

COUNTY OF SUFFOLK



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

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

**I. INTRODUCTION**

These are the Suffolk County Department of Health Services Standards for the Administration of Section 502, of Article 5 (Sewage Disposal), Sections 607-609 of Article 6 and Sections 705, 706, 709-716 of Article 7 of the Suffolk County Sanitary Code.

The purpose of these standards is to provide a means for achieving protection of the groundwater from excessive contaminant loading and to assure a safe, sanitary means of disposing of wastewater. Diseases such as infectious hepatitis, typhoid fever and dysentery can be transmitted by water, food, insects, pets, and toys contaminated by human waste. Properly designed, maintained and operated sewage disposal systems minimize the possibility of disease transmission and the potential for contamination of ground and surface waters.

These standards apply to commercial, industrial, multiple residential or other buildings and only address sewage as herein defined. Other solid, liquid or gaseous emissions or discharges are subject to a separate review and approval by the Department. For details relating to single family residences, refer to **Standards - Approval of Plans and Construction - Sewage Disposal Systems for Single-Family Residences**.

**II. DEFINITIONS APPLICABLE TO THESE STANDARDS**

**AASHTO H-20 Loading.** AASHTO is the American Association of State Highway and Transportation Officials. H-20 refers to the manufacture of sewage disposal system components and access covers capable of withstanding a 16,000 lb/sq. ft. live load, caused by traffic conditions. H-20 loading simulates the load due to a 20 ton truck.

**Acre.** Forty Three Thousand Five Hundred Sixty (43,560) square feet.

**Adjusted Gross Land Area.** Gross land area of a parcel minus area of regulated freshwater or tidal wetlands and ponds or other underwater lands.

**Alternative Sewage Disposal System.** A subsurface sewage disposal system which contains design elements not explicitly described herein or components that are arranged differently than shown in the conventional layouts of these standards.

**Apartment.** A premises occupied by an individual or family which is leased or rented from a corporation, entity, or another individual. Apartments are considered Multiple Residential Units.

**ASTM.** American Society for Testing and Materials.

**AWWA.** American Water Works Association.

**Backfill.** a) The operation of refilling an excavation, usually after some structure or pipe has been placed therein; b) the material placed in an excavation in the process of backfilling.

**Clean Sand.** Soil classified in accordance with ASTM D-2487 (Unified Soil Classification System) as SW or SP.

**Clean-out.** A device brought to grade to facilitate cleaning of sewer lines.

**Commercial Projects.** Restaurants, office buildings, nursing homes, hospitals, assisted living facilities, warehouses, hotels, motels or any other type project not considered a single-family residence.

**Community Sewage Treatment System.** A system utilized for the collection and disposal of sewage, including the various devices for the treatment of such wastes, serving more than one parcel, or serving a multiple residential project. A community sewage treatment system requires acceptance by the Suffolk County Sewer Agency.

**Conventional Subsurface Sewage Disposal System.** A sewage disposal system that contains a septic tank(s) and leaching pool(s) together with the associated sewer piping, manholes, distribution boxes, grease traps and other appurtenances as may be required.

**Collection System.** The network of sewer pipes, structures and devices installed for the purpose of collecting and transporting sewage to the sewage disposal, sewage treatment or sewer system.

**Density Load.** The quantity of sewage expected to be discharged from existing and/or proposed building(s) on a parcel, excluding kitchen/gray load, expressed in gallons per day per applicable unit and utilized to evaluate the need for sewage treatment when compared to the Population Density Equivalent for the project.

**Department.** The Suffolk County Department of Health Services.

**Design Professional.** A person licensed or registered in the State of New York and authorized by the State Education Law to design the systems described in these standards.

**Design Sewage Flow.** The sum of the hydraulic Load(s) from all uses of a building(s) on a parcel and utilized to determine the size of the sewage disposal system.

**Distribution Manhole.** A type of manhole used to distribute equal volumes of sewage to multiple leaching pools, or sewage system components.

**Drop Manhole.** A type of manhole used when the difference in elevation between the inflow and outflow sewer line exceeds two feet.

**Grease Trap.** A watertight chamber which promotes the separation of fats and greases from sewage.

**Gross Floor Area.** The floor area of all levels, within the exterior walls of a building or enclosed structure. Unfinished and/or mechanical spaces within cellars and attics are not included in the gross floor area.

**Groundwater.** The subsurface water occupying the zone of saturation below the established water table.

**Groundwater Management Zone.** Any one of the areas delineated in Suffolk County by the "Long Island Comprehensive Waste Treatment Management Plan (L.I. 208 Study)," as revised by the "Long Island Groundwater Management Plan", and subsequent revisions adopted by the Suffolk County Board of Health identifying differences in regional hydrogeologic and groundwater quality conditions. The boundaries of the Groundwater Management Zones are set forth on a map adopted by the Board filed in the Office of the Commissioner of Health in Hauppauge, New York.

**Groundwater Monitoring Well.** A well introduced into a particular aquifer for the purpose of obtaining samples of the groundwater for chemical analysis.

**Highest Recorded Groundwater.** The highest recorded groundwater elevation based upon the historic data of both the Department of Health Services and the United States Geological Survey.

**Hydraulic Load.** The sum of the density load and kitchen/gray load for a particular use of a building on a parcel expressed in terms of gallons per day per applicable unit.

**Invert Elevation.** The lowest elevation of the inside of a sewer line, water line, or other piping.

**Kitchen/gray Load.** The volume of sewage discharged from food preparation and service areas, or other gray water uses from a building expressed in terms of gallons per day per applicable unit which are omitted from the Density Load.

**Leaching Area.** The sidewall absorption area in a leaching pool below the inlet pipe, distribution pool below the outlet pipe, or the bottom surface area of a recharge bed. The area of the bottom of leaching pools is **not** included in leaching area.

**Leaching Pool.** A covered pit with a perforated reinforced concrete wall through which effluent from septic tanks or sewage treatment systems will infiltrate the surrounding soil.

**Liquid Depth.** The depth measured from the bottom of a septic tank or grease trap to the outlet invert elevation.

**Manhole.** A watertight chamber used for smooth redirection of sewage flow and/or to provide access to sewer lines.

**Modified Subsurface Sewage Disposal System.** An On Site Sewage Treatment system (treatment works) which includes processes capable of meeting applicable discharge standards and where the Design Sewage Flow does not exceed 15,000 gallons per day.

**Multiple Residential Projects.** All residential construction other than detached single-family housing units each on its own separate lot. Examples include two-family houses, apartment complexes, town homes, condominiums, co-ops, mobile home parks, or other similar arrangements.

**Municipal Sewage Treatment System.** A system utilized for the collection and disposal of sewage, or other waste of a liquid nature, including the various devices for the treatment (treatment works) of such wastes, serving a municipal sewer district.

**NEC.** National Electrical Code published by the National Fire Protection Association.

**NEMA.** The National Electrical Manufacturers Association.

**NYSDEC.** The New York State Department of Environmental Conservation.

**Occupancy Rating.** The maximum number of persons permitted to occupy an establishment as determined by the appropriate agency.

**On - Site Sewage Treatment System.** A treatment system (treatment works) located on the same parcel as the building(s) it serves which includes processes capable of meeting applicable discharge standards.

**Perched Groundwater.** Groundwater which is separated from the main body of groundwater by an aquiclude (e.g. a clay lens).

**Planned Retirement Community (PRC).** A multiple residential project in which each unit is required by law or regulation to be occupied by at least one resident per unit who is 55 years of age or older.

**Population Density Equivalent.** An expression of the quantity of domestic sewage in terms of the calculated population per unit area. (The calculated yield in gallons per day).

**PVC pipe.** A type of flexible thermoplastic pipe, manufactured from ethylene and chlorine, which may be used for sewer lines.

**Rooming House.** A building arranged or used for lodging for compensation, where group sleeping accommodations are provided in one room, or a series of rooms, and shared bathroom and kitchen areas may be provided.

**SCDPW.** The Suffolk County Department of Public Works

**Standard Dimension Ratio (SDR).** The ratio of the outside pipe diameter to the pipe wall thickness.

**SEQRA.** State Environmental Quality Review Act - a process that requires the consideration of environmental factors in the planning stages of a proposed action(s).

**Septic Tank.** A watertight chamber used for the settling, stabilizing and anaerobic decomposition of sewage.

**Sewage.** Water-carried wastes from residences, institutions, businesses, commercial and industrial buildings and establishments or a combination thereof, together with such ground, surface, and storm water as may inadvertently be present. The admixture of industrial wastes or other wastes shall not be considered sewage for purposes of these standards except where otherwise indicated. "Industrial wastes" and "other wastes" have the meaning as defined in Environmental Conservation Law Sections 17-0105(5) and (6).

**Sewage Disposal System.** Any plumbing or conveyances which are capable of receiving a discharge of sewage. This includes, but is not limited to, sewer lines, septic tanks, leaching pools, sumps, grease traps, tile fields, holding tanks, treatment works, outfalls and connecting piping. The term may also refer to a part of a larger disposal system.

**Sewage Pump.** Any type of device designed for the purpose of pumping sewage or other liquid wastes. Some examples of sewage pumps may include the following:

1. **Grinder Pump.** A type of submersible sewage pump used to cut, shred, or reduce in size, solids found in raw sewage.
2. **Positive Displacement Pump.** A type of pump capable of pumping raw sewage or liquids at a constant rate while utilizing various pressure heads.
3. **Submersible Sewage Pump.** A type of pump designed to operate while submerged in sewage.
4. **Vacuum Pump.** A type of pump capable of pumping air or a mixture of air and liquid.

**Sewage Pump Station.** A structure that contains pumps, piping, and other equipment used for the purpose of receiving, temporarily storing, and pumping sewage.

**Sewage Recharge Bed.** A designated area exposed to the atmosphere where treated wastewater is distributed for the purpose of infiltrating the surrounding soil.

**Sewage Treatment Plant (STP).** A sewage treatment system (treatment works) which includes processes capable of meeting applicable discharge standards and where the Design Sewage Flow rate exceeds 15,000 gpd.

**Sewage Treatment System.** Is a sewage disposal system consisting of a sewage collection system and treatment works.

**Sewer Line.** A pipe designed to convey sewage. Examples include the following:

1. **House Connection.** The gravity sewer line which extends from the face of the building to the sewage disposal or sewer system.
2. **Lateral or Branch Sewer Line.** The gravity sewer line used to collect sewage from one or more building sewers or house connections.

3. **Main Sewer Line.** The gravity sewer line used to collect sewage from one or more lateral or branch sewer lines.
4. **Sewage Force Main.** A sewer line designed to receive the sewage discharged from a pumping station and convey it under pressure to the point of discharge.

**Sewer System.** (Also referred to as sewage collection system, public sanitary sewer, municipal sewage disposal system, privately owned communal sewerage system, and communal sewage disposal system) Pipe lines, conduits, pumping stations, and force mains, and all other constructions, devices, and appliances appurtenant thereto, used for conducting sewage to a point of ultimate disposal.

**SPDES (State Pollutant Discharge Elimination System) Permit.** A permit, issued by the NYSDEC, authorizing discharges of 1,000 gallons per day or greater to the ground or surface waters of New York State.

