

Summary of January 1, 2018 Revisions to the Publication of On-Site Sewage Disposal <u>Regulations and Technical Standards for Subsurface Sewage Disposal Systems</u>

• Cover Page

- Removed former Technical Standards revision dates, added new revision date (1/1/18), added DPH logo, and referenced range of B103 and B104 regulation sections.
- Added asterisks and a notation to the 5,000 GPD design flow reference in the B103 and B104 regulation citations indicating that Public Act No. 17-146, Section 30 raised the jurisdictional design flow from 5,000 GPD to 7,500 GPD effective July 1, 2017. Note: See Circular Letter #2017-17 for more information.
- Listed new program's mailstop (MS) #: 12SEW in the address box.

• Table of Contents

- Added new page: Glossary of Acronyms and Abbreviations (page 10).
- Revised Technical Standards section titles: Section IX (Groundwater and Surface Water Drainage), Section X (Water Treatment Wastewater).
- Added new appendix (Appendix E) for water treatment wastewater authorized to discharge to a subsurface sewage disposal system.
- Added asterisk/notation indicating that the appendices may be updated prior to the next publication of the Technical Standards and updated appendices shall be posted on the Department of Public Health's website.
- Added dates of former Technical Standards revisions.

o B100a Regulation

Formatted to be consistent with the official B100a regulation that is available on the Secretary of State's website. Note: The Technical Standards definition includes the old (now incorrect) program mailstop (MS #51SEW) and a scrivener's error (standards prepared pursuant to PHC Section 19-13-B103d (b) not Section 19-13-B103d (d)).

o B103 Regulation

- Formatted to be consistent with the official B103 regulations (PHC Sections 19-13-B103a through 19-13-B103f) that is available on the Secretary of State's website, except per 1st asterisk note the reference to the Commissioner of Health Services was changed to the Commissioner of Public Health to be consistent with the Technical Standards.
- A 2nd asterisk note was added indicating that Public Act No. 17-146, Section 30 raised the jurisdictional design flow from 5,000 GPD to 7,500 GPD effective July 1, 2017.
- Changed the licensed cleaner statutory reference in PHC Section 19-13-B103c (c) (2) (A) from Chapter 393a to Section 20-341. Note: CGS Chapter 393a covers licensure of SSDS installers and cleaners, and past publications of the Technical Standards since 1989 cited this chapter; however the official regulation cites the above noted section.

o Glossary of Acronyms and Abbreviations

 New page created to list the various acronyms and abbreviations that are used in the Technical Standards. Examples: DOH = Local Director of Health, MLSS = Minimum Leaching System Spread, SSDS = Subsurface Sewage Disposal System, SWIS= Storm Water Infiltration System, WTW = Water Treatment Wastewater. These acronyms are also used throughout this summary.

Technical Standards

• Section I Definitions:

- Added definition for Commissioner (means Commissioner of Public Health).
- Free Draining Material definition: Changed the CT Department of Transportation (DOT) form reference from Form 816 to Form 817. Note: Form 817 released in 2016.
- Stone Aggregate definition: Changed the CT DOT form and specification reference from Form 816/Specification M.01.01 to Form 817/Tables M.01.02-1 and M.01.02-2. Reworded to stipulate stone aggregate shall meet the soundness (S), loss of abrasion (LOA), and fines (material passing #200 sieve: 1% maximum) criteria for coarse aggregate by pit/quarry source per Table M.01.02-1, and the gradation in Table M.01.02-2 for No. 4 or No. 6 coarse aggregate that are also included in Section VIII A. Removed the previously cited LOA and S specifications.
- o Added definition for Water Treatment Wastewater
- Added definition for Water Treatment Wastewater Dispersal System. The system includes solid conveyance piping, intermediate settling or filtration structures if any, and a receiving structure. The definition lists the various receiving structures: stone filled excavations, dry wells, galleries, pits, plastic chambers, or other structures approved by DPH.

• Section II Location of Sewage Systems:

- Subsection B. Benchmarks and Plan Adherence: Added language about DOH confirming field staking.
- Subsection C. Record Plans: Referenced the regulation requirement (PHC Section 19-13-B103e (g) (4)) for record plan (a.k.a., as-built drawing) submission, and noted other individuals (e.g., licensed land surveyor) may submit record plan if acceptable to the DOH.
- Subsection D. System Abandonment: Noted off-site disposal of abandoned sewage system structures must be approved by the DOH.

