Technical Standards 2023 Updates

Environmental Engineering Program
Environmental Health Section

2023 Technical Standards

- Effective as of: 1/1/2023
- Revised copy to correct typos posted on 1/23/2023
- Highlighted version
- Environmental Engineering - Subsurface Sewage (ct.gov)

2

Code Advisory Committee

- Process revision underway
- Last update 2018
- Postponed due to COVID and retirements
- Current Membership
  - CADH (Directors of Health)
  - CEHA (Sanitarians)
  - COWRA (Installers/Cleaners)
  - DEEP
  - DPH
  - Home Builders and Remodelers Association
  - Professional Engineers
  - Soil Scientist
  - Other invited groups (i.e. CTWWA, CT Precasters)

3

Environmental Engineering Program (EEP)

- 3 Engineers
  - Supervising Environmental Engineer
  - Env. Engineer 3
  - 1 new Engineer Intern
- 1 Environmental Analysts
  - Environmental Analyst 3
  - EA1 (vacant)

7

EEP Focus

- Wastewater: On-site Sewage Disposal (Septic Systems) (65%)
- Public Pools (25%)
- Disposition of Human Remains, Water Treatment Wastewater, Campgrounds/Recreation, Other (10%)

8

EEP Responsibilities: Wastewater

- Subsurface Sewage Disposal Systems
  - 19-13-B103 Sewage Discharges 7500 Gallons Per Day or less (effective August 16, 1982)
  - Technical Standards for Subsurface Sewage Disposal Systems (latest revision 2023)
  - 19-13-B100a Building Conversions, Change in use, Additions (effective August 3, 1998)
- Water Treatment Wastewater Discharge

9

EEP Responsibilities: Wastewater

- Enforcement
- Plan Reviews
- Investigations
- Licensing
- Product Reviews
- Legislative Matters
- Technical Assistance
- Exception Requests
- Training




10

2023 Technical Standards Updates

- Revision date: January 1, 2023
- Reference to CT General Statute Section 22a-430 (g)
- Updated the Environmental Engineering Program's email address DPH.EnvironEng@ct.gov
- Added PHC Section 19-13-B103d (d) in the Technical Standards definition is a clerical/Scrivener's error.
- Revised Table of Contents: Appendix E title: Water Treatment Wastewater Discharges to Subsurface Sewage Disposal Systems

CONNECTICUT PUBLIC HEALTH CODE

11

Section I: Definitions {pg.11-12}

- **Building Sewer** definition: added the word "gravity"
- **Department** definition *added*
  - Department defined in PHC Section 19-13-B103b (m)

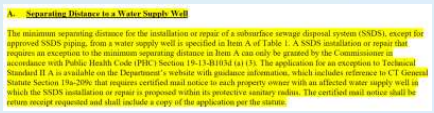
G. **Department** means the State Department of Public Health.

- Replaced "Commissioner of Public Health" with "**Department**" throughout Tech Standards
  - *except* in cases where a regulation citation specifically cites the Commissioner
- **Outbuilding** definition: replaced "guest houses and in-law apartments" with "accessory apartment"

13

Section II: Location of Sewage Systems {pg.13}

- Subsection A
  - Changed title: **Separating Distance to a Water Supply Well**
    - Referenced Item A in Table 1: water supply well for a SSDS installation or repair
    - An exception is required from the Commissioner pursuant to PHC Section 19-13-B103d (a) (3) if the distance cannot be achieved



A. Separating Distance to a Water Supply Well

The minimum separating distance for the installation or repair of a subsurface sewage disposal system (SSDS), except for approved SSDS piping, from a water supply well is specified in Item A of Table 1. A SSDS installation or repair that requires an exception to the minimum separating distance in Item A can only be granted by the Commissioner in accordance with Public Health Code (PHC) Section 19-13-B103d (a) (3). The application for an exception to Technical Standard II A is available on the Department's website with guidance information, which includes reference to CT General Statute Section 19a-209c that requires certified mail notice to each property owner with an affected water supply well in which the SSDS installation or repair is proposed within its protective sanitary radius. The certified mail notice shall be return receipt requested and shall include a copy of the application per the statute.

