

Innovative and Alternative Onsite Wastewater Treatment Systems

Julia Priolo

Principal Environmental Analyst

Suffolk County Department of Health Services

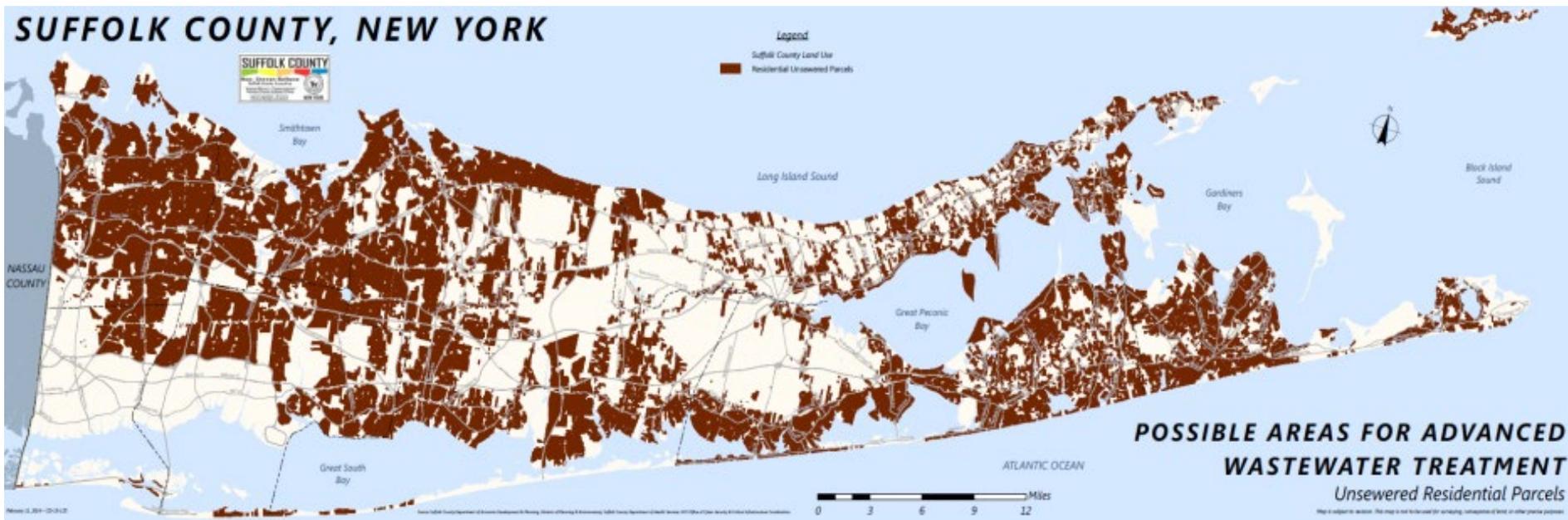
Division of Environmental Quality, Office of Ecology



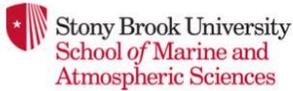
- ❑ Groundwater and Surface Water Impairments
- ❑ Subwatersheds Wastewater Plan
- ❑ Sanitary Code Regulations
- ❑ Onsite Wastewater Treatment Systems in Suffolk County
- ❑ Septic Improvement Program

Suffolk County, NY

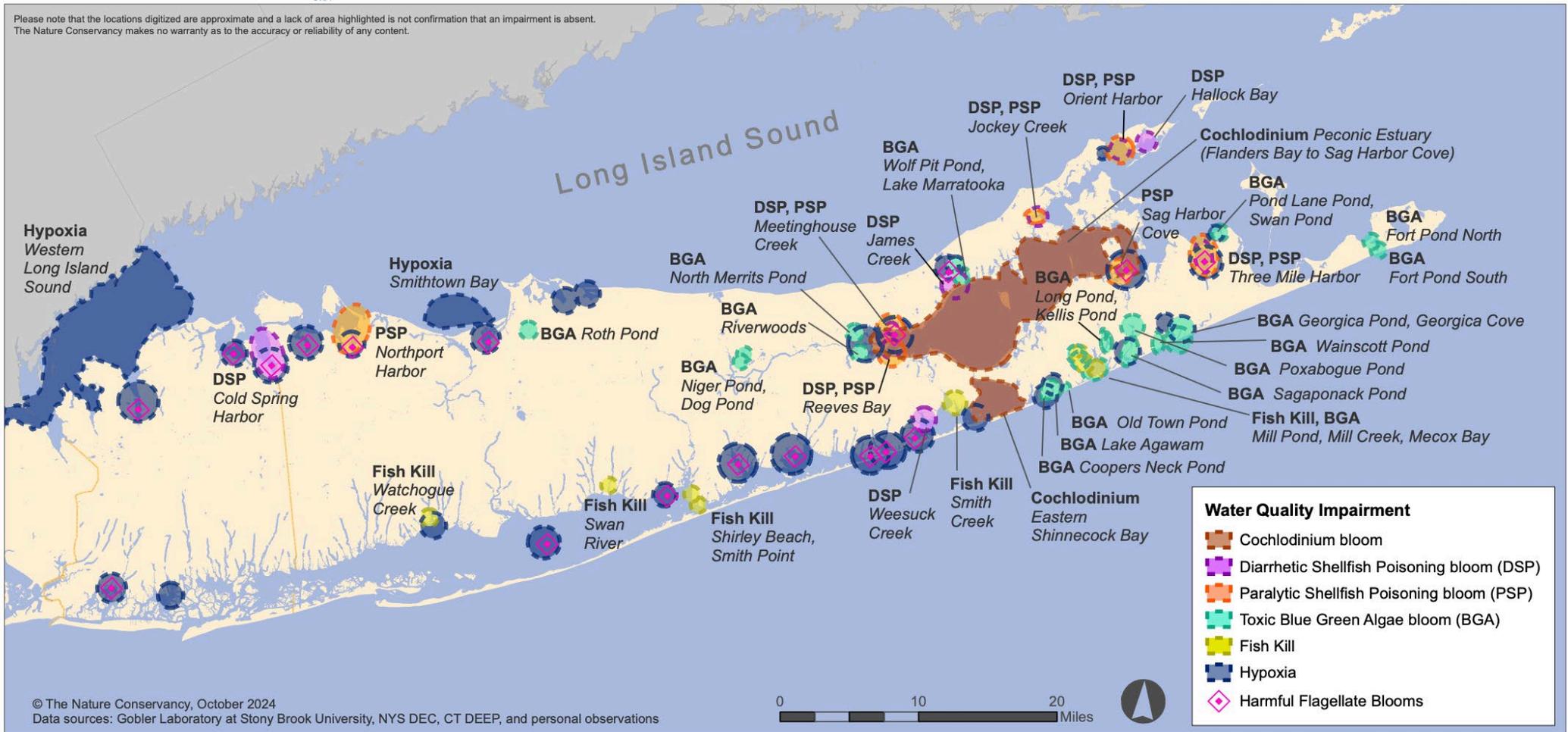
- Vulnerable Sole Source Aquifer – Public & Private Drinking Water Wells
- ~1.5 Million People – 74% of Parcels are Unsewered
- Approximately 380,000 Onsite Sewage Disposal Systems without Treatment
 - Approximately 250,000 pre-date 1973 Requirement for Septic Tank
- Surface Waters - Three Major Estuary Systems Deemed Impaired
 - HABs, Low DO, Shellfish Declines, Fish Kills, Beach Closures



