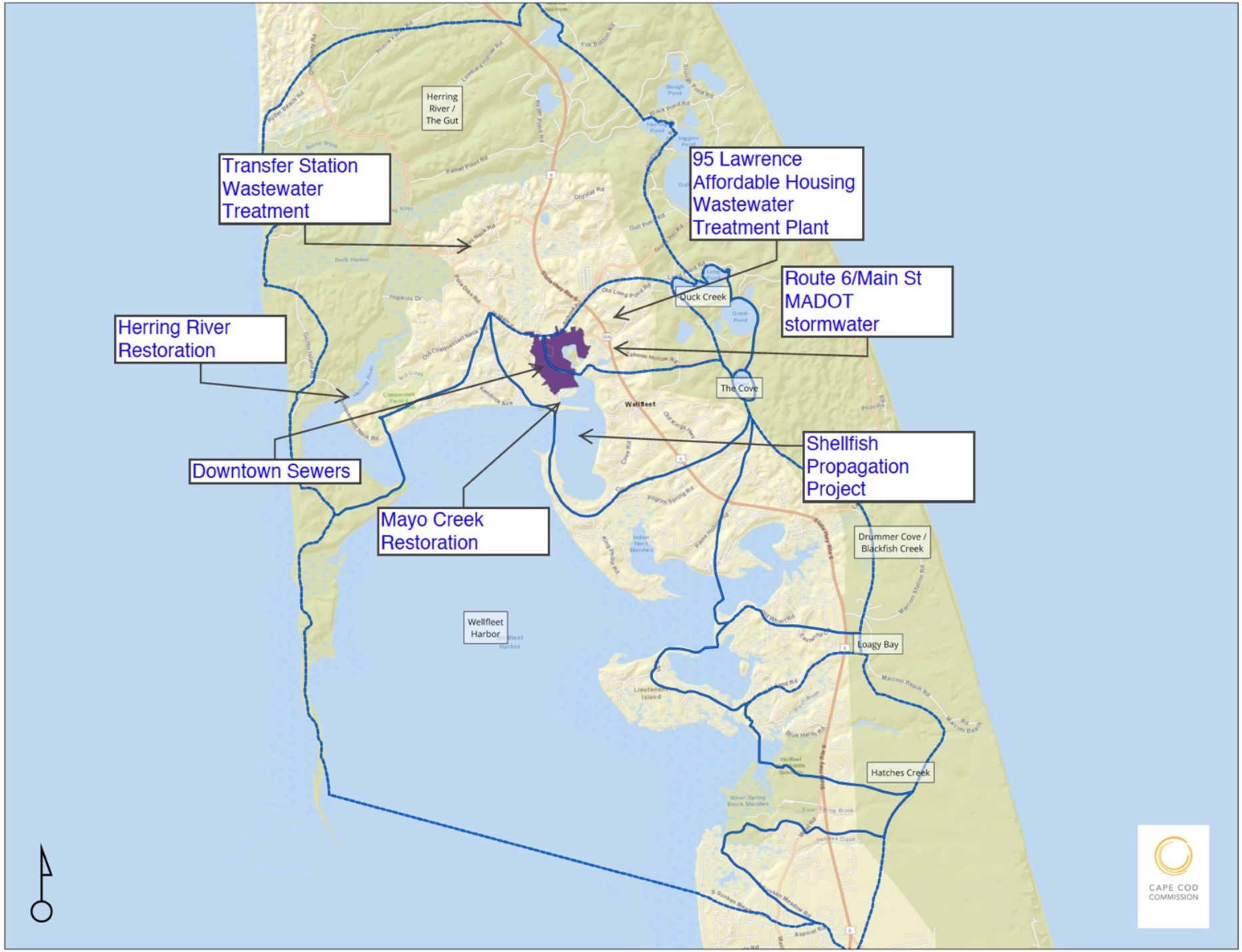


“Controllable” Sources of Nitrogen to Wellfleet Harbor Embayments (MEP, 2017)



