Nassau County Soil & Water Conservation District
1864 Muttontown Road, Syosset, NY 11791 T: (516) 364-5860

NASSAU S.E.P.T.I.C. GUIDANCE MEMO # 4

TO: Nassau County Municipalities
IA OWTS Manufacturers
Septic System Design Professionals

FROM: Derek Betts, District Manager
Nassau County Soil and Water Conservation District

SUBJECT: Recommended Minimum Guidelines Relating to Location, Design, Construction, and Use of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) to replace existing Septic Systems and Cesspools in Nassau County, NY as part of the County's S.E.P.T.I.C. Grant Program

DATE: Rev. 8.12.2022

---

1. Purpose and Authority

a. The purpose of these guidelines is to protect public and environmental health by establishing minimum recommendations for the location, design, and construction of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) to replace existing septic systems and cesspools in Nassau County, NY as part of the County's S.E.P.T.I.C. Grant Program

b. Current science has clearly demonstrated that conventional septic systems and cesspools are not designed or capable to reduce nitrogen to the levels needed to adequately prevent and reverse the water quality degradation that has contributed to harmful algal blooms, fish kills, and the loss of aquatic vegetation that provides aquatic habitat and protects against storm surges and coastal erosion.

c. Wherever practical, public sewer systems are the recommended method for the collection, treatment, and disposal of wastewater from residential and commercial establishments in Nassau County.

d. The use of I/A OWTS should be considered a viable nutrient mitigation measure in Nassau County, as when properly designed, sited, installed, managed, and maintained, these new septic systems provide a cost-effective and environmentally sound alternative to sewers in areas that are outside designated sewer areas or areas that will be connected to public sewers in the near future.

e. Nassau County's Septic Environmental Program To Improve Cleanliness (S.E.P.T.I.C.) Grant Replacement Program is available to Property Owners looking to replace their existing conventional septic systems or cesspools with I/A OWTS. The Grant Program is subject to the availability of funding and is made available to Property Owners meeting the qualifications of the New York State Septic System Replacement Program Outline published by the State Environmental Facilities Corporation and Nassau County.

f. The S.E.P.T.I.C. Program shall be administered by the Nassau County Soil and Water Conservation District (the District) consistent with the Agreement currently in place between Nassau County and the State Environmental Facilities Corporation (EFC) and the Agreement currently in place between Nassau County and Nassau County's Soil and Water Conservation District.

g. The New York State Department of Health's (NYSDOH) Residential Onsite Wastewater Treatment System Design Handbook and Appendix 75-A "Wastewater Treatment Standards – Residential Onsite Systems" is the minimum statewide standard for all new residential OWTS and apply to systems discharging less than 1,000 gallons per day.

h. New York State Education Law requires that a state licensed Design Professional must prepare and submit plans for the evaluation and design of residential OWTS.

i. The Nassau County Department of Health (NCDOH) has jurisdiction as the permitting authority for subdivisions with five (5) or more lots and does not issue permits for the repair or replacement of the existing septic system or cesspools. That responsibility falls to the local permitting authority. Design Professionals should check with the local permitting authority to see if more stringent treatment and design requirements are required.

j. This document was developed to provide a framework to cities, towns, and villages, as the local permitting authority, to provide guidance as they review applications for the repair and upgrade of existing conventional septic systems and cesspools to I/A OWTS. Local permitting authorities are encouraged to utilize I/A OWTS to achieve their water quality management goals in addition to review I/A OWTS being funded through the S.E.P.T.I.C. Grant Program.

k. Permits from other agencies may also be required. It is the responsibility of the Design Professional to verify if New York State Department of Environmental Conservation (DEC), the Army Corps of Engineers, or any other required permits may be required.

l. These guidelines are provided only as guidance for the replacement of existing septic systems and cesspools with IA OWTS. Applications for New Construction should comply

with the Nassau County Department of Health's Manual for Onsite Sewage Disposal Systems.