15

Section II: Location of Sewage Systems {pg.13}

- **Subsection A**: Separating Distance to a Water Supply Well
  - Application for an exception to minimum separating distance for Item A in Table 1 is on the Department's website
    - CT General Statute Section 19a-209c requires **certified** notice to all affected well owners
    - Notice must include a copy of the exception application

16

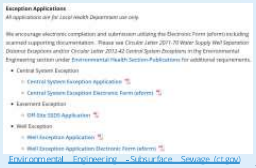
Section II: Location of Sewage Systems {pg.13}

- Subsection B
  - Retitled: **Separating Distances to Approved SSDS Piping**
    - Contains all language from previous Subsection A & Table 1 not included in retitled Section A
    - Previous Subsections B, C, and D: changed to Subsections D, E, and F, respectively
  - Stipulated: SSDS piping may also be approved by the Department in an approval letter issued after the current revision of the standards.

17

Section II: Location of Sewage Systems {pg.13}

- Added *new* Subsection C titled: **Off-Site & Central Subsurface Sewage Disposal Systems**
- Cited PHC Section 19-13-B103d (d)
  - Requires each building be served by a separate SSDS located on same lot as building served (Off-site easement)
- Cited PHC Section 19-13-B103d (a) (2)
  - Provides for Commissioner exceptions for off-site SSDSs and central SSDSs serving more than 1 building (Central System)
- Added information about SSDS assessments for proposed new building connections to existing SSDSs
- Applications and guidance for exceptions for off-site and central SSDSs are available on the Department's website



Environmental Engineering - Subsurface Sewage (ct.gov)

18

Section II: Location of Sewage Systems {pg.14}

- **Subsection F.** System Abandonment (ANY)
  - Stipulated: DOH may authorize hollow sewage system structures to be filled with material other than sand or gravel (i.e. concrete) when abandoning such structures

19

Section II: Location of Sewage Systems {pg.14}

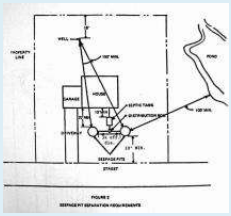
- **Subsection F.** System Abandonment
  - DOH may allow existing structures may be utilized if applicant demonstrates component is in acceptable condition and such use unlikely to cause health hazard or nuisance condition

←NO→

20

Section II: Location of Sewage Systems {pg.14}

- **Subsection F.** System Abandonment
  - Structures (ANY) left in place shall be located on a plot plan and noted in the property file



21

Table 1 Revisions {pg.15}

- **Item H.** Storm water infiltration system (SWIS)
- Added statement to special provision #2 that distance can be further reduced to 25 feet for a minor SWIS (e.g., rain garden) with the approval of the DOH if demonstrated that the leaching system will not be adversely impacted.
- *A minor SWIS discharges storm water collected from a localized area on a property and does not include a SWIS that discharges storm water collected from large areas on a property.*

23

24

Table 1 Revisions {pg.16}

- **Item O.** Utility service trench
  - Stated in special provision that the distance does not apply to electrical and alarm connections to sewage tanks
  - Added **recommendation** that detectable underground magnetic tracer/warning tape be provided at least one foot above buried utility lines within 25 feet of a SSDS

O. Utility service trench (e.g., electric, gas)	5	Utility trench excavations less than 25 feet from leaching system shall not be backfilled with FDM. It is recommended that detectable underground magnetic tracer / warning tape be provided at least 1 foot above buried utility lines within 25 feet of a SSDS. Distance does not apply to electrical and alarm connections to sewage tanks.

25

Table 1 Revisions {pg.16}

- **Item R.** Closed Loop Geothermal System
  - Reduced SSDS distance from 50 to 25 feet minimum separating distance to trench or bole hole regardless of system location on the landscape
  - Reduced SSDS distance from 10 feet to 5 feet to geothermal piping to trench or bole hole (consistent with other buried utilities)

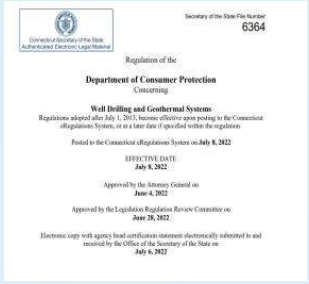
R. Closed loop geothermal system Bore hole, Trench	25	
Geothermal piping to Borehole/Trench	5	Geothermal piping excavations less than 25 feet from leaching system shall not be backfilled with FDM.