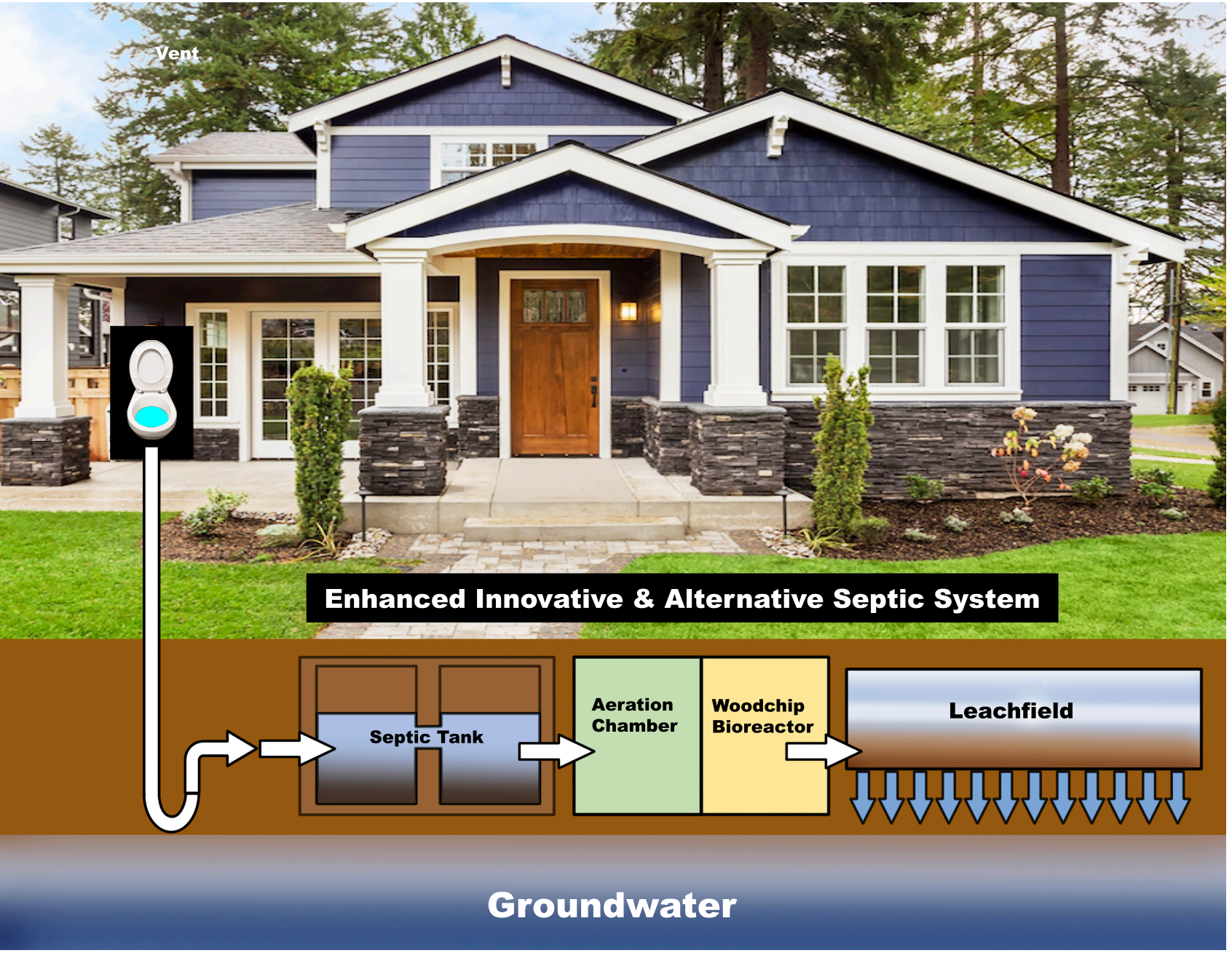

208 PLAN
Cape Cod Area Wide Water Quality Management Plan Update


Site Scale | Neighborhood | Watershed | Cape-Wide
| Prevention
Reduction
| Remediation
Remediation of Existing Development
Fertilizer Management
TDR
Transfer of Development Rights
Stormwater BMPs
Compact Development
Title 5
Standard Title 5 Systems
Conventional Treatment
IA
I/A Title 5 Systems
Cluster & Satellite Treatment Systems
Advanced Treatment
Enhanced IA
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
PRB
Permeable Reactive Barrier
Shellfish and Salt Marsh Habitat Restoration
Aquaculture/Shellfish Farming
Inlet / Culvert Widening
Pond and Estuary Dredging
GW
SW
Constr. Wetlands - Groundwater, Salt Water, Floating
Wastewater
Existing Water Bodies
Stormwater
Regulatory


Herring River / The Gut
Transfer Station Wastewater Treatment
95 Lawrence Affordable Housing Wastewater Treatment Plant
Route 6/Main St MADOT stormwater
Herring River Restoration
Duck Creek
The Cove
Wellfleet
Downtown Sewers
Shellfish Propagation Project
Mayo Creek Restoration
Drummer Cove / Blackfish Creek
Wellfleet Harbor
Loagy Bay
Hatches Creek
CAPE COD COMMISSION