Table 1 Revisions

- Item A. Water Supply Well: Revised the special provision language to clarify the cited percolation rate is the receiving soil percolation rate.
- Item H. Storm Water Infiltration System (SWIS): Changed item name to SWIS. Revised special provision language for single-family residential building lots to allow the DOH to approve a reduced distance to 10 feet between sewage tanks/leaching systems and minor infiltration systems (e.g., rain gardens).
- Item P. Buried Fuel Tanks: Added special provision language noting distance to sewage tank shall be reduced to 10 feet.
- Item Q. Water Treatment Wastewater Dispersal System: Revised special provision language relative to setback provisions for the three discharge categories. All categories now have reduced setback provisions, and the largest category (>500 GPD) includes an increased setback provision.
- Item S. Grade Cuts or Soil Disturbance Down-gradient of Leaching System: Revised special provision language to ensure preservation of receiving soil and referenced MLSS Appendix A.

• Section III Piping:

- Subsection A. Building Sewers: Noted that building sewer foundation penetrations shall comply with the plumbing code, which is under the purview of the local building official. Added note to Figure 1 that cleanouts to grade shall have a maximum angle of 45 degrees. Added statement that the minimum grade (pitch) on building sewers shall be provided for the entire building sewer.
- Table 3 (Approved Tight Pipe): Added ADS HP Storm Pipe and ADS SaniTite Sanitary Pipe to the table. Note: Pipes approved by DPH on July 10, 2015.

• Section IV Design Flows:

- Subsection A. Residential Buildings: Reduced design flows for single-family residential buildings with 4 or more bedrooms: Noted that the design flow for single-family residential buildings is 75 GPD for each bedroom beyond 3 (previously beyond 4 bedrooms).
- Subsection B. Nonresidential Buildings and Residential Institutions: Revised Table 4 laundromat language by replacing "Commercial: Requires DEEP Permit" with "Non-DEEP regulated".
- Subsection C. Water Usage Monitoring and Permits to Discharge: Cited the design flow range (2,000 to 7,500 GPD) for large SSDSs. Added language noting that on a limited SSDS repair (e.g., septic tank or leaching system replacement only) the permit to discharge should document which SSDS components were and were not replaced.

o Section V Septic Tanks & Grease Interceptor Tanks:

- Subsection A. General: Removed language concerning plastic tank submissions to DPH by July 1, 2015, and noted all plastic tanks must meet the IAPMO/ANSI Prefabricated Septic Tank Standard, unless otherwise approved by DPH. Recommended a secondary safety device be provided for a septic tank without a tank cover that has a riser cover weighing more than 59 pounds. Provided similar language in Subsection C for grease interceptor tanks. Added language and noted in Figure 4 (Typical Septic Tank) that an air gap is required above the compartment divider. Added language noting positive drainage away from manhole covers shall be provided when riser and manhole extension to grade are provided.
- Subsection B. Septic Tank Capacities: Revised Table 5 so that the add-on septic tank capacity increment (125 gallons for single-family, 250 gallons for multi-family) for residential buildings occurs after the 3rd bedroom (previously 4th bedroom). Note: The revisions make the minimum septic tank capacities slightly smaller for single-family homes with 4 or more bedrooms, and slightly larger for multi-family homes with 4 or more bedrooms.
- Subsection B. Septic Tank Capacities: Added WTW discharge to a SSDS to the list of plumbing fixtures that require increased septic tank capacities. An increased septic tank capacity of 250 gallons is required for WTW discharges of 50 to 150 gallons, and an increased septic tank capacity of 500 gallons is required for WTW discharges greater than 150 gallons. Referenced Section X and Appendix E for WTW discharge requirements.
- Subsection C. Grease Interceptor Tanks: Removed reference to food service establishment classifications. Note: CT is adopting the FDA model food code and new classification definitions become effective July 1, 2018.

• Section VI Effluent Distribution, Pump Systems & Air Injection Processes:

• Subsection A. General: Changed the Geomatrix HydroAir system name to HyAir. Removed the 7.4 SF/LF ELA reference in the paragraph concerning non-linear leaching systems.