26

DCP Regulations Revised

- Property line setbacks not addressed
- No consideration of the neighboring properties
- Deferred SSDS setback distances to DPH regs

https://eregulations.ct.gov/eRegsPortal/Search/getDocument?guid={006EDE81-0000-C215-9990-43B333657 48E}



Secretary of the State File Number
6364

Regulation of the

Department of Consumer Protection
Concerning

Well Drilling and Geothermal Systems

Regulations adopted after July 1, 2013, become effective upon posting to the Connecticut eRegulations System, or at a later date if specified within the regulation.

Posted to the Connecticut eRegulations System on July 8, 2022

EFFECTIVE DATE
July 8, 2022

Approved by the Attorney General on
June 4, 2022

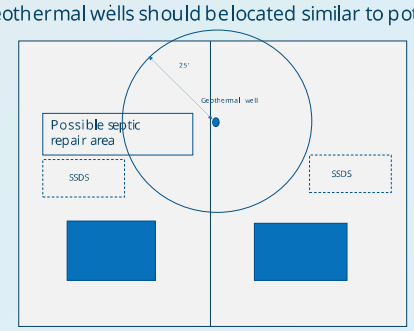
Approved by the Legislative Regulation Review Committee on
June 28, 2022

Electronic copy with agency head certification statement electronically submitted to and received by the Office of the Secretary of the State on
July 6, 2022

27

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

Geothermal wells should be located similar to potable wells



28

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH

29

Section III: Piping {pg.17}

- **Subsection A.** Building Sewers
  - Stipulated: when cleanout is provided for multi-bend change in direction on a building sewer, it shall be provided prior to the first change in direction
  - Require a cleanout for buildings constructed on slab on grade that includes a new sewer connection if a cleanout is not provided within the building

32

33

Section III: Piping {pg.19}

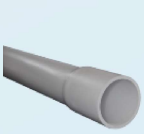
- **Table 2:** Approved Building Sewer Pipe from Building Served to Septic Tank or Grease Interceptor Tank
  - Increased minimum pressure class of PVC AWWA C 900 pipe from 100 to 150 psi
  - 4" wide couplings are required for 6" and 8" diameter building sewers.
  - Added Gripper Gasket LLC Maxadaptor Sewer Repair Coupling to acceptable joint column

Maxadaptor

34

Section III: Piping {pg.19}

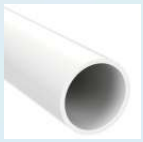
- Couplings without shear bands can be used for joint connections between cast iron pipe and the bell end of an approved PVC Schedule 40 or 80 pipe



OK

35

Section III: Piping {pg.19}



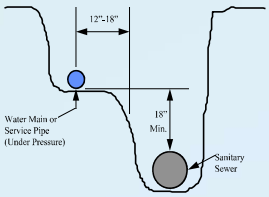
Not OK

Need

36

Section III: Piping {pg.19}

- Building sewers and water piping shall be installed in accordance with Section III D (p. 18)



37

Section IV: Design Flows {pg. 23 - 24}

- **Subsection A.** Residential Buildings
  - Clarifying language added noting reduced design flow (75 GPD) for each bedroom beyond three in a single-family residential building does not apply to bedroom(s) in a residential outbuilding for central SSDS sizing purposes

A. Residential buildings

Design flows for residential buildings shall be based on the number of bedrooms (refer to Section I). The design flow per bedroom is 150 GPD, except for bedrooms beyond three in single-family homes that have a design flow of 75 GPD for each additional bedroom. The reduced design flow (75 GPD) for each bedroom beyond three in a single-family residential building does not apply to the bedroom(s) in a residential outbuilding for central SSDS sizing purposes.