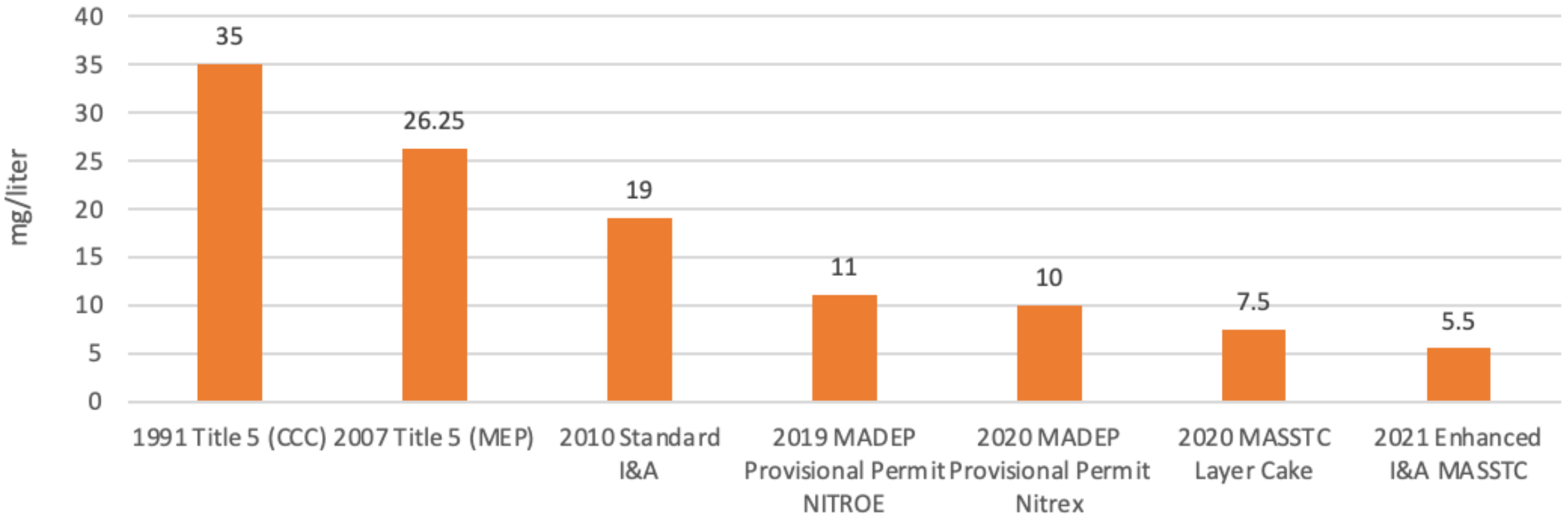

Transfer Station
HerringRiverTheGut
DuckCreek
WellfleetHarbor
TheCove
MAYO BEACH
SHIRTTAIL POINT
WellfleetHarbor
Legend
Proposed Force Main
Transfer Station Parcel
The Cove - Conceptual Sewershed
Duck Creek - Conceptual Sewershed
MEP Subembayments
Notes:
1. Analysis based on nitrogen reduction estimates calculated by Scott Horsley.
2. Estimated per parcel wastewater generated rates based on 2018-2022 water use data for parcels and MEP assumptions for parcels with private water.
GHD
TOWN OF WELLFLEET, MASSACHUSETTS
PRELIMINARY SEWER ANALYSIS
MEP THRESHOLD HYBRID COMPLIANCE APPROACH - CONCEPTUAL SEWERSHED LAYOUT
Project No. 11216492
Revision No. -
Date 05/27/2022
FIGURE 1


House Vent
Conventional Title 5 Septic System
Septic Tank
Leachfield / Drainfield
Effluent Absorption
Groundwater