2. Definitions

Cesspool - Any buried chamber, including, but not limited to any perforated metal tank, perforated concrete or block vault or hollow excavation, which receives direct discharges of wastewater from a building sewer for the purpose of collecting solids and discharging liquid to the surrounding soil.

District – The Nassau County Soil and Water Conservation District.

Conventional Septic System or Conventional Onsite Wastewater Treatment System (OWTS) - An onsite sanitary system consisting of a septic tank and any associated interconnecting piping, a leaching structure(s) and any associated interconnecting piping that does not have any active or mechanical means of treatment or any supplemental filtration components.

Design Flow - The volume of sewage to be used for the purpose of designing the size of the sewage disposal system.

Design Professional – A person licensed to practice engineering or architecture in New York State by the State Education Department in accordance with article 145 or article 147 of title VIII of the New York State Education Law, respectively, and who is currently registered with the New York State Education Department.

Innovative and Alternative Onsite Wastewater Treatment System (or "I/A OWTS" or "System") – An onsite decentralized wastewater treatment system that meets the District's Performance Requirements of total nitrogen effluent of 19 mg/l, determined in accordance with specifications set forth in The District Guidelines for the Acceptance, Use, and Management of I/A OWTS in Nassau County, NY, or any subsequent superseding documents.

Design Services – Services provided by a Design Professional to provide I/A OWTS design services for an IA OWTS permit submission in accordance with Local City, Town, or Village requirements.

Leaching Structure - A perforated structure placed below grade and conforming to the 10NYCRR, Appendix 75-A from which septic tank and/or I/A OWTS effluent will infiltrate the surrounding soil.

Letter of Completion or equivalent – Letter issued by the permitting jurisdiction stating that the I/A OWTS installation has been completed and was installed in conformance with approved plans. The District will also accept an Installation Certification Packet signed by the Installer and Designer.

Manufacturer or Manufacturer's Representative – A manufacturer, dealer, or seller of I/A OWTS that has been accepted for use by the District in accordance with District Guidelines.

Property Owner – A natural person, firm, partnership, corporation, trust, trustee, association, company or other legal entity capable of owning real property who is the current record owner in

fee or qualifying tenant of the residence for which a grant application is made. An owner in fee shall include a fee subject to a life estate.

Replacement or Retrofit – the abandonment, removal, and/or modification of an existing conventional septic system or cesspool with an new Innovative and Alternative Onsite Wastewater Treatment System (I/A OWTS).

Residence – An existing dwelling unit that is constructed on a residential parcel and designed for, in compliance with the relevant local town or village code or the Sanitary Code, single-family occupancy, two-family occupancy, or single-family occupancy with one accessory apartment.

Residential Parcel – Any parcel located wholly or partially in the County of Nassau, and may legally be used for permanent residential purposes under the local town or village code, as the case may be, and the Sanitary Code.

State Health Code – The New York State Department of Health Service Code and any duly enacted amendments thereto.

System Installer - An IA OWTS installation company with active Nassau County Home Improvement License and appropriate insurance coverage as determined by Nassau County Department of Consumer Affairs for the installation of IA OWTS whether directly or through contracted services, provides comprehensive installation and maintenance of such systems in accordance with all state and local permitting and licensing laws, regulations, District and Vendor guidelines.

System Service Provider - An IA OWTS Inspection, Maintenance, and Service company whether directly or through contracted services, provides comprehensive inspection, operation, and maintenance of such systems in accordance with all state and local permitting and licensing laws, regulations, District and Vendor guidelines.

