

**SUFFOLK COUNTY'S
RECLAIM OUR WATER INITIATIVE**

**SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES COMMERCIAL AND
RESIDENTIAL ONSITE SEWAGE DISPOSAL SYSTEM DESIGN STANDARDS**

MAY 10, 2018



Reclaim  Our Water



PRESENTATION OVERVIEW

- ☐ Update on Suffolk County's Reclaim Our Water Initiative
- ☐ Overview of Residential Standard Updates
- ☐ Overview of Commercial Standard Updates

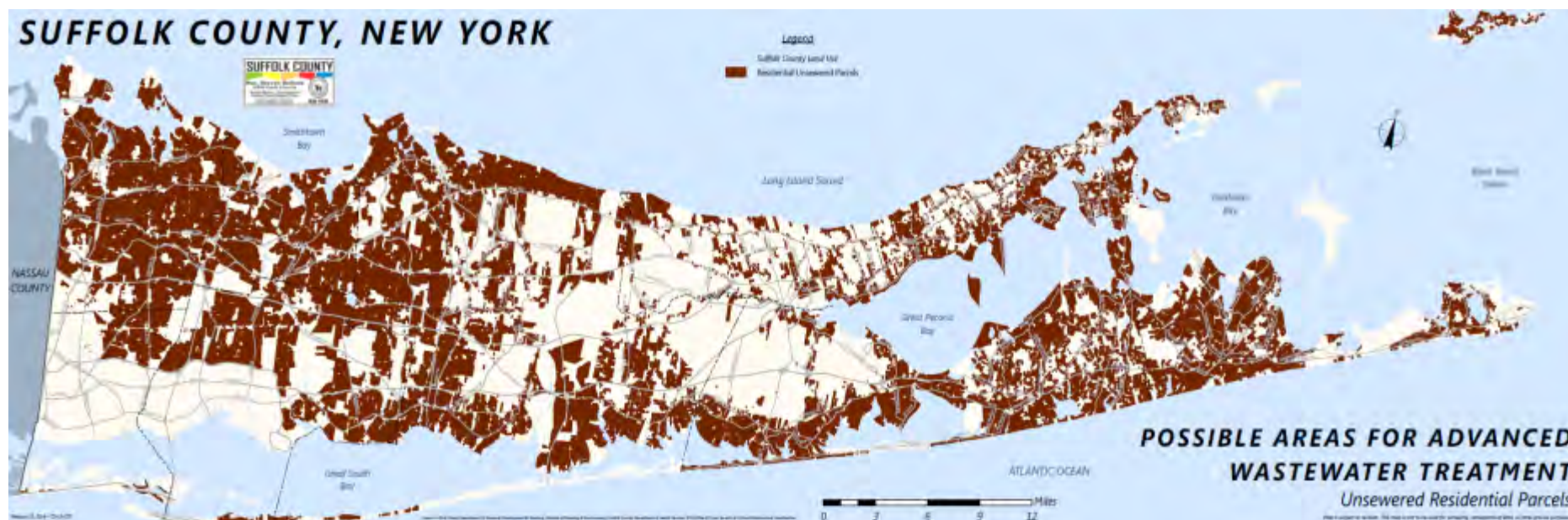
UPDATE ON SUFFOLK COUNTY'S RECLAIM OUR WATER INITIATIVE





74% NON-PERFORMING WASTEWATER TREATMENT

- Approximately 360,000 onsite sewage disposal system
- 209,000 systems in priority areas
- Approximately 252,530 pre-date requirement for septic tank



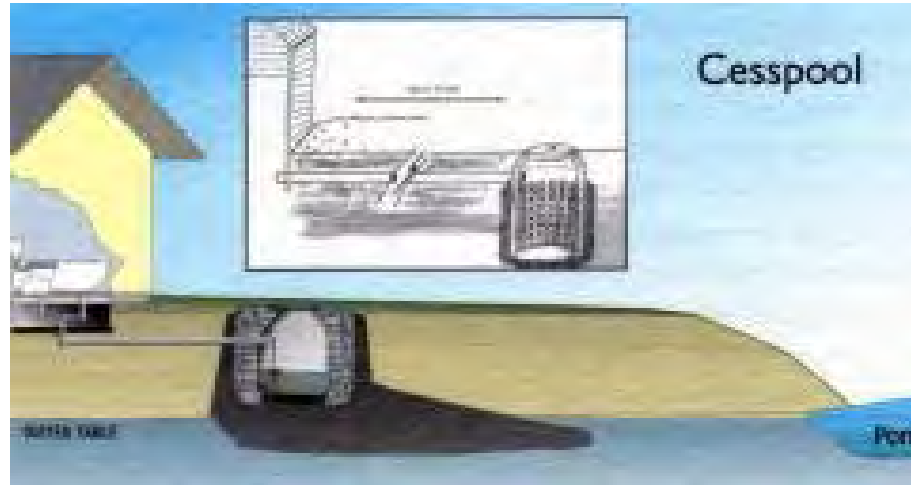
CURRENT MEANS OF REGULATING WASTEWATER NITROGEN DISCHARGE IN SUFFOLK COUNTY



- ☐ Suffolk County Sanitary Code Article 6
 - ☐ Requirements for Sewage Disposal and Water Supplies
- ☐ Discharge of Sanitary Flow Based on location within a Groundwater Management Zone (GMZ)
- ☐ 8 GMZ's created in the 1970's by the "Long Island Comprehensive Waste Treatment Plan (L.I. 208 Study)"
- ☐ GMZ 3, 5, and 6 require a minimum lot size of 40,000sf or 300 gpd/acre
 - ☐ with onsite sewage disposal and public water or private well
 - ☐ Groundwater nitrogen 4mg/l
- ☐ GMZ 1, 2, 4, 7, and 8 require a minimum lot size of 20,000sf or 600 gpd/acre
 - ☐ with onsite sewage disposal and public water
 - ☐ Groundwater nitrogen 6 mg/l
- ☐ When connected to sewers or STP minimum lot size not required per Art 6



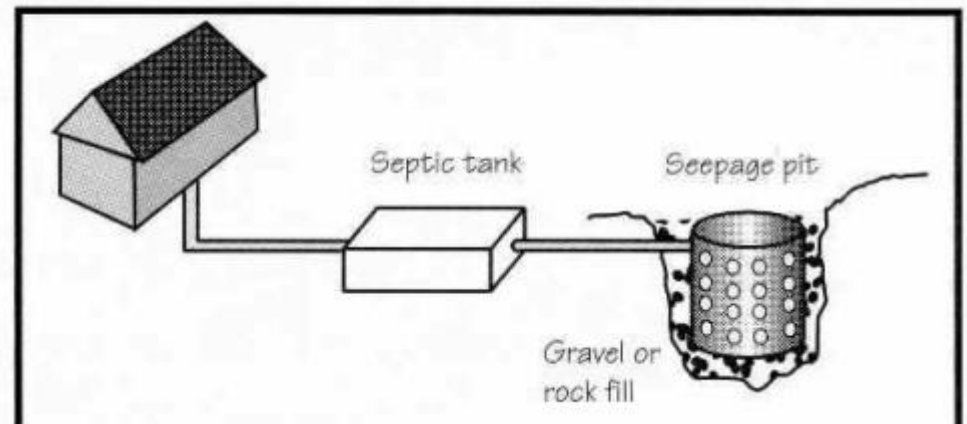
CESSPOOLS



Cesspools – ~250,000 in Suffolk County

- ✓ Cesspools are little more than holes in the ground that discharge raw, untreated human waste and can contaminate surface and groundwater sources and contributes to harmful algal blooms
- ✓ Untreated wastewater from cesspools contains pathogens such as bacteria, protozoa and viruses that can cause gastroenteritis, Hepatitis A, conjunctivitis, leptospirosis, salmonellosis and cholera
- ✓ EPA banned large capacity cesspools and strongly discourages use of small cesspools.
- ✓ Outlawed in Suffolk County for New Construction Since 1973
- ✓ Homeowners can currently replace failed cesspools in-kind
- ✓ Cesspool average installations range from \$2,000 - \$4,000

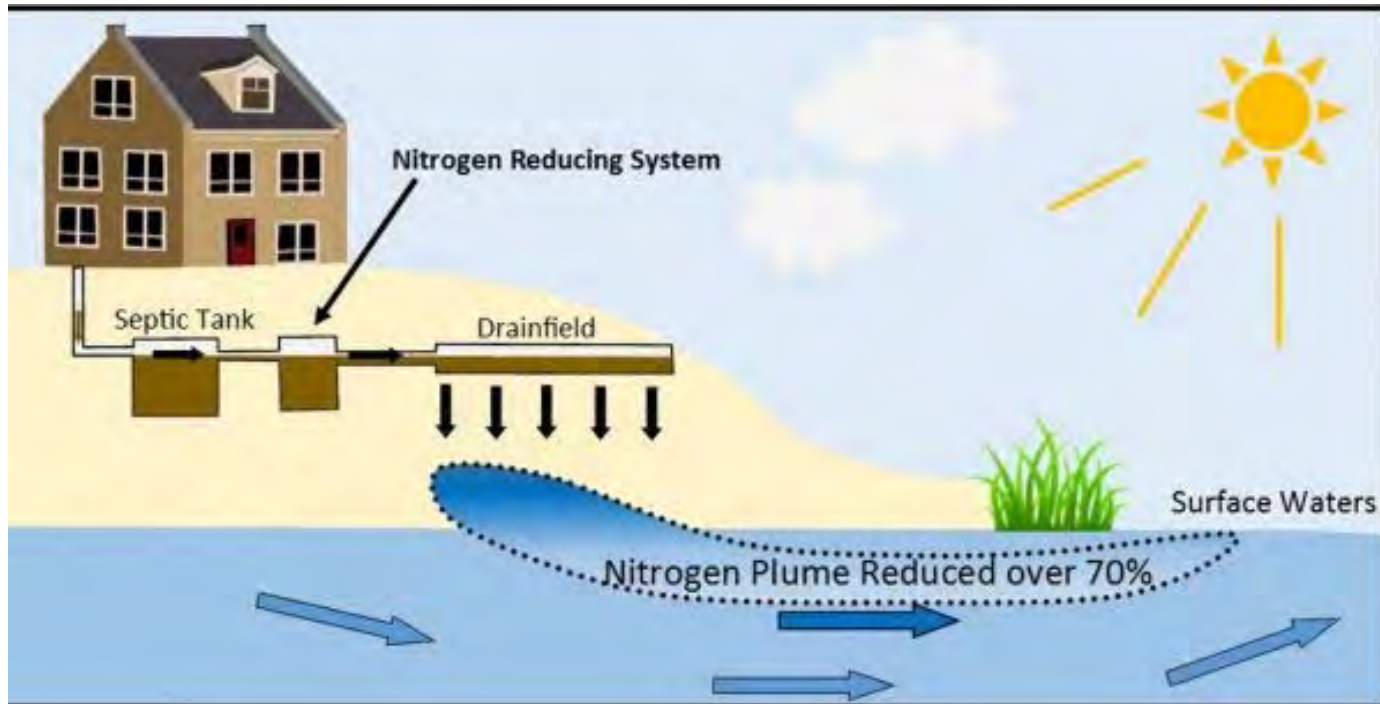
CONVENTIONAL SEPTIC SYSTEMS



Conventional Septic Systems – ~110,000 in Suffolk County

- ✓ Conventional systems consist of a septic tank before leaching structure (In most cases a leaching pool)
- ✓ Tanks collect solids, reduce BOD, TSS, other contaminants and protect leaching structure from excessive solids and clogging
- ✓ Conventional system installations typically range from \$6,000 - \$8,000
- ✓ **This is the minimum code compliant system required**
- ✓ **Permitted when a site meets Article 6 Density**