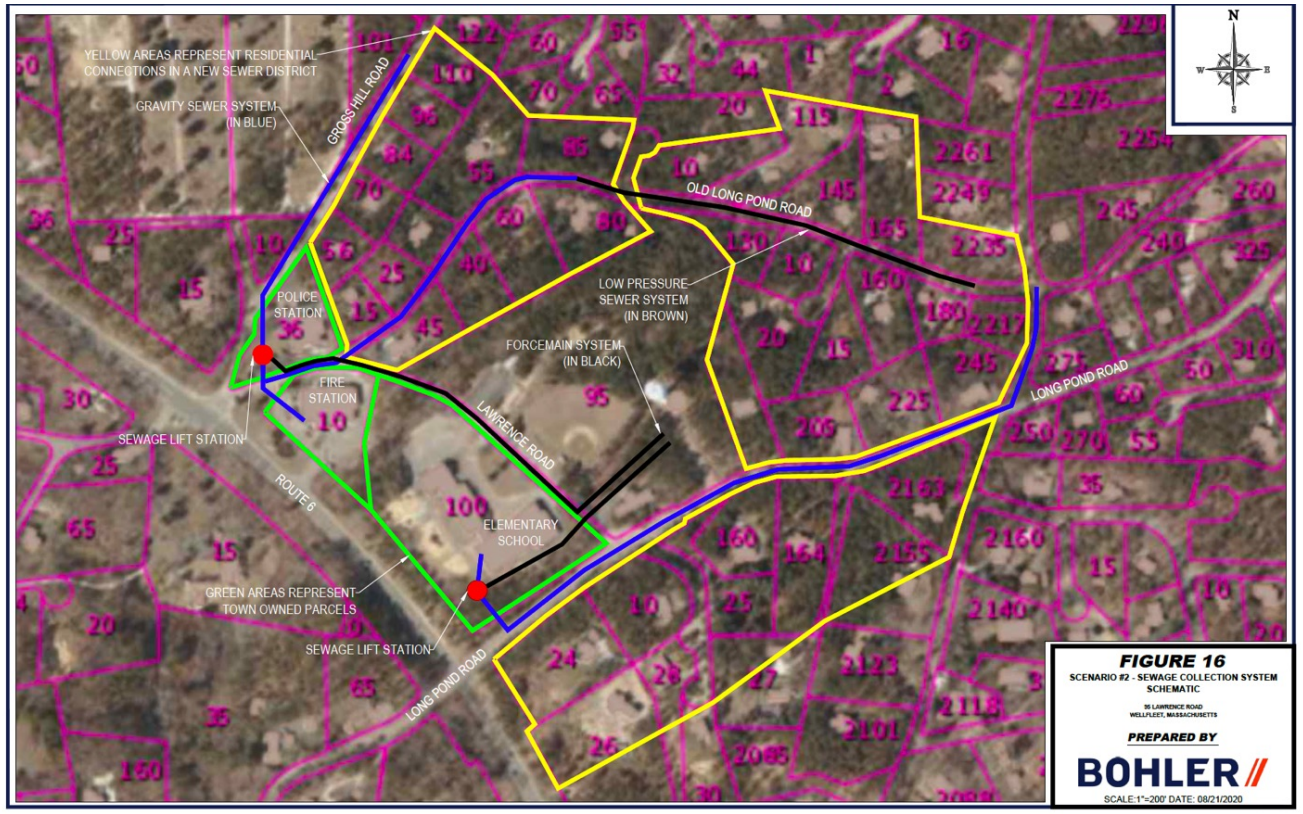


Enhanced Innovative and Alternative (I&A) Septic Systems

On-Site Septic System Performance Progress

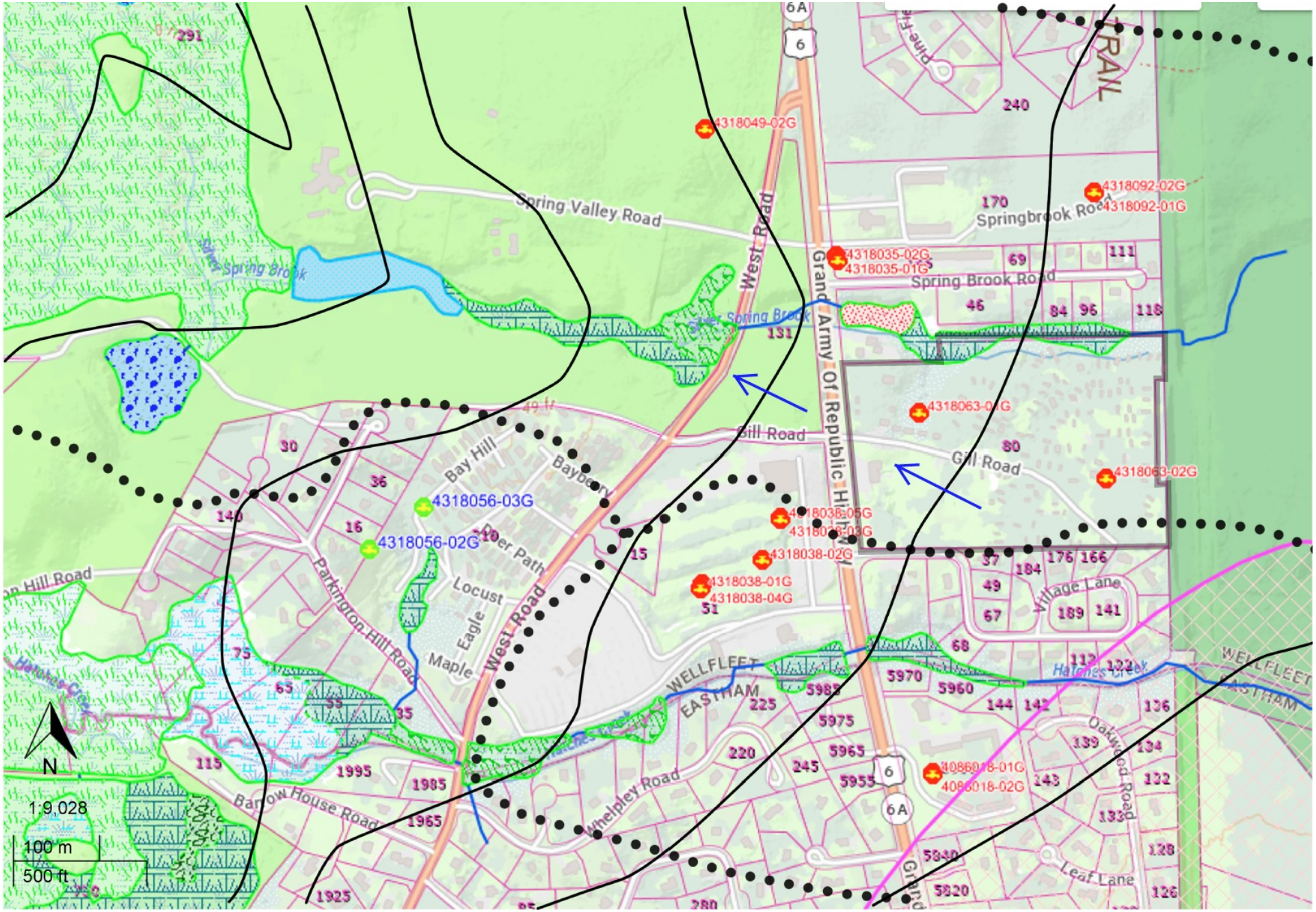


95 Lawrence Road Affordable Housing Project



Option A – Neighborhood System

Option B – Municipal Buildings


Spring Valley Road
West Road
Grand Army Of Republic Highway
Spring Brook Road
Springbrook Road
Gill Road
Bay Hill
Bayberry
Locust
Eagle
Maple
Parkington Hill Road
Barlow House Road
Whelpley Road
WELLFLEET
EASTHAM
Village Lane
Leaf Lane
Oakwood Road
4318049-02G
4318092-02G
4318092-01G
4318035-02G
4318035-01G
4318063-01G
4318063-02G
4318056-03G
4318056-02G
4318038-05G
4318038-03G
4318038-02G
4318038-01G
4318038-04G
4086018-01G
4086018-02G
6A
6
N
1:9,028
100 m
500 ft

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- 95 Lawrence Rd. Information
- Atlas Poster
- Enhanced Innovative & Advanced
- Lawrence Road Housing Project
- PRB
- Presentations
- Reports & Documents