**Stormwater Recharge Basin.** A designated area exposed to the atmosphere where stormwater is collected and distributed for the purpose of infiltrating the surrounding soil.

**Suffolk County Sewer Agency (Sewer Agency).** The agency responsible for directing the means and method of sewage disposal for projects involving multiple ownership where the Suffolk County Health Department has determined that sewage treatment is required.

**Thrust Block or Restraint.** A device used to resist thrust forces due to changes in alignment or direction of force mains.

**Treatment Works.** A facility designed for the purpose of removing certain constituents from sewage by mechanical, chemical or biological means, and stabilizing, and disposing of sewage.

**USGS.** United States Geological Survey. (Also, the NYS Building Code makes reference to the USC&GS - United States Coast and Geodetic Survey.)

**Valve Chamber.** A separate concrete box or chamber used to contain and access valving for the purpose of flow control or to isolate pumping units without having to enter the pump station.

**Wet Well.** The portion of a sewage pump station that receives and temporarily stores sewage.

### III. PROHIBITION OF INSTALLATION/USE OF SEWAGE DISPOSAL SYSTEMS

1. The installation of a sewage disposal system(s) is prohibited by the Suffolk County Sanitary Code unless a permit to construct has been issued by the Commissioner.
2. The construction of a new building or an addition to an existing building is prohibited unless the proposed sewage disposal system(s) serving such building has been approved by the Department and/or the existing sewage disposal system(s) have been approved by the Department for the additional use.

3. The construction of a building or building addition without plumbing or additional sewage disposal facilities is prohibited unless sewage disposal system(s) serving such facilities have been certified to the Department by a licensed design professional as capable of accepting sewage flows generated by the use of such new facilities and such facilities conform to the density load requirements of the Department.
4. A change in use or renovation to an existing building that may affect the Density Load or Design Sewage Flow is prohibited unless the proposed sewage disposal system(s) serving such building has been approved by the Department and/or the existing sewage disposal systems have been approved by the Department for the additional use.
5. The occupancy of a building(s) and/or the use of a sewage disposal system(s) is prohibited without (final) approval by the Department.
6. The installation of conventional subsurface sewage disposal system(s) or alternative sewage disposal system(s) is prohibited when the site to be developed is within the boundaries of a municipal sewer district or is served by an on-site/community sewage treatment system.

#### **IV. PLANS / PERMIT TO CONSTRUCT / APPROVALS REQUIRED**

1. Plans / Permits Required to Construct
  - a) Written Approval of Plans Required Prior to Construction

Written approval of plans is required before start of construction of new sewage disposal systems and components. Approval of Plans is also required prior to the start of construction of all new buildings, building additions with or without internal plumbing, or changes in use or renovations of existing buildings that may affect sewage flows or density load. Plans shall be prepared by a Design Professional and shall conform to these standards and guidelines issued by the Department. These plans, once signed and approved by an authorized representative of the Department, in conjunction with form WWM-016, become a permit to construct a sewage disposal system. Refer to **Application Requirements For Sewage Disposal Facilities & Water Supply Systems For Other Than Single Family Residences - Form WWM-003**.

Written approval of plans is also required prior to construction of sewage collection facilities, Modified Subsurface Sewage Disposal Systems, On-site sewage treatment systems, or Community Sewage Systems. Refer to **Application Requirements For Sewage Disposal Facilities & Water Supply Systems For Other Than Single Family Residences – Form WWM-003**, as well as **Appendix A** and **Appendix B** of these standards. In addition, separate residential applications must be submitted to and approved by the Department for projects involving condominiums or other attached residences prior to construction.

b) Responsibility of Design Professional

The design professional retained to design the sewage disposal system, sewer system, or treatment works shall be responsible for all aspects of the system design. That responsibility includes gathering all design information as necessary, making the site evaluation, and creating the design. These standards shall not be construed as providing sufficiently detailed guidance as to relieve the design professional from undertaking whatever additional steps or measures that may be necessary to achieve an appropriate design.

2. Permits / Approvals from other Agencies Required

a) Permits from other agencies

Permits from other agencies, where such permits may affect placement of the sewage disposal systems, shall be submitted to the Department prior to the Department's issuance of a permit to construct. Such permits include but are not limited to wetlands or natural resources permits from the New York State Department of Environmental Conservation, the Army Corps of Engineers, and/or the appropriate local regulatory authority (e.g. delegated agents for NYSECL Articles 15, 24, 25; Wild, Scenic & Recreational Rivers; Town natural resources permits, etc.).

b) A SPDES permit issued by the New York State Department of Environmental Conservation or its agent is required for all discharges to groundwater where the design sewage flows (total hydraulic load) are 1,000 gallons per day or greater.

c) Sewer district approval is required from Suffolk County Department of Public Works for county sewer districts or the appropriate agency for other sewer districts.

**V. INSPECTION / CERTIFICATION OF CONSTRUCTED WORKS REQUIRED**

1. Inspection by the Department Required

Sewage disposal systems, sewer systems, or treatment works constructed in Suffolk County shall conform to standards herein approved by the Commissioner of the Suffolk County Department of Health Services and plans approved by the Department. Prior to backfilling, installed subsurface sewage disposal system components and piping shall be inspected and authorized for backfilling by a representative of the Department. The Department shall be notified at least 48 hours in advance of scheduled backfilling. Backfilling prior to Department inspection is prohibited and may result in an order by the Commissioner to remove all backfill for inspection. The property lines shall be "staked" in order to ascertain that the system is located on the property in accordance with these standards. Refer to **Instructions for Obtaining Final Health Approval of Constructed Projects for Other than Single-Family Residences – Form WWM-019** for additional inspection requirements for sewer systems and treatment works.

2. Excavation Inspection Required

In the case of unacceptable soil and/or groundwater conditions, inspection of the excavation by a representative of the Department is required prior to the installation of the leaching pool(s).

3. Separate Certification of Construction May be Required

In certain instances, the Department may also require a separate certification of construction by a Design Professional for various aspects of the project as noted in the Permit Conditions issued at the time of approval.

**VI. FINAL APPROVAL OF CONSTRUCTED WORKS REQUIRED**

1. Final Approval of Constructed Works Required

Final approval of constructed works is necessary to operate or discharge into constructed sewage disposal systems, sewer systems, or treatment works. In addition, occupancy of a building(s) is prohibited without the issuance of final approval by the Department.

2. As-Built Plans Required

Final approval of constructed works will be granted to the applicant on as-built plans which are to be submitted after the final satisfactory field inspection is completed. Plans are to be signed and sealed by a licensed professional engineer or architect except a licensed surveyor may sign for conventional subsurface sewage disposal systems only. Refer to **Instructions for Obtaining Final Health Approval of Constructed Projects for Other than Single-Family Residences – Form WWM-019** for the as-built plan requirements.

3. Other Requirements

For further information, refer to **Instructions for Obtaining Final Health Department Approval of Constructed Projects for Other Than Single-Family Residences – Form WWM-019** and **Appendix C** of these standards.

**VII. DETERMINING POPULATION DENSITY EQUIVALENT**

A population density equivalent estimate must be made in order to determine the type of sewage disposal system required for a project, and to determine if a project meets the density requirements of Article 6 of the Suffolk County Sanitary Code. There are two alternative acceptable methods for determining population density equivalent, a **Calculation Method**, or a **Yield Map Method**.

## 1. Calculation Method

### a) Commercial Projects

Population density equivalent is calculated by multiplying the adjusted gross lot area in acres (43,560 sq.ft./acre) by 600 gallons per day/acre (300 gallons per day per acre in Groundwater Management Zones III, V, or VI, or where a community water supply is not being provided). Adjusted gross lot area is obtained by subtracting the area of regulated freshwater wetlands, tidal wetlands, ponds, or other underwater lands from the land area as delineated and shown on official surveys and site plans.

### b) Multiple Residential Projects

The population Density Equivalent is calculated as seventy-five percent (75%) of adjusted gross land area in square feet (sq. ft.), multiplied by 600 gallons /day / 40,000 sq. ft. of land area (300 gallons / day / 40,000 sq. ft. of land area in Groundwater Management Zones III, V, or VI, or when a community water supply is not being provided). The resultant value is the population density equivalent expressed as gallons / day.

Adjusted gross lot area is obtained by subtracting the area of regulated freshwater wetlands, tidal wetlands, ponds, or other underwater lands from the land area as delineated and shown on official surveys and site plans.

## 2. Yield Map Method

The Yield Map Method may be used as an alternative method for calculating population density equivalent. A map illustrating the location of building lots together with roads, recharge basins, and other appurtenances as would normally be necessary to develop single family lots on the site, shall be submitted for a lot yield determination by the Department. All lot areas and dimensions must be shown together with recharge basin calculations. Lot configurations should conform to local Town/Village zoning requirements for similar sized lots, and minimum zoning requirements should be specified on the maps. Yield maps shall be signed and sealed by the licensed design professional.

Regulated freshwater wetlands, tidal wetlands, ponds, or other underwater lands may be shown as part of the lots on a yield map. However, an applicant must demonstrate that all lots shown on the yield map will conform to the requirements of the Department with respect to the

location of individual sanitary systems and water supply on these delineated lot areas or by the appropriate agencies having jurisdiction.

All lots shown on a yield map must be at least 20,000 sq.ft. in area (40,000 sq.ft. in Groundwater Management Zones III, V, or VI, or where a community water supply is not being provided).

The population density equivalent, in gallons / day, is obtained by multiplying the number of building lots by 300 gallons / lot / day.

### **VIII. DETERMINING DENSITY LOAD**

Density Load is the sum of all density loads generated on a site. Density Load is derived from occupancy ratings and/or from density loading rates shown in Table 1 below. For mixed type buildings such as office/warehouse an appropriate density loading rate should be used to calculate the proportionate density load for each building use as applicable. The (total) Density Load is the sum of the proportionate density loads for all existing and proposed uses on the site. The density load does not include the kitchen/gray load from the site.

### **IX. DETERMINING DESIGN SEWAGE FLOW**

The Design Sewage Flow for a project is derived from the hydraulic load rates shown in Table 1 below. For a mixed type building(s) such as office/warehouse, the design sewage flow rate should be calculated as the sum of all hydraulic loads for each individual use within the building(s). The Design Sewage Flow may be apportioned appropriately if more than one sewage disposal system is being proposed or modified.

