



Town of

Orleans
Massachusetts

Massachusetts Environmental Policy Act

NPC Pre-filing Meeting

August 1, 2017

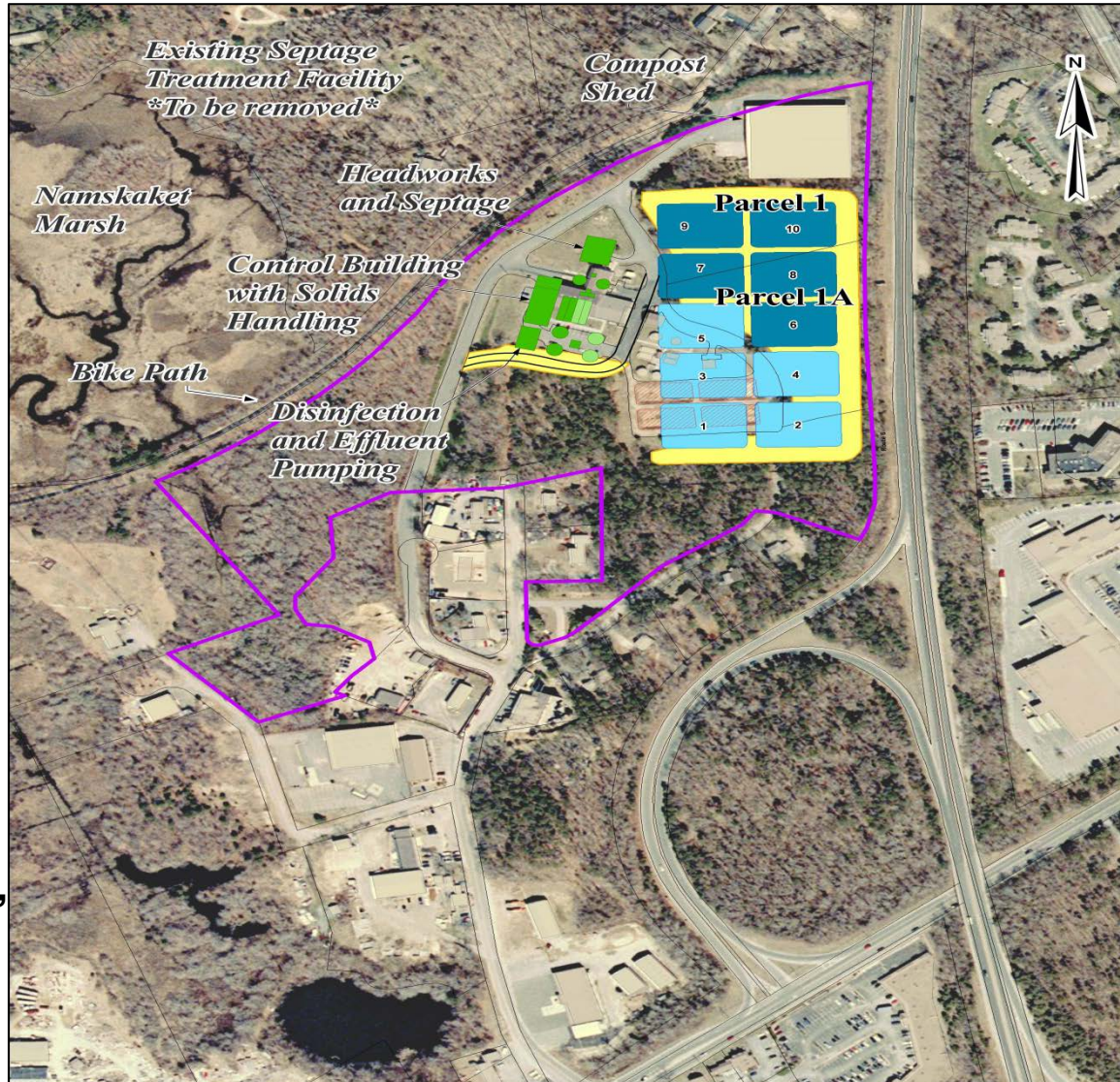
Tri-Town Septage Treatment Facility

- ❖ Operated From 1987 thru 2016
- ❖ Permitted to Discharge 45,000 gpd to Namskaket and Little Namskaket Watersheds
- ❖ Discharge Nitrogen Concentration = 50 mg/L
- ❖ Existing Effluent Discharge Permit Based on 1985 MEPA Finding of “No Significant Impact”