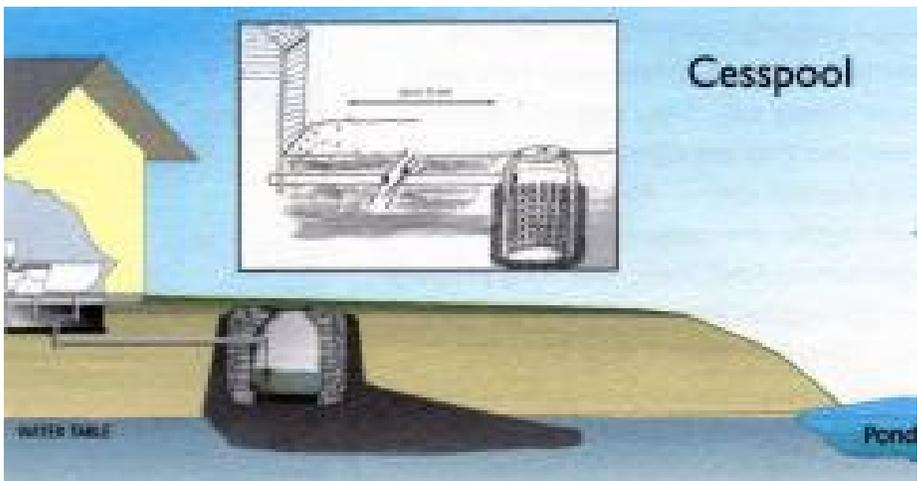
Surface Water Quality Impairments



Long Island Water Quality Impairments Summer 2024



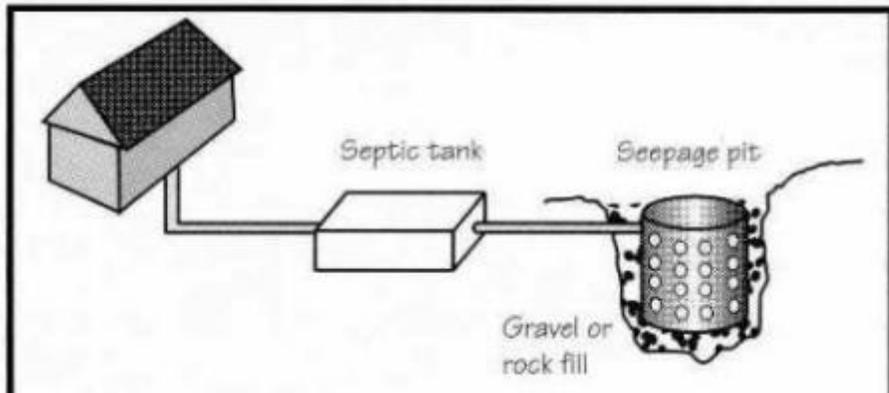
Reclaim Our Water



Cesspool

Cesspools
 ~ 250,000 in Suffolk County. Banned from new const. in 1973. Cesspools are little more than holes in the ground that discharge raw, untreated human waste and can contaminate surface and groundwater.

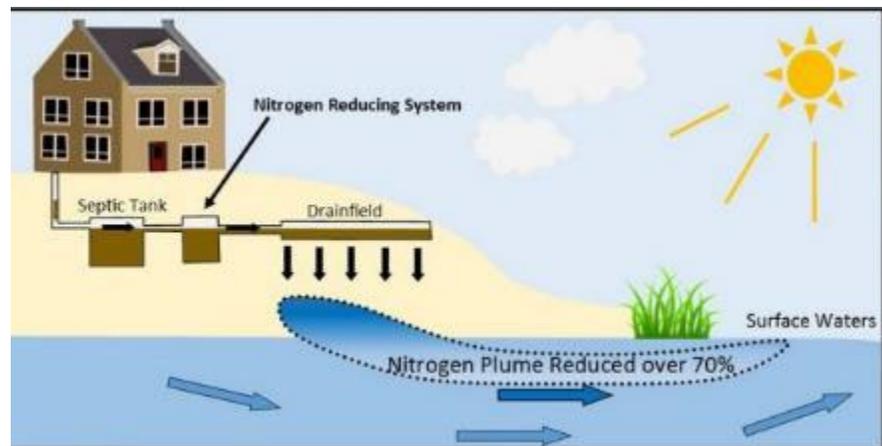
Since 7/1/2019 homeowners can no longer replace a cesspool with another cesspool, need a Conventional Septic at minimum.



Conventional Septic System

~ 110,000 in Suffolk County.

Consists of Septic Tank and Leaching Structure, required on new construction since 1973. This is the minimum code compliant system permitted to be installed for a replacement or retrofit beginning 7/1/19.



I/A OWTS Clean Water Septic

~ 5,000 + in Suffolk County.

Advanced wastewater treatment systems that reduce BOD, TSS and remove up to 70% of Total Nitrogen prior to discharge.

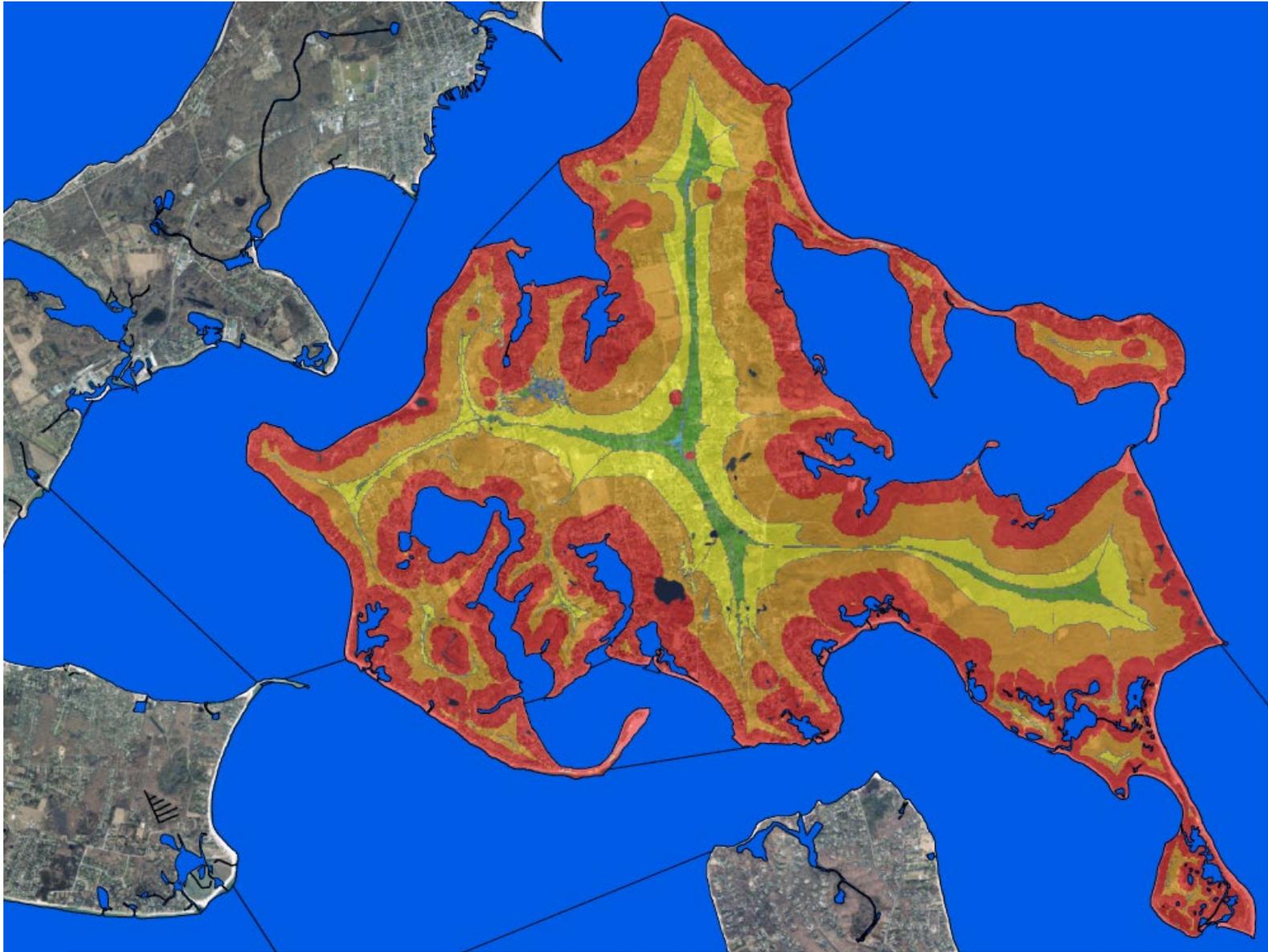
Allowed on Voluntary basis in SC since 2016. Mandated for New Construction and Major Renovation as of 7/1/2021.

