



CONNECTICUT PUBLIC HEALTH CODE

On-site Sewage Disposal Regulations, and Technical  
Standards for Subsurface Sewage Disposal Systems

# 2015 Technical Standards for SSDS

PHC Section 19-13-B100a (Building Conversions, Changes in Use, Building Additions, etc)

Effective August 3, 1998

PHC Section 19-13-B103 (Design Flows 5,000 Gallons per Day or Less)

Effective August 16, 1982

**Technical Standards for Subsurface Sewage Disposal Systems**

Effective August 16, 1982

Former revisions: 1986, 1989, 1992, 1994, 1997, 2000, 2004, 2007, 2009, 2011

Revised January 1, 2015

PHC Section 19-13-B104 (Design Flows Greater than 5,000 Gallons per Day)

Effective August 16, 1982

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[www.ct.gov/dph/subsurfacesewage](http://www.ct.gov/dph/subsurfacesewage)

January 2015

# Section I Definitions

- Eliminate definition for *two (2) inch nominal tire chip aggregate*.
- Revise definition for *approved aggregate* to remove reference to two (2) inch nominal tire chip aggregate.



# Section I Definitions

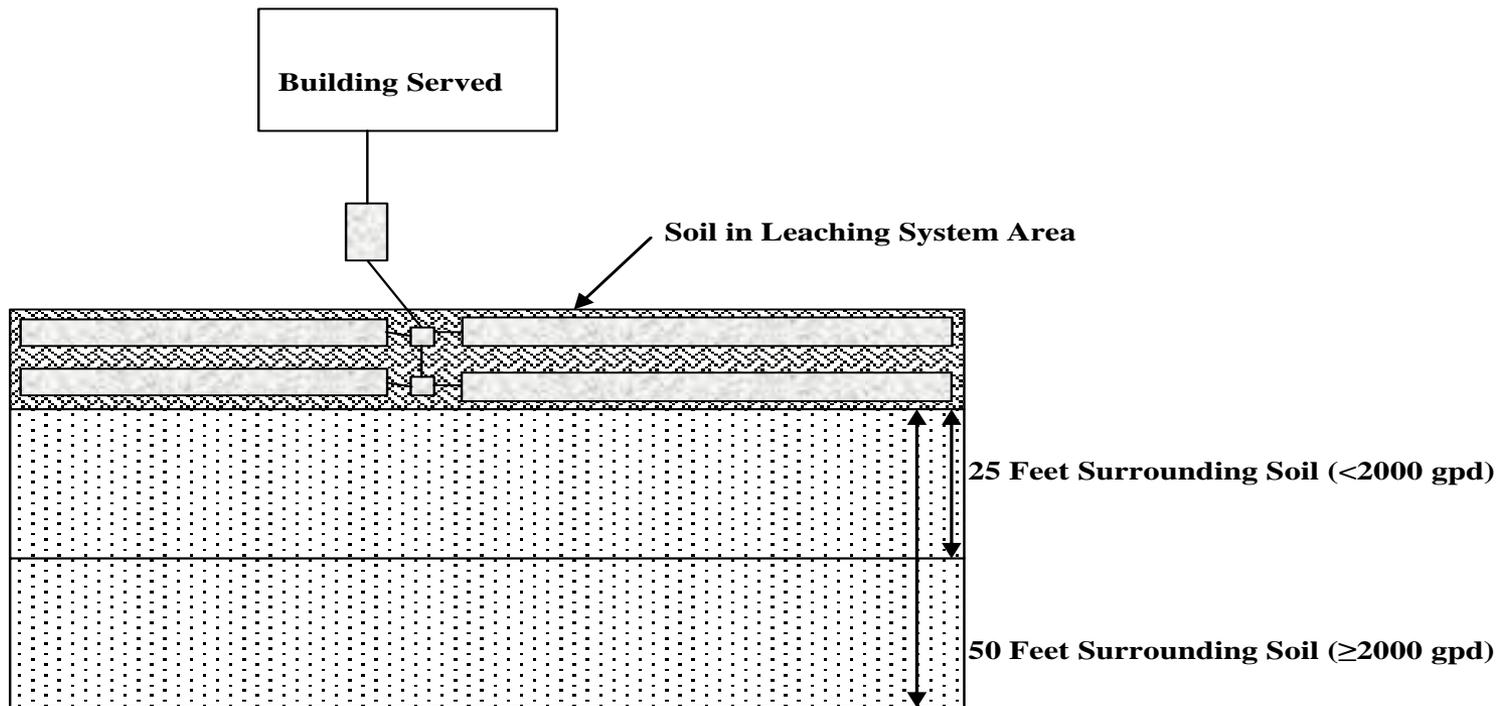
- **Outbuilding** means an ancillary structure served by a water supply and sewage system that is located on a lot with an associated primary residential building, which cannot be split off and sold separately from the primary building. (detached garages, barns, pool houses, guest houses, and in-law apartments, etc)