- Subsection C. Pump Systems: Recommended a secondary safety device be provided for a pump chamber without a cover that has a riser cover weighing more than 59 pounds. Noted that high-level alarms shall be both audible and visual unless otherwise approved by the DOH, and shall be located to readily alert building occupants when activated. Noted raw sewage force main foundation penetrations shall comply with the plumbing code, which is under the purview of the local building official. Made several revisions (check valve and weep hole locations, electrical box designations) to Figure 11 Pump Chamber.
- Subsection C. Pump Systems: Added language about passive nitrogen reduction (PNR) 0 technology that, where warranted (e.g., community pollution areas), can be used in conjunction with SSDSs that utilize low-pressure effluent distribution (requires PE design unless otherwise approved by DPH) or a proprietary pressure-dosed dispersal system. Noted that use of the technology should only be permitted if deemed its usage is appropriate and the DOH has sufficient resources to ensure the systems are properly designed and installed. Noted that PNR technology does not aerate the contents of a septic tank and only uses a single or dual alternating effluent pumps for leaching system dosing. PNR technology uses a subsurface wood product (e.g., sawdust, wood chips, mulch) through which partly treated sewage effluent flows. The wood product provides the carbon source for denitrification of nitrified wastewater below or down-gradient of a leaching system. PNR technology typically mixes the wood product with a specified category of clean soil (e.g., sand, loamy sand). SSDS plans that call for PNR technology shall include detailed information and specifications on the dosing system, wood product, and soil treatment horizons. Plans must provide a plan view and cross sections detailing the leaching system, wood product, added soil, restrictive layers, and all pertinent depths and elevations. Plans must also include placement and construction requirements. Stipulated the PNR technology plan designer shall supervise the installation and provide a certification to the DOH that the installation conformed to the approved plan. Noted that the DOH shall provide DPH notice of proposed use of PNR technology on small (<2,000 GPD) SSDSs prior to the issuance of an approval to construct in order to determine if the system is classified as an alternative treatment system, which can only be permitted by DEEP. Notice is not required for large SSDSs as plans for these systems require DPH approval.
- Subsection E. Leaching System Clogging Break-up: Added the patented EarthBuster process, and cited same permitting requirements as the patented Terra-lift process. Added new limitations (depth and proximity of air injection relative to leaching system) for both processes.

• Section VII Percolation Tests:

• Revised language about sizing leaching systems constructed entirely in select fill that have the bottom of the leaching system above existing grade.

• Section VIII Leaching Systems:

- Subsection A. General: Revised and bulleted the language and requirements for minimum separation above maximum groundwater and ledge rock. Twenty four inch minimum separation between the bottom of a leaching system and maximum groundwater is required if the percolation rate of the receiving soil is faster than 5 minutes per inch (previously 1 minute per inch).
- Subsection A. General: Clarified wording about creating new lots with unsuitable soil conditions, and note there shouldn't be unsuitable soil conditions in the leaching system area (within 10 feet of primary and reserve leaching areas).