39

Section IV: Design Flows {pg. 23 - 24}

- **Subsection C.** Water Usage Monitoring and Permits to Discharge
  - Added language to reference non-compliant ELA or MLSS leaching system repairs

C. Water usage monitoring and Permits to Discharge

Plans for large SSDSs (2,000 to 7,500 GPD) shall include provisions to monitor domestic sewage generation via the use of water meters or other available means (e.g., pump cycling and dose volume documentation). Permits to discharge issued by the DOH shall be on approved forms (Form #4 or approved equal) as required by PHC Section 19-13-B103e (h). Permits to discharge for limited SSDS repairs (e.g., septic tank or leaching system replacement only) shall document which SSDS components were and were not replaced. The discharge permits shall specify the design flow and permitted flow. The design flow shall equal the permitted flow, except for leaching system repairs that do not provide the required ELA or MLSS. The permitted flow for non-compliant ELA or MLSS repairs shall be prorated by using the most limited percentage of the required ELA or MLSS provided. The discharge permit shall recommend the average daily discharge not exceed 2/3 of the permitted flow allow the SSDS to operate with a sufficient factor of safety and to accommodate peak flow conditions.

40

Section V: Septic Tanks & Grease Interceptor Tanks {pg. 27- 28}

- **Subsection A. General:**
  - Tanks deeper than 24" with *existing* risers do not need to be retrofitted with a 24" diameter risers; new and repairs only

42

Section V: Septic Tanks & Grease Interceptor Tanks {pg. 27- 28}

- **Subsection A. General:**
  - Steel tanks, slab cover (coffin top) tanks, and any tank in poor condition are not good candidates for risers and should be replaced.

43

Secondary Safety Lid or Device

- Require a secondary safety lid or device for a riser assembly when the sewage tank cover is not left in place, regardless of weight of riser cover for all sewage tanks. (holding tank, pump chamber, grease interceptor and septic tank)
- If the tank cover is removed a secondary safety lid or device must be provided below the riser cover.

44

45

Secondary Safety Lid or Device

- Secondary safety devices are commercially available products for the purpose of preventing accidental entry.
- Not retroactive. Secondary safety requirements should be addressed during the planning stages of the installation. Like effluent filters, specification can be included on plans.
- Applies to sewage tanks, holding tanks, pump chambers, grease interceptor and septic tanks when tank covers are removed and a riser is utilized.

46

Secondary Safety Lid or Device

- Many commercially available products for all riser materials, including concrete.
- The secondary safety device must go between the sewage tank opening and riser cover.
- Pump chamber options: The nylon nets or straps seem to be used most often for a pump chamber. They allow for access to the pump while meeting the requirement of a safety device.

47

Commercially Available

- Riser Safety Grates (orenco.com)
- Concrete or Plastic Septic Tank Lid Safety System | Infiltrator (infiltratorwater.com)
- Safety Nets | simtechfilter (simtechfilterinc.com)

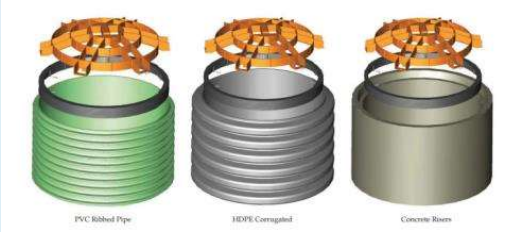
Commercially Available

- Riser Extension Kits (For Existing Risers) - Aero-Stream® LLC

49

Commercially Available

- safety screens.ai (polylok.com)



50

Secondary Safety Devices




51

Secondary Safety Devices



52

Section V: Septic Tanks & Grease Interceptor Tanks {pg. 27- 28}

- **Subsection A. General:**
  - ASTM C 1227 allows oversized non-stepped covers that sit on top of tanks.
  - Requires covers are prevented from lateral movement