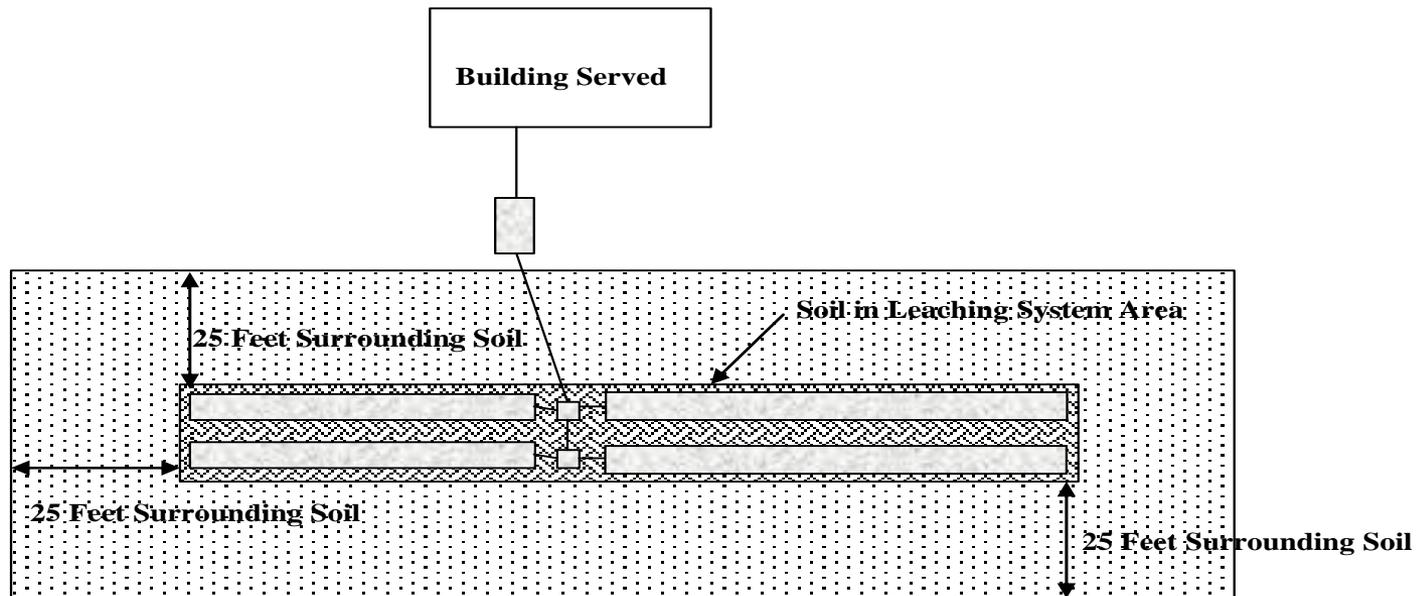
# Section I Definitions

- **Receiving soil** means the soil in the leaching system area and surrounding soil that is available to disperse effluent. Receiving soil characteristics (e.g., depth, percolation rate) determine the configuration and sizing of a leaching system.

# Receiving Soils Sloped Lots



# Receiving Soils Flat Lots



# Section I Definitions

- **Proprietary pressure-dosed dispersal system** means a manufactured dosing and dispersal system that uniformly applies effluent into the receiving soil via small diameter holes in small diameter distribution piping, and has been approved by the Commissioner of Public Health.



# Section I Definitions

- Revise definition for **effective leaching area** (ELA) so the square feet rating measure based on infiltrative area and type of infiltrative interface does not apply to proprietary pressure-dosed dispersal systems. (pg. 13)
- Revise definition for **leaching system** to include the dispersal components of the proprietary pressure-dosed dispersal system. (Pg. 14)

# Section I Definitions

- Revise definition for **proprietary leaching system** to note these systems do not include the dispersal component of a *proprietary pressure-dosed dispersal system*.
- Revise the definition of **tight pipe** to reference new table designation: Table 3.