Sewering:
 Large scale conveyance systems to a centralized wastewater treatment facility

Suffolk County Subwatersheds Wastewater Plan (SWP)

- Objective: Provide a parcel-specific roadmap to describe how, when, and where to upgrade the greater than 380,000 existing OSDS with nitrogen reducing systems to restore and protect our water resources.
- 190 Subwatersheds Evaluated
- Developed in partnership with the Long Island Nitrogen Action Plan (LINAP) and in collaboration with numerous project partners, stakeholders, and technical experts.
- The plan seeks to arrest and reverse the existing trend of degrading water quality over a 10 year period.
- In March of 2020, the Suffolk County Legislature adopted the SEQRA Statement of Findings for the SWP GEIS.
- Water Quality Restoration Fund Approved November of 2024

Groundwater Contributing Area and Subwatersheds Delineation for the SWP



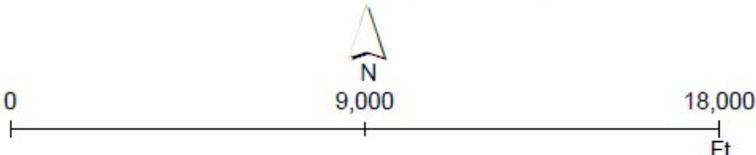
CDM
Smith

Figure 2-12 Area Contributing Groundwater Baseflow to Shelter Island Surface Waters



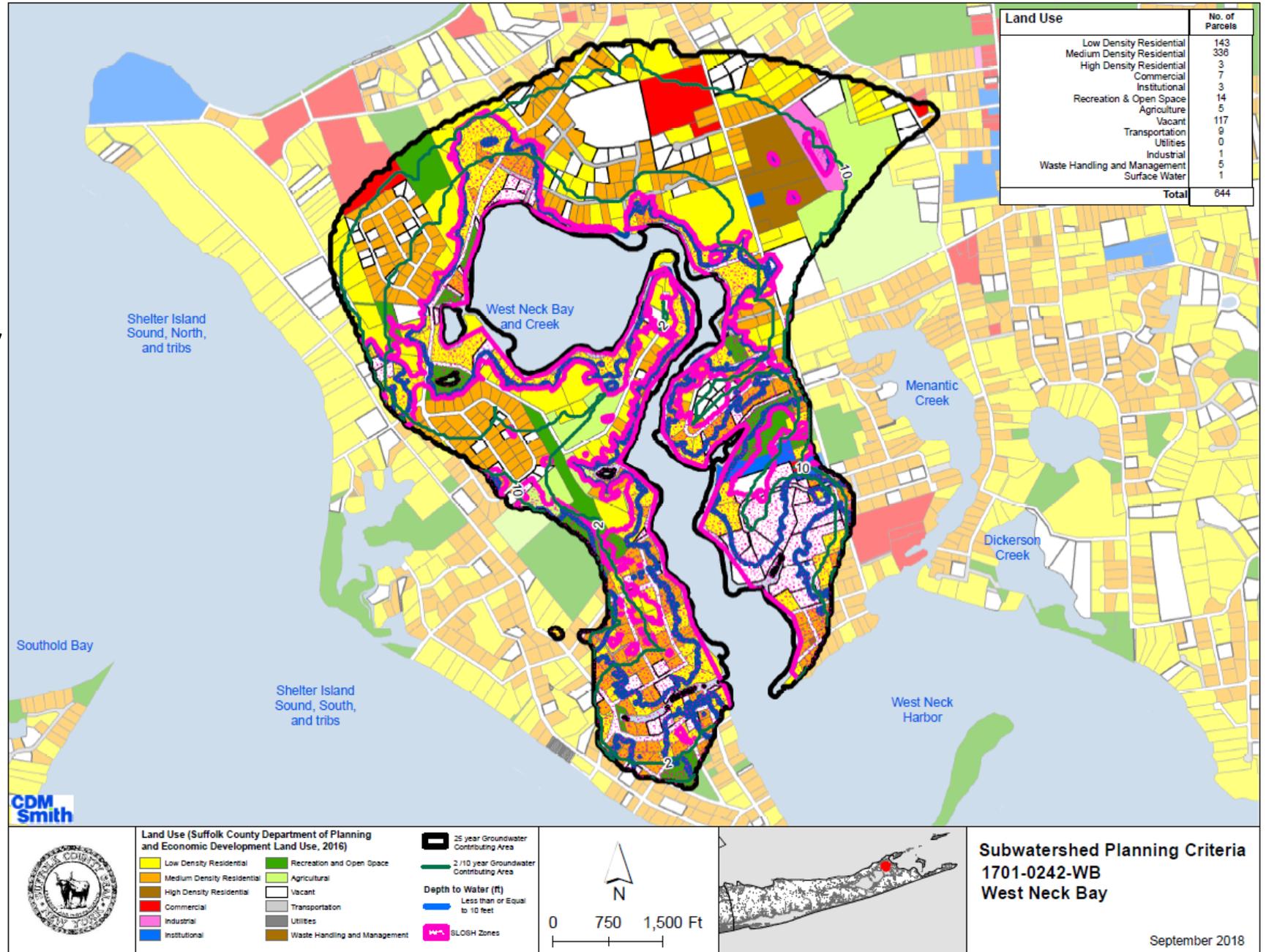
Travel Time (Years)

| | |
|-----------|------------|
| Waterbody | 25 to 50 |
| 0 to 2 | 50 to 100 |
| 2 to 10 | 100 to 200 |
| 10 to 25 | |