54

Stepped

Non-stepped

55

Section V: Septic Tanks & Grease Interceptor Tanks {pg. 28}

- **Subsection B. Septic Tank Capacities:**
  - Tank sizing for a central SSDS serving a single-family residential building and a residential outbuilding shall calculate the minimum required capacity based on the single-family criteria for the main house and an additional 250 gallons for each bedroom in the outbuilding
  - For a single-family home with an attached or internal accessory apartment the minimum required tank capacity shall be calculated based on the single-family criteria for the main house and an additional 250 gallons for each bedroom in the accessory apartment

B. Septic Tank Capacities

1. Residential Buildings

The minimum liquid capacities/volumes of septic tanks serving residential buildings shall be based on Table 5. Septic tank sizing for a central SSDS serving a single-family residential building and an outbuilding containing a potential bedroom(s) shall calculate the minimum required septic tank capacity based on the single-family criteria for the main dwelling and an additional 250 gallons for each bedroom in the outbuilding. For a single-family home with an attached or internal accessory apartment, the minimum required tank capacity shall be calculated based on the single-family criteria for the main dwelling and an additional 250 gallons for each bedroom in the accessory apartment.

56

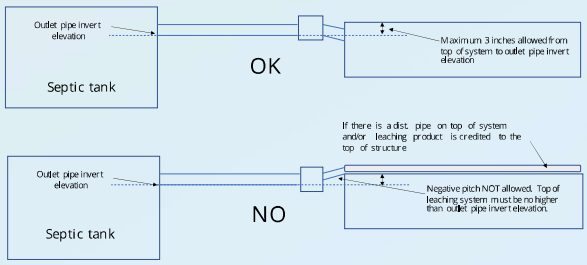
Section VI: Effluent Distribution, Pump Systems & Air Injection Processes {pg. 30}

- **Subsection A. General:**
  - The septic tank outlet invert shall be set no lower than 3 inches from the top of all leaching structures

  - The effluent distribution piping between the septic tank and a leaching system shall not have negative pitch

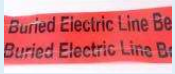
59

Diagram



60

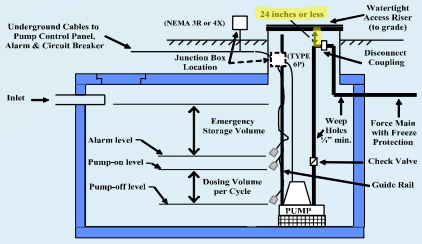
Section VI: Effluent Distribution, Pump Systems & Air Injection Processes {pg. 31- 33}



- **Subsection C. Pump Systems:**
  - Recommend detectable underground magnetic tracer/ warning tape be provided at least one foot above buried electric lines for the pump chamber
  - A raw sewage pump force main should discharge to the septic tank via a 4-inch pipe connection to reduce velocity and solids disturbance. An inlet baffle is required for the tank at the force main connection.

61

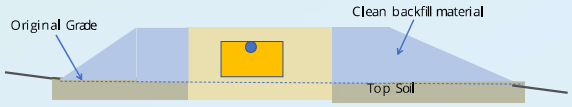
- **Subsection C. Pump Systems:**
  - Maximum distance from the disconnect to the top of riser is 24 inches



62

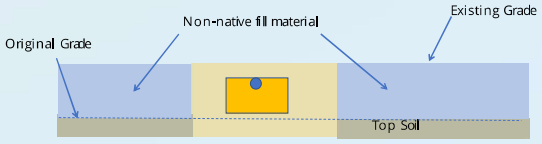
System Entirely in Select Fill

- Revised language to use the select septic fill percolation rate for systems constructed entirely in select fill where the bottom of the system is above **original** grade. Formally "existing grade"



System Entirely in Select Fill

- Revised language to use the select septic fill percolation rate for systems constructed entirely in select fill where the bottom of the system is above **original** grade. Formally "existing grade"



Section VIII: Leaching Systems {pg. 36 - 37}

- **Subsection A.** General
  - Lots that are to be filled to address unsuitable soil conditions shall be prepared with the necessary select fill needed for the leaching system installation, and in a manner to protect the naturally occurring soil and be stabilized to protect against erosion.

68

Section VIII: Leaching Systems {pg. 36 - 37}

- **Subsection A.** General
  - New SSDSs shall be laid out in such a manner to provide an acceptable reserve leaching area of potentially suitable soil.