- Subsection A. General: Removed the #40 and #200 sieve specifications from the chart for No. 4 & No. 6 stone aggregate. Added language above the chart to reference the new stone aggregate definition that includes a maximum percent passing the #200 sieve of 1.0% at the pit/quarry source, and noted this standard should be met at the SSDS installation site; however in no case shall the fines exceed 1.5%. Added similar aggregate language (clean, hard, tough, durable fragments) in CT DOT Form 817 M.01.02.
- Subsection A. General: For DPH initial and annual manufactured fill approvals the minimum average permeability shall be 10 feet per day. Additional testing may be required for manufactured fill with a minimum average permeability of 10 to 15 feet per day. Manufactured fill approval applications and annual registrations for approved suppliers shall include a signed statement attesting that the test results submitted to DPH are typical of routine quality control/quality assurance (QC/QA) test results. Stipulated annual manufactured fill registration for approved suppliers shall include updated test results and QC/QA narratives.
- Subsections B. Leaching Trenches and D. Leaching Galleries: Noted that when distribution pipe is placed on top of aggregate that the stone must be cradled around the bottom portion of the pipe to prevent filer fabric from obstructing the perforated pipe openings.
- Subsection E. Proprietary Leaching Systems & Proprietary Pressure-Dosed Dispersal Systems: New subsection title. Subsection broken into 2 categories (Proprietary Leaching Systems & Proprietary Pressure-Dosed Dispersal Systems). Note: The latter category was previously a separate subsection (F). Added proprietary leaching systems (Eljen Mantis Double-wide, Infiltrator Quick 4, Geomatrix Concrete System (GCS)) approved since the last Technical Standards. Changed name of Eljen Type "B" units to B43. Changed the DOT form and specification reference from Form 816 Specification M.03.01 to Form 817 Table M.01.03-1.
- Subsection F. Leaching System Sizing: Note: This subsection was previously Subsection G. New list of bulleted exceptions (1-bedroom outbuildings, minimum multi-family sizing, central systems for single-family homes & residential outbuildings) to the residential building sizing requirements in Table 6. Revised Table 6 to eliminate the 4-Bedroom Building column, and revised the header of the last column from "For each bedroom above 4" to "For each bedroom above 3". Note: The Table 6 revisions make leaching systems slightly smaller for single-family homes with 4 or more bedrooms.
- Subsection G Leaching System Product Approvals, ELA Ratings, Center to Center Spacing: This subsection was previously Subsection H. Limited the center to center spacing reduction consideration language to shallow leaching system in low-pressure distribution applications, and stipulated a minimum of 6 inches edge to edge for each 1 square feet, or part thereof, per linear foot ELA credit shall be provided.

Section IX Groundwater and Surface Water Drainage:

- Changed section title from Groundwater, Roof, Cellar and Yard Drainage to Groundwater and Surface Water Drainage.
- Removed separating distances, and added additional references (Table 1 Items, Section III D, and Table 3) for minimum separating distance requirements for storm water collection/drainage/infiltration systems and groundwater drainage systems.
- Separated language concerning storm water and groundwater drainage systems.
- Expanded the language noting groundwater drainage shall not discharge into or within 25' of a SSDS to note that increased separating distance may be needed if the discharge location may impact the operation of the leaching system.

• Section X Water Treatment Wastewater:

- o Changed section title from Other Wastewater to Water Treatment Wastewater.
- Removed reference to DEEP's General Permit for Low Flow Water Treatment Wastewater and 500 GPD permit limits.
- Referenced the July 2017 DEEP/DPH Delegation Agreement concerning WTW that provides the authority for the DOH or licensed sanitarian to approve and permit WTW discharges to a WTW dispersal system, holding tank system, or if authorized by DPH to a SSDS. Noted that WTW discharges shall also be in accordance with any future regulations promulgated by DPH. WTW discharges to the ground surface, wetlands or open watercourse are not authorized. Note: See Circular Letter #2017-26 for more information and the delegation agreement.
- The applicant (property owner or duly authorized agent) shall submit to the DOH a plan/sketch showing the proposed WTW dispersal system, WTW holding tank, or connection to the SSDS. The name and contact information of the installer shall be noted.
- The applicant shall submit information on the water treatment system including WTW volume per cycle and cycle frequency.
- Noted that in areas where well water treatment is anticipated, plans for new SSDSs should designate an area where a WTW dispersal system could be installed.
- Noted that compliance with PHC Section 19-13-B100a (e) may need to be demonstrated. Note: This B100a subsection concerns sewage disposal area preservation and it governs activities that affect soil characteristics or hydraulic conditions that may reduce a potential repair area or eliminate a code complying area.
- The DOH or licensed sanitarian shall approve the design prior to the installation of WTW dispersal system or WTW holding tank. Noted that DPH approval is not required for a WTW holding tank; however DPH approval is required for WTW discharges directed to a sewage holding tank.
- The WTW disposal system installer shall provide twenty four (24) hour minimum advance notice to the DOH prior to commencement of installation, unless otherwise approved by the DOH. DOHs may request an inspection prior to covering the WTW disposal system.
- Noted that applicable permits (electrical, plumbing) shall be obtained from the local building official.
- WTW dispersal systems shall have a minimum storage volume of 1.5 times of either the anticipated discharge per cycle or daily average, whichever is greater.
- Stone aggregate used shall be free of silt, dirt and debris and covered with approved filter fabric.
- Specified minimum separating distances between WTW solid conveyance piping, and public and private water supply wells: 25' for <10 gpm, 75' for 10 to 50 gpm, and 100' for >50 gpm. Noted the DOH may further reduce the distance to no less than 10' to private wells on existing developed properties if warranted. WTW solid conveyance pipe shall be approved by DOH and protected from freezing. Referenced gravity and pressure pipes in Tables 2-A and 2-B as acceptable pipe.
- WTW dispersal systems shall meet the minimum separating distances to sewage systems per Item Q in Table 1. WTW holding tanks, including piping, shall be located at least 10' from SSDSs.
- WTW dispersal system receiving structures shall meet the minimum separating distances in Table 9 (new table). Table 9 distances: Property line: 10 feet*, open watercourse: 25 feet*, public water supply reservoir: 100 feet, and water supply well*: <10 gpm: 75 feet, 10 to 50