Comprehensive Wastewater Management Plan

- ❖ Approved by MassDEP, MEPA, and Cape Cod Commission - 2010
- ❖ 740,000 gpd from New WWTF to Namskaket and Little Namskaket Watersheds
- ❖ Discharge Nitrogen Concentration = 10 mg/L
- ❖ Based on USGS and SMAST studies concluding there would be “no significant impact” to either marsh system



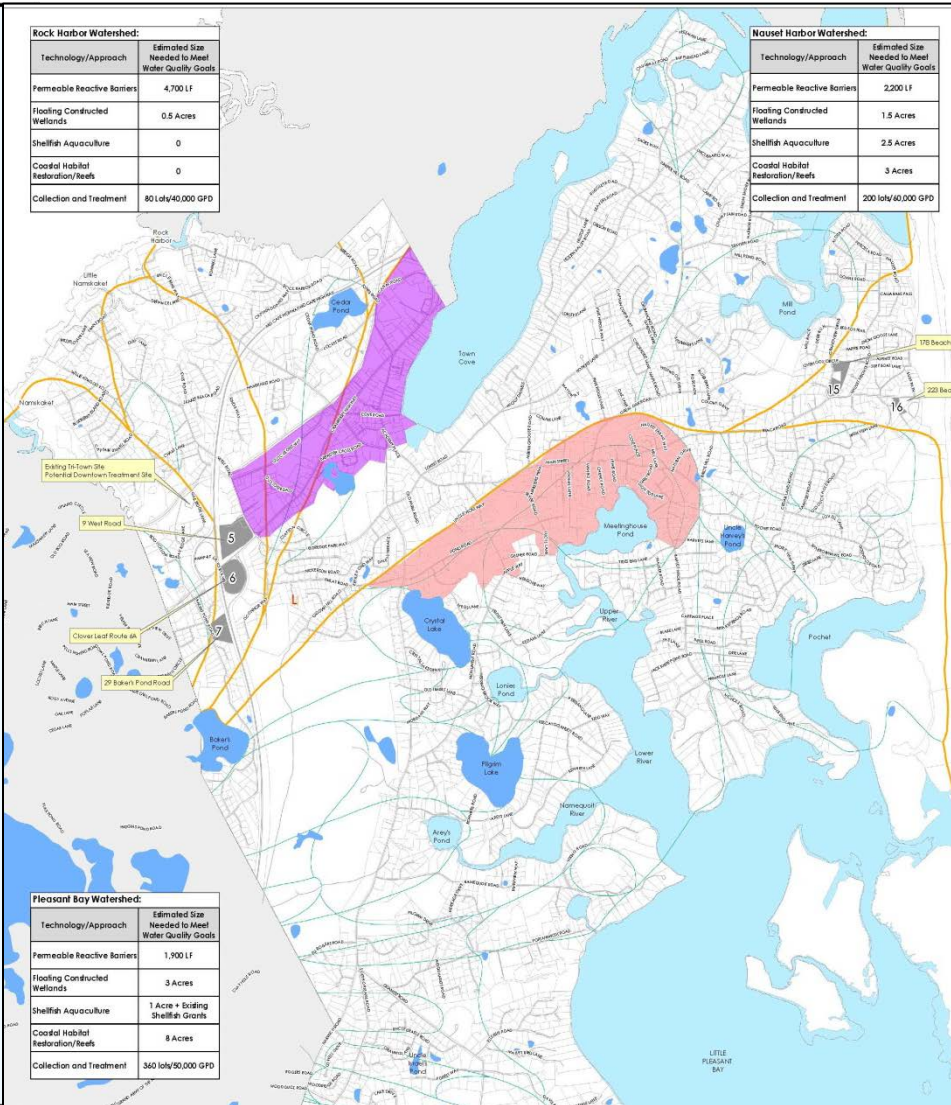
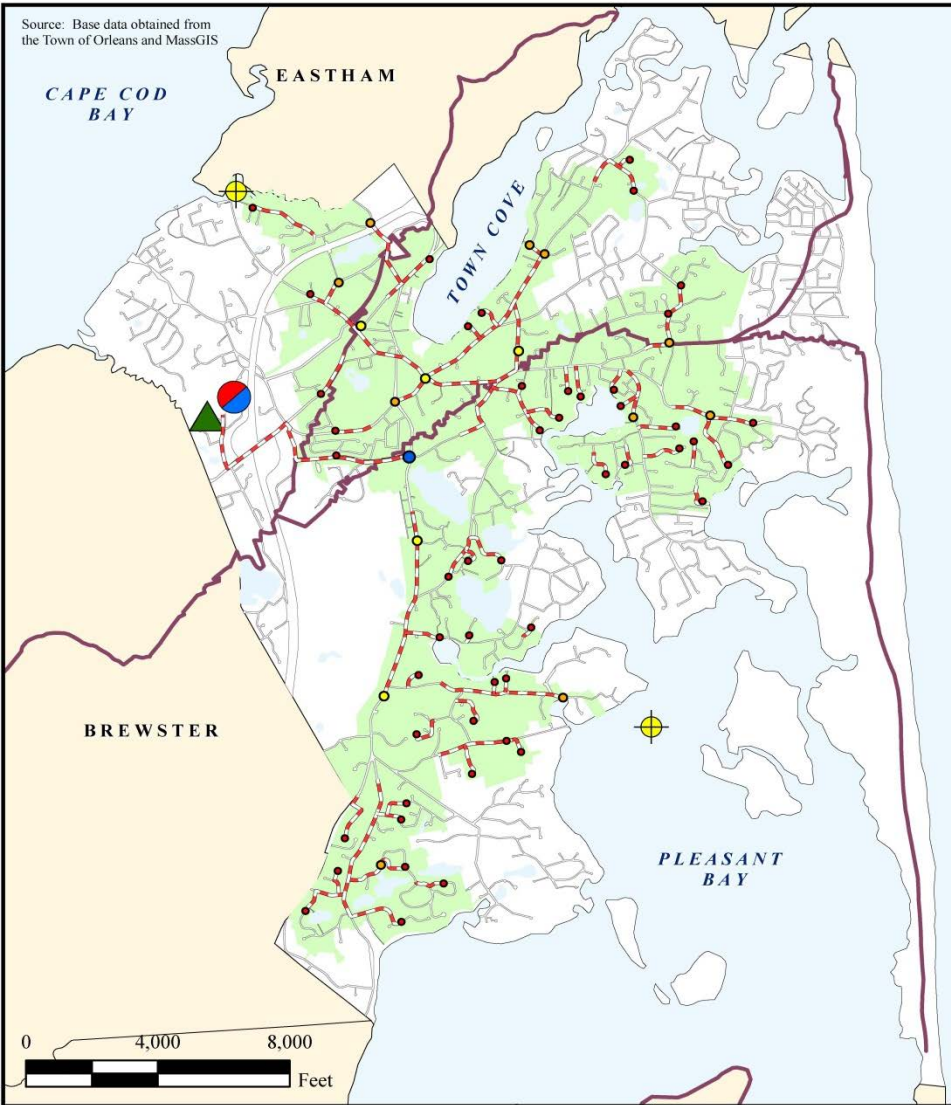
Consensus Plan

- ❖ **Conceptual and Preliminary Design to Update the 2010 Comprehensive Wastewater Management Plan to Reflect the 2015 Consensus Plan (Water Quality Management Plan)**
- ❖ **Minimize the Sewered Footprint (area of Town and number of properties to be sewerred) by Maximizing the Use of Several the Non-Traditional Technologies**
 - Coastal Habitat Restoration
 - Aquaculture
 - Floating Constructed Wetlands
 - Permeable Reactive Barriers
 - Nitrogen Removing Barriers
- ❖ **Identify and Evacuate Alternative Water Recharge Sites**



Consensus Plan (cont.)