**TABLE 1 - PROJECT DENSITY LOADING RATES & DESIGN SEWAGE FLOW RATES**  
 (Based upon gross floor area in square feet (sf) unless otherwise noted)

Structure Use	Density Load	Kitchen/Gray Load	Hydraulic Load
<b>FOOD SERVICE</b>			
Bar (in restaurant)	10 gpd/seat	5 gpd/seat	15 gpd/seat
Bar, Tavern, Disco (no fixed seating)	10 gpd/occupant <sup>1</sup>	5 gpd/occupant <sup>1</sup>	15 gpd/occupant <sup>1</sup>
Bar (outdoor/seasonal)	5 gpd/seat	2.5 gpd/seat	7.5 gpd/seat
Cafeteria (open to public)	See Primary use + 5 gpd/seat	2.5 gpd/seat	Primary use + 7.5 gpd/seat
Cafeteria/Continental Breakfast (not open to public)	See Primary Use	2.5 gpd/seat	Primary use + 2.5 gpd/seat
Snack Bar	See Primary Use	0.12 gpd/sf	Primary use + 0.12 gpd/sf
Juice Bar	See Primary Use	2.5 gpd/seat	Primary use + 2.5 gpd/seat
Catering Hall	5 gpd/seat	2.5 gpd/seat	7.5 gpd/seat
Outside Patio Dining	5 gpd/seat	10 gpd/seat	15 gpd/seat
Restaurant (full service or single services > 16 seats <sup>2</sup> )	10 gpd/seat	20 gpd/seat	30 gpd/seat
Wet store w/ food (Deli/take-out with max 16 seats single service <sup>2</sup> )	0.03 gpd/sf	0.12 gpd/sf	0.15 gpd/sf
Convenience store/Market/Farm Stand	0.03 gpd/sf	0.02 gpd/sf	0.05 gpd/sf
Commercial Bakery	0.04 gpd/sf	0.02 gpd/sf	0.06 gpd/sf
Wine/Beer Tasting (in a winery/brewery only)	5 gpd/occ	2.5 gpd/occ	7.5 gpd/occ
<b>GENERAL INDUSTRIAL</b>			
General Industrial <sup>3</sup>	0.04 gpd/sf	Industrial process water <sup>4</sup>	0.04 gpd/sf
Greenhouse	0.03 gpd/sf	N/A	0.03 gpd/sf
<b>MEDICAL</b>			
Drug Rehabilitation	75 gpd/bed	See note <sup>5</sup>	75 gpd/bed
Mental Health Residence	75 gpd/bed	See note <sup>5</sup>	75 gpd/bed
Hospital	300 gpd/bed	See note <sup>5</sup>	300 gpd/bed
Nursing Home	150 gpd/bed	See note <sup>5</sup>	150 gpd/bed
Assisted Living	110 gpd/bed	See note <sup>5</sup>	110 gpd/bed
Medical office space	0.10 gpd/sf	N/A	0.10 gpd/sf
Dialysis Center	0.10 gpd/sf	Dialysis process water <sup>4</sup>	0.10 gpd/sf
Veterinary <sup>6</sup>	0.10 gpd/sf + 10 gpd/animal boarding	N/A	0.10 gpd/sf + 10 gpd/animal boarding

<b>MUNICIPAL SERVICES</b>			
Library, firehouse, precinct, museum, art gallery (w/ meeting rooms)	0.03 gpd/sf + 5 gpd/occupant <sup>1</sup> for meeting rooms	2.5 gpd/occupant <sup>1</sup>	0.03 gpd/sf + 5 gpd/occupant <sup>1</sup> + 2.5 gpd/occupant <sup>1</sup>
Library, firehouse, precinct, museum, art gallery (w/o meeting rooms)	0.03 gpd/sf	2.5 gpd/occupant <sup>1</sup>	0.03 gpd/sf + 2.5 gpd/occupant <sup>1</sup>
<b>OFFICE</b>			
Non-medical office space	0.06 gpd/sf		0.06 gpd/sf
<b>RECREATION</b>			
Bath house/comfort station	5 gpd/occupant <sup>1</sup>	5 gpd/shower/occupant <sup>1</sup> + Food service <sup>7</sup>	5 gpd/occupant <sup>1</sup> + 5 gpd/shower/occupant + Food service <sup>7</sup>
Bowling alley/tennis court/racquetball	100 gpd/court or alley	Food service <sup>7</sup>	100 gpd/court or alley + Food service <sup>7</sup>
Miniature golf	15 gpd/parking space	Food service <sup>7</sup>	15 gpd/parking space + Food service <sup>7</sup>
Ice/roller Skating Rink	15 gpd/skater <sup>1</sup> + 5 gpd/specator <sup>1</sup>	Food service <sup>7</sup>	15 gpd/skater <sup>1</sup> + 5 gpd/specator <sup>1</sup> + Food service <sup>7</sup>
Recreation	15 gpd/parking space	Food service <sup>7</sup>	15 gpd/parking space + Food service <sup>7</sup>
Spa/Fitness Center/ Karate/Dance/etc. (w/ showers & amenities)	0.1 gpd/sf	0.2 gpd/sf + Food service <sup>7</sup>	0.3 gpd/sf + Food service <sup>7</sup>
Spa/Fitness Center/ Karate/Dance/etc. (w/o showers & amenities)	0.1 gpd/sf	Food service <sup>7</sup>	0.1 gpd/sf + Food service <sup>7</sup>
Marina	10 gpd/boat slip	Food service <sup>7</sup>	10 gpd/boat slip + Food service <sup>7</sup>
OTB	5 gpd/person	Food service <sup>7</sup>	5 gpd/person + Food service <sup>7</sup>
Theater	3 gpd/seat	Food service <sup>7</sup>	3 gpd/seat + Food service <sup>7</sup>
Horse Farm <sup>6</sup>	0.04 gpd/sf + 10 gpd/stall		0.04 gpd/sf + 10 gpd/stall
Camp Ground	10 gpd/camper	5 gpd/shower/camper	10 gpd/camper + 5 gpd/shower/camper
Billiard Hall	5 gpd/occ	2.5 gpd/occ	7.5 gpd/occ
<b>RESIDENTIAL</b>			
Single Family Residence	300 gpd		300 gpd
Two Family Residence	600 gpd		600 gpd
Rooming house	75 gpd/bed		75 gpd/bed

Motel/Hotel unit up to 400 sq.ft. gross floor area w/o kitchenette (w/kitchenette see Housing Unit)	100 gpd/unit		100 gpd/unit
Motel/Hotel unit > 400 sq.ft. gross floor area w/o kitchenette (w/kitchenette see Housing Unit)	150 gpd/unit		150 gpd/unit
Housing Unit <sup>8</sup> up to 600 sq.ft. gross floor area	150 gpd/unit		150 gpd/unit
Housing Unit <sup>8</sup> between 601-1200 sq.ft. gross floor area	225 gpd/unit		225 gpd/unit
Housing Unit <sup>8</sup> > 1200 sq.ft. gross floor area	300 gpd/unit		300 gpd/unit
PRC unit up to 600 sq.ft. gross floor area	100 gpd/unit		100 gpd/unit
PRC unit between 600-1600 sq.ft. gross floor area	150 gpd/unit		150 gpd/unit
PRC unit between 1600-2000 sq.ft. gross floor area	225 gpd/unit		225 gpd/unit
PRC unit > 2000 sq.ft. gross floor area	300 gpd/unit		300 gpd/unit
<b>RETAIL</b>			
Dry store	0.03 gpd/sf		0.03 gpd/sf
Wet store w/o Food (Hair salon, nail salon, pet shop w/o animal boarding, etc.)	0.03 gpd/sf	0.07 gpd/sf	0.1 gpd/sf
Car Dealership	0.03 gpd/sf for showroom/offices + 0.04 gpd/sf for maintenance/storage areas		0.03 gpd/sf for showroom/offices + 0.04 gpd/sf for maintenance/storage areas
Massage/Tanning	0.03 gpd/sf		0.03 gpd/sf
Tattoo Parlor	0.03 gpd/sf		0.03 gpd/sf
<b>SCHOOL</b>			
Boarding school/ Dormitory	75 gpd/capita <sup>1</sup>	2.5 gpd/capita <sup>1</sup>	77.5 gpd/capita <sup>1</sup>
Day School	5 gpd/capita <sup>1</sup>	2.5 gpd/capita <sup>1</sup>	7.5 gpd/capita <sup>1</sup>
<b>MISCELLANEOUS</b>			
Car Wash	0.04 gpd/sf	Car wash process water <sup>4</sup>	0.04 gpd/sf
Laundromat	0.03 gpd/sf	Laundromat process water <sup>4</sup>	0.03 gpd/sf
Funeral Home	0.05 gpd/sf	Funeral Home process water <sup>4</sup>	0.05 gpd/sf

House of Worship (w/ meeting rooms)	1.5 gpd/seat + 5 gpd/occupant <sup>1</sup> for meeting rooms	2.5 gpd/occupant <sup>1</sup>	1.5 gpd/seat + 5 gpd/occupant <sup>1</sup> + 2.5 gpd/occupant <sup>1</sup>
House of Worship (w/o meeting rooms)	1.5 gpd/seat	2.5 gpd/occupant <sup>1</sup>	1.5 gpd/seat + 2.5 gpd/occupant <sup>1</sup>
Public Storage <sup>9</sup>	0.04 gpd/sf		0.04 gpd/sf
Animal boarding <sup>6</sup>	0.03 gpd/sf + 10 gpd/animal		0.03 gpd/sf + 10 gpd/animal
Winery/Brewery	0.04 gpd/sf	Winery/Brewery process water <sup>4</sup>	0.04 gpd/sf

- <sup>1</sup> Occupancy ratings can be determined using New York State Uniform Fire Prevention and Building Code as a guide.
- <sup>2</sup> Single Service means disposable plates, silverware & cups. Takeout seating is for waiting patrons and is not convertible to full seating or for density credit at full service restaurants.
- <sup>3</sup> General industrial buildings may contain up to 15% related office space without applying a proportionate office density loading or flow rating to the space. If office space exceeds 15% of gross floor area, then a proportionate office density loading or flow rating must be applied to the entire office space.
- <sup>4</sup> Process waters require a separate permit and disposal facilities – Consult Department.
- <sup>5</sup> A grease trap shall be provided for this installation which is sized at 20 gpd/bed.
- <sup>6</sup> A separate sewage disposal system shall be provided for wastewater generated from animal boarding, horse stalls, or kennel areas.
- <sup>7</sup> Food (kitchen) flow is added according to the type of food service in the establishment.
- <sup>8</sup> Motel/Hotel with Kitchenettes, Cottages, Apartments, Condominiums, Mobile Homes, Trailers, or Co-Ops.
- <sup>9</sup> Public storage density and/or design flow may be reduced if restrictive covenants are recorded on the parcel.

**Note: The above table is subject to amendment from time to time as data becomes available to the Department. The table will be republished as an addendum to these standards if and when revised.**

**X. DETERMINING TYPE AND REQUIREMENTS FOR SEWAGE DISPOSAL SYSTEM**

1. Conventional Subsurface Sewage Disposal System.

If the Density Load for a project, as calculated in Section VIII, is less than or equivalent to the Population Density Equivalent, calculated in Section VII, then a Conventional Subsurface Sewage Disposal System may be acceptable to serve the project, provided all other applicable requirements of these standards can be met. Where the total design flow for a parcel is greater than 30,000 gpd, the disposal system must be separated into individual outfalls not to exceed 30,000 gpd per outfall.

Conventional subsurface sewage disposal systems consist of precast concrete septic tank(s) and subsurface leaching pool(s) together with sewer piping, manholes, distribution boxes, grease traps and other appurtenances as defined in these standards or in other bulletins issued by the Department.

A parcel that is separately assessed, as shown on the 1981 tax maps, shall be allowed a minimum Design Sewage Flow (density load + kitchen/gray load) of 300 gpd regardless of lot area utilizing a Conventional subsurface system provided all other applicable requirements of these standards can be met. This exemption is based upon total lot area of the project and shall not be additive if a project seeks to combine several undersized lots.