# Section II Location

- Change section heading to **Location of Sewage Systems** pg. 15

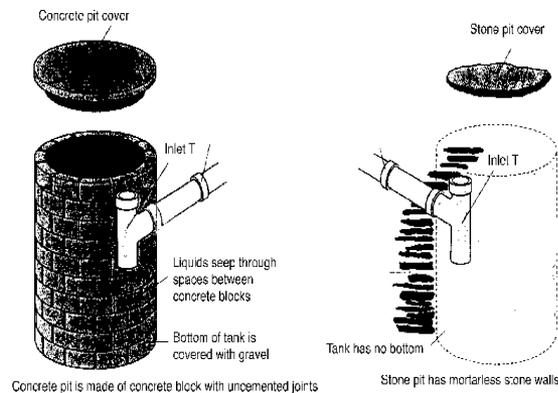
# Section II Location

- Modify language in Subsection A to maintain minimum separating distances to **sewage systems** which include subsurface sewage disposal systems (SSDSs), cesspools, holding tanks, and privies.
- **Sewage Tanks** added in Table 1- includes septic tanks, pump chambers, grease interceptor tanks, and holding tanks.



# Section II Location

- **Cesspools** are antiquated sewage systems that do not have the benefit of a septic tank. Cesspool abandonment is encouraged and typically occurs at the time of a real estate transaction. The Federal Underground Injection Control program required large capacity cesspools that serve multi-family residential building(s), or non-residential buildings serving 20 or more persons per day to be abandoned by April 5, 2005.



# Section II Location Benchmarks and Plan Adherence

- **Non-Engineered SSDS** plans shall include information about the placement of the SSDS relative to the *restrictive layers* and *fixed reference points*.

# Section II Location

- Combine Item B Human Habitation on Adjacent Property and Item C **Building Served**. Both sewage tanks and leaching system can be as close as 10 feet to the building served not provided with perimeter drainage.



# Section II Location

- Water supply suction pipes removed from Item A **Water Wells** and added to Item K **Water Piping**.
- Item C **Open Watercourse** includes a provision that in coastal areas, **the Coastal Jurisdiction Line** (Public Act 12-101) shall be used as the limit of the open watercourse, unless site specific information is available.

# Coastal Jurisdiction Lines

- **DEEP: LIS Program - Coastal Permitting**
- Effective October 1, 2012, the state's coastal regulatory jurisdiction changes from the "High Tide Line" to the "Coastal Jurisdiction Line."
- For more information, please refer to the [Coastal Jurisdiction Line Fact Sheet](#)

# CJL Examples

Long Island Sound	Thames River	Housatonic River	Connecticut River
Greenwich 5.5'	Norwich 2.4'	Derby 5.4'	Old Lyme 2.9'
Orange 4.7'	Montville 2.3'	Stratford 5.0'	Hartford 3.8'
Groton 2.0'			Windsor Locks 15.0'

# Section II Location

- Item E reworded to *solid piping for the conveyance surface water and ground water drainage* and references the new tight pipe designation (Table 3).



# Section II Location

- Item F **Storm water structures** (catch basins & manholes) cites a 25 foot separating distance with a provision for a reduced distance to 10 feet to sewage tanks. SWS must be designed not to collect ground water – watertight!



# Section II Location

- Item H **Storm water systems** separated into two categories (single-family residential lots and other lots (e.g. commercial, multi-family)). Distances typically 50 feet and 75 feet, respectively. Reductions if MLSS not applicable or not located up or down gradient of leaching system. Also, reduction for sewage tanks (25 feet).



# Section II Location

- **Storm water systems** (cont'd)

Minor systems for single-family residential building lots (rain gardens) may be reduced to 10 feet.

LHD may require increased distances or engineered assessment if localized ground water mounding is a concern.