69

Acceptable Soil

- SSDS shall be covered with a minimum 6-inches of **acceptable** soil

- Acceptable soil does not contain construction material, glass or rocks or other debris

71

72

Section VIII: Leaching Systems {pg. 39}

- **Subsection A.** General
  - On sloped lots only, select fill shall be reduced to 2 feet on the sides and up gradient of the leaching system
    - 5 feet extension down-gradient sloped lots (still required)
    - 2 feet for all other extensions (up-gradient and sides on sloped lots)
    - 5 feet fill extension around the perimeter shall remain for flat lots

73

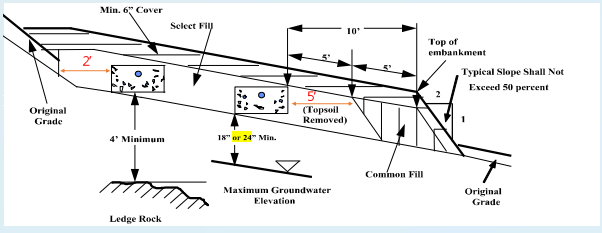
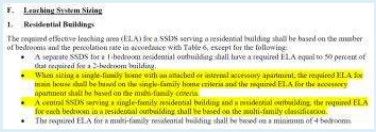


Figure 13 - Minimum Separating Distances above Ledge Rock and Maximum Groundwater

Section VIII: Leaching Systems and MLSS {pg. 46 and 63}

- The required ELA / MLSS for each potential bedroom in a residential outbuilding shall be based on the multi-family classification



F. Leaching System Sizing

1. Residential Buildings

The required effective leaching area (ELA) for a SSDS serving a residential building shall be based on the number of bedrooms and the percolation rate in accordance with Table 6, except for the following:

- A separate SSDS for a 1-bedroom residential outbuilding shall have a required ELA equal to 50 percent of that required for a 2-bedroom building.
- When sizing a single-family home with an attached or internal accessory apartment, the required ELA for main house shall be based on the single-family home criteria and the required ELA for the accessory apartment shall be based on the multi-family criteria.
- A central SSDS serving a single-family residential building and a residential outbuilding, the required ELA for each bedroom in a residential outbuilding shall be based on the multi-family classification.
- The required ELA for a multi-family residential building shall be based on a minimum of 4 bedrooms.

FLOW FACTORS (FF)

75

Section VIII: Leaching Systems {pg. 46}

- **Subsection F.** Leaching System Sizing
  - Single-family home with an attached/internal accessory apartment:
    - The required ELA for main house shall be based on the single-family home criterion AND
    - The required ELA for the accessory apartment shall be based on the multi-family criterion

76

Section X: Water Treatment Wastewater {pg. 48 - 49}

- Revised requirement #2 to indicate the DOH should consider requiring a PHC Section 19-13-B100a (e) review for WTW daily discharges that exceed the building's sewage design flow.
- Noted: Certain water treatment systems (e.g., whole house/building reverse osmosis systems) can produce very large quantities of WTW that may require significant area for a WTW dispersal system, and such a review would ensure preservation of SSDS areas.

78

Table 9: Clarified DOH authority to grant an exception for distances specified in Table 1 for existing SSDS. {pg. 49}

Table 9

Item	Separation Distance (feet)	Special Provisions
Public or private water supply well with required withdrawal rate of: < 10 GPM 10 to 50 GPM > 50 GPM	 75 150 200	The DOH may allow certain separation distance reductions on existing developed properties if compliance cannot be met due to site limitations. (1)(2)(3)
Open watercourse	25	
Public water supply reservoir	100	
Building	5	
Property line	10	
Subsurface sewage disposal system	See Table 1 (Item Q)	

79

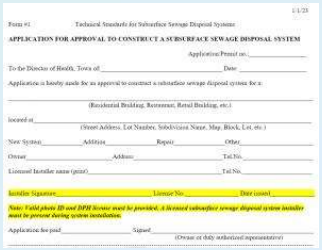
Section XI Non-Discharging Toilet & Sewage Disposal Systems {pg. 50}