2. Sewage Treatment Systems

a) Categories of Sewage Treatment Systems

If the Density Load for a project exceeds the Population Density Equivalent then the installation of a sewage treatment system will be required. Sewage treatment systems are broken down into the following categories:

i. On-Site Sewage Treatment System

If the project consists of a single lot, an On-Site Sewage Treatment System, as applicable, will be required to serve the project.

An On-Site Sewage Treatment System includes a sewage treatment facility located on the same parcel as the building(s) it serves, which includes processes capable of meeting applicable discharge standards. These systems must serve all the buildings and facilities located on the site. This type of system may be approved for projects constructed on a single parcel which is not part of a realty subdivision or development that is proposed or has already been approved by the Department. A community water supply system must be provided to serve these projects.

ii. Community Sewage Treatment System

If the project consists of Condominiums, Town Homes, Home Owner's Association, or will serve two or more separate tax parcels, then a Community Sewage Treatment System, as applicable, will be required to serve the entire project.

Community sewage treatment systems include a sewage collection system, treatment works and sewage disposal facilities. The community sewage treatment facility must be capable of producing an effluent meeting applicable discharge standards. In addition, projects served with these types of systems require acceptance by the Suffolk County Sewer Agency (SCSA), and must be reviewed and approved by the Suffolk County Department of Public Works. Design of these systems is covered in the GLUMRB - Recommended Standards for Wastewater Facilities - 2004 Edition, or the latest revision. Additional standards for construction of these facilities can be obtained from the Suffolk County Department of Public Works.

iii. Municipal Sewage Treatment System.

If the project is located within the boundaries of a county, town, or village sewer district, then the project must be served by the appropriate Municipal Sewage Treatment System.

b) Types of Treatment Works

On-Site, Community and Municipal Sewage Treatment Systems shall contain treatment works of a type and design acceptable to the Department as well as to the NYSDEC and SCSA, when applicable. These can be classified into two types depending upon the design sewage flow:

i. Modified Subsurface Sewage Disposal Systems

A modified subsurface sewage disposal system may be permitted when the Design Sewage Flow (density load + kitchen/gray load) generated from the project is less than or equal to 15,000 gallons/day. These systems must be capable of producing an effluent meeting applicable discharge standards. However, when the project Design Sewage Flow exceeds 1,000 gallon/day, the NYSDEC may also review the proposed system design and issue a SPDES permit for the facility prior to the Department issuing a permit to construct. Applicable guidelines and/or standards covering these systems can be found in **Appendix A**.

ii. Sewage Treatment Plant (STP) or Treatment Works

A Sewage Treatment Plant or Treatment Works may be permitted when the Design Sewage Flow (density load + kitchen/gray load) generated from the project is greater than 15,000 gallons/day. These systems must be capable of producing an effluent meeting applicable discharge standards. Applicable design standards can be found in

the GLUMRB - Recommended Standards for Wastewater Facilities - 2004 Edition, or the latest revision, and **Appendix B**.

## **XI. LOCATION / SITING OF SEWAGE DISPOSAL SYSTEMS**

### 1. Priority Siting for Sewage Disposal Systems

Because the failure of sewage disposal systems has the potential for significant public health impact, first priority during planning shall be given to the location of sewage disposal systems over the location of other improvements on the property.

The design professional is responsible to consider the significance of the existing and proposed topography, soils, location of existing and proposed private and public water supply wells, surface waters, wetlands, and groundwater conditions. The design must take into consideration the planned locations of other improvements such as building locations, underground utilities, storm drainage structures, and construction on adjacent properties, property lines, and other limitations of a physical or legal nature.

### 2. Site Conditions Prohibited

Sewage Disposal Systems shall not be located:

- c) In any area subject to imminent erosion, which cannot be controlled so as to protect the sewage disposal system(s);
- d) In areas where the highest recorded groundwater level is less than one foot below the original ground surface;
- e) In areas with existing slopes greater than 15%, unless the site can be properly graded in accordance with these standards. Refer to Section XXI - Final Grading and Backfilling;
- f) In areas where the existing subsoils contain meadow mat, bog, silts, clays, or other impervious material extending below the groundwater table;
- g) In areas where the groundwater conditions are not conducive to the proper functioning of subsurface sewage disposal systems;
- h) Where topography concentrates runoff onto or into the area where the system is proposed;
- i) In any area or under any part of a building, or other improvements that does or may prevent reasonable access for repair or maintenance of the system.
- j) In any area which may reasonably be expected to create a public health risk.

### 3. Site Condition Requirements

Sewage Disposal Systems shall be located:

- a) On land owned in fee by the applicant (except for Community or Municipal Sewage Treatment Systems);
- b) On the same parcel as the building(s) to be serviced (except for Community or Municipal Sewage Treatment Systems);
- c) In an area which is easily accessible for purposes of maintenance and/ or replacement of sewage disposal and treatment system components;
- d) In accordance with the minimum separation distances presented in Table 2 of these standards;
- e) In accordance with the minimum separation distances and other conditions listed in **Appendix A** and **Appendix B** as applicable.

### 4. Expansion Area Requirements

#### a) Conventional Subsurface Sewage Disposal Systems

A land area shall be set aside and shown on the plans adequate to allow for a minimum of fifty percent (50%) expansion and/or replacement of the leaching system. The area provided for expansion shall be contiguous to the location of the planned system. Deepening the basic system is not permitted in lieu of this expansion area.

#### b) On-site or Community Sewage Treatment Systems

An adequate area shall be set aside to allow for a minimum of one-hundred percent (100%) expansion and/or replacement of sewage treatment and disposal systems. The area provided for expansion shall be contiguous to the planned location of the treatment and disposal facilities. Deepening the leaching system is not permitted in lieu of this expansion area. Refer to **Appendix A or B**, of these standards, for additional information.

### 5. Other Site Specific Considerations

To protect the public water supply and the benefits that freshwater wetlands, tidal wetlands, streams, and other surface waters provide, all projects may be subject to a separate site review by the department. The following criteria apply to these sites:

- a) Sewage disposal systems shall be located to maximize distances to public water supply wells. If the department determines that insufficient distance exists to protect the well, further treatment may be required.

- b) Sewage disposal systems shall be located to maximize distances to regulated freshwater wetlands, tidal wetlands, ponds, streams, and other surface waters. See **Table 2** of these standards for specific separation distance requirements.
- c) Boundaries of wetlands, surface waters and flood zones shall be shown accurately on surveys and site plans. Wetlands are not regulated directly by the Department, only through standards and regulations of the NYSDEC, NYSDOH, and various other government agencies.

**TABLE 2 - MINIMUM HORIZONTAL SEPARATION DISTANCES**

<b>Table of Minimum Horizontal Separation Distances From:</b>	<b>Septic Tank, Pump Station, Grease Trap, or Manhole</b>	<b>Leaching Pool<sup>3</sup></b>	<b>Sewer Line, Force Main</b>
Building with Cellar	10 ft.	10 ft.	5 ft.
Building on Slab	5 ft.	10 ft.	5 ft.
Water Service Line/Laterals/Mains <sup>5</sup>	10 ft.	10 ft.	10 ft. <sup>4</sup>
Underground Utilities	5 ft.	5 ft.	5 ft.
Surface Water/Regulated Wetlands	75 ft.	100 ft.	50 ft.
Public Water Well <sup>2</sup>	200 ft.	200 ft.	50 ft.
Private Well <sup>1</sup>	100 ft.	150 ft.	50 ft.
Storm Drain/Stormwater Recharge Basin <sup>5</sup>	20 ft.	20 ft.	10 ft.
Catch Basins (non leaching)/Drainage Pipe <sup>6</sup>	5 ft.	10 ft.	5 ft.
Leaching Pool	8 ft.	8 ft.	10 ft. <sup>7</sup>
Septic Tank, Pump Station, Grease Trap, or Manhole <sup>8</sup>	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.

<sup>1</sup> Increased distance between leaching pools and private wells may be required based upon the depth of the well(s) involved and the direction of groundwater flow. Refer to **Standards For The Design Of Individual Water Supply Systems**. Discharges from treatment works shall be located down gradient of the well or out of the groundwater flow path towards the well. **Precise groundwater flow direction measurements may be required.**

<sup>2</sup> Significant discharges (generally greater than 5,000 gpd or those in proximity to wells) are subject to a separate site review by the department.

<sup>3</sup> Leaching pools for treatment works have different distance requirements. See **Appendix A** and **Appendix B** for distance requirements for leaching pools or recharge beds associated with modified subsurface sewage disposal systems and treatment works, respectively.

<sup>4</sup> Water and sewer lines may be in the same trench if the water line is placed on an undisturbed bench or shelf so that the bottom of the water main is at least 18 inches higher than the top of the sewer and the sewer is not subject to settling, vibration, superimposed loads, or frost action.

<sup>5</sup> A minimum of 10 foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage leaching structures.

<sup>6</sup> A minimum of 5 foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage non-leaching structures and associated piping.

<sup>7</sup> Sewer piping between clusters of leaching pools may be installed at lesser separation distances.

<sup>8</sup> Multiple unit septic tanks and grease traps shall be considered one structure and therefore individual components may be installed at lesser separation distances.

## **XII. SUBSOIL AND GROUNDWATER CONDITIONS**

Subsoil conditions shall be shown on the plans. The nature of the soil shall be determined by excavation of one or more test holes at the site of the proposed subsurface sewage disposal system. The soil investigation shall be subject to the following conditions:

### **1. Test Holes/Borings**

The soils in the test holes/borings shall be classified using the ASTM Unified Soil Classification System (ASTM D-2487) as a reference. The test holes/borings shall be carried to a depth of three feet in excess of the proposed leaching pool bottom or seventeen feet, whichever is greater. In the case where unacceptable soil is encountered, the test hole/boring must be carried until a strata of six feet of clean sand is reached (defined as SP or SW by ASTM standards). If groundwater is encountered less than seventeen feet from grade, then the test hole/boring must be extended a minimum of six feet into groundwater.

A test hole/boring log and grade elevation at the test hole shall be indicated on the plans. The log shall also indicate the date, time, and person responsible for the test hole. If groundwater is encountered, the groundwater elevation measured during the test hole/boring and the highest recorded groundwater elevation shall be shown.

### **2. Responsibility of Design Professionals**

The design professional, by providing this information on the submitted plan, is considered to be certifying the results. Test holes/borings listed as "by others" are unacceptable unless independently certified by a design professional. Test holes/borings undocumented as to time and location of test are not acceptable.

### **3. Witnessed Test Excavations**

Test excavations witnessed by a representative of the Department may be required prior to approval to construct in areas of unusually poor soils or high groundwater or where data on record with the Department indicates inconsistent conditions. Borings are not acceptable to be witnessed by the Department in lieu of open excavations.

### **4. Interpretation of Soil Investigation**

In the event that there is a question over the classification of any soil and its suitability for sewage disposal, a sieve analysis performed by a qualified laboratory or design professional may be required. The Department may also require a technical report, submitted by a design professional, where unsuitable soil conditions exist at a site.

### **5. Removal of Soils Unsuitable for Leaching Pools**

Unsuitable soils shall be removed and replaced with clean sand for a diameter six feet greater than the leaching pool (three foot collar) extending down until a hydraulic connection is established with a minimum six foot stratum of acceptable material. In cases where clean sand

cannot be encountered, a design for an alternative sewage disposal system may be required in accordance with Section XXV of these standards.