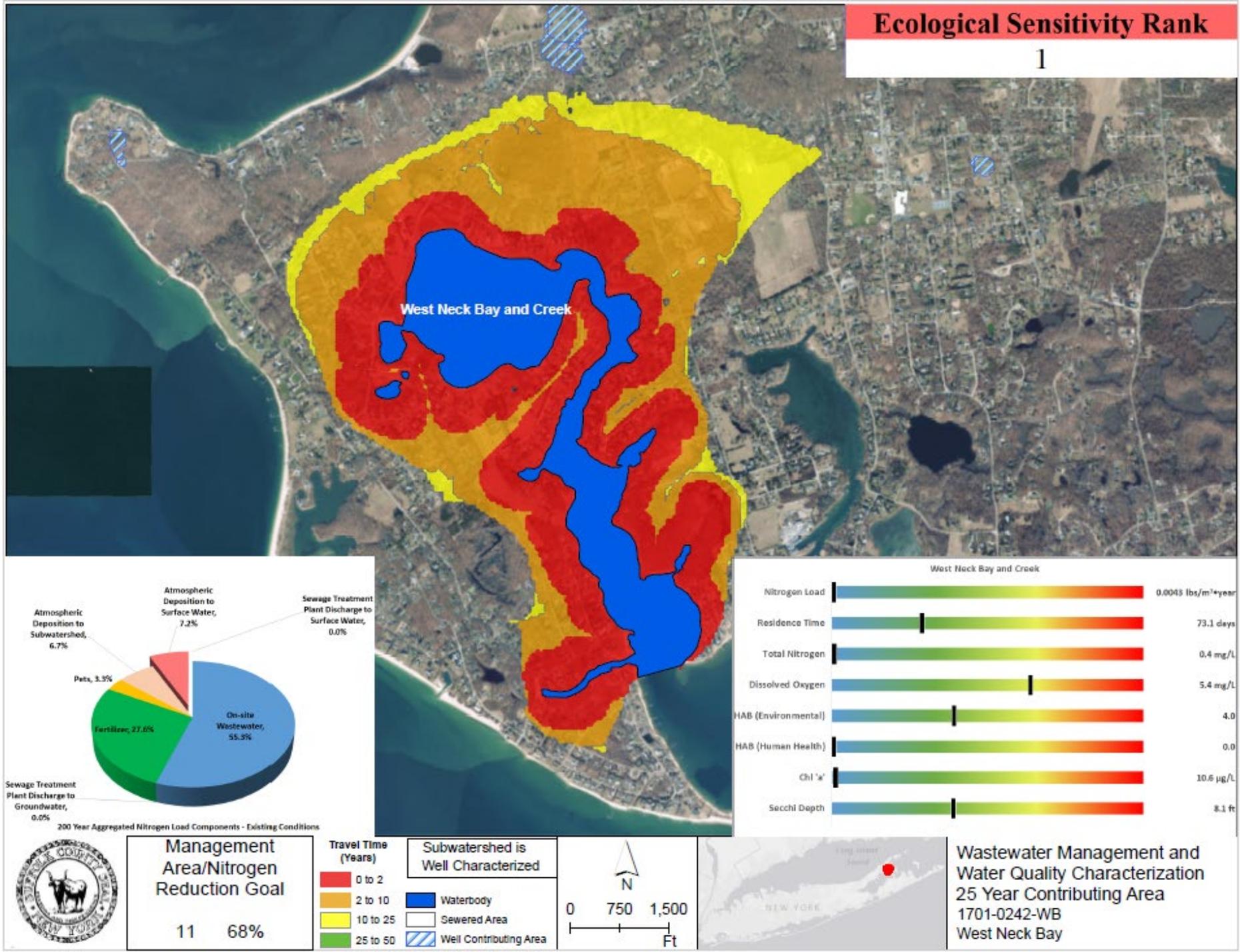


Reclaim  Our Water

Subwatershed Contributing Area: West Neck Bay and Creek



SWP Nitrogen Loads and Reduction Goals: West Neck Bay and Creek



Reclaim Our Water

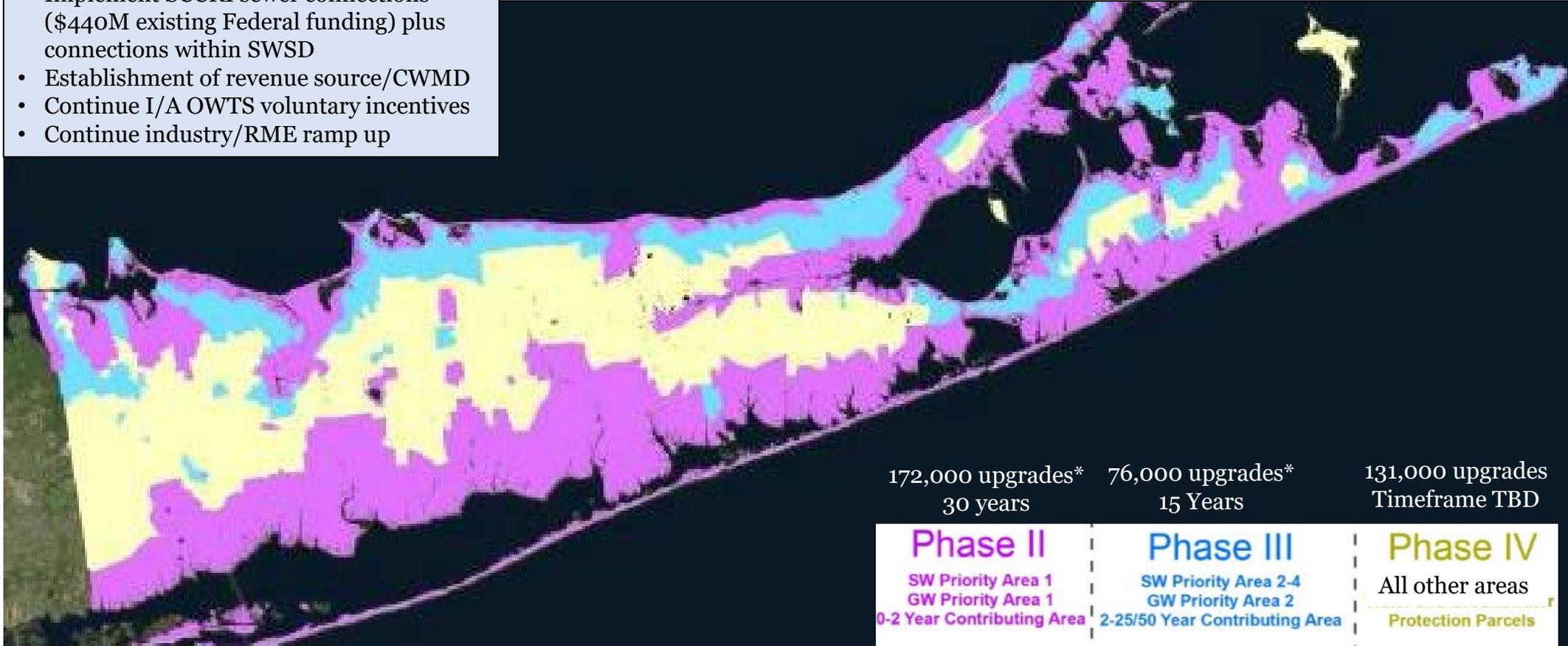
Phased Wastewater Upgrade Program

Years 2020-2024

Phase I - Program Ramp Up includes:

- I/A OWTS for New Construction/Addition
- Implement SCCRI sewer connections (\$440M existing Federal funding) plus connections within SWSD
- Establishment of revenue source/CWMD
- Continue I/A OWTS voluntary incentives
- Continue industry/RME ramp up

*Wastewater upgrades include use of I/A OWTS, connection to sewers, or clustered/decentralized systems. Use of I/A OWTS to be facilitated through changes to the Suffolk County Sanitary Code. Systems may be upgraded voluntarily, upon existing system failure, upon major building renovation, or at property transfer.



Suffolk County Sanitary Code Regulations

Article 6 of the Suffolk County Sanitary Code

- 1973: Conventional septic systems required
- 1981: Established minimum lot size for environmental protection based on groundwater priority areas
- 2019: Eliminated grandfathering of cesspools
- 2021: I/A OWTS mandate for New Construction Homes, Major Renovation of Single-Family Residence and New “Other Construction Projects”
 - A residential application is required to be submitted to SCDHS OWM if:
 - Construction of a new residential dwelling
 - Replacement of an existing residential dwelling
 - Addition of Bedrooms to an existing residential dwelling
 - Addition requiring the relocation/installation of a new sanitary system
 - Other: Town/Village referral for SCDHS approval
 - I/A OWTS Required if deemed new construction of *major renovation*

Article 19 of the Suffolk County Sanitary Code

- Enacted in 2017
- Establishes a framework for the Department, as the Responsible Management Entity, to evaluate, approve, register, oversee, and facilitate the use of I/A OWTS
- Article 19 allows the Department to ensure the management of all I/A OWTS Activities (monitoring, operation and maintenance, and data management) in order make sure I/A OWTS continue to function effectively over the long-term and to benefit the environment.
- Requires I/A OWTS technologies meet a standard total nitrogen effluent of 19 mg/L.

Liquid Waste Licensing and Training

- Regulated by the Suffolk County Department of Labor, License and Consumer Affairs
- Liquid Waste License Requirements
 - Requires specialized endorsement and training for I/A OWTS installer and I/A OWTS service provider, and continuing education credits for license renewals.

I/A Onsite Wastewater Treatment Systems in Suffolk County

Summary of Article 19 Approval Requirements

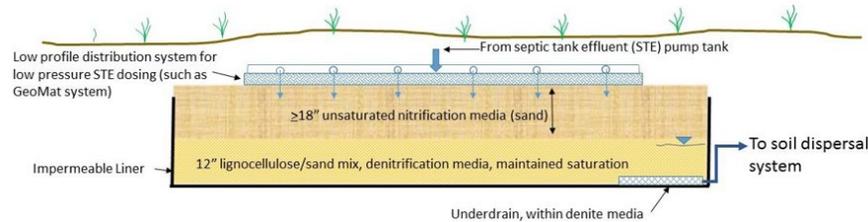
*****Most stringent approval process in the United States (world?)*****

| Approval Phase | # of Systems | Sampling Frequency | Performance Requirement |
|----------------------|-------------------------|--|---|
| Experimental | 2 – 5 year-round | Monthly Sampling 12 months rolling average | When 2-3 systems, each must have average TN ≤ 19 mg/L. When 4-5 systems, dataset of 75% of the systems must have average TN ≤ 19 mg/L. |
| Piloting | 8 – 12 year-round | Monthly Sampling 12 months rolling average | The total dataset of 75% of the systems must have a combined average of 19 mg/L or less TN |
| Provisional 1 | First 20 year-round | Bi-Monthly Sampling for 24 months rolling average | The dataset of all the 20 systems must have a combined average of 19 mg/L or less TN |
| General Use | All Residential Systems | Every 36 Months | The dataset must maintain an average of 19 mg/L or less in order to remain in General Use phase |

I/A OWTS with General Use Approval and Provisional Approval



Norweco Hydro-Kinetic



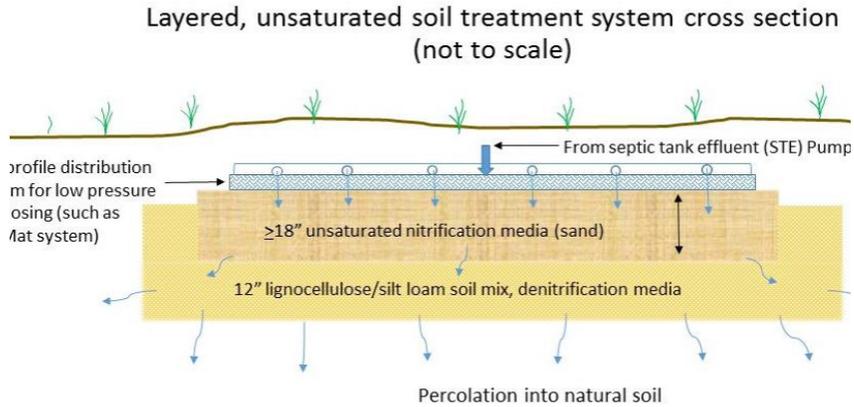
Lined Nitrogen Reducing Biofilter



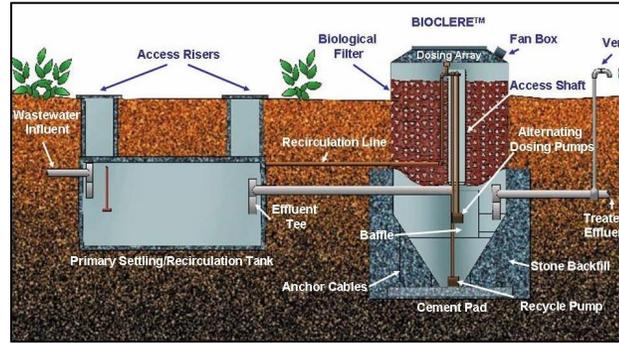
Norweco Singlair TNT

- One technology currently does not meet SC's stringent standard of 19 mg/L (~70% reduction) and manufacturer is implementing remedial action plan.