I/A OWTS



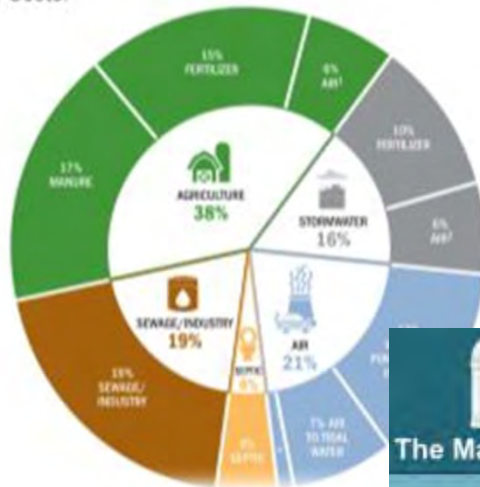
I/A OWTS – ~92 Approved in Suffolk County

- ✓ Advanced treatment systems that reduce BOD, TSS and remove up to 70% of Total nitrogen
- ✓ Allowed on Voluntary basis in SC since 2016
- ✓ I/A OWTS designs & installations have an average cost of \$19,500
- ✓ Permitted when a site meets Article 6 Density

MULTI-STATE SEPTIC TOUR TO INVESTIGATE I/A TECHNOLOGIES AND I/A PROGRAMS



Nitrogen Pollution to the Chesapeake Bay
By Sector



COUNTY OF SUFFOLK

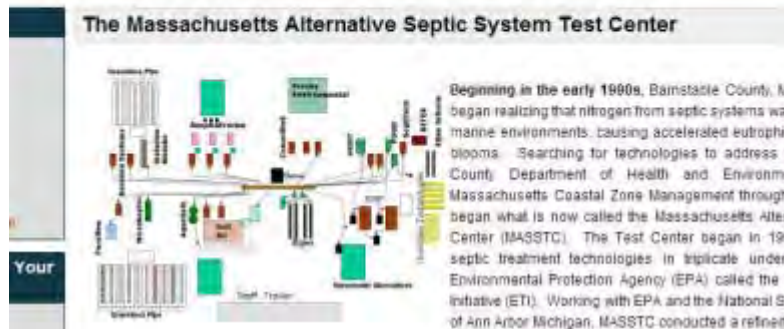


STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

REPORT ISSUED BY SUFFOLK COUNTY
DEPARTMENTS OF ECONOMIC DEVELOPMENT & PLANNING, HEALTH SERVICES,
AND PUBLIC WORKS

Advanced Wastewater & Transfer of Development Rights Tour Summary

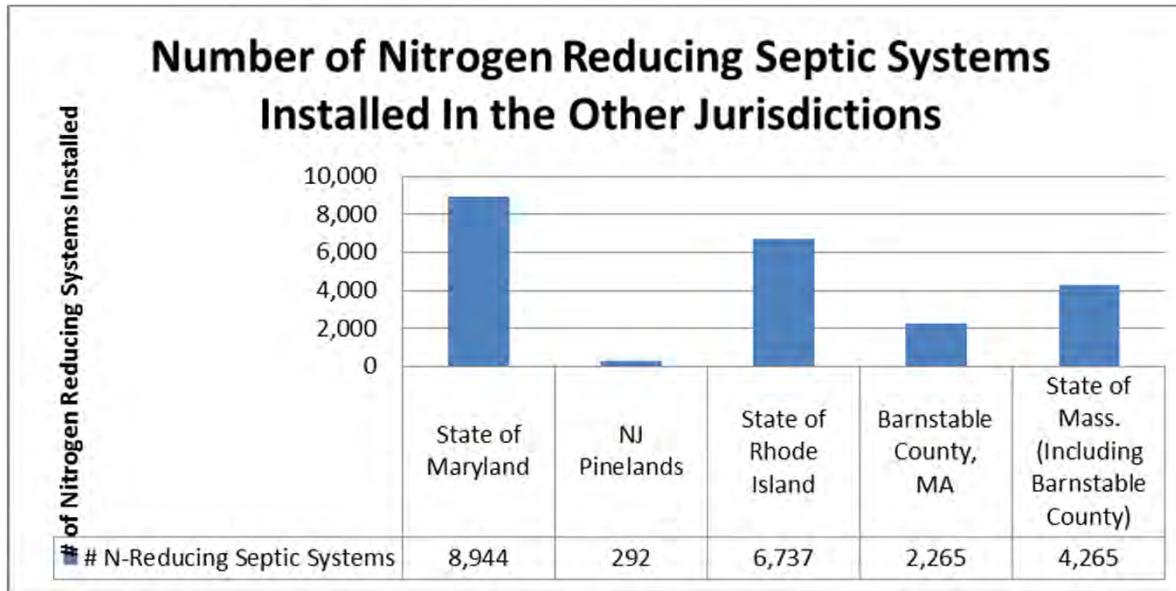
April 28, 2014



Cesspools and the Rhode Island Cesspool Act

September 1, 2015

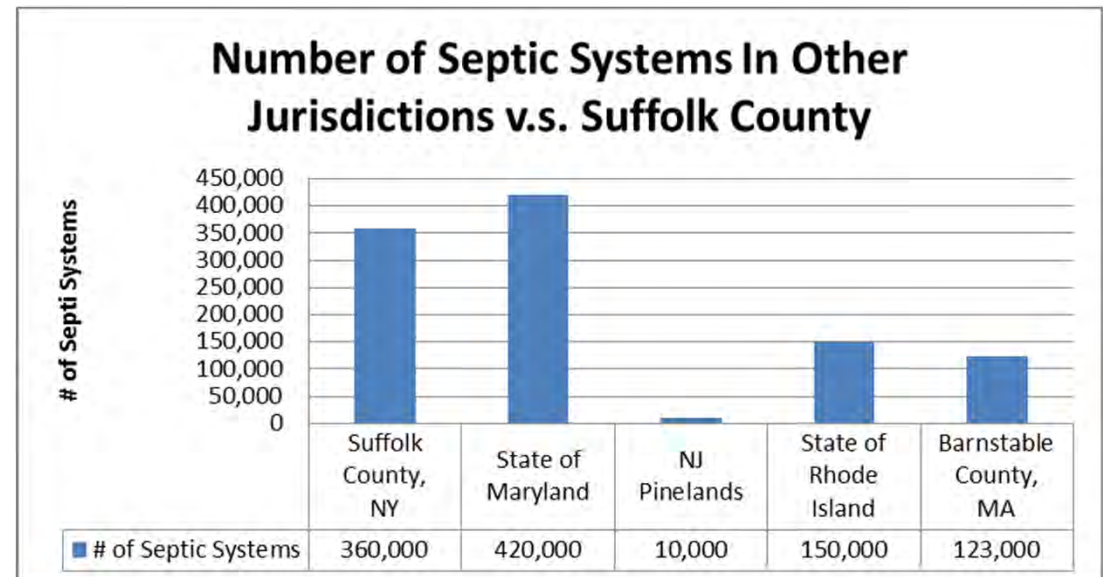
HOW MANY I/A OWTS ARE THERE?



Jurisdiction	Year I/A's gained acceptance
Barnstable County	1995
Rhode Island	2000
Maryland	2005
Suffolk County	2016

~112 I/A OWTS approved
in Suffolk County as of
February 2018

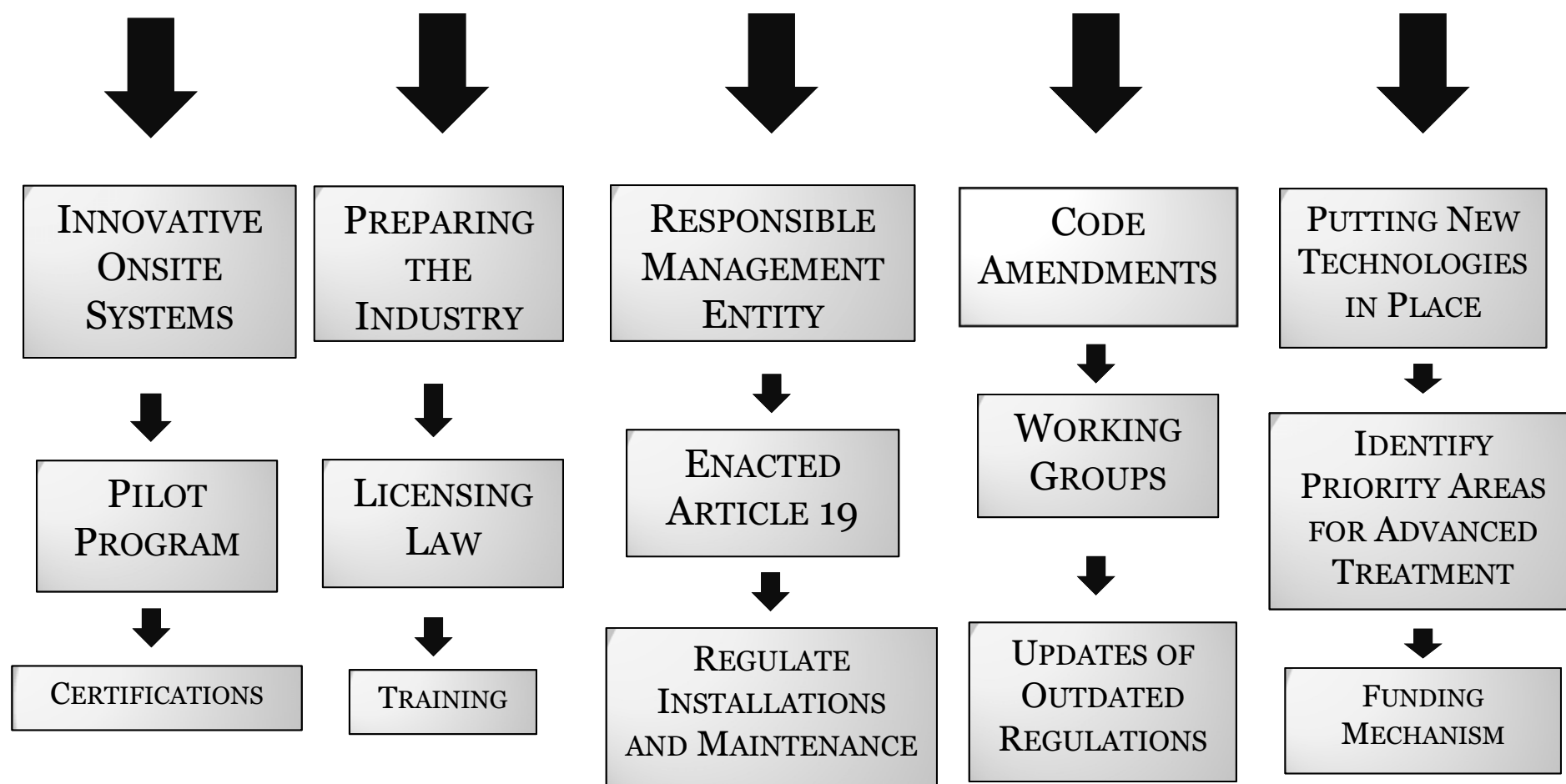
~ Total # of I/A's Installed
in MD, NJ Pinelands, RI,
Mass
20,238