Source: Base data obtained from the Town of Orleans and MassGIS



Water Recharge Site Investigations

Background

❖ **Begin Work to Find Alternative Water Recharge Sites**

- Fourth Detailed Site Identification Study in Last 12 years
- Two Areas to be Sewered: Downtown Area and Meetinghouse Pond Area
- Discharge of Current Wastewater Flow From Downtown Area
 - 150,000 gpd
 - Discharge Nitrogen Concentration < 10 mg/L

❖ **Selection Criteria**

- Non-nitrogen Sensitive Watershed
- Ownership
- Massachusetts Historic Commission (Archaeology)
- Wetlands
- Rare and/or Endangered Habitat
- Distance from WWTF
- Uses (Historic and Existing)
- Depth to Groundwater
- Potable Water Wells in Area



Water Recharge Site Investigations (cont.)

Feasible Sites

❖ Short-listed Sites

- Insufficient Capacity for Downtown Area
- Nitrogen Sensitive Watersheds
- Not Town Owned
- Property Owner Refusal to Consider Use
- Distant from WWTF
- Legal and Management Issues with Lease and/or Purchase

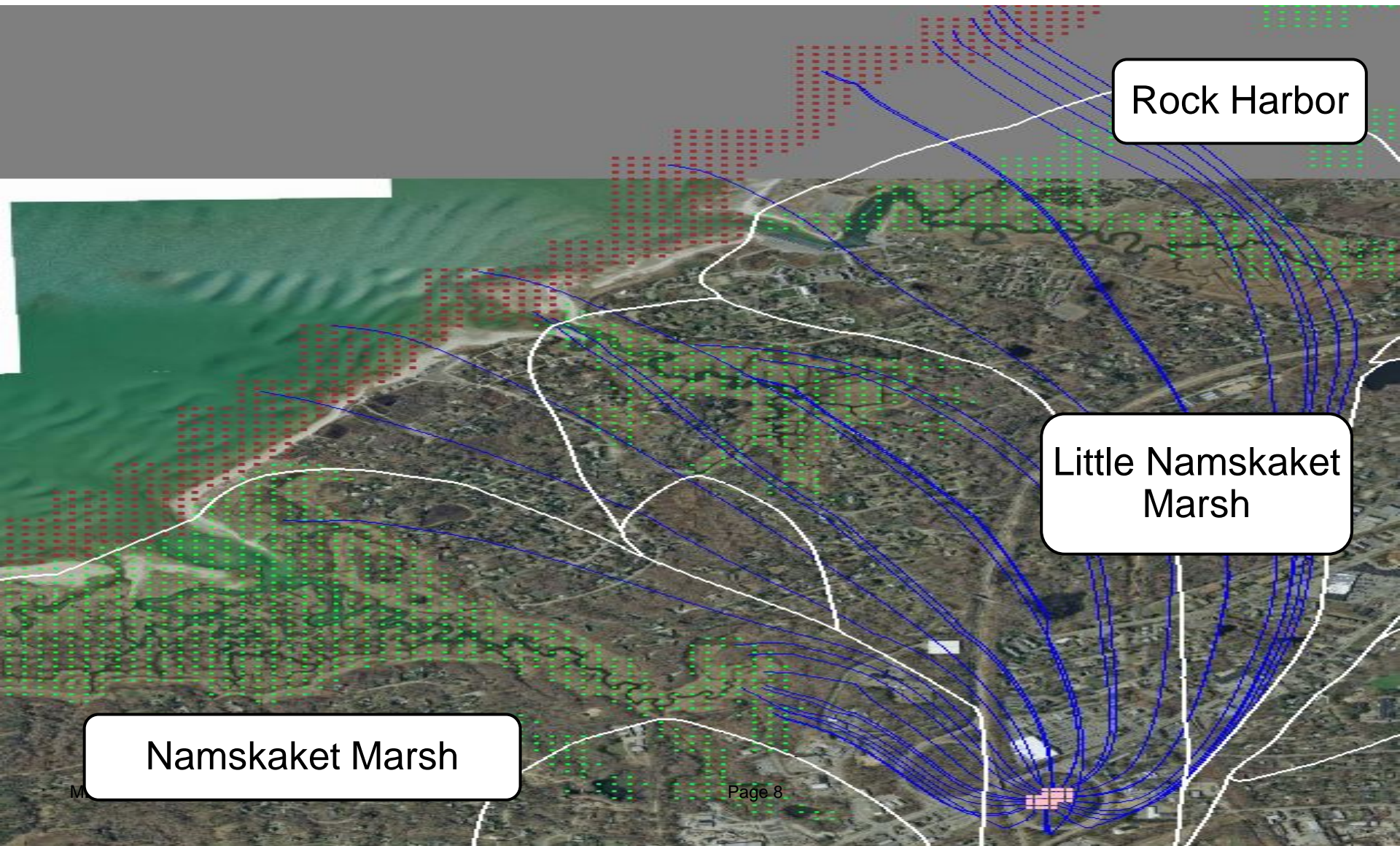
❖ Route 6 Exit 12 (Cloverleaf)