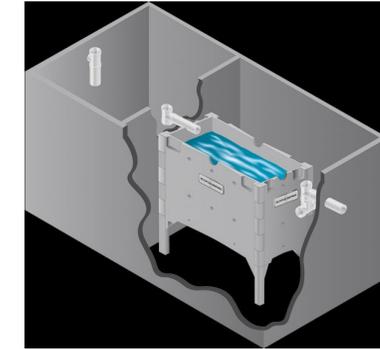
I/A OWTS Approved for Pilot Use



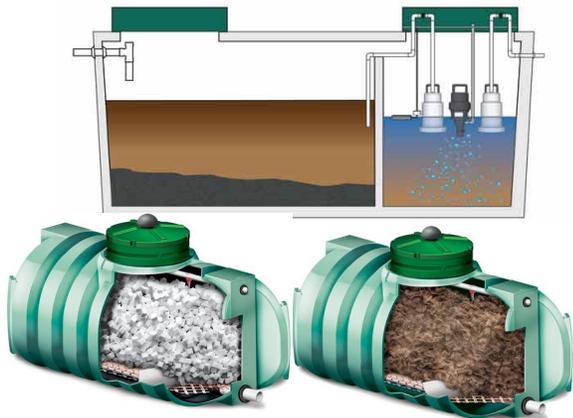
**Nitrogen Reducing Biofilter
(Unlined & Boxed)**



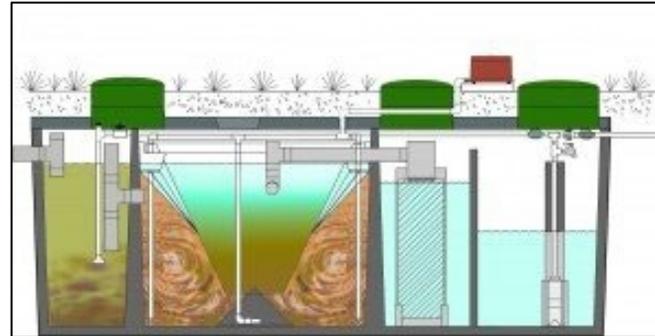
AquaPoint BioClere



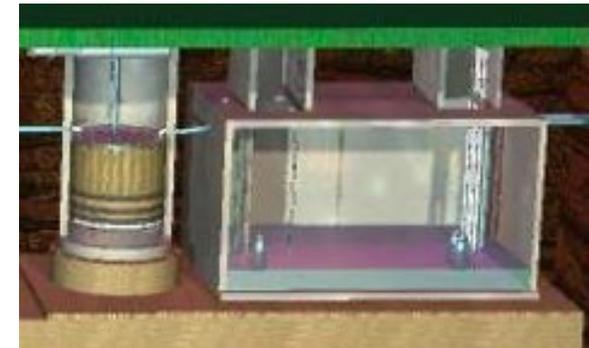
ECOPOD N-Series



Anua Purasys, BioCoir & AeroCell



Hoot ANR

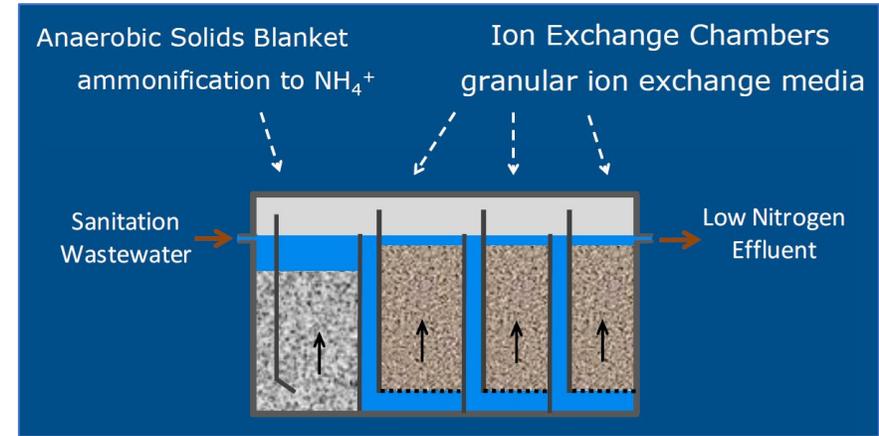


Amphidrome

I/A OWTS Approved for Experimental Use

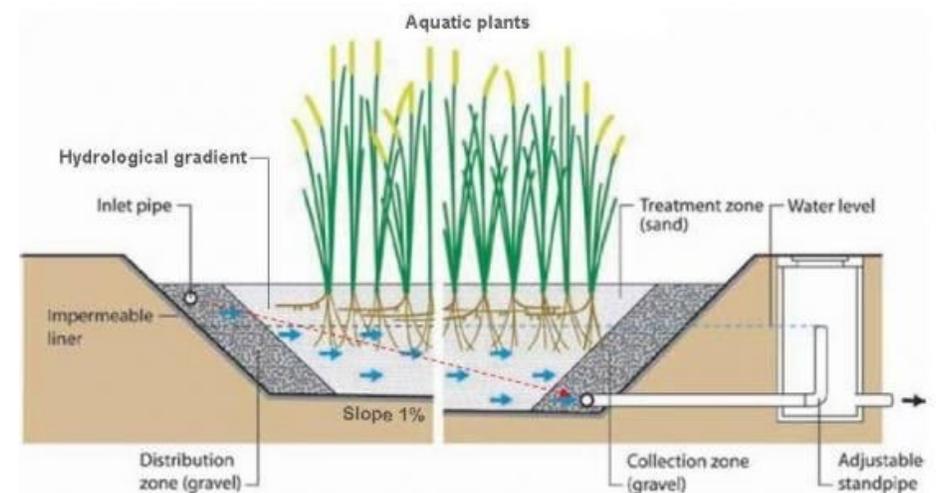
- AET Tech's "The New Clear Solution"

- First chemical based treatment system being evaluated in Suffolk County
- Utilizes Zeolite to absorb ammonium
- Average Effluent is 4.5 mg/L (n=8)
- Showing 90%+ N reduction



- Constructed Wetlands / Vegetated Recirculating Gravel Filters

- Coordinating with SBU CCWT to designate the technology at pilot based on general use approvals in RI and MA
- 4 installed, 3 additional in planning phases



SBU Center for Clean Water Technology



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Onsite Wastewater Treatment Systems