### **XIII. CONSTRUCTION MATERIALS REQUIREMENTS**

All components used in the sewage disposal system shall comply with the appropriate National Sanitation Foundation, the American Society of Testing and Materials, the American Association of Highway and Traffic Office, and / or the American Water Works Association requirements. Concrete used in the construction of sewage disposal system components shall conform to ASTM - C33 and ASTM - C150 standards. Concrete reinforcement shall conform to ASTM - A185 and ASTM - A615 as applicable.

All materials shall be identified as to manufacturer and have identification visible at the time of inspection.

### **XIV. SEPTIC TANK REQUIREMENTS**

#### 1. General

All conventional subsurface and/or alternative sewage disposal systems shall contain a septic tank as part of the overall sanitary disposal system design.

#### 2. Location

Septic tanks shall be located below grade and outside the building in either paved or unpaved areas. Septic tanks shall be located in areas that are easily accessible for routine inspection and maintenance. Refer to Section XI for additional siting requirements.

#### 3. Design Capacity / Configuration

Septic tanks shall be designed to hold two days' Design Sewage Flow with a minimum capacity of 1200 gallons. The Design Sewage Flow for the project can be calculated from Section IX of these standards. All septic tanks shall be cylindrical and shall meet the following:

##### a) Single Unit Septic Tank (Figure # 1)

- i. The minimum outside diameter cylindrical septic tank shall be 8 feet and the maximum outside diameter shall be 12 feet.
- ii. The minimum liquid depth of any cylindrical septic tank shall be 4 feet. Liquid depth is the effective depth of the tank below the outlet pipe.
- iii. Eight (8) foot diameter tanks shall have a maximum liquid depth of 5 feet.
- iv. Ten (10) foot diameter tanks shall have maximum liquid depth of 6 feet.

- v. Twelve (12) foot diameter tanks shall have a maximum liquid depth of 7 feet.

- vi. There shall be a maximum number of three (3) outlet pipes from the septic tank. All outlet pipes shall be set at the same elevation.

b) Two Unit Septic Tank (Figure #2)

In addition to the requirements listed in Section XIV C.1, two unit septic tanks shall require the following:

- i. Units shall be connected with three (3) - 8 inch diameter pipes placed such that the center lines of the pipes are 18 inches below the liquid level of the tank. The three connecting pipes shall be spaced 20 inches on centers. Each unit shall have the same diameter and liquid depth.

c) Multiple Unit Septic Tank (Figures #3 and #4)

In addition to the requirements listed in Section XIV C.1, multiple unit septic tanks shall require the following:

- i. When three or more individual septic tanks are utilized within one system, they shall be placed on a common reinforced concrete slab at least 6 inches thick.
- ii. All units shall be connected with two (2) – 8 inch diameter pipes placed such that the center lines of the pipes are 18 inches below the liquid level of the tank. Each connecting pipe set shall be spaced 20 inches on centers.
- iii. Each unit shall have the same diameter and liquid depth.

4. Design and Construction Details

- a) All septic tank components (i.e. slabs, domes, covers, etc.) shall be constructed of precast reinforced concrete and designed to be traffic bearing to meet the requirements of AASHTO H-20 loading.
- b) All units shall be provided with two openings with a minimum diameter of 20 inches positioned over the inlet and outlet pipes. A watertight and insect-proof adjustable and locking cast iron frame and cover shall be installed at grade over each opening.
- c) Extension Collars (chimneys) may be used for the purpose of bringing the cast iron covers to grade provided that they are firmly affixed in place. The extension collar (chimney) shall be of reinforced precast concrete at least 24 inches in diameter and shall not exceed 2 feet in height.
- d) The top slab or dome of the septic tank shall be located a maximum of 2.5 feet below grade.
- e) There shall be a minimum 1 foot air space measured from the outlet invert(s) to the bottom of the septic tank top slab or dome.

- f) Precast concrete sections shall be sealed with one(1) - inch butyl rubber joint sealant which conforms to ASTM C-990.
- g) The outlet invert(s) shall be six inches below the lowest inlet invert. All outlet inverts shall be installed at the same level.
- h) The outlet pipe(s) from the tank shall be provided with a drop tee extending eighteen inches into the liquid. The outlet(s) shall be located at the maximum flow path from the inlet.
- i) All sewer pipes shall penetrate the vertical sidewall of the septic tank(s) and shall be sealed with grout. There shall be no penetrations within domes.
- j) All single unit septic tanks shall be divided into two compartments, the inlet compartment to have 50 - 75 percent of the total capacity. The traverse wall separating compartments shall extend from the bottom to at least 6 inches above the liquid level and be constructed of reinforced precast concrete.
- k) The opening in the traverse wall shall be 8 inches in height and at least 24 inches wide. The center shall be 18 inches below the liquid level. There shall be a minimum of 4 inch air gap at the top of the traverse wall.
- l) Whenever practical, septic tanks shall not be located within groundwater. For installations that are placed in groundwater, the bottom and side portion, up to 18 inches above the highest recorded groundwater elevation, of the septic tank shall be monolithically constructed. In cases where this is not practicable, the septic tank shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation. Maximum permissible leak rate is  $\frac{1}{4}$  inch in 8 hours.
- m) Septic tanks shall be installed in accordance with the manufacturer's recommendation. All septic tanks shall be installed at level in all directions (with a maximum tolerance in any direction of +/- one quarter inch) on a minimum three inch bed of properly graded and compacted sand which is free of rock and pea gravel.

## **XV. GREASE TRAP REQUIREMENTS**

### **1. General**

All restaurants and/or food preparation establishments are required to install a grease trap for the kitchen or food preparation area. A grease trap is considered part of the equipment necessary to obtain a permit to operate a food establishment pursuant to Article 13 of the Suffolk County Sanitary Code. Grease traps should be cleaned and maintained on a regular basis in order to insure proper functioning and insect free performance.

### **2. Location**

Grease traps shall be located below grade and outside the building preceding the septic tank or sewer line. Only discharges from the kitchen or food preparation areas may be piped to grease traps. Grease traps shall be located in areas that are easily accessible for routine inspection and maintenance. Refer to Section XI for additional siting requirements.

### 3. Design Capacity / Configuration

The required capacity of grease traps shall be based on the kitchen design flow for a one day period. The kitchen design flow can be calculated from Section IX of these standards. All grease traps shall be cylindrical with a minimum size of 1500 gallons and meet the following criteria:

#### a) Single Unit Grease Trap (Figure #5)

- i. The minimum outside diameter cylindrical grease trap shall be 8 feet and the maximum outside diameter shall be 12 feet.
- ii. The liquid depth shall be a minimum of 5 feet and shall not exceed 7 feet depending upon diameter.

#### b) Multiple Unit Grease Trap (Figure #6)

- i. The minimum outside diameter cylindrical grease trap shall be 10 feet and the maximum outside diameter shall be 12 feet.
- ii. The liquid depth shall be a minimum of 5 feet and shall not exceed 7 feet depending upon diameter.
- iii. Each unit shall have the same diameter.
- iv. Units shall be connected in series by utilizing one 6 inch diameter drop tee pipe.
- v. There shall be a 6 inch drop between the inlet and outlet pipes of each unit. Each succeeding unit shall have a liquid depth of 6 inches less than the preceding unit.

### 4. Design and Construction Details

- a) All grease trap components (i.e. slabs, domes, covers, etc.) shall be constructed of precast reinforced concrete and designed to be traffic bearing to meet the requirements of AASHTO H-20 loading.
- b) All units shall be provided with two openings with a minimum diameter of 20 inches positioned over the inlet and outlet pipes. A watertight and insect-proof adjustable and locking cast iron frame and cover shall be installed at grade over each opening.
- c) Extension Collars (chimneys) may be used for the purpose of bringing the cast iron covers to grade provided that they are firmly affixed in place. The extension collar (chimney) shall be of reinforced precast concrete at least 24 inches in diameter and shall not exceed 2 feet in height.

- d) The top slab or dome of the grease trap shall be located a maximum of 2.5 feet below grade.
- e) There shall be a minimum 1 foot air space measured from the outlet invert(s) to the bottom of the grease trap top slab or dome.
- f) The base section of all units (bottom slab and minimum of 1 foot of sidewall) shall be monolithically cast.
- g) Precast concrete sections shall be sealed with one (1) - inch butyl rubber joint sealant which conforms to ASTM C-990.
- h) The outlet pipe(s) from each grease trap unit shall be 6 inch in diameter to the inlet of the septic tank or sewer main. Each outlet shall be provided with a 6 inch diameter drop tee extending to 1 foot above the bottom of the tank. The outlet(s) shall be braced as required and located at the maximum practicable distance from the inlet.
- i) All sewer pipes shall penetrate the vertical sidewall of the grease trap(s) and shall be sealed with grout. There shall be no penetrations within domes.
- j) Whenever practical, grease traps shall not be located in groundwater. For installations that are placed in groundwater, the bottom and side portion, up to 18 inches above the highest recorded groundwater elevation, of the grease traps shall be monolithically constructed. In cases where this is not practicable, the grease traps shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation. Maximum permissible leak rate is  $\frac{1}{4}$  inch in 8 hours.

5. Exceptions

While the requirement to install a grease trap at establishments served by community sewers shall not be waived, the design, location, capacity and construction details for the unit shall be determined by the appropriate sewer authority.

## **XVI. LEACHING POOL REQUIREMENTS**

### **1. General**

Leaching pools are used as part of conventional subsurface or alternative sewage disposal system, and on-site and community sewage treatment systems to infiltrate effluent into the surrounding soil.

### **2. Location**

Leaching pools must be installed in areas that are easily accessible for routine inspection, maintenance, replacement or expansion. Refer to Section XI for additional requirements concerning the location of leaching pools.

### **3. Design Leaching Area**

- a) Leaching pool systems shall be designed on the basis of sidewall area to receive one full day's hydraulic design flow. The required sidewall leaching area is computed from the outside wall area below the inlet pipe for satellite pools and below the outlet pipe for distribution pools. The pool bottom area is not to be included in the leaching area computation.
- b) The minimum required system sidewall leaching area is 300 sq.ft.
- c) The maximum hydraulic leaching rate of 1.5 gal/sq.ft./day shall be used for Conventional Subsurface Sewage Disposal Systems.
- d) The maximum hydraulic leaching rate of 5 gal/sq.ft./day shall be used for On-Site and Community Sewage Treatment Systems without positive filtration processes.
- e) The maximum hydraulic leaching rate of 10 gal/sq.ft./day shall be used for On-Site and Community Sewage Treatment Systems with positive filtration processes.
- f) The maximum hydraulic leaching rate for alternative sewage disposal systems shall be determined in accordance with the requirements of Section XXV of these standards.

### **4. Leaching Pool Design and Construction Details (Figure #7)**

- a) All leaching pools shall have an outside diameter of eight feet or ten feet.
- b) When more than one leaching pool is used, all pools shall be the same size and depth, except the distribution pool, which may differ.
- c) When a distribution pool is used, all outlet pipes shall be set at the same elevation and be at least three inches below the inlet pipe. All outlets shall be provided with an 18 inch drop tee.