3. General Conditions

a. IA OWTS shall only be used where it has been demonstrated that public sewers are not feasible, available, or where site constraints prohibit connection to public sewers.

b. Component Substitution - For an IA OWTS permitted, but not yet installed, a substitution of components or technologies may be made provided the Design Professional submits request in writing to the local permitting authority and certifies such substitution complies with District Guidelines. The Design Professional may be required to submit as-built plans upon completion of construction. Substitution of leachfields or leachfield components are not recommended under these guidelines without updated plan submission to the local permitting authority.

c. It is the law in the State of New York that “Dig Safely New York” and the New York City and Long Island “One-Call Center” be contacted to determine the location of any underground utilities in the area to avoid potential excavation hazards, injury, and disruption of utility service. For more information please visit www.digsafelynewyork.com or dial the One-Call Center at 811

d. Federal OSHA Construction Standards are applicable to excavations and trenches. Visit OSHA's Safety and Health Topics on trenching and excavation at: www.osha.gov/SLTC/trenchingexcavation/index.html

e. All System Installers shall have a current Nassau County Home Improvement License in good standing and possess appropriate insurance for Septic System Installations.

4. Siting of I/A OWTS and Associated Leaching Structures

a. Failure of leaching structures have the potential for significant public and environmental health impacts, as such, the Design Professional is responsible to carefully consider the significance of the existing and proposed topography, soils, location of water services, groundwater conditions, distance to surface waters and wetlands and the planned locations of other improvements when siting an I/A OWTS and associated leaching structures.

b. The Design Professional should avoid siting I/A OWTS and associated leaching structures in the following areas:

i. Areas subject to erosion that cannot be controlled to protect the system

ii. Areas where the maximum high groundwater level is less than one foot below the original ground surface

iii. Areas where slopes exceed 15%

iv. Areas where impervious soils have been identified

v. In any area that may prevent reasonable access for maintenance or repair of the system.

c. The Design Professional is responsible to site the I/A OWTS and associated leaching structures to allow for the best feasible upgrade within the borders of the lot, while preserving public and environmental health.

5. Soil Investigation

a. Soils should be classified using either ASTM Unified Soil Classification System (ASTM D-2487) or the US Department of Agriculture's Field Book for Describing and Sampling Soils, version 3.0 or subsequent versions.

b. The highest groundwater level shall be determined, and the leaching structure should be designed with a minimum of a two-foot separation between the proposed bottom of the structure and the highest expected groundwater level.

c. It is recommended that two percolation tests or soil borings be made at the site of each proposed leaching structure.

d. Test holes for seepage pits shall extend to at least the full depth of the proposed pit bottom.

e. Three feet of usable soil is recommended between the bottom of the seepage pit, leaching pool, or leaching galley and impermeable soil layer.

f. Percolation tests should be performed in accordance with 10NYCRR, Appendix 75-A. Designers should be aware that percolation tests are only indicators of soil permeability and should be used in accordance with the overall soil classification of the site as determined from test holes or soil borings.

6. <u>Minimum Design Recommendations</u>

a. General Septic and I/A OWTS Tank Requirements:

i. Tanks shall be constructed of precast concrete, fiberglass, polyethylene, polypropylene, thermoplastics, or other materials in accordance with 10NYCRR, Appendix 75-A.

ii. Steel tanks are prohibited

iii. Interior compartment walls shall not extend to the interior roof without providing for venting. A four (4) inch air gap is recommended at the top of the compartment wall.

iv. Septic Tanks shall be watertight and tested using one of the following methods:

1. Vacuum testing: tank should be sealed and the empty tank shall hold 90% of vacuum for two (2) minutes. Vacuum testing is recommended prior to installation.