- Non-nitrogen Sensitive Waterbody (Little Namskaket)
- Capacity Sufficient for Downtown Area and Meetinghouse Pond Area
- No Existing Uses on Site
- Needs Additional Hydrogeological and Environmental Investigations
- Very Minimal Difference in Freshwater Discharge Compared Approved CWMP
- Higher Construction and Operating Cost Due to Distance from New WWTF
- IMA with MassDOT Required for Site Usage and Town Bonding
- Meeting with MassDOT – August 9, 2017



Effluent Disposal Site Investigations

Route 6 Exit 12 at 400,000 gpd



Rock Harbor

Little Namskaket Marsh

Namskaket Marsh

Effluent Disposal Site Investigations

Estimated Nitrogen Loading to Watersheds (kg/yr)

Route 6 Exit 12 at 400,000 gpd

Location	Present Nitrate Load ¹	Present Nitrate Threshold Load ¹	Allowable Additional Watershed Load ²	Estimated WWTF Nitrate Load	Excess Watershed Load with WWTF Load ³	Increase to Baseline Flow (percent)
Namskaket Marsh	3,446	16,750	13,304	1,610	11,694	2.79
Little Namskaket Marsh	2,797	4,650	1,853	945	908	3.24
Rock Harbor	ND	ND ⁴	ND	43	ND	1.94
Cape Cod Bay	ND	ND	ND	2,400	ND	1.13

1. Present and Threshold Loads from Draft and Final MEP Reports for Namskaket Marsh, Little Namskaket Marsh, and Rock Harbor.

Tri-town Septage Treatment Facility Loads Removed.