- Salt Marsh Restoration
- Shellfish
- Storm Water
- Wellfleet Watershed Plan

COVID-19 Information Page - Updated Regularly Read more »

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Clean Water Advisory Committee

Executive Summary

The goal of this plan is to mitigate water quality impairments, restore marine habitats, and to bring the coastal waters associated with Wellfleet Harbor into compliance with the Clean Water Act. The plan is the product of over ten years of planning and engineering studies and integrates the approaches developed by the Cape Cod 208 Water Quality Plan Update. It is based upon a hybrid approach that integrates both traditional and non-traditional technologies to reduce excessive nitrogen loads. The plan prioritizes those technologies that have lower costs, quicker results, provide local co-benefits (including jobs), and minimize climate impacts. It includes an adaptive management plan that provides for a full evaluation of emerging nature-based technologies backed up with conventional wastewater treatment systems.

Thank you for your attention!

Questions?

Comparative Costs of Wastewater Solutions

	Capital Cost	Kg Reduction	$/kg
Title 5 standard system @ 26.25 mg/liter	$ 25,000	0	
Enhanced I&A septic @ 8 mg/liter	$ 35,000	3.29	$ 533
Cluster System @ 5 mg/liter	$ 4,700,000	442 - 617	$ 381 - 531
Downtown Sewer @ 5 mg/liter	$ 109,800	3.83	$ 1,435

Estimated Costs ($ M)

	Scenario A Hybrid	Scenario B Traditional
Collection System	$9.4	$80.4
Wastewater Treatment	$10.9	$32.7
Sewer Laterals	$3.2	$27.5
Design	$2.0	$11.3
Construction Services	$5.0	$30.7
Total Municipal Centralized Infrastructure	$30.5	$182.6
Collection System	$0.8	$0.8
Wastewater Treatment	$0.9	$0.9
Leaching System	$0.2	$0.2
Design & Contingencies	$0.6	$0.6
Total 95 Lawrence Capital Costs	$2.5	$2.5
I&A Septics	$63.0	$44.9
Design	$10.6	$7.5
Total I&A Septics ★	$73.6	$52.4
TOTAL COSTS (millions)	$106.6	$237.5