gpm: 150 feet, >50 gpm: 200 feet. *DOH can reduce distances on existing developed properties when warranted based on site limitations; however distance reductions for water supply wells can only be considered for private wells and the distance shall not be reduced to less than 25 feet. WTW discharges less than 75 feet up-gradient of private wells shall be avoided, whenever possible. The DOH may not allow a reduced setback to a private well if there is a concern the WTW may impact the quality of the groundwater.

- Noted non-discharging WTW disposal system components (WTW holding tanks, WTW settling or filtration structures) and any air gaps/breaks in conveyance piping outside of building foundation shall meet the minimum separating distances in Table 9, unless otherwise authorized by DPH.
- The bottom of the WTW dispersal system shall be located a minimum 12 inches above maximum groundwater and 24 inches above ledge rock.
- WTW holding tanks shall provide an access cleanout to grade and be equipped with a high-level alarm.
- WTW dispersal systems and WTW holding tanks in vehicular travel areas shall be H-20 load rated.
- An as-built drawing shall be submitted to the DOH that includes distances from two or more permanent reference points to the WTW disposal system.
- Stipulated DPH may authorize certain WTW to discharge to a SSDS if a finding is made that the nature and volume of the discharge is unlikely to cause problems with the SSDS. WTW from ion exchange systems, both cationic (a.k.a., softeners) and anionic (e.g., radionuclide treatment systems), are not be authorized to discharge to a SSDS. No WTW is authorized to discharge to a cesspool. WTW that is authorized by DPH to discharge to a SSDS are listed in Appendix E. Language added noting the appendix may be updated prior to the next publication of the standards.

• Section XI Non-Discharging Toilet & Sewage Disposal Systems:

 Subsection G. Sewage Holding Tanks: Subsection title changed from Holding Tanks to Sewage Holding Tanks. Recommend a secondary safety device be provided for a holding tank without a cover that has a riser cover weighing more than 59 pounds. Added high-level alarm requirements (audible and visual, alarm location to alert building occupants).

• Forms #1, #2, #2A, #3, & #4:

- Form #1 (Approval to Construct Application): Minor changes
- Forms #2 and #2A (Site Investigation Forms): Add soil scientist to the list of possible individuals participating in site investigation.
- Form #3 (Final Inspection Report): Removed Approved Plan, Approval to Construct, As-built, and Permit to Discharge questions. Added WTW and secondary safety device questions. Changed approved aggregate reference to stone aggregate. Added leaching system elevation table.
- Form #4 (Permit to Discharge): Removed item 1 (address system malfunctions and failures) in the Special Requirements and Restrictions section.

• Appendix A: MLSS:

- Added Receiving Soil (RS) Depth formula and calculation information.
- Created three categories for RS Depth determinations and each category includes language and cross sections that detail receiving soil measurements in the leaching system area and surrounding soil.