SETTING THE STAGE FOR THE SOLUTION TO NITROGEN POLLUTION:

Evolution to the Use of Innovative Treatment Systems





SCCWRMP AND ROW

SEPTIC/CESSPOOL UPGRADE PROGRAM ENTERPRISE*

Task 1 Planning/Monitoring

- ✓ LINAP Coordination/
Workgroup Establishment
- ✓ Initiated Subwatersheds
Wastewater Plan (SWP)
- ✓ Completed Subwatershed
Delineations of 189 waterbodies
- ✓ Collected >100 surface water
samples
- ✓ Updated Land Use Maps for All
of Suffolk County
- ✓ Completed HAB Action Plan
- ❑ Final SWP (Summer '18)
- ❑ Hire Support Staff and Develop
SWP Monitoring Plan
(2018/2019)
- ❑ Next HAB Symposium (2018)
- ❑ Continued LINAP Support

Task 2 Development

- ✓ Article 19 of Sanitary Code
- ✓ Established RME
- ✓ Phase I Article VI Sanitary Code
(grandfathering, permits for
replacement)
- ✓ Residential Construction Standards
for I/A OWTS
- ✓ Commercial Construction Standards
for I/A OWTS
- ✓ Article VI Working Group
- ✓ EHIMS database - contractor
selected
- ❑ Phase II Article VI Sanitary Code
(align w/SWP findings; priority
areas, new construction, replace on
failure/property transfer)(2018)
- ❑ EHIMS Constr/Startup (2018)
- ❑ Establish District

Task 3 Implementation

- ✓ Phase I/II Residential Demo
- ✓ Septic Improvement Program
- ✓ Commercial I/A OWTS and
Experimental Demos
- ✓ Developed and implemented
industry training program
- ✓ Kelp Aquaculture
- ✓ Sewer Upgrades and
Expansion (ASRF, SCCRI)
- ✓ Retained 13 New Staff to
Support Program
- ❑ SIP Expansion (NYS Septic
Funding)
- ❑ Commercial I/A OWTS and
Experimental Demos
(ongoing)

*Supported by substantial grant funding and LINAP program leadership from NYSDEC.

- ✓ Task Complete or Underway
- ❑ Task Pending

Suffolk County Department of Health Services

Proposed Sanitary Code Changes



Policy 1:
“Grandfathering”
for Commercial
Properties

Policy 2: Permit
Requirements for
Retrofits &
Replacements

Policy 3:
Require I/A
OWTS for
New
Construction

Policy 4: Require
I/A OWTS for
existing systems
(e.g. failure,
sunset etc..)

Policy 5:
Require I/A
OWTS upon
Property
Transfer

Policy 6:
Amend Unsewered
Density Limit to 1
Unit / Acre for all
Hydrogeologic Zones

Phase - I

- Approved by SC Legislature and SC BOH 2017
- Changes effective January 2018 for Grandfathering
- Changes to take effect July 2018 for reporting of pump-outs, replacements, and retrofits.
- Changes to take effect July 2019 for permits for replacements or retrofits

Phase - II

- Goal to Implement ASAP after 2018 SWP GEIS Findings Statement
- Dependent on Sub-watersheds Wastewater Plan Recommendations (County Wide vs Critical/Priority Areas)
- Policy 4 and 5 may be dependent on establishment of Wastewater Management District and Funding Mechanism
- Requires increase in SCDHS Staffing



EXEMPTIONS (“GRANDFATHERING”) MODIFICATIONS

➤ **Revise Exemptions For “Other Construction Projects”** *(Same Flow & Same Building)*

● **Commercial Single-Tenant**

- ✓ must be active, continuous use for same purpose;
- ✓ not vacant for more than 2 years at the time of application
- ✓ no increase in density load compared to previous WWM applications
- ✓ less than 10% increase in footprint/gross floor area (Maximum 1,000 sf)
- ✓ Project does not involve total replacement or major reconstruction of a structure

● **Commercial Multi-Tenant**

- ✓ Not more than 50% vacant for more than 2 years at the time of application
- ✓ no increase in density load compared to previous WWM applications
- ✓ less than 10% increase in footprint/gross floor area (Maximum 1,000sf)
- ✓ Project does not involve total replacement or major reconstruction of a structure

****Short-Term Changes to Article 6 Grandfathering**



REQUIRE THE USE OF I/A OWTS FOR PRE-EXISTING OTHER CONSTRUCTION PROJECTS NOT MEETING REVISED EXEMPTIONS SECTION

- **New Section in Article 6**
- **Pre-Existing Structure Must Meet All Conditions**
 - No increase in established density load based on previous SCDHS or Town/Village approvals
 - ✓ SCDHS approvals include WWM, Food Permits, and Housing Permits
 - ✓ Town/Village Approvals must be before 1981
 - Pre-existing structures must be habitable at the time of application
 - Site exceeds density requirements of the Article
 - Project does not meet exemptions
 - Project is not located within a sewer district

Examples:

- Replacement of a Building previously approved by WWM with a “grandfathered” flow --- Requires the installation of I/A OWTS to maintain flow
- Replacement of a Building or Change of Use of a Building with w/ SCDH food permit, SCDHS Housing permit, or Town/Village approval prior to 1981 -- Requires the installation of I/A OWTS to maintain flow

Note: For multi-tenant structures only the tenant proposing modification has to install I/A

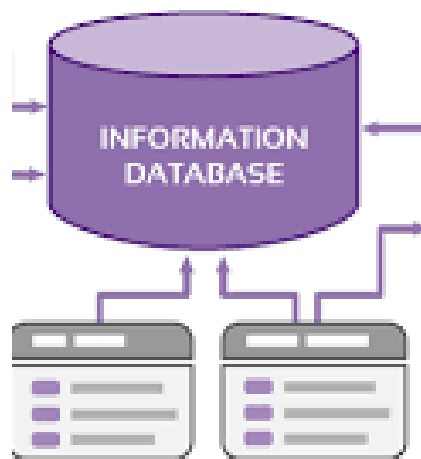
Note: TDR's permitted for grandfathered flows but would require I/A for additional flow over grandfathered flow to double-density

*** Short-Term Changes to Article 6 Grandfathering***



STARTING JULY 1, 2018

- Liquid Waste haulers must report all pumping and maintenance activities to SCDHS
- Septic System installers must report all installations of new cesspools/leaching pools/ overflow pools to SCDHS



NOTE: SCDHS expects between 5,000 and 10,000 replacement/retrofit reports to be filed every year



STARTING JULY 1, 2019

- Permits/filing for replacements or retrofits of existing sewage disposal systems are required
- Filing must indicate system components installed when property owner decides system needs to be replaced/retrofitted
- Require installation of a system substantially conforming to standards (Best-Fit)
 - Current standards require a septic tank + leaching structure at a minimum

NOTE: SCDHS expects between 5,000 and 10,000 replacement/retrofit reports to be filed every year



SUBWATERSHEDS WASTEWATER PLAN

Onsite Wastewater Treatment System Upgrades for Surface Water Protection

Sewer Districts

Black Subwatersheds - critical

Red Subwatersheds - high priority

Yellow Subwatersheds - medium priority

Green Subwatersheds - low priority

Subwatersheds - critical priority areas include: intensive D.O. impairments, HAB hot spots, eelgrass etc; high nitrogen, poor flushing.

Science Based Bridge to Support Policy Decisions - Transition from Septic Demo and SIP to wide-scale implementation

Provide recommended blueprint for wastewater upgrades: Set priority areas, nitrogen load reduction goals, and describe where, when, and what methods to implement to meet reduction goals (I/A OWTS, sewerage, clustered, other).

Establish uniform and consistent set of subwatershed boundaries for all priority areas (surface water, drinking water, groundwater)

Develop nitrogen load rates

Develop receiving water residence times (surface water sensitivity)

Establish baseline water quality

Establish drinking water areas

Define water quality goals (e.g., water clarity, dissolved oxygen, HABs, SAV, Harmful Algal Bloom Hot Spots)

Establish first order nitrogen load reduction goals for all of the County's surface water

drinking water, and groundwater resources

Recommendations for wastewater upgrades for each priority tier

Evaluation annual costs for various implementation options to support funding

- Brown Tide (Aureococcus anophage)
- Cyanobacteria
- Rust Tide (Cochlodinium polykrikoid)

0 5 10 20 Miles

recommendations



Sound

SUBWATERSHEDS WASTEWATER PLAN PROGRESS UPDATE

- **Established Uniform and Consistent Set of Land Use Data**
- **Developed Countywide Fictitious Full Buildout Land Use Scenario**
- **Identified Surface Water Quality Data Gaps and Collect Data**

- ✓ Identified 70 water bodies with no data
- ✓ Collected an additional ~90 surface water samples to fill data gaps and support evaluations
- ✓ Collected additional bathymetry data to support hydrodynamic model data gaps

Peconic Bay

- **Completed Subwatershed Delineations of 191 Waterbodies**

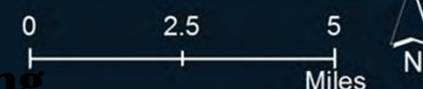
- **Completed Nitrogen Load Projections**

- **Completed Surface Water Hydrodynamic Modeling**

- **Developed DRAFT Priority Area Rankings**

- **Currently Refining Load Reduction Goal Methodology and Completing Evaluations**

- **SWP GEIS Final Scope Prepared/Adopted – Spring 2017**



Simulated TN (mg/L)



Atlantic Ocean



SWP & GEIS TIMELINE

- First Draft Subwatersheds Wastewater Plan ~July 2018
- Final Draft SWP - August/September 2018
- Final SWP and SEQRA Findings Statement - Fall/Winter 2018

SEPTIC DEMONSTRATION PROGRAM (I/A OWTS)



➤ *Phase 1 - Septic Demo Program*

- Manufacturer Selection
 - 4 manufacturers selected to install 6 types of systems for a total of 19 systems
- Homeowner Selection
 - 19 homes selected throughout the County via lottery by Legislative District



➤ *Phase 2 - Septic Demo Program*

- 6 manufacturers applied to install 8 types of systems
- Homeowner Selection - over 207 Applicants
- 23 homeowners selected on July 26, 2016