2. Water testing: tank should be sealed and filled with water. Let stand for 24 hours. Refill the tank to the outlet invert after the 24-hour period is complete. Let the tank stand for an additional ten (10) hours. The tank passes the test if the water level is held for the ten (10) hour period. Water testing is recommended to be done after installation.

v. I/A OWTS installed in a driveway or parking area should be designed and installed to withstand HS-20 or H-20 loading as designated by AASHTO.

vi. Septic tanks shall be designed and constructed in accordance with 10NYCRR, Appendix 75-A.

vii. The following conditions must be met when installing non-concrete septic and IA tanks within groundwater or subject to groundwater rise to the level of the bottom of the tank:

1. Tank is designed with an anchoring system

2. Design Professional submits buoyancy calculations

3. A safety factor of 1.5 is provided

b. Access Risers and Lids

i. Safety grates shall be used in instances where the access cover weighs less than 60 lbs.

ii. It is recommended that access covers be brought to grade over the inlet and outlet of a conventional septic tank.

iii. Access to I/A OWTS should be in accordance with manufacturer specifications

iv. Access covers should be locking, watertight, insect-proof, flat, skid proof and be approved for sewage use.

v. Access covers shall be tamper-resistant and mechanically fastened.

vi. Access covers should be labeled to warn "entrance into the tank may be fatal"

vii. Precast covers and risers are not permitted to be used on non-concrete septic or IA tanks

c. I/A OWTS minimum rated treatment capacity

i. I/A OWTS size requirements shall be calculated at 110 gallons per day (gpd) per bedroom with a minimum rated treatment capacity of 440 gpd

ii. Garbage grinders are not permitted to be connected to an I/A OWTS

iii. I/A OWTS models shall be rated to the treatment capacity as outlined in the table below. IA model number and capacity should match the manufacturers NSF 245 certification

Number of Bedrooms	Minimum I/A OWTS Rated Treatment Capacity (gpd)
Up to 4	440
5	550
6	660

d. Minimum Recommended Separation Distances (where feasible)

i. Recommended horizontal setback distances are listed in the table below, please note, for sites that cannot meet these setbacks the Design Professional shall follow the best-fit provisions in section 7 of this document.

Horizontal Separation Distances From:	To: Septic Tanks, IA OWTS, Pump Stations or Manholes	To: Leaching Structure
Building with Basement	10 ft	10 ft

Building on Slab	5 ft	5 ft
Porches and Decks	5 ft	5 ft
Water Service lines, laterals, and mains	10 ft	10 ft
Underground Utilities	10 ft	10 ft
Surface Waters	75 ft	100 ft
Public Well	200 ft	200 ft
Private well	75 ft	150 ft
Drainage Structures (catch basins, drainage pipe, drywells)	10 ft	10 ft
Septic Tanks, IA OWTS, Pump Stations or Manholes	5 ft	5 ft
Stormwater Recharge Basins	20 ft	20 ft
Property Lines	10 ft	10 ft
Leaching Pools	8 ft	8 ft
Swimming Pools	20 ft	20 ft
Retaining Walls (water proof)	10 ft	10 ft
Bluffs	75 ft	75 ft

a. Leaching Structure Requirements

   i. Leaching Pools and Leaching Galleys

      1. Leaching pools and galleys installed in sand and gravel (SP or SW per ASTM Standards) should have a minimum of 300 sf of leaching area for up to a 4-bedroom residence and 400 sf for up to a 6-bedroom residence

      2. Residences greater than six bedrooms shall provide an additional 75 square feet of leaching area

3. Minimum Leaching Pool Designs for up to a four-bedroom residence are depicted in the table below:

Depth to Groundwater	Minimum Leaching System (300 sf sidewall area)
> 17 feet	1 leaching pool (12 ft deep, 8 ft diameter)
11 ft – 17 ft	2 leaching pools (6 ft deep, 8 ft diameter)
9 ft – 11 ft	3 leaching pools (4 ft deep, 8 ft diameter)
Less than 9 ft	Alternate Leaching Recommended

4. Minimum Leaching Pool Designs for a five to six bedroom residence are depicted in the table below:

Depth to Groundwater	Minimum Leaching System (400 sf sidewall area)
> 21 feet	1 leaching pool (16 ft deep, 8 ft diameter)
13 ft – 21 ft	2 leaching pools (8 ft deep, 8 ft diameter)
11 ft – 13 ft	3 leaching pools (6 ft deep, 8 ft diameter)
Less than 11 ft	Alternate Leaching Recommended