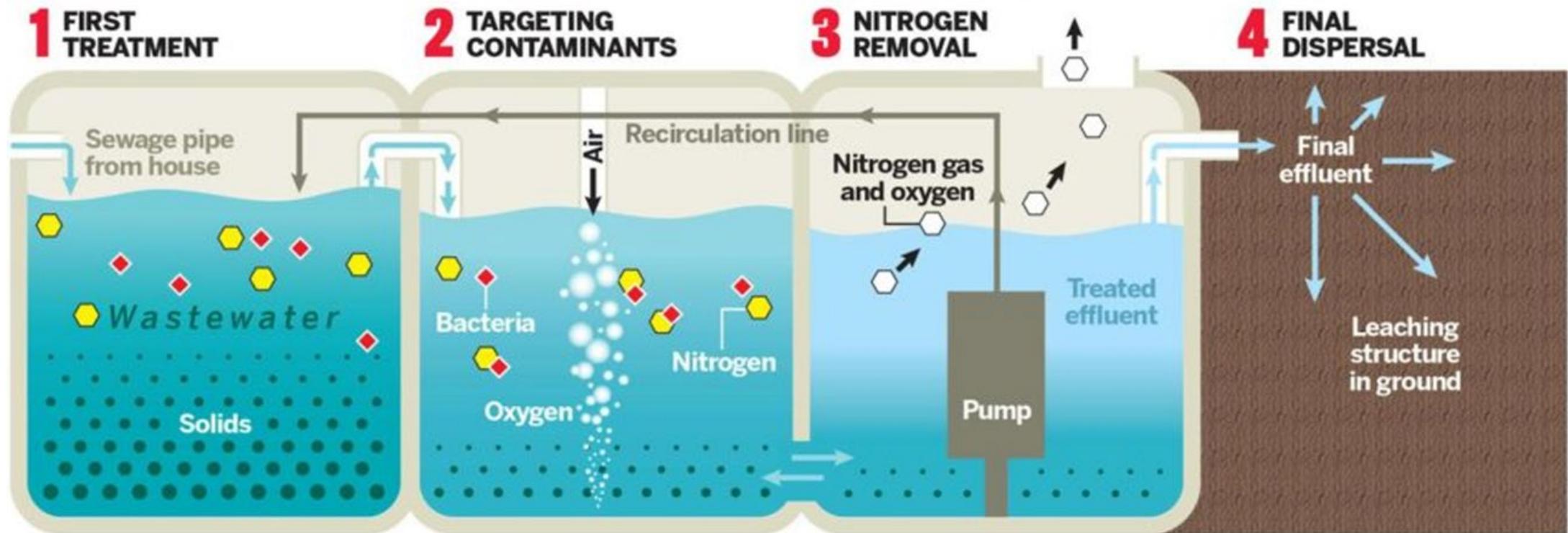
The goal of the NYS Center for Clean Water Technology is to develop next generation approaches for handling household wastewater that are more efficient at removing nitrogen and other contaminants, less expensive, easier to operate, and smaller in size. While our primary focus is on solving the nitrogen issue in Suffolk County, the solutions developed by the Center will be applicable to other parts of the United States and globally.

For inquiries related to the Center's wastewater research please contact [Dr. Stuart Waugh](#), Senior Research Scientist.

Reclaim
our
Water

Wastewater Treatment Technology

ADVANCED SEPTIC SYSTEM Many models exist. Here's how they generally work in reducing nitrogen in wastewater.



NEWSDAY GRAPHIC/ANDREW WONG

Wastewater enters the first chamber, where **solids** and sediment are allowed to settle. The water then moves on to the next stage.

Air is pumped in, feeding **oxygen** to "good" **bacteria** in the water so they can begin the process of converting **nitrogen** contaminants into nitrogen gas and oxygen.

A **pump** recirculates remaining solids and **treated effluent** to complete the process, resulting in **nitrogen gas** and **oxygen** being vented into the atmosphere.

The **final effluent**, which represents a 70% reduction in total nitrogen, is released into a **leaching structure** and dissipated into the ground.

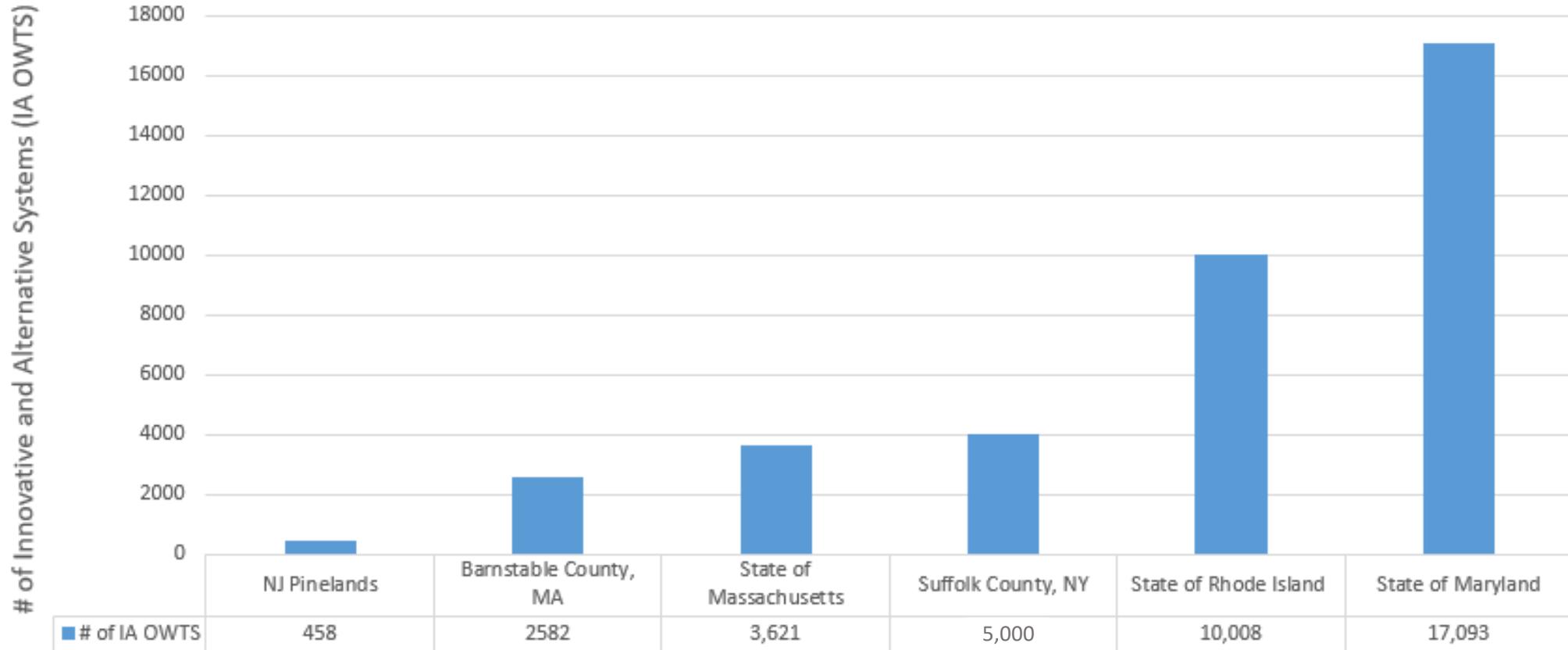
Regular Maintenance for I/A OWTS

Maintenance requirements for I/A OWTS varies by technology, but generally involves one to two site visits per year to inspect system components, replace filters, test alarms, and pump sludge, when necessary.

The following minimum procedures are required in the County I/A OWTS standards:

- The septic tank/trash chamber shall be measured for solids accumulation and a pump out should be scheduled if the quantity of solids exceeds the manufacturer's specifications. More actively used systems may need to be placed on more frequent inspection or maintenance schedules.
- All electrical components should be checked annually for functionality and safety.
- All effluent screens shall be cleaned at a minimum, on a yearly basis, and whenever the tanks are pumped
- Bio-solids hosed off of filters, pumps, pump vaults, and treatment material shall be placed into the inlet end of the septic/trash tank.

Quantity of I/A OWTS Installed in Suffolk County and Other Jurisdictions



** New Jersey data as of 2022 Program Report.

** Barnstable County data obtained from the Barnstable County Septic Management Program's "I/A System Map" page as of 9/18/2023.