PERFORMANCE SUMMARY OF I/A OWTS DEMONSTRATED IN SUFFOLK COUNTY AND APPROVED FOR PROVISIONAL USE

Technology	AVG (Mg/L)*	Provisional Approval
Hydro-Action AN Series	11.6 mg/L	Approved in September 2016
Norweco – Singulair TNT	18.3 mg/L	Approved in October 2016
Orenco Advantex – RT	18.8 mg/L	Approved in March 2017
Norweco – Hydro-Kinetic	17.4 mg/L	Approved in April 2017
Fuji Clean System	16.6 mg/L	Approved in January 2018

*Standard is 19mg/L

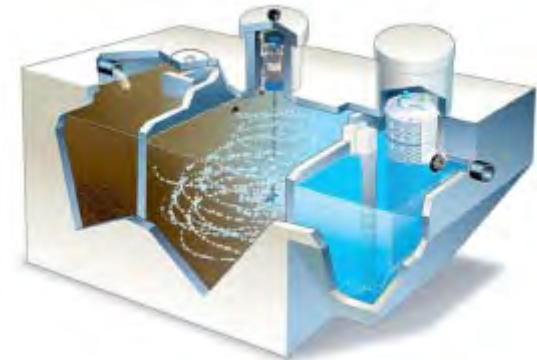
PROVISIONALLY APPROVED I/A OWTs



Hydro-Action



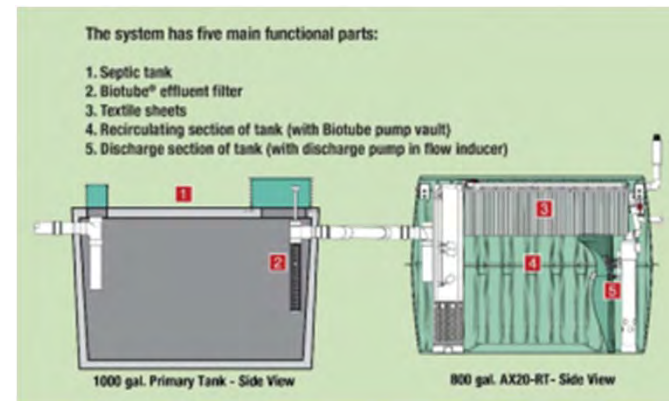
**Fuji Clean
System**



**Norweco
Singlair TNT**



**Norweco
Hydrokinetic**



**Orenco Advantex
AX-RT**

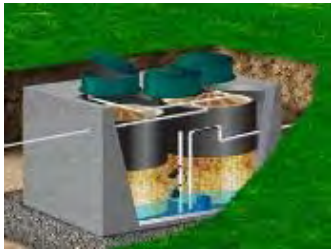
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES

SEPTIC DEMO PERFORMANCE DATA

Technology	Projected Approval Data	Treatment Performance *	# of Systems Being Sampled	% Completed
Orenco Advantex – AX20	Summer 2018	22.5 mg/l	3	83%
Amphidrome	Spring 2018	18.3 mg/L	2	(one system restarted) 50%
Ecoflow with Denite	Spring 2018	17.3 mg/L	2	90%
SepticTech	Summer 2018	11.5 mg/l	2	50%
Pugo	Cannot Project	35.5 mg/L	4	Manufacturer to make adjustments in 2018
Ecoflow	Cannot project	38.4 mg/L	2	Adjustments made in 2017
Waterloo	Cannot Project	49.4 mg/L	2	Manufacturer to make adjustments in 2018
BioBarrier	Cannot Project	52.9 mg/L	2	Manufacturer to make adjustments in 2018
BUSSE - MF	Cannot Project	83.1 mg/l	2	Systems offline. Manufacturer to make adjustments in 2018

*Standard is 19mg/L

I/A OWTS BEING EVALUATED BY SUFFOLK COUNTY



**Waterloo
BioFilter**



**PUGO
Systems**



**BioMicrobics
SeptiTech STAAR**



**BioMicrobics
BioBarrier MBR**



BUSSE MBR



**Orenco Advantex
AX-20**

Comparison of I/A OWTs Results



Technology	NSF 245 or ETV Certification	Suffolk County	Maryland	Barnstable County	New Jersey Pinelands	Rhode Island
Advantex AX	NSF 24 mg/l	21.6 mg/L	14 mg/l	17.42 mg/l		14.9 mg/l
Advantex RT		18.8 mg/L	17 mg/l			
HydroAction	NSF 15 mg/L	11.6 mg/L	20.3 mg/l			
Norweco Singulair	NSF 12 mg/L	18.3 mg/L	27 mg/l	17.86 mg/l		
Norweco Hydro-Kinetic	NSF 7.9 mg/L	18.5 mg/L				
BUSSE MF	NSF 16 mg/l	72.3 mg/L				
Amphidrome	ETV 10.81 mg/L	17.8 mg/L		13.74 mg/l	17 mg/l	
BioMicrobics FAST	NSF 17 mg/L		25 mg/l	15.48 mg/l	21 mg/l	17.1 mg/l
BioMicrobics BioBarrier	NSF 9 mg/L	48.0 mg/L			23 mg/l	
BioMicrobics SeptiTech	NSF 17 mg/L		20 mg/l	17.37 mg/l	17 mg/l	11.3 mg/L
Fuji Clean	NSF 10 mg/L	16.6 mg/L				
Pugo	NSF 17 mg/L	29.9 mg/L				
Ecoflo Coco Filter	NSF 18.6 mg/L	19.8 mg/L				
Waterloo BioFilter	ETV 14 mg/L	52.0 mg/L		17.89 mg/l		

Notes:

- Barnstable County, Mass uses the median. Results are the average of the median
- NJ Pinelands and Rhode Island use the median. Results are the average of the median
- Maryland use the average
- SC systems stated are part of a demo program. Results are the average of at least 6-months of composite sampling. Suffolk County results in **red** are of systems that have not received provisional approval and a limited sample size is represented
- Performance Standard of 30 mg/l in Maryland and 19 mg/l in MA, RI, and Suffolk County



PROVISIONAL SAMPLING RESULTS

Technology	AVG (Mg/L)*	# of samples	Provisional Approval
Hydro-Action AN Series	15.7 mg/L	27	Approved in September 2016
Norweco – Singulair TNT	42.9 mg/L	25	Approved in October 2016
Orenco Advantex – RT	33.1 mg/L	10	Approved in March 2017
Norweco – Hydro-Kinetic	29. mg/L	25	Approved in April 2017
Fuji Clean System	9.25 mg/L	4	Approved in January 2018

*Standard is 19mg/L

COMMERCIAL DEMONSTRATION PROJECTS



Completed

- *Meschutt County Park*
 - \$ 300,000 County Funding
 - Orenco AXMAX-225 Unit (Packed Bed Textile Recirculating Filter)
 - Construction completed May 2016
 - Average Total Effluent Nitrogen 17.2 mg/l (7-months composite sampling)
- *Sylvester Manor Educational Farm*
 - \$209,000 County Funding
 - Vegetated gravel recirculating filter
 - Construction Complete Spring 2017
 - Average Total Effluent Nitrogen 14.5 mg/l (3-months composite sampling)
- *Lake Ronkonkoma Park*
 - \$408,000 County Funding (Enhanced Water Quality funding)
 - Norweco Hydro-Kinetic I/A OWTS with Eljen geotextile gravelless sand filter leaching
 - Construction Complete (to Be Sampled 2018)
- *SBU CCWT NRB (County Parks)*
 - Installed 3 Nitrogen Reducing Biofilters (NRB) at County Parks
 - Lined, Unlined, and Box
 - Systems installed in Spring 2018
 - Sampling to begin Spring/Summer 2018

Pending

- *County Parks Pending Appropriation of funding (Enhanced Water Quality Funding)*
 - *Cupsogue Beach County Park*
 - *West Sayville County Park*
- *Vanderbilt Museum/Planetarium*
 - \$167,000 County Funding (Enhanced Water Quality funding)
 - Currently in Design/Permitting Phase
- *TNC Upland Farms*
 - \$220,000 County Funding (Enhanced Water Quality funding)
 - Constructed Wetland & NRB's
 - Currently in Design/Permitting Phase





SEPTIC IMPROVEMENT PROGRAM (SIP)



GRANT PROGRAM DETAILS:

- Individual homeowners may be eligible for a grant up to \$11,000.
- \$10,000 will be provided toward the purchase and installation of an approved I/A OWTS and leaching structure, as well as for attendant engineering and design services.
- An additional \$1,000 may be available for installation of Pressurized Shallow Drainfield for a maximum grant of up to \$11,000.

INCOME CRITERIA:

- Adjusted Gross Income less than or equal to \$300,000/year is eligible for 100% of grant
- Adjusted Gross Income between \$300,000/year - \$500,000/year is eligible for 50% of grant
- Adjusted Gross Income of \$500,000 or more will not be eligible for a grant (consistent with NYS Star Property Tax Rebate).

REGISTER ONLINE AND ACTIVATE YOUR ACCOUNT



Reclaim Our Water

Sign up now for the Septic Improvement Program

WWW.RECLAIMOURWATER.INFO

Homeowners



Industry



Regulatory



Technical



Infrastructure



Contact



Septic Improvement Program



Septic Replacement Loan Program

To further CDCLI's mission of increasing investment in neighborhoods, protecting the assets of homeowners, and protecting the environment, a **low interest rate loan product** is now available to assist with the installation of a Suffolk County approved replacement septic system!

This new loan from CDCLI is made available in conjunction with the Suffolk County Septic Improvement Program. Under the Suffolk County Septic Improvement Program, homeowners may apply for a **grant** from Suffolk County to assist with the cost of replacing outdated and failing septic systems with state-of-the-art nitrogen reducing systems designed to reverse decades of damaging nitrogen pollution of ground and surface waters.