- **Subsection C. Incineration Toilets:**
  - Lowered the minimum combustion temperature from 1,400 to 1,000 degrees Fahrenheit
  - Stipulated that incineration can occur when the toilet lid is open if the toilet has a combustion chamber that is separate from the collection bowl

81

Form #1 {pg. 51}

- Added installer signature and note to check identification
- An Installer must be present during the system installation

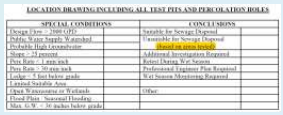


APPLICATION FOR APPROVAL TO CONSTRUCT A SUBSURFACE SEWAGE DISPOSAL SYSTEM

83

Forms 2 and 2a {pg. 55}

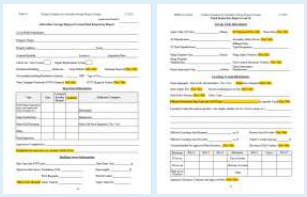
- **Form #2: and 2a:**
  - Added "based on area tested" to the unsuitable conclusion
  - Conclusion for area(s) tested



84

Form 3 {pg. 56 - 57}

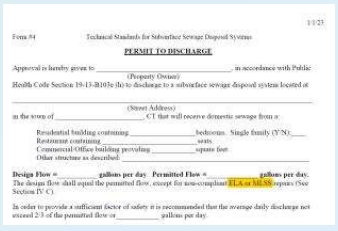
- **Form #3:** SSDS Final Inspection Report
  - Deleted one of the two "Sieve Required (Y/N):" citations add added the word "stone" to the remaining citation
  - Added space to note type of effluent distribution pipe and joint
  - Added space to note exceptions (e.g., minimum separating distances, MLSS, ELA)
  - Reformatted and added Yes / No circle options



85

Permit to Discharge Form 4 {pg. 58}

- Revised the standard reference for non-compliant repairs from Section IV D to Section IV C and added "ELA or MLSS" between "non-compliant" and "repairs".



86

Appendix A: MLSS {pg. 59 - 61}

- Deleted the word "essentially" that was in parenthesis along with "0 percent"
- Revised title for Category 1 to only include new lot creation (removed B100a conceptual systems)
- Category 2 now allows B100a conceptual systems to utilize select fill as receiving soil

Category 2 - New SSDSs, MLSS Compliant Repairs and Conceptual B100a Areas (Code-Complying & Potential Repair Areas): Leaching system spreads shall equal or surpass the MLSS. A leaching system that is designed with the top of the system more than 12 inches below natural grade shall have receiving soil in the leaching system area measured from the top of the system to the restrictive layer (see Diagram 4).

88

Category 1 - SSDS Layouts for New Lot Creation

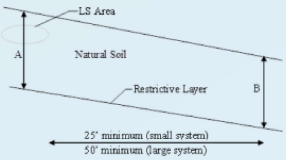
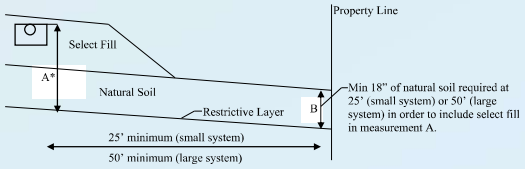


Diagram 1 - Sloped Restrictive Layer

89

Category 2 - New SSDSs, MLSS Compliant Repairs and Conceptual B100a Areas (Code-Complying & Potential Repair Areas):



*Receiving soil in LS area may include up to 24" of select fill measured from top of system if all receiving soil is on property and there is at least 18" of natural soil throughout the receiving soil.

Diagram 3 – LS in Select Fill (Sloped Restrictive Layer)

90

Appendix E: Authorized Water Treatment Wastewater Discharges to SSDS's {pg. 66}

- Heavy metal adsorption medias (e.g., titanium oxide, iron oxide, activated alumina) to the list of water treatment wastewater that are authorized to discharge a SSDS.

Authorized WTW Sources
WTW shall only be from a calcite filter, granular activated carbon filter, a Point of Use (POU) reverse osmosis unit or heavy-metal adsorption medias

91

Questions?