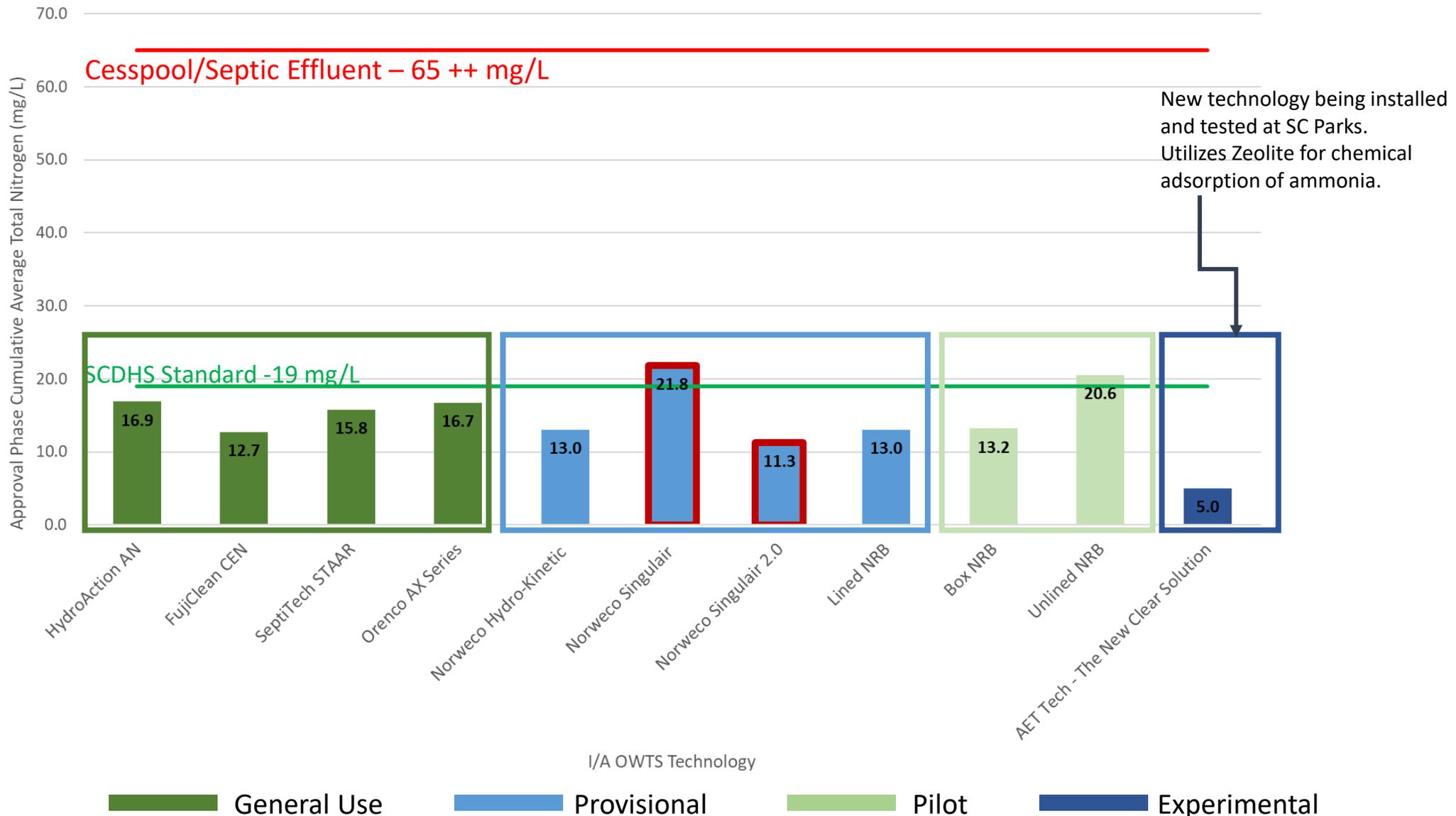
** MA data is approximation based on reporting from 7 counties in 2022.

** Suffolk County data as of 9/15/2023 from Julia Priolo

** Rhode Island data is for all approved applications as of 3/28/2022.

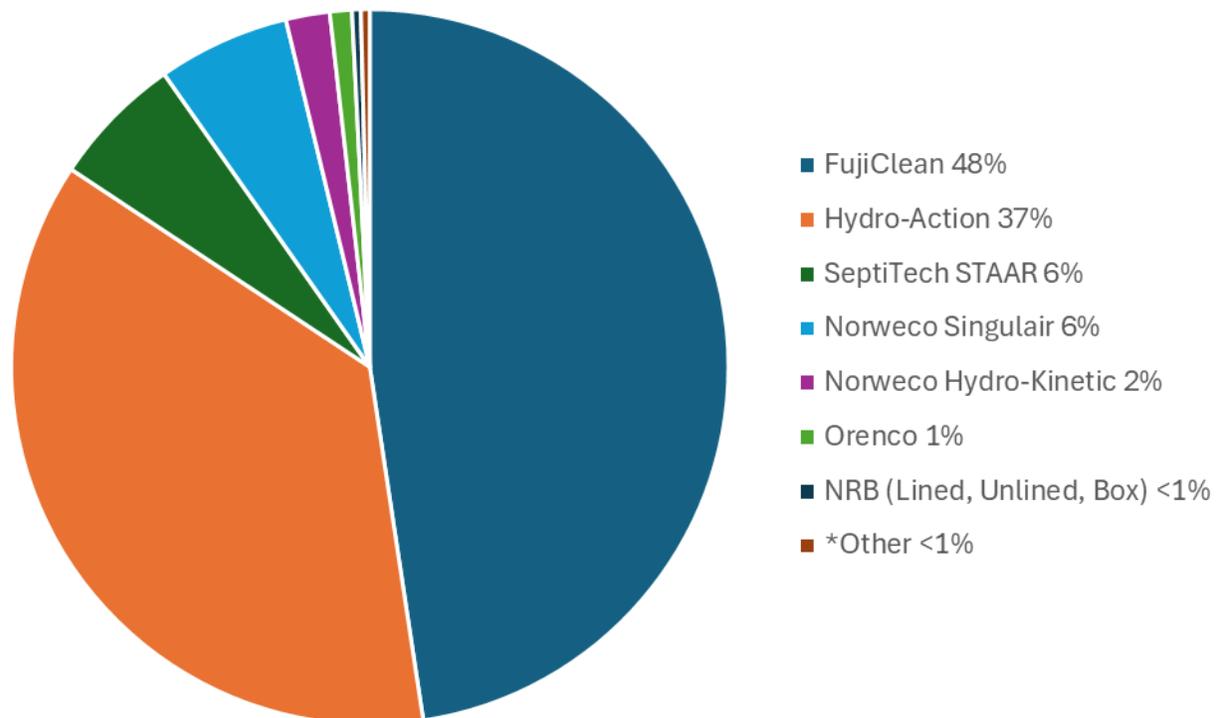
** Maryland data as of 11/11/2022.

I/A OWTS Performance in Suffolk County



I/A OWTS in Suffolk County

Suffolk County I/A OWTS Technology Market Share

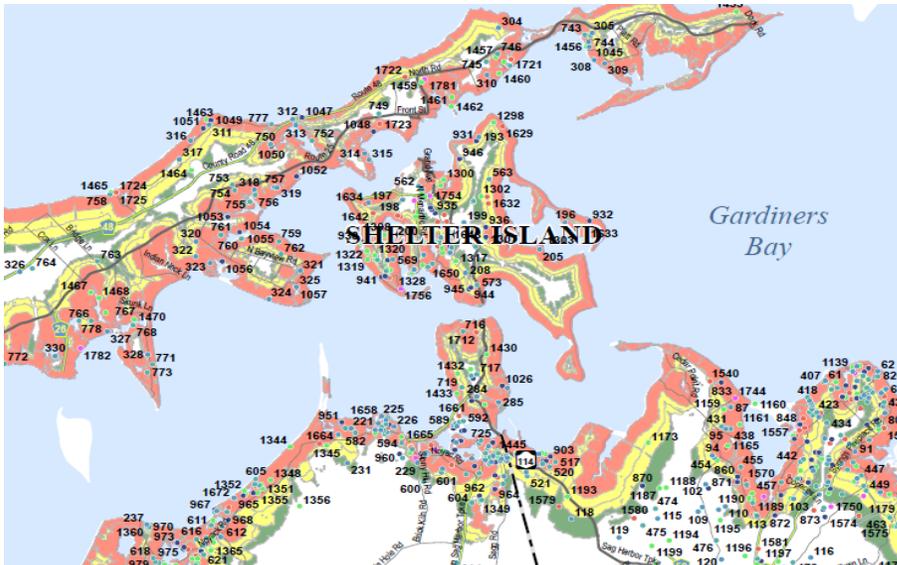


**Other' includes all technologies that did not advance from Septic Demonstration Program, Constructed Wetlands, Experimental and Pilot systems, except NRBs.*

As of 10/2024

SIP & SSRP Grant Funded I/A OWTS Installs by Township

- Majority of I/A OWTS installed in East Hampton, Southampton and Shelter Island due to:
 - additional grant funding,
 - additional/earlier mandates, and
 - more projects that trigger the need for I/A OWTS installations



| Town | Grant Funded I/A OWTS Installs Count |
|----------------|--------------------------------------|
| Babylon | 31 |
| Brookhaven | 330 |
| East Hampton | 605 |
| Huntington | 98 |
| Islip | 125 |
| Riverhead | 40 |
| Shelter Island | 118 |
| Smithtown | 53 |
| Southampton | 689 |
| Southold | 154 |
| Total | 2,243 |

| Town | Approx. Total I/A OWTS Installs Count |
|----------------|---------------------------------------|
| Babylon | 57 |
| Brookhaven | 730 |
| East Hampton | 1465 |
| Huntington | 197 |
| Islip | 240 |
| Riverhead | 90 |
| Shelter Island | 250 |
| Smithtown | 126 |
| Southampton | 1881 |
| Southold | 308 |
| Total | 5,344 |