- Category 1 includes Conceptual B100a Areas (Code-Complying & Potential Repair), and SSDS Layouts for New Lots. This category only allows consideration of naturally occurring soil (a.k.a., natural soil) for receiving soil measurements, which is noted in the category language and Diagrams 1 & 2.
- Category 2 includes New SSDSs and MLSS Compliant Repairs. This category allows consideration of natural soil for receiving soil, and in certain cases also select fill in the leaching system area. The conditions (measurement from top of leaching system, minimum natural soil requirements) for including select fill in the leaching system area receiving soil measurement are noted in both the category language and in Diagram 3. This category also limits natural soil measurements in the leaching system area when the top of the system is more than 12 inches below natural grade that are noted in both the category language and in Diagram 4.
- Category 3 includes MLSS Non-compliant Repairs and B100a MLSS Non-compliant Potential Repair Areas. This category allows consideration of existing receiving soil, both fill and natural soil, and additional fill that is included in the SSDS design. This category includes language and two diagrams (5 & 6) that provide conditions and limitations for considering the various types of soil in determining the receiving soil measurements.
- Flow Factor (FF) Chart: Revised the single-family residential building design flow language to note that the 75 GPD/bedroom design flow allocation starts with bedrooms beyond 3 rather than 4. The cited FF for a 4-bedroom home is now: 525/300 = 1.75, and each bedroom beyond 4 increases by 0.25. Eliminated the 5-bedroom line from the chart.
- Percolation Factor (PF) Chart: Combined the previous 2 percolation rate categories (Up to 5.0 Min/Inch, 5.1 to 10.0 Min/Inch) into a single category (Up to 10.0 Min/Inch) that has a PF of 1.0. Lowered the PF for the remaining categories. Provided asterisks and a notation to the 30.1 to 45.0 and 45.1 to 60 Min/Inch categories allowing further reductions of the PF if the leaching system is entirely in select fill and the bottom of the system is above existing grade and at least 24 inches above maximum groundwater.

• Appendix B: Approved Septic Tank Effluent Filters:

• Updated list to include the filters listed on the last revised Appendix B list dated July 8, 2015.

• Appendix C: Approved Filter Fabric for Covering Stone Aggregate:

o No changes

• Appendix D: Approved Non-Concrete Septic Tanks:

• Updated list to include the non-concrete tanks listed on the last revised Appendix D list dated December 17, 2015.

• Appendix E: Water Treatment Wastewater Discharges to SSDSs

 New appendix that is referenced in Section X. The appendix cites authorized WTW sources, WTW discharge limits, existing SSDS requirements, and proprietary leaching system considerations.

Appendix E: Water Treatment Wastewater Discharges to SSDSs

Authorized WTW Sources

WTW shall only be from a calcite filter, granular activated carbon filter, or a Point of Use (POU) reverse osmosis unit.

WTW Discharge Limits

Single-family residential buildings: WTW discharge is less than 150 gallons per backwash cycle, and cannot exceed a daily average of 50 GPD.

Other buildings: WTW discharge is less than 150 gallons per backwash cycle or less than 10 percent of the building's SSDS daily design flow, whichever is greater. Additionally, discharges cannot exceed a daily average of 50 GPD or 2 percent of the buildings SSDS daily design flow, whichever is greater.

Existing SSDS Requirements

Septic tanks must have two compartments, an effluent filter, and be properly sized for the daily design flow of the building. Single compartment tanks can remain only if receiving WTW from a POU reverse osmosis unit that discharges less than 50 GPD. Septic tanks must have been cleaned and inspected within three years with no reported signs of malfunctioning.

Leaching systems must provide at least 50 percent of the required ELA and be in good operating condition with no signs of malfunction or at risk of hydraulically overloading the receiving soil.

Proprietary Leaching Systems

Proprietary leaching system companies may not support the discharge of WTW into their SSDS products. Therefore the applicant should consult with the proprietary company to determine if use of their leaching system product is suitable with WTW discharge.

• B104 Regulation

- Formatted to be consistent with the official B104 regulations (PHC Sections 19-13-B104a through 19-13-B104d) that is available on the Secretary of State's website, except per 1st asterisk note the reference to the Commissioner of Health Services was changed to the Commissioner of Public Health to be consistent with the Technical Standards.
- A 2nd asterisk note was added indicating that Public Act No. 17-146, Section 30 raised the jurisdictional design flow from 5,000 GPD to 7,500 GPD effective July 1, 2017.
- Changed the licensed cleaner statutory reference in PHC Section 19-13-B104c (b) (2) (A) from Chapter 393a to Section 20-341. Note: CGS Chapter 393a covers licensure of SSDS installers and cleaners, and past publications of the Technical Standards since 1989 cited this chapter; however the official regulation cites the above noted section.

Disclaimer: This summary is not all inclusive and is intended to highlight the most significant revisions to the Technical Standards publication.

P/RWS/Summary of January 1, 2018 Technical Standards Revisions