2. Watershed Load = Threshold Load - Present Load

3. Estimated Watershed Load with WWTF = Threshold Load -(Present Load + Estimated WWTF Load)

4. Threshold Load From Draft MEP Report for Rock Harbor - 1,951 kg/yr (Subject to Change)

gpd = gallons per day

kg/yr = kilograms per year

ND = No Data



Effluent Disposal Site Investigations Estimated Discharge to Watersheds

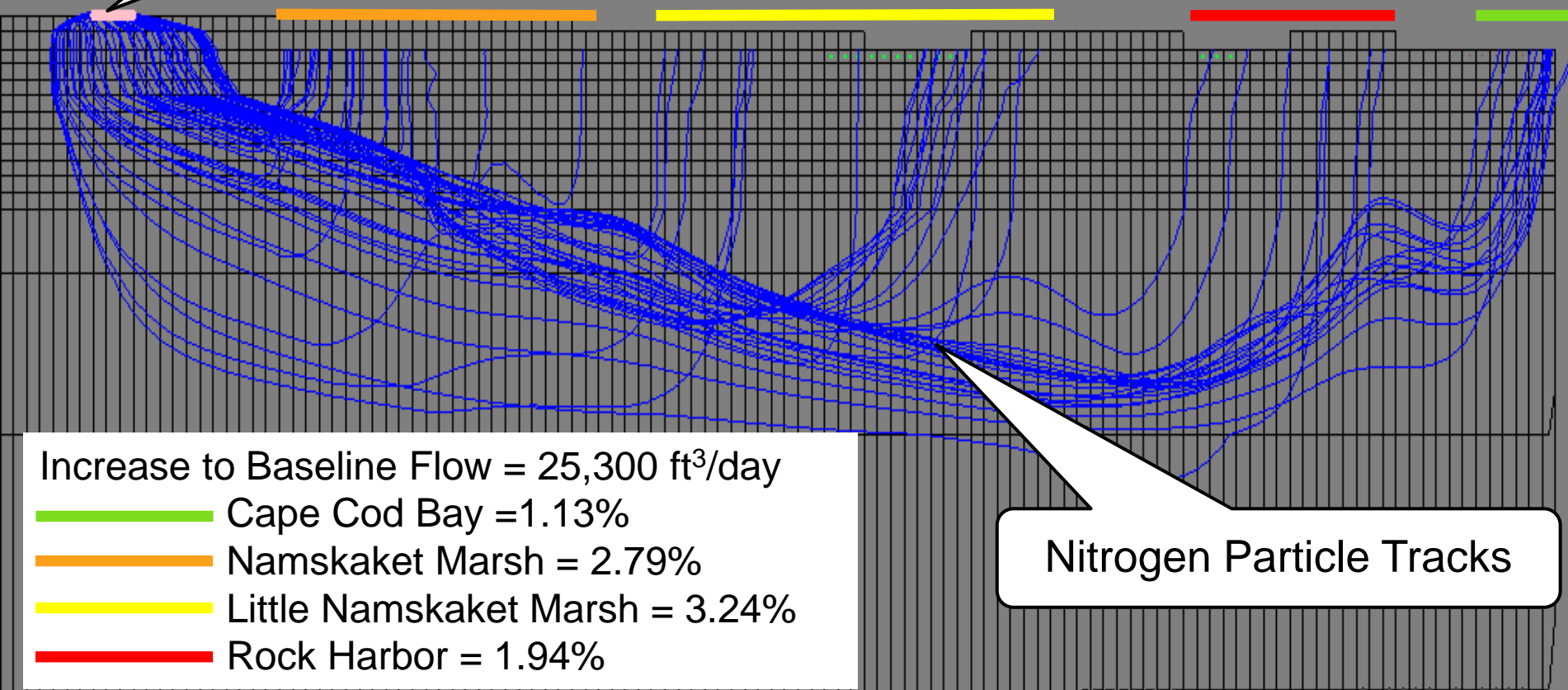
Route 6 Exit 12 at 400,000 gpd

Baseline Flow = 1,164,200 ft³/day

Increase to Baseline Flow = 25,300 ft³/day

- Cape Cod Bay = 1.13%
- Namskaket Marsh = 2.79%
- Little Namskaket Marsh = 3.24%
- Rock Harbor = 1.94%

Nitrogen Particle Tracks



Amended Comprehensive Wastewater Management Plan

- ❖ **Prepare Amended CWMP**
- ❖ **Submit Two Notice of Project Changes**
 - Water Recharge
 - Non-Traditional Technologies
- ❖ **Why Now?**





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Thank You

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