What I/A OWTS Homeowners Should Know

- The **average** cost for installation of a nitrogen-removing I/A and leaching system and removal of existing system under the grant program is approximately
 - \$34,000 within the east end towns
 - \$28,500 within the west end towns
- The cost of engineering/design services and site restoration is separate. Costs will vary on a case-by-case basis based on site conditions (soil type, access, depth to groundwater, etc.)
- Covers to Grade
- Control Panels
- Annual Operation & Maintenance
 - current average cost of an O&M contract renewal for 3 years is approximately \$1,500 (\$500/year)
- Electrical Costs
- Repair and Replacement Costs
- Pumping Costs



I/A OWTS Installation



Reclaim Our Water

I/A OWTS Installation



Reclaim Our Water

I/A OWTS Post-Installation



Reclaim Our Water

Control Panels & Air Vents



Grant Funding for Residential I/A OWTS

Suffolk County SIP & NY State Grants

- Suffolk County Septic Improvement Program (SIP)
 - \$15,000 base grant
 - Additional \$5,000 for installation for LMI eligible applicants
- NY State Septic System Replacement Program (SSRP)
 - Up to \$10,000 grant
- Town CPF Funds
 - Southampton, East Hampton & Shelter Island
- Low Interest Loan Program with CDCLI
 - Up to \$10,000 loan
- Grant Application Available Online: www.ReclaimOurWater.info
- Grant funding enables Suffolk County to implement upgrades in accordance with the timeline in the Subwatersheds Wastewater Plan, prior to the establishment of a Countywide Wastewater Management District and Countywide Water Quality Protection Fund.

Suffolk County SIP & NY State Grants

- Apply online at ReclaimOurWater.info
- Required documents include: CO, tax bill, proof of system failure, if applicable, and, if applying for LMI, recent tax return.
- If property is owned by Trust, LLC, or Corporation, additional documentation is required.
- Property cannot be in foreclosure or have tax liens.
- Grant Awardees must select a Vendor on the County's Approved List, established through a SOQ Process.
- Applicants assign their grant payment directly to the Vendor. Payments are then made by the County to the Vendor.
- County SIP is not designed as a reimbursement program. Applicants must apply for and receive a grant prior to installation of the I/A OWTS.
- Where an applicant is only applying for a State SSRP grant, State SSRP grants may be processed as a reimbursement, and Vendor is not required to be on County List.



SIP Grant Application Scoring

1. **Prioritize Grant Issuance for Public Health and Safety Concerns**

- ✓ Modify Grant Application Scoring
- ✓ Add Definitions for Catastrophic and Non-Catastrophic Failure

2. **Upgrade Priority Areas Maps using SWP Mapping**

- ✓ Add-in Drinking Water Protection

*** SIP Rules and Regulations Revised in 2021 are intended to expedite grant issuance for homeowners with failed sanitary systems and to establish priority areas for the protection of drinking water.

- 100 - Catastrophic Failures, regardless of the property location
- 90 - Non-Catastrophic Failures, regardless of the property location
- 80 - Non-Failures, Priority Area 1
- 70 - Non-Failures, Priority Area 2
- 60 - Non-Failures, Non-Priority Area

Grant Funded I/A OWTS Installations

Grant-Funded Installations/Year

2017: 8
2018: 51
2019: 257
2020: 425
2021: 293
2022: 467
2023: 434
2024: 308 +

Average Grant-Funded Installations/Month:

2019: 21
2020: 35
2021: 24
2022: 39
2023: 36
2024: 35



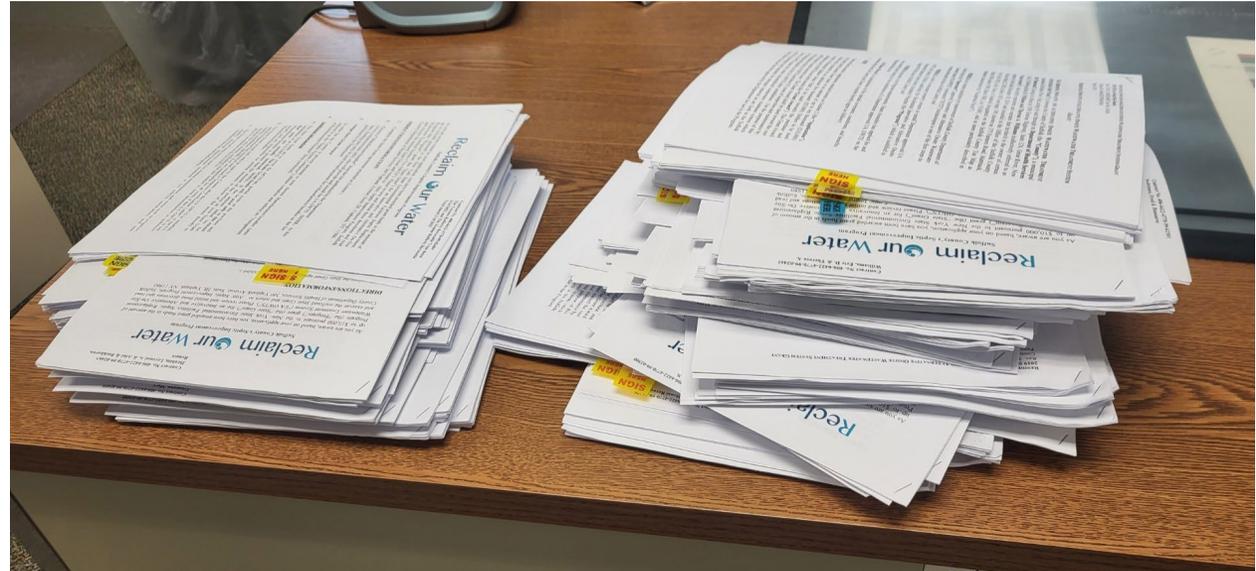
Total of 2,243 + SIP & SSRP Grant Funded I/A OWTS Installations Completed & Paid Out

Septic Improvement Program History

- **Program established in 2017 based upon:**
 - Limited funding for grants and administration
 - Voluntary upgrade program; strict eligibility criteria
 - County-only funding (single grant agreement)
 - Work within ‘confines of existing County standard procedures’
 - I/A OWTS installation required full permit through SCDHS OWM
- **Major milestones & events since 2017:**
 - NYS awarded Suffolk County over \$60M in NYS SSRP grant funds
 - Grants awarded through separate, additional homeowner grant contract
 - To-date County has allocated \$39.7M to SIP due to overwhelming program demand
 - Banning the replacement of a cesspool with a new cesspool
 - SCDHS “SHIP” process significantly expedites permit and grant approval for failed/ block system replacements
 - Suffolk County Subwatersheds Wastewater Plan published
 - Demand surpassing funding during COVID, and the cyber-intrusion resulted in a grant application backlog
 - Requirement to upgrade to I/A OWTS for major construction projects enacted
 - IRS 1099 ruling deeming grant non-taxable
 - Water Quality Restoration Fund approved

SIP Streamlining Goals

- **Goals:**
 - Enable Program to Ramp Up from 500 to 2,000 Grants per Year
 - Dramatically Increase Productivity/Efficiency
 - Meet existing demand of applicants in the queue
 - Meet future expected demand to implement Clean Water Plan
- Simplified, **User-Friendly Grant Application Process** with Less Burden on the Applicant
- Enhanced Notifications to Applicants and Installers
- Timesaving Automatic Contract and Form Creation
- **Eliminate Paper** & current requirement for **66+** separate original signatures, initials and notarization
- Combine both County and State Grants into One E-Sign Contract
- **Implementation Timeline**
 - SIP Law, and SIP Rules and Regulations Amendments **Completed**
 - Additional Staffing **Ongoing**
 - Application Portal / Database Enhancements **Ongoing**
 - Streamlined Application Requirements, Grant Issuance and Electronic Signatures **Before End of Year**





Questions?

Suffolk County Department of Health Services
Office of Ecology

SepticDemo@SuffolkCountyNY.gov

631-852-5811

www.ReclaimOurWater.info