[LEARN MORE](#)

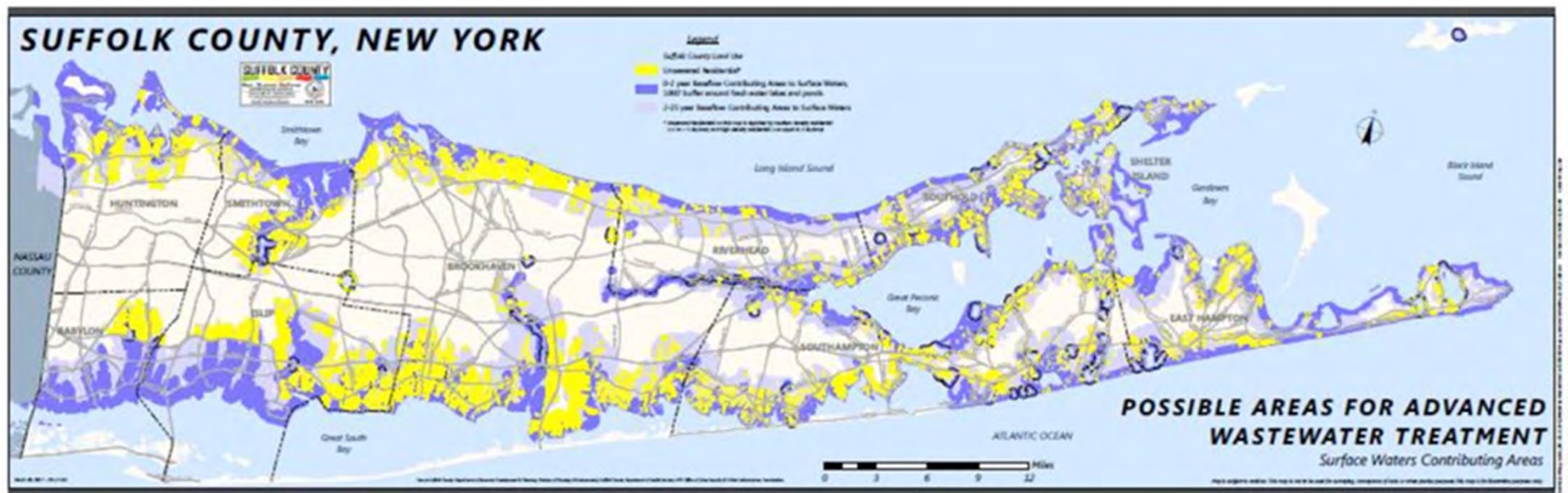
LOAN PROGRAM DETAILS:

- Administered by CDCLI Funding Corporation
- Individual homeowners may be eligible for low cost financing up to \$10,000
- Competitive 3% interest rate
- Repayment term of up to 15 years
- The loan program will be administered by CDCLI Funding Corp, with financial support from Bridgehampton National Bank

GRANT ELIGIBILITY CRITERIA



PRIORITY AREAS:



Septic Improvement Program



Reclaim Our Water with a state-of-the-art wastewater treatment system supported by a grant of up to \$11,000 from Suffolk County.

[Register](#)

SIP APPLICATION STATUS AS OF MAY 7, 2018

➤ **Septic Improvement Program (SIP) Statistics**

- SCDHS started accepting applications July 3, 2017
 - ✓ 1168 registrants
 - ✓ 323 completed applications
 - ✓ 230 issued grant certificates
 - ✓ 40 withdrawn grant certificates, 2 rescinded
 - ✓ 188 active grant certificates
 - ✓ 62 total WWM Permit Applications
 - 14 permits pending price quotes from vendors and assignments of payment from homeowners
 - 17 completed installations
 - 10 other installs Approved & waiting to be scheduled
 - ✓ 12 final approvals issued by WWM

AVERAGE COSTS UNDER SEPTIC IMPROVEMENT PROGRAM

I/A OWTS Installation Cost	Site Constraints	Leaching Field Type	Leaching Costs	Engineering Costs	Total Project Cost
\$15,733	2 leaching pools, shrubs in access way	Leaching Pools	2,107.00	\$2,500	20,340.00
\$18,789	Dewatering. Reroute plumbing. Removal of shrubs & Belgian block patio	Existing 5-Pool System	N/A	\$2,500	21,289.00
\$15,733	Existing System in Driveway.		3,217.00	\$2,500	21,450.00
\$13,584		New Leaching Pool Installed	3,261.00	\$2,500	19,345.00
\$16,395	High Groundwater, System in Driveway	Leaching Pools (5 pool system) Existing. Expansion Pools Installed.	6,325.00	\$2,500	25,220.00
\$17,274	Deep Excavation, Long Electrical Conduit Run, Cost includes removal of deck for access to yard	Leaching Pool	2,426.00	\$2,500	22,200.00
\$15,733		Leaching Galleys	1,476.00	\$2,500	19,709.00
\$16,276		Pressurized Shallow Drainfield	3,579.00	\$2,500	22,355.00
\$13,584	Tight Yard Access	Leaching Pool	2,511.00	\$2,500	18,595.00
\$19,044	6 bedroom; tree removal, reroute waterline	leaching pools	5,245.00	\$2,500	26,789.00
\$15,733		Infiltrator	2,643.25	\$2,500	20,876.25
\$16,095	Driveway Leaching Location	Leaching Pools	4,825	\$2,500	23,420.00
\$15,733		Eljen	4,243.25	N/A	19,976.25
\$15,733		Leaching Pool	2,643.25	\$2,500	20,876.25
\$15,733	Remove trees; raise wellhead; remove walkway; relocate water softener pipe	Leaching pool	4,030.13	\$2,500	22,263.13
\$13,584		Leaching Pools	5,346.00	\$2,500	21,430.00
\$16,095	H2O Traffic Loading tank and Leaching Pools	Leaching Pool	8,500	\$2,500	27,095.00
\$15,932.41			\$ 3,898.62	\$2,500.00	21,954.64



SIP GRANTS BY TOWN AS OF MAY 2, 2018

Town	# of Grant Certificates Issued
Brookhaven	54
Southampton	44
East Hampton	27
Huntington	20
Southold	10
Islip	13
Smithtown	10
Shelter Island	6
Riverhead	3
Babylon	1



Overview of I/A OWTS Installations and Pending Applications in Suffolk County, NY

Technology	# of Septic Demo Installs	# of SIP Installs	Approval Status	Other Installation s or Pending Application s
HydroAction AN Series	5	9	Provisional	55
Norweco Singulair TNT	5	8	Provisional	68
Orenco Advantex RT	2	0	Provisional	14
Norweco Hydro-Kinetic	5	0	Provisional	1
Fuji Clean CEN Series	4	0	Provisional	32
Orenco AX-20	3	0	Demonstration	0
Orenco AX-MAX	1	0	Demonstration	0
BUSSE	2	0	Demonstration	0
Pugo	4	0	Demonstration	0
Ecoflo Cocofilter	2	0	Demonstration	0
Waterloo BioFilter	2	0	Demonstration	0
Amphidrome	2	0	Demonstration	0
BioMicrobics BioBarrier	2	0	Demonstration	0
BioMicrobics SepticTech	2	0	Demonstration	0
BioMicrobics MicroFAST	0	0	Demonstration	2
Nitrogen Reducing BioFilters (NRB's)	3	0	Experimental	2
Totals	46	17		174

Note:

- (1) Total amount of Applications (Installed, Under Review, or Permitted) is 237
- (2) Information as of May 2, 2018



STATE SEPTIC SYSTEM REPLACEMENT FUND

➤ Suffolk County receives **\$10,025,000** in first allocation

- Program Eligibility

- ✓ Must be located in a Priority Area
- ✓ Must be failure, likely to fail, or determined by County Health Official that suspected to be major source of pollutants based on environmental factors.
- ✓ Only single family homes, 2 family homes, and small businesses are eligible.
- ✓ Projects cannot exceed 1,000 gpd
- ✓ Seasonal / secondary homes are not eligible

- Ineligible Costs

- ✓ Routine Maintenance
- ✓ Sales tax
- ✓ Fines, penalties, permit fees, and late fees
- ✓ Non-essential site beautification
- ✓ Administrative work completed by engineer
- ✓ Construction oversight by engineer if engineer is also conducting septic repair or replacement

**STANDARDS FOR APPROVAL OF PLANS AND
CONSTRUCTION FOR SEWAGE DISPOSAL SYSTEMS
FOR SINGLE-FAMILY RESIDENCES**

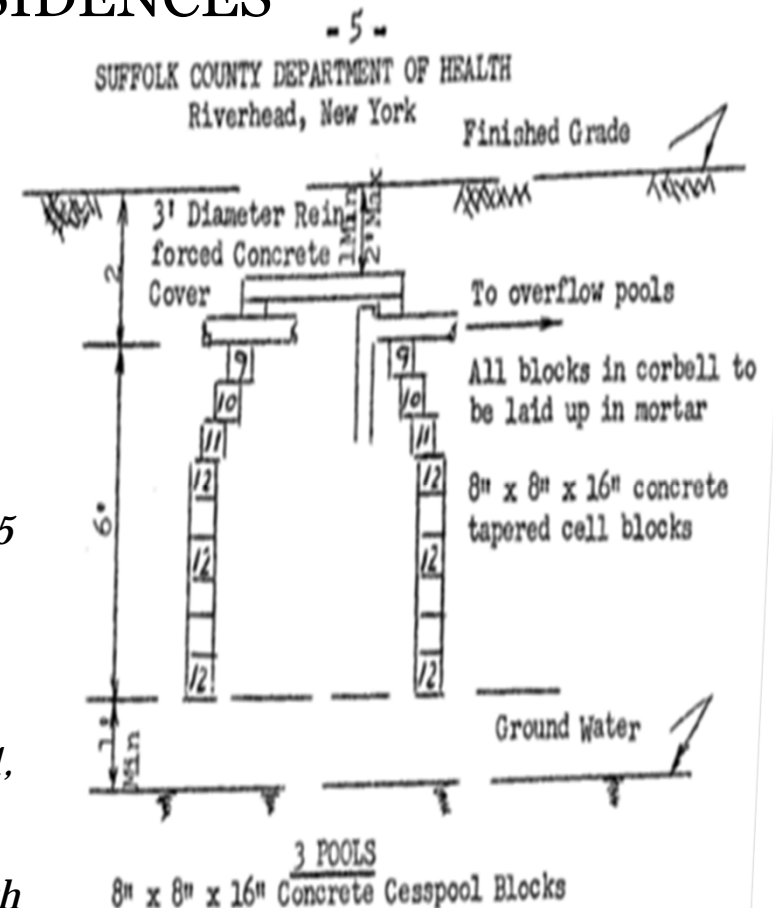




STANDARDS “APPROVAL OF PLANS AND CONSTRUCTION FOR SEWAGE DISPOSAL SYSTEMS FOR SINGLE-FAMILY RESIDENCES

➤ History:

- 1958 - 1st Residential Standards went into effect permitting block cesspools as a method of sewage disposal for single-family residences
- 1972 – Standards were revised to require septic tank prior to leaching and precast structures
- Residential Standards Enacted November 13, 1995
- 1st major updates to residential standards in 20 years
- Intern Residential Standards issued September 21, 2016 to permit the use of I/A OTWS
- Residential Standards issued January 1, 2018 with expansion of leaching and I/A OTWS sections and addition of “Best-Fit”





KEY ADDITIONS TO THE RESIDENTIAL STANDARD

- ✓ Update Septic Tank Section
- ✓ Allow for best-fit-retrofits with I/A OWTS
- ✓ Add New Section For I/A OWTS
- ✓ Cross-Reference Article 19 and I/A OWTS Standard
- ✓ Procedures for conducting Percolation Tests
- ✓ Updates to Gravelless Absorption Trenches
- ✓ Addition of Pressurized Shallow Drainfields following I/A OWTS
- ✓ Update Cover and Riser/Chimney Section