- d) The maximum permissible depth of a precast concrete leaching pool is twenty five feet from finished grade. The minimum permissible effective depth of any leaching pool shall be three feet.
  - e) The minimum vertical separation distance from the bottom of the leaching pools to the highest recorded groundwater elevation shall be 3 feet for all new leaching pools installed after the effective date of this standard. Previously installed leaching pools that do not meet this criteria may be accepted by the Department on a case-by-case basis.
  - f) All leaching pools (i.e. slabs, domes, covers, etc.) shall be constructed of precast reinforced concrete and designed to be traffic bearing to meet the requirements of AASHTO H-20 loading.
  - g) All leaching pools shall be provided with one opening with a minimum diameter of 20 inches. A watertight and insect-proof adjustable and locking cast iron frame and cover shall be installed at grade over each opening.
  - h) Extension Collars (chimneys) may be used for the purpose of bringing the cast iron covers to grade provided that they are firmly affixed in place. The extension collar (chimney) shall be of reinforced precast concrete at least 24 inches in diameter and shall not exceed 2 feet in height.
  - i) The top slab or dome of the leaching pool shall be located a maximum of 2.5 feet below grade.
  - j) All sewer pipes shall penetrate the vertical sidewall of the leaching pool and shall be sealed with grout. There shall be no penetrations within domes.
5. Leaching Pool Arrangement / Layout (Figure #8)
- a) A maximum of 3 leaching pools are permitted to be piped directly from the septic tank.
  - b) When 4 or more leaching pools are required, a distribution leaching pool or a distribution manhole shall be used to apportion the flow to the satellite leaching pools.
  - c) A maximum of 4 satellite leaching pools shall be piped from a distribution pool or manhole to form one leaching pool cluster.
  - d) When more than 5 leaching pools are required, multiple leaching pool clusters shall be provided. The leaching pool clusters may be piped directly from the septic tank or from distribution pools or manholes as required.
  - e) When multiple clusters are utilized, each cluster shall be equipped with a gate or ball valve to allow for isolation and resting. Each valve shall be outfitted with a traffic bearing cover that is accessible for operation from grade.



## 6. Installation Requirements

- a) Leaching pools shall be installed in clean sand (defined as SP or SW by ASTM standards).
- b) Unsuitable soils shall be removed and replaced with clean sand for a diameter six feet greater than the leaching pool (three foot collar) extending down until a hydraulic connection is established with a minimum six foot stratum of acceptable material.
- c) In cases where clean sand cannot be encountered, a design for an alternative sewage disposal system may be required in accordance with Section XXV of these standards.
- d) The bottom and sidewall area of the leaching pools shall be free of debris before backfilling.

## **XVII. MANHOLE REQUIREMENTS**

### 1. General

Manholes are used as part of a sewage disposal and collection systems to distribute equal volumes of sewage, to allow for access, or to collect and re-distribute sewage.

### 2. Location

- a) Manholes shall be provided on gravity sewer lines wherever there is a grade change or alignment change further than 10 feet from building foundations as measured along the pipe.
- b) Manholes shall be provided on gravity sewer lines at intervals not exceeding 400 feet.
- c) Manholes shall be provided at the junctions and at the ends of lateral or main sewer lines.
- d) Building sewer connections shall not be piped directly to a collection system manhole, but shall be connected to the main line via a wye connection.

### 3. Design and Construction Details

- a) All manholes (i.e. slabs, covers, etc.) shall be constructed of precast reinforced concrete and designed to be traffic bearing to meet the requirements of AASHTO H-20 loading.
- b) All manholes shall be constructed in accordance with ASTM C-478 (latest revision).
- c) All manholes shall be provided with an opening with a minimum diameter of 20 inches. A watertight and insect-proof adjustable and locking cast iron frame and cover shall be installed at grade over each opening.

- d) Extension Collars (chimneys) may be used for the purpose of bringing the cast iron covers to grade provided that they are firmly affixed in place. The extension collar (chimney) shall be of reinforced precast concrete at least 24 inches in diameter and shall not exceed 2 feet in height.
- e) The top slab of the manhole shall be located a maximum of 2.5 feet below grade.
- f) The base section of all manholes (bottom slab and minimum of 1 foot of sidewall) shall be monolithically cast.
- g) Precast concrete sections shall be sealed with one(1) - inch butyl rubber joint sealant which conforms to ASTM C-990.
- h) The bottom of all manholes shall be coved or benched. The bench shall be the same width as the diameter of the pipe and shall extend upward at least three-quarters of the diameter of the pipe.
- i) All sewer pipe penetrating the manhole shall be accomplished with a cast- in place flexible rubber sleeve that conforms to ASTM C-923 and stainless steel tightening devices. For cases where a new penetration is being made into an existing manhole, a link seal may be substituted for the rubber boot.
- j) If the manhole is more than four feet in depth, manhole steps shall be provided every twelve (12) inches. The steps shall be constructed of copolymer polypropylene coated 2 inch steel reinforcing bar. The access opening shall be provided over the manhole steps.
- k) Whenever practical, manholes shall not be located in groundwater. For installations that are placed in groundwater, the bottom and side portion, up to 18 inches above the highest recorded groundwater elevation, of the manhole shall be monolithically constructed. In cases where this is not practicable, the manhole shall be water-proofed up to 18 inches above the highest recorded groundwater elevation and leak tested to ensure tightness prior to operation. Maximum permissible leak rate is  $\frac{1}{4}$  inch in 8 hours.

#### 4. Types of Manholes

Manholes can be broken into 4 general categories. In addition to the items in Section C above, each category shall conform to the following requirements:

- a) Access/Junction Manhole (Figure #9)
  - i. Access/junction manholes shall have a minimum inside diameter of 4 feet.
  - ii. For pipe diameters of 24 inches or greater, the minimum inside diameter of the manhole shall be 5 feet.
  - iii. A minimum drop of 0.1 foot shall be provided between the inlet and lowest outlet invert elevation.

- iv. The maximum change in elevation between the inlet and outlet invert shall be no greater than 2 feet.
- b) Drop Manhole (Figure #10)
  - i. All drop manholes shall have a minimum inside diameter of 5 feet
  - ii. A drop manhole is required to be provided when the difference in elevation between the inflow and outflow sewer line is greater than 2 feet.
  - iii. The drop pipe shall be securely attached to the sidewall of the manhole with stainless steel straps.
- c) Distribution Manhole (Figure #11)
  - i. All outlets from the distribution manhole shall be set at the same elevation.
  - ii. A minimum drop of 0.1 foot shall be provided between the inlet and outlet invert elevations.
- d) Sampling Manhole (Figure #12)
  - i. Dimensions for sampling manholes shall be 2 foot by 2 foot.
  - ii. Maximum depth for sampling manhole shall be 4 feet.
  - iii. A minimum drop of 0.1 foot shall be provided between the inlet and outlet invert elevations.
  - iv. A 12 inch deep sample retention area shall be provided below the outlet invert elevation.

## **XVIII. GRAVITY SEWER LINE REQUIREMENTS**

- 1. General Sewer Line Requirements
  - a) Gravity sewer lines and fittings shall meet or exceed ASTM standard D-3034 for PVC sewer pipe with a minimum SDR 35 rating, unless otherwise indicated.
  - b) PVC pipe and fittings shall be provided with integral bells and spigots and rubber sealing rings. The sealing rings shall meet the requirements of ASTM standard F-477. All sewer lines shall be straight, and couplings shall be securely installed and be watertight.
  - c) All sewer lines shall have a minimum diameter of four (4) inches.

- d) Where practical, gravity sewer lines shall not be installed in groundwater. For installations that are placed in groundwater, the sewer piping shall be constructed of pressure rated piping and tested to ensure tightness prior to operation. Maximum permissible leak rate is ¼ inch in 8 hours.

2. Internal Building Plumbing

- a) Internal building plumbing shall be designed in accordance with applicable building codes and is outside the jurisdiction of the Department.
- b) It is the preference of the Department that all individually owned buildings, residences, or premises be plumbed separately and serviced with an independent house connection to the exterior sanitary services.
- c) The use of common house connections shall be permitted provided that the internal plumbing is designed to accommodate multiple sewer connections in accordance with good engineering practice and applicable building codes. In addition, restrictive covenants shall be placed upon the property notifying the owner and/or homeowners association of their responsibility for the operation and maintenance of the internal sewer appurtenances; including, but not limited to, the repair, replacement, and cleaning of the internal piping within the structure.

3. House Connections

- a) A house connection is defined as the portion of the gravity sewer line which extends from the face of the building to the sewage disposal or sewer system.
- b) There shall be a minimum two foot length of cast-iron sewer line extending through the foundation.
- c) House connections shall have a minimum diameter of 4 inches, unless otherwise noted.
- d) House connections serving two or more commercial or multiple residential units shall have a minimum diameter of 6 inches.
- e) House connections shall have a minimum pitch of one-quarter inch per foot.
- f) Slip ring connectors of the proper type shall be used at the cast iron joint. If required, a flexible PVC coupling with stainless steel bands may be used to connect cast iron pipe to PVC house Connections. The flexible coupling and bands shall conform to ASTM C1173.
- g) All house connections shall be provided with a clean-out at the face of the building.

- h) House connections shall be straight. There shall be no bends in sewer lines to the septic tank or grease trap. If bends are unavoidable, then the following additional criteria shall apply:
  - i. For bends greater than 10 feet from the building foundation as measured along the length of the sewer pipe, an approved manhole will be required where the pipe changes direction.
  - ii. For bends within 10 feet of the building foundation measured along the length of the sewer pipe, no fittings greater than 45 degrees shall be installed. If a directional change greater than 45 degrees is required, a minimum of five foot length of pipe shall be installed between fittings. The maximum permitted change in alignment of the sewer line shall be 90 degrees as measured along the axis of the starting pipe.
  - iii. Cleanouts are required at any bend within 10 feet from the building or every 75 feet along the length the house connection. Refer to Figure #13.

#### 4. Sewer Main / Lateral Sewer Requirements

- a) Sewer main and lateral sewers shall have a uniform slope and be laid with a straight alignment, without bends. When required, approved manholes may be utilized where sewers change direction or slope.
- b) House or building sewers shall be connected to main or lateral sewers with approved wye fittings.
- c) Sewers shall be provided with manholes at intervals not to exceed 400 feet. See Section XVII for manhole location requirements.
- d) Sewer main and lateral sewers shall have a minimum diameter of eight inches, and shall have a minimum slope of 0.4%. Ten inch diameter sewers shall have a minimum slope of 0.28%.
- e) Sewer main and lateral sewers that have less than 2 foot of cover or are not placed on virgin soil shall be constructed of ductile iron pipe.
- f) Sewer main and lateral sewers that have between 2 foot and 4 foot of cover shall be constructed of DR18 or ductile iron pipe.
- g) Sewer main and lateral sewers that have over 4 foot of cover may utilize SDR35 pipe.

#### 5. Installation / Backfilling Requirements

- a) The width of trenches shall be adequate to allow sewer pipe to be laid and joined properly and to allow bedding and haunching to be placed and compacted to adequately support the pipe.