5. Minimum Leaching Galley Designs for up to 6-bedroom residences are depicted in the table below:

Height (ft)	Width (ft)	Length (ft)	Area (sf per galley)	Up to 4 Bedrooms	Up to 6 Bedrooms
2	4.75	8.5	53	6 galleys	8 galleys
2.5	4.75	8.5	66.25	5 galleys	7 galleys
3	4.75	8.5	79.5	4 galleys	6 galleys
3.5	4.75	8.5	92.76	4 galleys	5 galleys

4	4.75	8.5	106	3 galleys	4 galleys

ii. Gravelless Absorption Trench Systems

1. Open-bottom gravelless chambers and gravelless geotextile sand filter systems listed in 10NYCRR, 75-A may be used and be sized at 110 gallons per bedroom per day
    a. A 33 % reduction in total trench length is allowed when used following an I/A OWTS; or
    b. Sizing of 6 sf ft per linear foot may be used when using gravelless geotextile sand filter systems that meet the following criteria:
        i. Minimum width of 3 feet
        ii. Minimum storage capacity of 12 gallons per linear foot
        iii. Minimum of 6 inches of ASTM C33 sand installed below and on the sides of each geotextile unit
2. For cases where trench systems must be installed in a paved area, the structure must be traffic bearing or installed to be traffic bearing to meet the requirements of AASHTO H-20 or HS-20 loading.

7. <u>Best-Fit for I/A OWTS Repairs and Replacement</u>

a. Wherever feasible, a system should be brought into compliance with Appendix 75-A.

b. When full compliance with the standards of Appendix 75-A is not feasible or practicable, the systems should be upgraded based upon the best professional judgment of the Design Professional to the extent feasible that will maximize the protection of public and environmental health.

c. The Design Professional shall certify that the Repair / Replacement meets the Standards to the greatest extent possible and that the proposed plan represents the most feasible alternative.

d. The Design Professional shall certify that the Repair / Replacement represents an improvement over existing conditions.

e. The protection of public health and the environment shall be given priority over all other considerations.

<u>8. Minimum Plan Submission Recommendations</u>

a. For Repairs / Retrofits an old survey may be used if viable. Other resources such as deeds and GIS coverage may also be used at the discretion of the Design Professional.

b. The following items should be clearly depicted on the I/A OWTS Design Plan:

i. Lot lines with metes and bounds

ii. Measured distances from the proposed OWTS to site features, including, but not necessarily limited to: foundations, streets, buildings, wells (private and public), water supply lines, underground utilities, drainage structures, fences, driveways, trees, pools, and property lines.

iii. Basic design calculations of I/A OWTS as follows:

1. Indicate the number of bedrooms
2. Indicate required I/A OWTS treatment capacity == # bedrooms x 110 gpd/bedroom
3. Indicate I/A OWTS manufacturer, I/A OWTS model, and I/A OWTS rated treatment capacity
4. Basic leaching structure calculations when using structures other than leaching pools/galleys. If using leaching pools or galleys indicate # of pools/galleys to be installed, dimensions of each pool/galley (diameter x depth for Leaching Pools or W X L X Depth for leaching galleys)

iv. General location of existing sanitary system (label components to be abandoned).

v. If re-using a sanitary component (leaching pool or septic tank) indicate if precast and size.

vi. Show proposed location of the sanitary system and all components

1. Control Panel and Electric Service Connection Diagram and panel details
2. Cross-section of proposed components (profile through the proposed sanitary system) with invert elevations clearly identified
3. Cross-section and dimensions of septic tanks and I/A OWTS
4. Clean out details
5. Wiring Schematics

vii. Show location of soil test holes, soil borings, and percolation tests

viii. The location of any wetlands on the subject property

ix. Anti-flotation provisions for components on high groundwater sites

x. Plan shall comply with local sediment and erosion control requirements