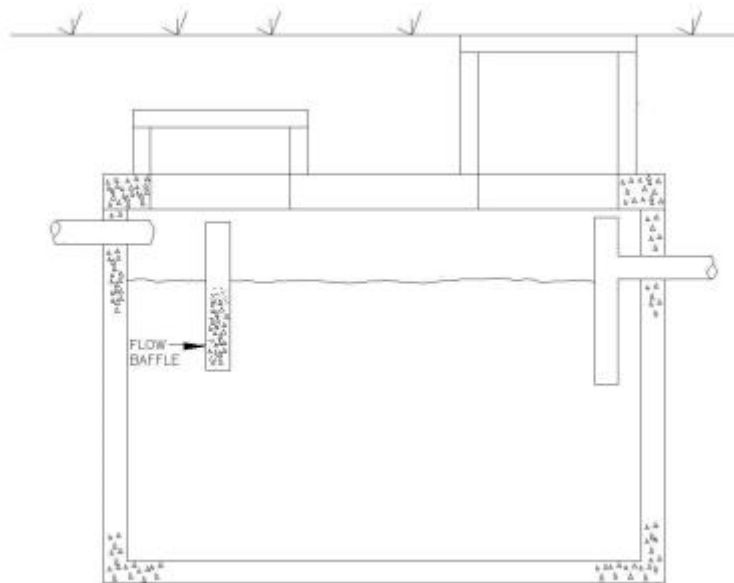




MAIN REVISIONS TO SEPTIC TANK SECTION

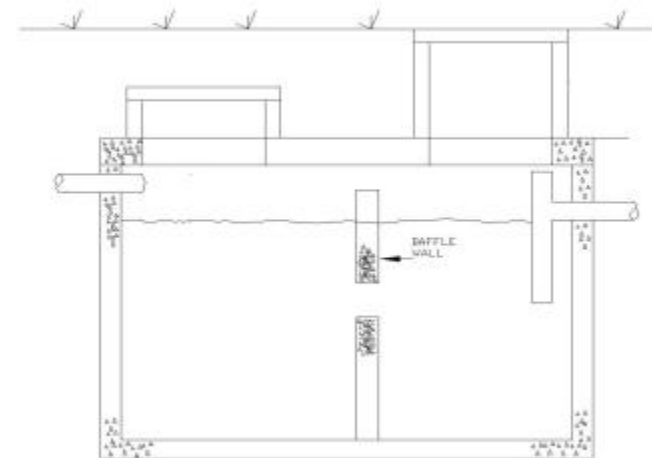
Old

- Tanks are not required to have two compartments
- Pre-cast tanks permitted only



New

- Require two compartments (Inlet and Outlet) similar to the commercial standards
- Permit the use of Poly and Fiberglass septic tanks





SEPTIC TANK CAPACITIES

Number of Bedrooms	Minimum Tank Capacity (gallons)	Minimum Liquid Surface Area (sq. ft.)
0, 1, 2, or 3	1,000	27
4	1,250	34
5	1,500	40
6	1,750	47
7	2,000	54

NOTES:

Tank size requirements for more than six bedrooms shall be calculated by adding 250 gallons and seven square feet of surface area for each additional bedroom. A garbage grinder shall be equivalent to an additional bedroom for determining septic tank capacity.

Non-Concrete Septic Tanks

- fiberglass, polyethylene, polypropylene, thermoplastics, or other materials
 - steel septic tanks prohibited
- Walls, floors, roof and access covers shall resist a min. force of 300 psf
- Min. 3" drop across the tank
- Must have 2 compartments (1st 50-70% vol.)
- Installed 8ft to driveway or parking area
- **Examples:**
 - Roth Septic tanks
 - Infiltrator Septic tanks





APPLICATIONS FOR RETROFIT (“BEST-FIT”)

- **Retrofit or Replacement** of an existing sewage disposal system with an I/A OWTS shall meet the Standards to the greatest extent possible.
- If necessary, certain requirements may be relaxed at the discretion of the Department provided:
 - ✓ **A change of use, building renovation or any increased flow to the OWTS is not proposed.**
 - ✓ The protection of public health and the environment is given priority of all other considerations.
 - ✓ The proposed system does not reduce the setbacks to neighboring private wells as compared to the current system being replaced or retrofitted.
 - ✓ The Design Professional certifies that the retrofit application meets the Standards to the greatest extent possible and that other alternatives are not feasible.
- The Department may allow an OWTS Application for Retrofit to be submitted when a fire or other catastrophic occurrence necessitates that a structure served by an OWTS be replaced.

NEW INNOVATIVE AND ALTERNATIVE OWTS SECTION



➤ **Capacity Requirements:**

- Designed Based on Bedrooms
 - 110 GPD/Bedroom
- Minimum Capacity for 4 bedrooms -- 440 gpd rated treatment capacity
- Maximum permitted rated treatment capacity under this standard is 1,000 gpd

➤ **Setbacks :**

- I/A OWTS are equivalent to Septic Tanks (8ft to driveway if non-concrete)

➤ **I/A Tank Materials permitted and requirements:**

- Pre-cast Concrete, Fiberglass , & Polyethylene

➤ **General Electrical Requirements :**

- Control panels, pumps, blowers, floats, etc.

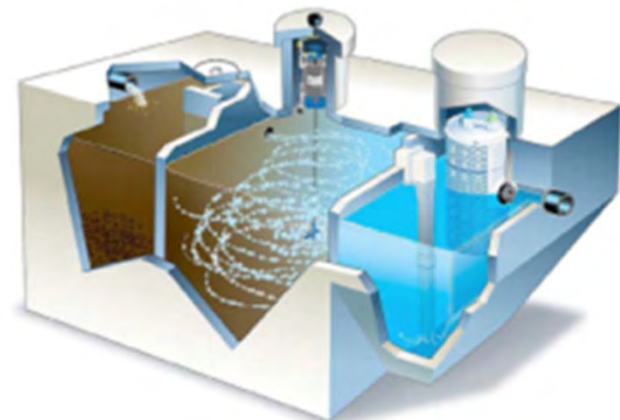




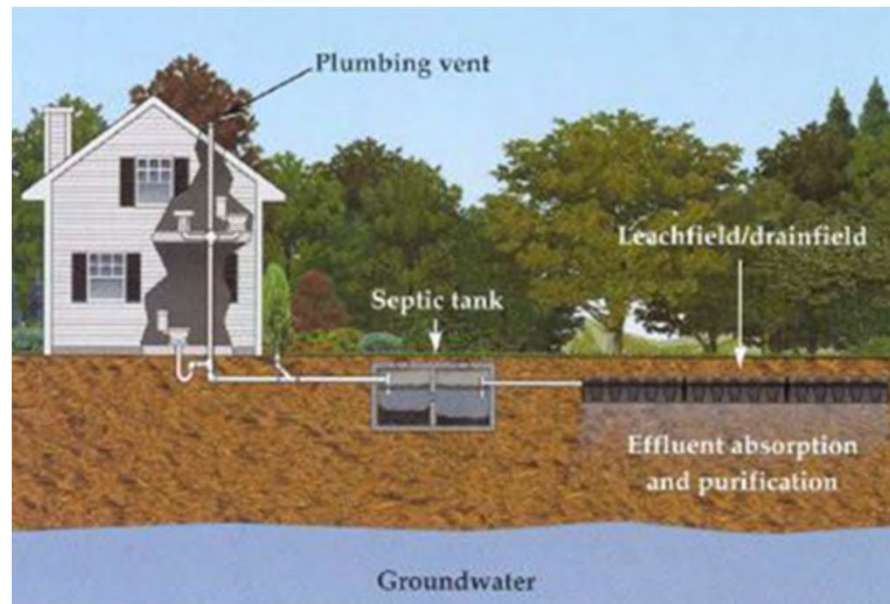
TABLE 1 - MINIMUM SEPARATION DISTANCE TO SEWAGE DISPOSAL SYSTEMS (IN FEET)

Table of Minimum Horizontal Separation Distances From:	Septic Tank, I/A OWTS Pump Station, or Manhole	Leaching Structure/System (including expansion)	Sewer Line, Force Main
Building with Cellar/Basement	10 ft.	10 ft.	5 ft.
Building on Slab	5 ft.	10 ft.	5 ft.
Porches, decks, house overhangs, cantilevers, etc.	5 ft.	5 ft.	5 ft.
Water Service Line/Laterals/Mains ¹	10 ft.	10 ft.	10 ft.
Underground Utilities	5 ft.	5 ft.	5 ft.
Surface Waters ²	75 ft.	100 ft.	50 ft.
Public Water Well	200 ft.	200 ft.	50 ft.
Private Well ³	75 ft.	100/150 ft.	50 ft.
Non-Potable Water Well	50 ft.	50 ft.	50 ft.
Road Storm Drains/Stormwater Recharge Basin ⁴	20 ft.	20 ft.	10 ft.
On-site Drywells/Drainage Structures ⁴	10ft	10ft	10ft
Catch Basins (non-leaching)/Drainage Pipe ⁵	5 ft.	10 ft.	5 ft.
Leaching Pool	8 ft.	8 ft.	5 ft.
Septic Tank, Pump Station, or Manhole ^{6,8}	5 ft.	8 ft.	5 ft.
Property Lines	5 ft.	5 ft.	5 ft.
Swimming Pool	20 ft.	20 ft.	5 ft.
Retaining Wall (water proof) ⁷	10 ft.	10 ft.	5 ft.
Fuel Storage Tanks (below ground)	10 ft.	10 ft.	10 ft.
Bluffs	65 ft.	65 ft.	65 ft.



REVISIONS TO LEACHING STRUCTURE SECTION

- Added section for “Leaching Galleys”
 - Rectangular pre-cast leaching structures
- Added a section for “Gravelless Absorption Trenches” and “E. Gravelless Absorption Beds”
- Systems approved the Department or listed in the NYSDOH “Residential Onsite Wastewater Treatment System Design Handbook”, Appendix C
- Added section for “Pressurized Shallow Drainfields”





PERCOLATION TESTS

➤ Required for:

- PSD's
- Gravelless Absorption Trenches/Beds
- Other Leaching Systems

➤ Method:

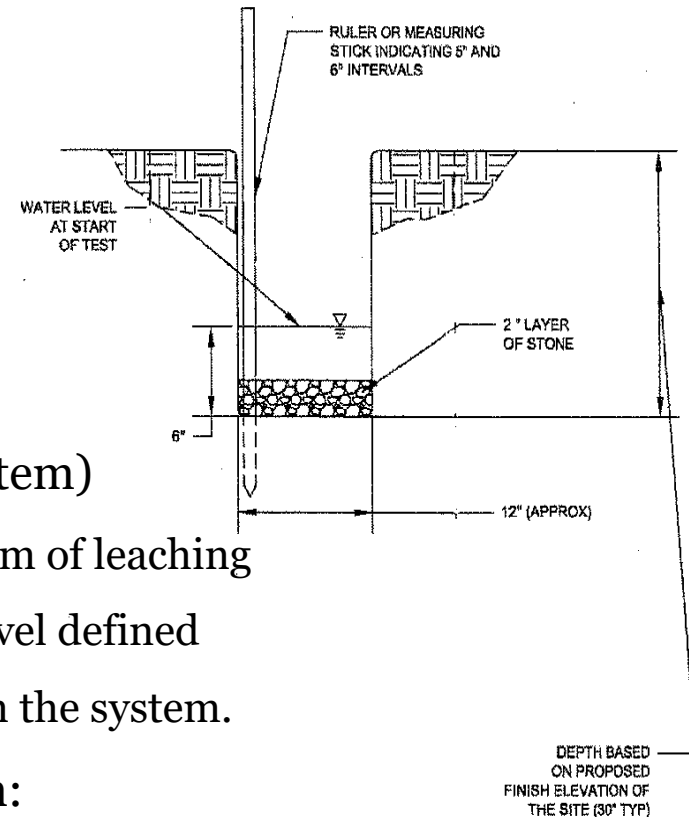
- 2 tests for less than or equal to 1,000 sq. ft.
- Additional test for each additional 500 sq. ft.