- b) The embedment material around the PVC pipe shall be installed in layers not exceeding six inches. The embedment material shall be Class I, Class II, or Class III. Class I material shall conform to the following standards: minimum particle size 3/4 inches, not less than 50% weight of material shall pass the 3/8 inch sieve. Class II material is defined as coarse sands and gravels with maximum particle size of 40 mm (1/2 inches), including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Unified Soil Classification types GW, CP, SW, SP are included in this Class. Class III material is defined as fine sand and clayey gravels, including fine sands, sand clay mixtures, and gravel - clay mixtures. All backfill material within one foot horizontally and one foot above the crown of the pipe shall be placed by hand and requires hand compaction.
- c) Each layer of Class II and class III material shall be compacted to a minimum density of ninety-five (95) percent of maximum density of the soil as determined by the Standard Procter Test AASHTO designation T-99.
- d) For additional requirements concerning the installation of PVC sewer pipe, refer to ASTM standard D-2321 "Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity- Flow Applications".

#### 6. Testing

Deflection testing of every section of sewer main or lateral sewers, constructed of PVC, is required by the Department. The total vertical wall deflection of the PVC pipe, as determined by testing not earlier than 30 days after placement and compaction of the final backfill, shall not exceed four (4) percent of the inside pipe diameter. The deflection shall be checked by manually pulling a "GO - NO GO" deflection testing mandrell through the pipe. The contractor shall conduct the tests under the observation of the certifying engineer / architect.

#### 7. Certification

For projects that involve a sewage collection system, a licensed engineer / architect shall certify that all material, method of construction, installation, and testing of the sewer pipe meet the requirements of these standards as well as plans approved by the Department. Refer to **Appendix C** of these standards.

### **XIX. SEPARATION OF SEWER AND WATER LINES**

#### 1. Parallel Installation

- a) Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main or lateral. The distance shall be measured edge to edge.
- b) If it is not practical to maintain a horizontal separation of ten feet, the department may allow a deviation on a case-by-case basis. Such deviation may allow for the installation of the sewer to be a minimum of 5 feet to a water main or lateral, provided

that the bottom of water main or lateral is at least 18 inches above the top of the sewer line.

- c) If the vertical separation as described in item 2 above cannot be obtained, the department may allow a deviation on a case-by-case basis. Such deviation may allow for the installation of the sewer to be a minimum of 5 feet to a water main or lateral, provided that the bottom of the water main or lateral is at least 12 inches above the top of the sewer line and both are constructed of pressure rated pipe.

## 2. Crossings

- a) The crossing of water and sewer lines should be avoided unless proven absolutely necessary.
- b) Water Line over Sewer Line

In the event that the water line must cross over the sewer line, the following conditions shall be met:

- i. sewer lines shall be laid below the water line and provide a separation of at least 18 inches between the bottom of the water line and the top of the sewer line; and
- ii. sewer line joints shall be at least 10 feet from the point of crossing; and
- iii. when it is not practical to obtain an 18 inch separation, both the water and sewer lines shall be constructed of pressure pipe and have a minimum separation of 12 inches between the bottom of the water line and the top of the sewer line.

- c) Sewer Line over Water Line

In the event that the sewer line must cross over the water line, the following conditions shall be met:

- i. adequate structural support shall be provided for the sewer to maintain line and grade; and
- ii. water line and sewer line joints shall be at least ten feet from the point of crossing; and
- iii. the entire length of sewer line between adjacent manholes or other sanitary structures shall be constructed of materials and joints that are equivalent to water main standards of construction; and
- iv. a vertical separation of at least 18 inches shall be provided between the bottom of the sewer line and the top of the water line. In the event that this distance cannot be maintained, the department may allow a deviation on a case-by-case basis. In no case shall the separation distance be less than 12 inches between the bottom of the sewer line and the top of the water line.

**XX. SEPARATION OF SEWER AND DRAINAGE LINES**

1. Sewers shall be laid at least 5 feet horizontally from any existing or proposed drainage line. The distance shall be measured edge to edge.
2. In the event that the drainage line must cross over the sewer line, the sewer line must be constructed of ductile iron pipe unless a separation distance of 18 or more inches is maintained.
3. In the event that the sewer line must cross over the drainage line, the sewer line shall be constructed of ductile iron pipe for a distance of 3 feet horizontally into virgin soil.
4. If perimeter roof drainage piping is installed near the face of the building, all house connections must be constructed of ductile iron pipe for 10 feet from the building.

**XXI. BACKFILL AND FINAL GRADING**

1. Backfill and Final Grading

The completed system shall be backfilled and covered with suitable soil following permission to do so by the Department. The property shall be graded to minimize surface drainage into the system. A maximum 5 percent slope downward shall be maintained for 20 feet horizontally from the nearest edge of the leaching portion of the pool(s) to the toe of the slope before tapering off to prevent seepage of the leachate through the slope. Dummy rings that are utilized to bring the system to grade shall be permitted to be placed at a lesser horizontal distance. Steep grades further than twenty feet from the leaching pools shall be stabilized pursuant to local codes.

2. Retaining Walls

- a) In cases where the grading and slopes indicated in paragraph A. above, the utilization of retaining walls shall be required. In such cases, the retaining walls shall be designed by a licensed design professional in accordance with good engineering practice and applicable building codes. All retaining walls shall be shown as part of a grading and plot plan.
- b) Retaining walls shall be constructed to met the following requirements:
  - i. Retaining walls that are located within 20 feet of the sewage disposal system shall be constructed of reinforced concrete.
  - ii. No part of the sewage disposal system shall be placed closer than 10 feet from a retaining wall.
  - iii. If the leaching pools are located closer than 20 feet from the retaining wall, waterproofing will be required to prevent the seepage of leachate through the wall.



## XXII. SEWAGE PUMP STATIONS

### 1. General Requirements

Sewage disposal systems should be designed to flow by gravity. Only when absolutely necessary should pump stations be used. In such cases, the sewage pump station plans shall be prepared by a licensed design professional and must be reviewed and approved by the Department. In addition, construction and installation of sewage pump stations must be certified by a licensed professional engineer. For additional information concerning sewage pump stations refer to **GLUMRB - Recommended Standards for Wastewater Facilities -2004 edition (or latest revision)** and **NYSDEC - Design Standards for Wastewater Treatment Works - 1988 edition (or latest revision)**.

### 2. Location

- a) Sewage pump stations and valve chambers must be located in an area that is easily accessible for proper operation and routine maintenance. Security fencing shall be provided around pump station installations. Refer to Section XI for additional requirements concerning the location of sewage pump stations.
- b) Whenever practical, pumping stations that are utilized as lift stations within conventional on-site sewage disposal systems shall be located after the septic tank. In no instance shall the pump station be located prior to the grease trap.
- c) Whenever practical, pump stations shall not be located in groundwater.

### 3. Design / Construction Requirements

- a) All sewage pump station components are to be constructed of precast reinforced concrete and designed to be traffic bearing that meets the requirements of AASHTO H-20. Concrete pumping stations shall have a minimum inside diameter of four (4) feet. Pump stations may be constructed of other materials provided that they are water-tight, non-corrodible, and structurally sound.
- b) The bottom and side portion, up to 18 inches above the inlet invert, of the station shall be monolithically constructed. In cases where this is not practicable, the pumping station shall be water-proofed up to 18 inches above the invert and leaked tested to ensure tightness prior to operation. Maximum permissible leak rate is ¼ inch in 8 hours.
- c) Inlet sewer pipes penetrating the sidewall of the pump station shall be provided with cast-in-place rubber sleeves with stainless steel tightening devices or with a flexible rubber sleeve that conforms to ASTM C-923.
- d) Pump station wet well volume shall be sized to prevent excessive retention of sewage while preventing frequent cycling of pumps. Minimum cycle times between 15 and 30 minutes are recommended.

- e) The floor of the wet well shall be sloped toward the pump units to prevent the deposition of sewage solids.
- f) Precast concrete sections shall be sealed with one (1) - inch butyl rubber joint sealant which conforms to ASTM C-990.
- g) The maximum permissible depth of a pump station from grade shall be 30 feet.

4. Mechanical Requirements

- a) Duplex submersible sewage pumps that are automatically alternated shall be provided. A hand-off-automatic (HOA) switch shall also be provided for each pump. Each pump shall be capable of meeting the anticipated peak sewage design hydraulic flow rate.
- b) In some cases, where the pump station is receiving raw sewage, grinder type sewage pumps may be required.
- c) Pumps shall be readily removable and replaceable without dewatering the wet well or disconnecting any piping in the wet well. Stainless steel guide rails together with slide away flanges, or quick disconnect couplings shall be provided for this purpose.
- d) Pump discharge piping within the pumps station shall be constructed of ductile iron or stainless steel piping.
- e) Pump stations shall have adequate ventilation, by providing an intake fan that forces fresh air into the bottom of the lift station. The intake fan shall be capable of providing 12 air changes per hour for continuous operation or 30 air changes per hour for intermittent operation. An exhaust vent shall also be provided to remove sewer gases. Odor control equipment may be required for the exhaust vent.
- f) A hinged and lockable (non-skid) aluminum or stainless steel door shall be provided to allow accessibility to the pumps.
- g) A non-corrodible ladder with safety climb device shall be provided for access to the pumping station.
- h) A hinged and lockable (non-skid) aluminum or stainless steel door shall be provided to allow access to the ladder.
- i) Each pump shall be equipped with a stainless steel chain or cable. In addition, a pump lifting device shall be provided on-site to facilitate the removal of the pumps.
- j) There shall be no physical interconnection between any potable water supply and a sewage pumping station or any of its components.

## 5. Electrical Requirements

- a) All electrical components, including pumps, fans, and wiring, shall be explosion proof and conform to the requirements for Class I, Division 1, Group D of the National Electrical Code.
- b) There shall be no electrical splices, junction boxes, or connections of any kind in the sewage wet well. Junction boxes shall be located within a NEMA 4X enclosure outside of the pump station wet well.
- c) The pump station shall be provided with a minimum of 5 pump control switches. These include: a) "Low Level Alarm", b) "Pumps Off", c) "Lead Pump On", d) "Lag Pump On", e) "High Water Alarm". Encapsulated mercury filled float switches shall be used for this purpose. A hand-off-automatic (HOA) switch shall also be provided.
- d) Pump stations shall be provided with a dialer alarm that is activated by the low level and high level alarms.
- e) Alternative pump control devices, such as, a mutlitrode or bubbler system may be accepted in lieu of float controls. If an alternative device is utilized, a redundant high level float and low level float must be provided. The high level alarm shall activate the dialer alarm and operate the pumps throughout the throw of the float. The low level alarm shall activate the dialer alarm.
- f) Pump station control panels should be located within a building or other enclosure when possible. If required, control panels may be located outside of buildings, provided that the controls are located within a NEMA 4X rated enclosure that is placed within another NEMA 3R box.
- g) If pump control panel(s) are not within line of sight of the pumping station, then the pumps shall be outfitted with local disconnect switches at the pump station in lieu of a junction box.
- h) When pump stations are serving Multiple Residential Type projects, a permanent emergency power generator set with an automatic transfer switch shall be provided at the site. For other types of projects, consult the Department. All equipment and installation shall conform to the requirements of the National Electrical Code.
- i) A permanent light fixture shall be provided in the pump station wet well.

## 6. Valve Chamber

- a) The valve chamber shall be constructed of precast reinforced concrete and designed to be traffic bearing that meets the requirements of AASHTO H-20.
- b) Each pump shall be provided with a check and shut-off or isolation valve located within a separate chamber, outside of the pump station.