➤ When tests exceeds 60 MI (or 30MPI for bed system)

- 4ft of unsuitable soils shall be excavated below bottom of leaching
- The excavation shall be backfilled with sand and gravel defined
- The lowest application rate shall be utilized to design the system.

➤ Percolation tests not required for the above when:

- The bottom of the structure placed on virgin strata of 4ft of sand and gravel defined; or
- Soils are excavated to a 4ft strata of virgin sand and gravel & then backfilled with clean sand and gravel defined as SP or SW.





GRAVELLESS ABSORPTION TRENCHES

- These are systems approved for use under Appendix 75A and the NYSDOH “Residential Onsite Wastewater Treatment System Design Handbook”, Appendix C
 - Infiltrator (Various Products)
 - Cultec (Various Products)
 - GeoMatrix (Various Products)
- Designed based on 2ft wide trenches
- Plans must prepared by a Design Professional (NYS PE or RA)
- Design based on percolation tests and soil borings.
- Sized at 110 g/b/day (Minimum 4-bedrooms)
- Requires effluent filter on the outlet of Septic Tank or I/A OWTS
- Reductions for Gravelless Absorption Trenches
 - 33% with I/A OWTS
 - 25% for gravelless chambers
 - 6 sf/ft for gravelless geotextile sand filters
 - Reductions cannot be combined



Septic Tank or I/A OWTs Effluent Filters

- Must be NSF Standard 46
- Must be installed when using leaching systems other than leaching pools or galleys
- Example Leaching Requiring Filter:
 - Infiltrator chambers
 - Infiltrator ATL
 - Eljen





Diagram 1: Trench with Permeable Backfill

Labels: PERMEABLE BACKFILL, FABRIC COVER, PERFORATED PVC PIPE, CLUMP, CRUSHED MESH CORE, FABRIC AND SOLID CORE, RAINFALL, LEVEL, TRENCH BOTTOM, WASHED CONCRETE SAND.

Dimensions: 18' MIN. x 30' MAX., 48', 2' MIN.

Notes: (1) MINUTES PER INCH PERCOLATION RATE) PERMEABLE SOIL.

Diagram 2: Trench with Soil Backfill

Labels: SOIL BACKFILL, VOID SPACE, CHAMBER UNIT, WATER COLUMN, TRENCH BOTTOM.

Dimensions: 18' x 30', 2' MIN.

Notes: PERMEABLE SOIL (1) MINUTES PER INCH PERCOLATION RATE.

Common Note: DRAINAGE BEDROCK OR IMPERMEABLE SOIL

LEACHING SIZING TABLES INCLUDED IN STANDARDS



**TABLE 8 – REQUIRED LENGTH OF A GRAVELLESS ABSORPTION TRENCH FOR STANDARD
DESIGN FLOWS (FEET)
(BASED UPON TWO (2) FOOT WIDE TRENCH)**

Percolation Rate (minutes/inc h)	Applicati on Rate (gal/day/ft ²)	Daily Flow Rate (gallons per day)							
		3- Bedroo ms	4- Bedroo ms	5- Bedroo ms	6- Bedroo ms	7- Bedroo ms	8- Bedroo ms	9- Bedroo ms	10- Bedroo ms
		330	440	550	660	770	880	990	1100
1-5	1.20	138	184	230	275	321	367	413	458
6-7	1.00	165	220	275	330	385	440	495	550
8-10	0.90	184	245	306	367	428	489	550	611
11-15	0.80	207	275	344	413	481	550	619	688
16-20	0.70	236	315	393	472	550	629	707	786
21-30	0.60	275	367	459	550	642	733	825	917
31-45	0.50	330	440	550	660	770	880	990	1100
46-60	0.45	367	489	612	734	856	978	1100	1222

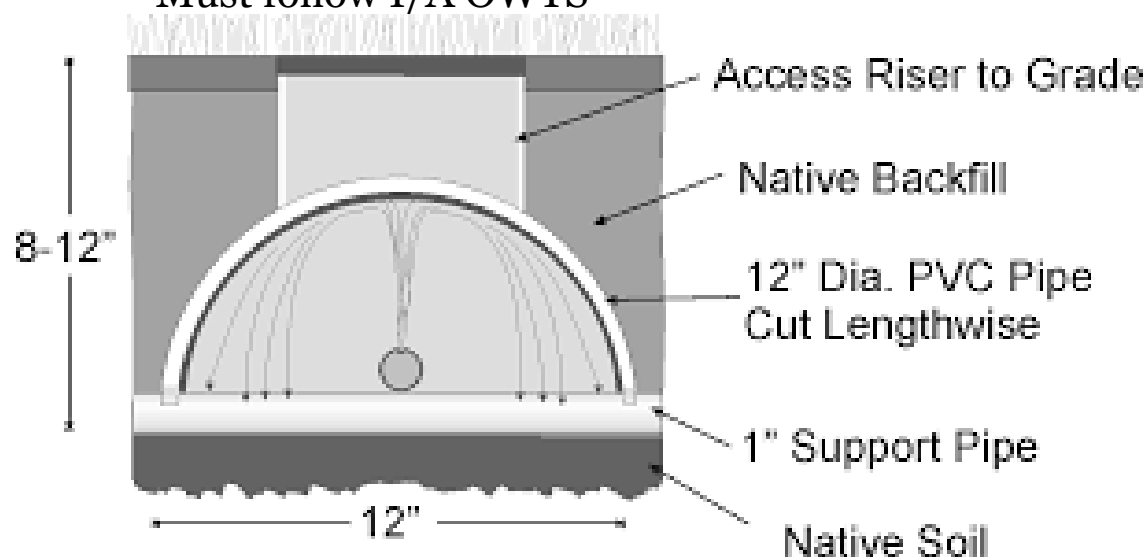
**TABLE 9 – REQUIRED LENGTH OF A GRAVELLESS ABSORPTION TRENCH FOR STANDARD
DESIGN FLOWS (FEET)
(BASED UPON TWO (2) FOOT WIDE TRENCH WITH 25% REDUCTION)**

Percolation Rate (minutes/inc h)	Applicati on Rate (gal/day/ft ²)	Daily Flow Rate (gallons per day)							
		3- Bedroo ms	4- Bedroo ms	5- Bedroo ms	6- Bedroo ms	7- Bedroo ms	8- Bedroo ms	9- Bedroo ms	10- Bedroo ms
		330	440	550	660	770	880	990	1100
1-5	1.20	103	138	172	206	321	367	413	458
6-7	1.00	124	165	206	248	385	440	495	550
8-10	0.90	138	183	229	275	428	489	550	611
11-15	0.80	155	206	258	309	481	550	619	688
16-20	0.70	177	236	295	354	550	629	707	786
21-30	0.60	206	275	344	413	642	733	825	917
31-45	0.50	248	330	413	495	770	880	990	1100
46-60	0.45	275	367	458	550	856	978	1100	1222



PRESSURIZED SHALLOW DRAINFIELDS (PSDs)

- Pressurized drainfields that evenly and horizontally distribute treated effluent within 18 inches of the top soil horizon.
- Emphasis on increased microbial activity and nutrient absorption.
- Req. duplex pumps unless system designed to flow by gravity on pump failure
- Must follow I/A OWTS





PSD SIZING AND LOADING RATES

- Sizing based on perc test
- all I/A OWTS to precede PSD's must fall within one of the following categories:
 - Category 1 Technologies: I/A OWTS meeting effluent of less than or equal to 20 mg/L for BOD and TSS and 5 mg/L for FOG.
 - Category 2 Technologies: I/A OWTS meeting effluent of less than or equal to 30 mg/L for BOD and TSS and 5 mg/L FOG.

TABLE 13 - LOADING RATES FOR PRESSURIZED SHALLOW DRAINFIELDS (PSD's)
SIZED BASED ON BOTTOM AREA OF TRENCH

Soil Type	Percolation Rate (min/in)	Application Rate (gal/day/sf)	
		CATEGORY 1 I/A OWTS	CATEGORY 2 I/A OWTS
Sand and loamy sand	1 – 5	3.0	1.9
Sandy loam	6 – 15	2.0	1.3
Fine sand, very fine sand, loam	16 – 30	1.5	.9
Silt and silt loam	30 – 45	1.2	.8
Clay loam, sandy clay, silty clay loam	45 – 60	1	.75
Clay	60 - 120	NOT ALLOWED	



REVISIONS TO COVER AND CHIMNEY/RISER SECTION

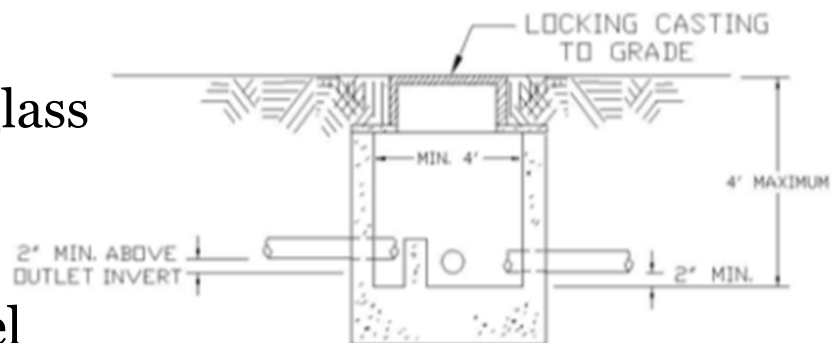
- Use on Septic Tanks, I/A OWTS, Sampling Manholes, and Leaching Structures
- Add section permitting HDPE Covers
 - HDPE covers must be flat w/ non-skid finish
- Add section permitting non-precast chimney/riser
- Concrete chimneys/riser not permitted on fiberglass or Poly structurers
- Concrete or cast iron covers not permitted on fiberglass or Poly structurers





Distribution Boxes and Levelers

- Concrete or Non-Concrete (fiberglass or HDPE)
- All Outlets should be @ same level
- Must have locking cover to grade (cast iron or HDPE)
- Use of leveling devices required



OTHER REVISIONS TO THE RESIDENTIAL STANDARDS



- Require tanks (e.g. I/A or Septic Tank) using thermoplastic weighing less than 60lbs to install a secondary safety lid or device.



- Grading update:
 - When using an I/A OWTS with PSD or Gravelless Absorption Trench
 - ✓ permit a maximum slope equal to a 1ft drop over 3ft beginning 3ft from the edge of the leaching system trench

STANDARDS FOR APPROVAL OF PLANS AND CONSTRUCTION FOR SEWAGE DISPOSAL SYSTEMS FOR OTHER THAN SINGLE-FAMILY RESIDENCES



Notes:

- *For sites with outfalls less than 30,000gpd.
- *NYS SDPES permit required for outfalls greater than 1,000gpd
- *I/A OWTS monitoring required per Suffolk County Sanitary Code Article 19 Standard



KEY ADDITIONS TO THE COMMERCIAL STANDARD

- Cross-reference Article 19 and I/A OWTS Standards
- Update Septic Tank/ Grease Trap Sections to allow non-concrete products
- Added New Section For I/A OWTS
- Update to Leaching Section
- Procedures for conducting Percolation Tests
- Allow for best-fit-retrofits to I/A OWTS

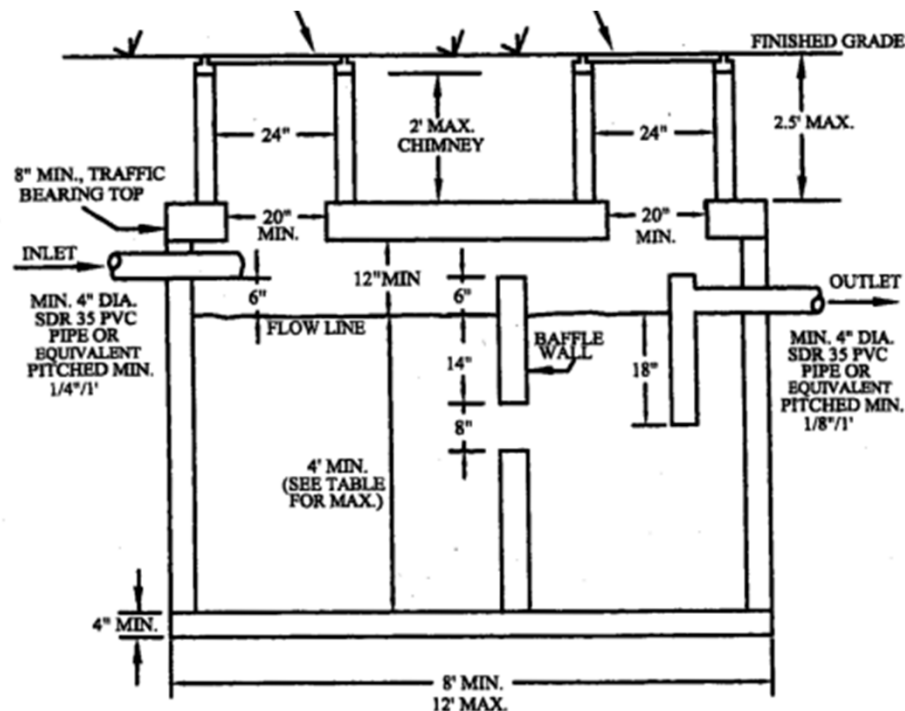




MAIN REVISIONS TO SEPTIC TANK & GREASE TRAP SECTION

Old

- Pre-cast tanks permitted only



New

- Permit the use of Poly and Fiberglass septic tanks
- Must be or installed to be traffic bearing (unless can be placed in an area restricted from vehicular access)





NEW INNOVATIVE AND ALTERNATIVE OWTS SECTION

➤ **Capacity Requirements:**

- Not permitted to be used to increase density above Article 6 density requirements
- Design based on flow rates in the standards
- In some cases mass loading calculations may be required to design system

➤ **Setbacks :**

- I/A OWTS are equivalent to Septic Tanks

➤ **I/A Tank Materials permitted and requirements:**

- Pre-cast Concrete, Fiberglass , & Polyethylene
- Must be or installed to be traffic bearing (unless can be placed in an area restricted from vehicular access)
- Recommend redundant GT with kitchen waste

➤ **General Electrical Requirements :**

- Control panels, pumps, blowers, floats, etc.





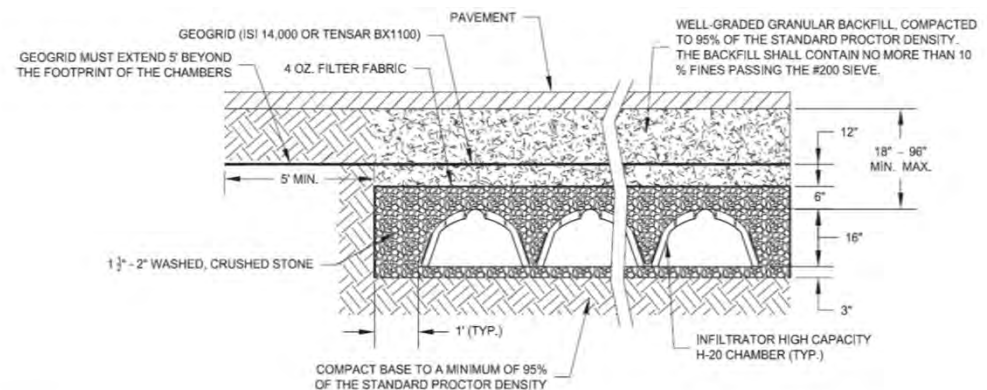
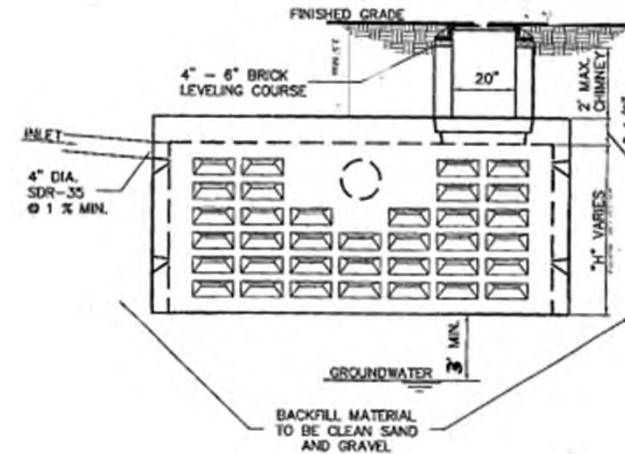
TABLE 2 - MINIMUM HORIZONTAL SEPARATION DISTANCES

Table of Minimum Horizontal Separation Distances From:	Septic Tank, I/A OWTS, Pump Station, Grease Trap, or Manhole	Leaching Structure ³	Sewer Line, Force Main
Building with Cellar	10 ft.	10 ft.	5 ft.
Building on Slab	5 ft.	10 ft.	5 ft.
Water Service Line/Laterals/Mains ⁵	10 ft.	10 ft.	10 ft. ⁴
Underground Utilities	5 ft.	5 ft.	5 ft.
Surface Water/Regulated Wetlands	75 ft.	100 ft.	50 ft.
Public Water Well ²	200 ft.	200 ft.	50 ft.
Private Well ¹	100 ft.	150 ft.	50 ft.
Storm Drain/Stormwater Recharge Basin ⁵	20 ft.	20 ft.	10 ft.
Catch Basins (non-leaching)/Drainage Pipe ⁶	5 ft.	10 ft.	5 ft.
Leaching Structure ⁸	8 ft.	8 ft.	10 ft. ⁷
Septic Tank, Pump Station, Grease Trap, or Manhole ⁹	5 ft.	8 ft.	5 ft.
Property Lines	5 ft.	10 ft.	5 ft.
Swimming Pool	20 ft.	20 ft.	5 ft.
Retaining Wall (water proof)	10 ft.	10 ft.	5 ft.
Fuel Storage Tanks (below ground)	20 ft.	20 ft.	10 ft.
Top of Embankment or Steep Slope (15 % slope or greater)	25 ft.	25 ft.	25 ft.
Bluffs	65 ft.	65 ft.	65 ft.



MAIN REVISIONS TO LEACHING STRUCTURE SECTION

- Add section for “Leaching Galleys”
 - Rectangular pre-cast leaching structures
 - Leaching galleys <2ft shall be installed as an absorption trench
- Add a section for “Gravelless Absorption Trenches”
 - Includes Open-Bottom Gravelless Chambers and Gravelless Geotextile Sand Filter Systems
 - Minimum design based on 440gpd
 - Design based on 2ft wide trenches unless permitted reduction of:
 - 33% with I/A OWTS
 - 25% for gravelless chambers
 - 6 sf/ft for gravelless geotextile sand filters
 - Reductions cannot be combined
 - Examples:
 - Infiltrator (Various Products)
 - Cultec (Various Products)
 - GST by Geomatrix
 - Eljen
 - Design based on Percolation tests and soil borings
 - May need Septic Tank or I/A OWTS Effluent Filter
- Other Leaching Structures/Systems

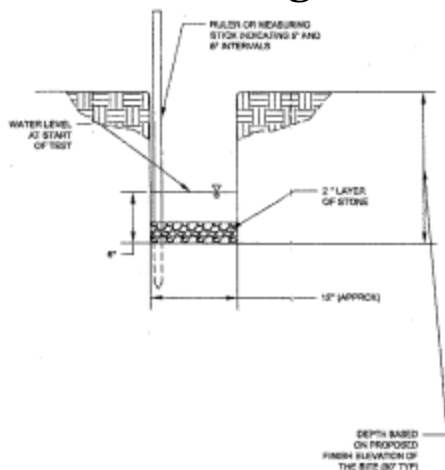




PERCOLATION TESTS

- Needed for Gravelless Absorption Trenches or other leaching structures
- At least two percolation tests for less than or equal to 1,000 sq. ft. of absorption
- An additional percolation test for each additional 500 sq. ft. of absorption area
- performed at the depth equivalent to the bottom of the proposed leaching structure
- Structure proposed to be installed in SP or SW by ASTM standards may use a

leaching rate of 1.20/0.95



Percolation Rate (MPI)	Application Rate Trench System (gal/day/sq.ft.)	Application Rate Absorption Bed (gal/day/sq.ft.)
0-5	1.20	0.95
6-7	1.00	0.80
8-10	0.90	0.70
11-15	0.80	0.60
16-20	0.70	0.55
21-30	0.60	0.45
31-45	0.50	Not Acceptable
46-60	0.45	Not Acceptable

APPLICATIONS FOR RETROFIT OR REPLACEMENT



- **Retrofit or Replacement** of an existing sewage disposal system with an I/A OWTS shall meet the Standards to the greatest extent possible.
- If necessary, certain requirements may be relaxed at the discretion of the Department provided:
 - ✓ sole objective to perform an Replacement or Retrofit
 - where the permanent **structure is existing**
 - there is **no increase in hydraulic load** from the structure
 - **no increase in the gross floor area**
 - the new system will be an improvement in wastewater treatment for the site.
 - **Not for a propose any change of use or building renovation**
 - ✓ The protection of public health and the environment is given priority of all other considerations.
 - ✓ The proposed system does not reduce the setbacks to neighboring private wells as compared to the current system being replaced or retrofitted.
 - ✓ The Design Professional certifies that the retrofit application meets the Standards to the greatest extent possible and that other alternatives are not feasible.



QUESTIONS?

Contact information:

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Department of Health Services
Office of Wastewater Management
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