- c) The piping within the valve vault shall be constructed of ductile iron or stainless steel piping.
- d) A hinged and lockable aluminum or stainless steel door with a non-skid surface shall be provided over the valve chamber to allow accessibility to all valving.
- e) If necessary, access steps, constructed of polypropylene coated 2 inch steel bar shall be provided to access all valving from finished grade.
- f) A permanent light fixture shall be provided in the valve chamber.

#### 7. Certification

For projects that involve a sewage pumping station, a licensed design professional shall certify that all materials, method of construction, installation, and testing of the sewer pipe and equipment meet the requirements of these standards as well as plans approved by the Department. Refer to **Appendix C** of these standards.

#### 8. Exceptions

The Department may accept pump station designs which vary from the standards in cases of small sewage flows provided that the licensed design professional submits engineering justification acceptable to the Department.

### **XXIII. SEWAGE FORCE MAINS**

#### 1. Materials

Force mains may be constructed of either PVC and /or ductile iron in accordance with the following criteria:

- a) Plastic (PVC) sewer pipe used for force mains that have a diameter less than 4 inches shall be constructed of schedule 40 or 80 PVC pipe and meet the requirements of ASTM standard D-1785. Fittings shall have bell push-on joints and rubber sealing rings constructed of ductile iron, grade 65-45-12, in accordance with ASTM standard A-536. The rubber sealing rings shall meet the requirements of ASTM standard F-477.
- b) Plastic (PVC) sewer pipe and fittings used for force mains that have a diameter of four (4) inches or greater shall have a minimum rating of SDR-18 and meet or exceed the requirements of the AWWA C-900 standard. Rubber sealing rings shall meet ASTM F-477.
- c) Ductile iron pipe shall conform to AWWA C-150 and C-151 standards and have a minimum class 52 designation. Ductile iron push-on-joints used with this pipe shall conform to AWWA C-111; fittings shall meet AWWA C-110 and C-153 standards.

## 2. Design

- a) Force mains shall be designed to provide a minimum flow velocity of 2 feet per second and a maximum velocity of 7 feet per second. No force main shall have an inside diameter of less than two (2) inches.
- b) Force mains used to pump raw sewage shall have a minimum diameter of 4 inches, unless grinder pumps are used.
- c) Thrust blocks or restraints shall be provided where applicable throughout the length of a force main and shall be designed to contain the resultant thrust forces. Thrust blocks and restraints shall conform to AWWA C-600 standards.
- d) Force mains shall be located a minimum of 4.5 feet below finished grade to protect against freezing. In certain cases, force mains may have less soil cover, provided the line is pitched so that sewage is not retained in the line between pump cycles.

## 3. Installation Requirements

- a) The width of trenches shall be adequate to allow sewer pipe to be laid and joined properly and to allow bedding and haunching to be placed and compacted to adequately support the pipe. Refer to Section XVIII, paragraph E concerning the material used for embedment around PVC pressure pipe.
- b) For additional requirements concerning the installation of PVC pressure pipe, refer to ASTM standard D-2774 "Practice for Underground installation of Thermoplastic Pressure Piping".
- c) Force mains constructed of ductile iron pipe shall be installed in accordance with AWWA C-600 standard.

## 4. Testing

Force mains shall be pressure tested at 200 psi for a minimum of 30 minutes to assure water tightness prior to backfilling. The contractor shall conduct the test in the presence of the certifying design professional.

## 5. Certification

A licensed design professional shall certify that all material, methods of construction, installation and testing meet the requirements of these standards as well as plans approved by the Department. Refer to **Appendix C** of these standards.

## 6. Exceptions

The Department may accept force main designs which vary from the standards in cases of small sewage flows provided that the licensed design professional submits engineering justification acceptable to the Department.

## XXIV. PUMP-OUT FACILITIES

### 1. General

When required, pump-out facilities for the purpose of emptying marine vessel, bus, or RV holding tank wastes shall be located in areas that are easily accessible for proper operation, maintenance, or replacement. The construction of such facilities shall meet the requirements of the NYSDEC and all other applicable authorities where required. Provisions for pump-out facilities should be based upon the following guidelines:

### 2. Design Considerations

- a) Pump-out units may be portable or permanent, and should include a vacuum pump or a positive displacement type of pump to empty marine vessel and boat holding tank wastes. Pump-out units may be electrically or manually operated. If pump-out units are electrically operated, then all electrical components must be explosion proof, and meet NEC requirements.
- b) All pump-out units shall be provided with a flexible suction hose and dripless nozzle.
- c) All mechanical and electrical components must be adequately protected from freezing.
- d) Pump-discharge piping or force mains must be constructed of materials and joints that meet water main standards. The force main may be constructed of Type 1, Grade 1, schedule 80 PVC sewer pipe, or PVC pressure rated SDR 18 pipe.
- e) All pump-out units should be provided with a non-potable water service and an approved backflow prevention device for rinsing the onboard holding tanks.
- f) Holding tanks shall be located in accordance with Table 2 Section XI.
- g) The minimum capacity of any holding tank shall be 1000 gallons, but a greater volume may be required, as determined by the Department.
- h) Holding tanks shall be made watertight and leak tested to ensure tightness prior to operation. Maximum permissible leak rate is ¼ inch in 8 hours.
- i) Holding tanks shall not have an outlet pipe but shall be provided with a hinged and locking access port. A locking cast iron frame and cover shall be provided at finished grade over the access port. Both the access port and access cover shall be watertight and insect proof.

j) Holding tanks shall be properly vented, and shall be equipped with a liquid level float switch, high water level alarm and auto dialer or other acceptable automatic notification system.

k) All mechanical and electrical equipment shall meet the requirements of the NEC.

3. Disposal of Holding Tank Wastes

a) Holding tank wastes must be pumped out on a routine basis by a licensed scavenger vehicle and discharged to an acceptable treatment facility.

b) Discharge of holding tanks wastes to an on-site sewage disposal system is prohibited.

4. Certification Required

A design professional shall supervise the installation of pump-out facilities and certify that the systems are constructed in accordance with the approved plans and applicable codes.

5. Exceptions

a) For cases where a municipal sewer is available, the marine vessel, bus, or RV waste can be pumped directly to the sewer system in lieu of providing an on-site holding tank.

b) For cases where NYSDEC approval is required, the Department may consider alternative designs for pump-out facilities.

**XXV. ALTERNATIVE SEWAGE DISPOSAL SYSTEMS**

1. General

The sewage disposal systems addressed thus far in these Standards are considered conventional or typical systems and may be used on sites with adequate soil percolation and vertical/horizontal separation distances unless otherwise prohibited. For sites that are not suitable for such systems, the use of alternative systems may be permitted by the Department without need for a variance if the design meets the conditions listed in section XXV.2 and is acceptable to the Department. The Department reserves the right to require a variance to utilize an alternative system from the Board of Review at any time in conformance with section XXVIII.

2. Design Considerations

In addition to the typical plan requirements, applications for alternative designs shall include the following:

a) The system shall be designed by a licensed professional engineer.

- b) It is clearly demonstrated that the proposed system is physically equivalent or better than the conventional systems, in respect to storage capacity, leaching area, land area utilization, grading, accessibility, maintainability, reparability, life expectancy, effluent quality and reliability.
  - c) An engineering report shall be submitted that defines the disposal system and determines that the proposed design is most suitable for the building site and that the proposed sanitary system will function properly without causing any health hazard and will minimize the impact on the surrounding environment.
  - d) The design engineer shall supervise the installation of the system and certify that the system was constructed in accordance with the approved plans. An inspection log shall be maintained and a copy submitted to the Department if requested.
3. Examples of Alternative Systems
- a) *Clustered Leaching Systems* - a leaching system that consists of shallow pools that are clustered to minimize the space requirement. Maximum effective depth of leaching rings shall not exceed 3 feet and can be located a minimum of 2 feet above the highest recorded groundwater elevation. Refer to figure #14.
  - b) *Chamber Leaching System* - a leaching system that consists of plastic chambers in lieu of concrete leaching pools and can be located a minimum of 2 feet above the highest recorded groundwater elevation.
  - c) *Diffusion Well Systems* - a leaching system that utilizes wicks and other appurtenances to minimize the effects of poor soils.

## **XXVI. ABANDONMENT OF EXISTING SEWAGE DISPOSAL SYSTEMS**

Existing disposal systems that are proposed to be abandoned as part of a project may require sampling and remediation prior to abandonment. Once the Department has issued approval for the closure, the existing sanitary system shall be abandoned in accordance with the following requirements:

1. *Abandonment In-Place* - existing systems shall be abandoned by removing all residual sewage wastes by a licensed waste hauler, removing the top of the structure(s), backfilling with suitable sand and gravel material, and properly compacting.
2. *Abandonment by Removal* - existing systems may also be abandoned by removing all residual sewage wastes by a licensed waste hauler, removing the entire structure(s), backfilling with suitable sand and gravel material, and properly compacting.
3. *Abandonment of Sewer Piping* - the associated sewer piping shall be cut and capped as a means of abandonment. The Department should be contacted for further abandonment requirements, if future construction is contemplated in the area of the abandoned septic system.

4. *Certification Required* - the abandonment of existing sewage disposal systems, either in-place, or by removal, must be certified by either a licensed design professional or licensed contractor as indicated by the Department on the Permit to Construct. For projects served by municipal sewer districts, the appropriate municipal agency with jurisdiction should also be contacted.

## **XXVII. COVENANTS AND RESTRICTIONS**

Restrictive covenants may be required when submitting an application to the Department. Covenant restrictions are applied on lots located in deep recharge or water supply sensitive areas and serve as notice regarding storage restrictions for toxic or hazardous materials or changes in use or occupancy. Other covenants restricting sanitary waste flows may be required where the Department determines that change in use could result in violation of approval conditions or when approval is contingent upon the applicant performing a future action. For further information refer to Articles 6, 7 and 12 of the Suffolk County Sanitary Code.

## **XXVIII. VARIANCES**

1. The Commissioner of the Department of Health Services, on written application, may grant a variance, in accordance with Section 220 of Article 2 of the Suffolk County Sanitary Code, from a specific provision of these Standards in a particular case, subject to appropriate conditions, where such variance is in harmony with the general purpose and intent of the Standards, and when such application for a variance has been considered by a Review Board appointed by the Commissioner.
2. The Commissioner may impose more stringent requirements in a specific case when necessary to insure an adequate and satisfactory sewage and waste disposal system or to protect a sensitive habitat.

**XXIX. APPROVAL BY THE COMMISSIONER OF HEALTH SERVICES**

In accordance with Section 221, Article 2, of the Suffolk County Sanitary Code, the foregoing are **Standards for Approval of Plans And Construction For Sewage Disposal Systems for Other Than Single-Family Residences** approved by the Suffolk County Commissioner of Health Services and include the required details for submission of plans and other information to the Suffolk County Department of Health Services to assure conformity to the approved Standards. These Standards are adopted December 1, 2009 and are effective for applications received after January 1, 2010.

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Linda Mermelstein, M.D., M.P.H.  
Acting Commissioner of Health Services  
Suffolk County

*(Adopted 6/15/82; Amended 3/5/84, 2/5/88, 7/15/08, 11/20/08, 12/1/09)*