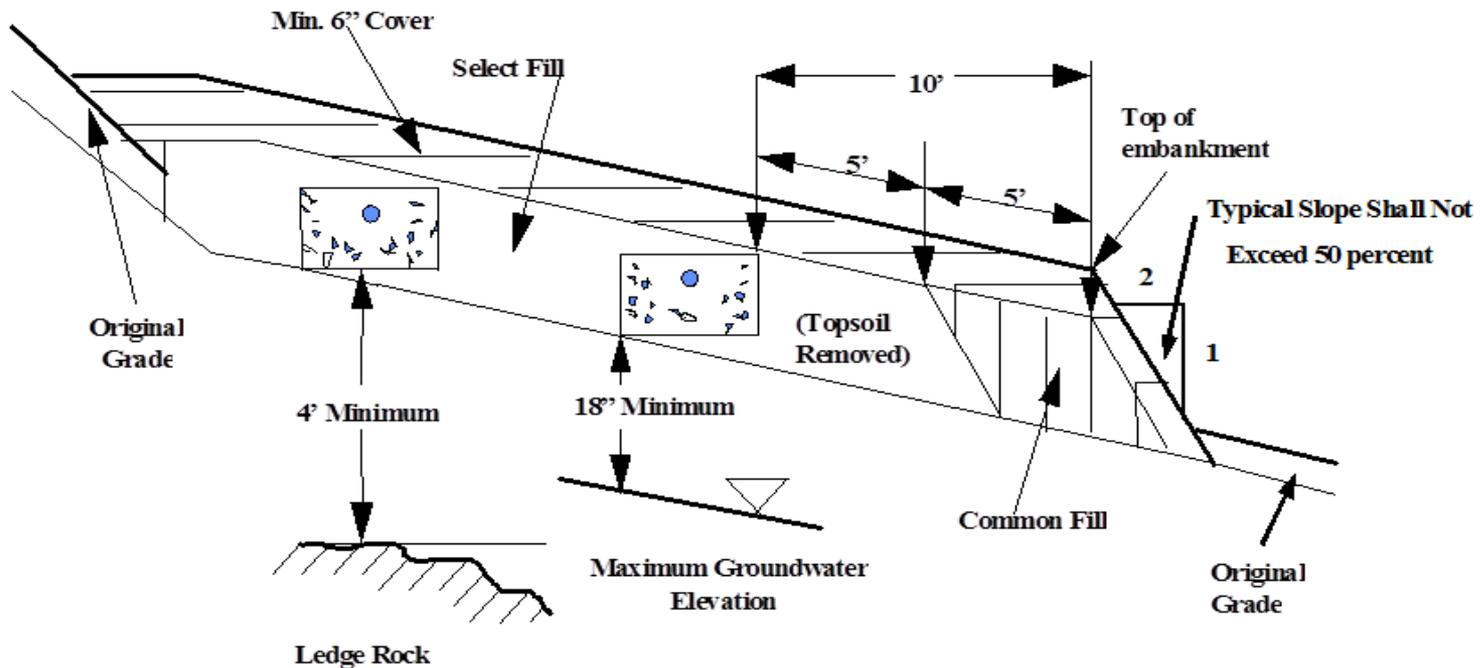


# Section II Location

- Average rainfall in CT about 50 in/year
- 1 inch rain event over 1 acre of impervious land equals approximately 27,000 gallons of water!

# Section II Location

- Item I **Top of Embankment** (fill package around perimeter of system) 10 feet (see figure 13)



# Section II Location

- Item P **Buried fuel tanks** 25 feet separation to SSDS if located down gradient. If not located down gradient to SSDS then 10 feet is permissible.



# Section II Location

- Item Q **Water treatment wastewater dispersal structure** subdivided into 3 categories (small <150, medium 150-500, large >500 GPD). Distances cited as 25, 50, and 75 feet, respectively.



# Section II Location

- **WTW dispersal structure** (*cont'd*).  
Reduced distance of 10 feet to sewage tanks. Also reductions to 10 feet to LS for small systems if MLSS not applicable or not located up or down gradient of leaching system.



# Section II Location

- Item R **Closed Loop Geothermal system**  
Distance to LS 50 feet – reduced to 25 feet if Borehole/Trench not located down gradient of SSDS.  
Sewage tanks require 25 feet.



# Section II Location

- Item S **Grade cuts or soil disturbances** down gradient of a LS.  
Grade cuts within 50 feet of LS not allowed if bleed-out may be a concern. LHD may reduce distance if demonstrated that cut/soil disturbance does not diminish the receiving soil necessary for the proper operation of the leaching system.

# Section III Piping

- All sewer piping (building sewer, distribution piping, force mains) now Tables 2, 2-A, and 2-B (pg. 20-23)
- Eliminate current Tables 2-A & 2-B that concern public sewer piping near water supply wells.



**Table 2**

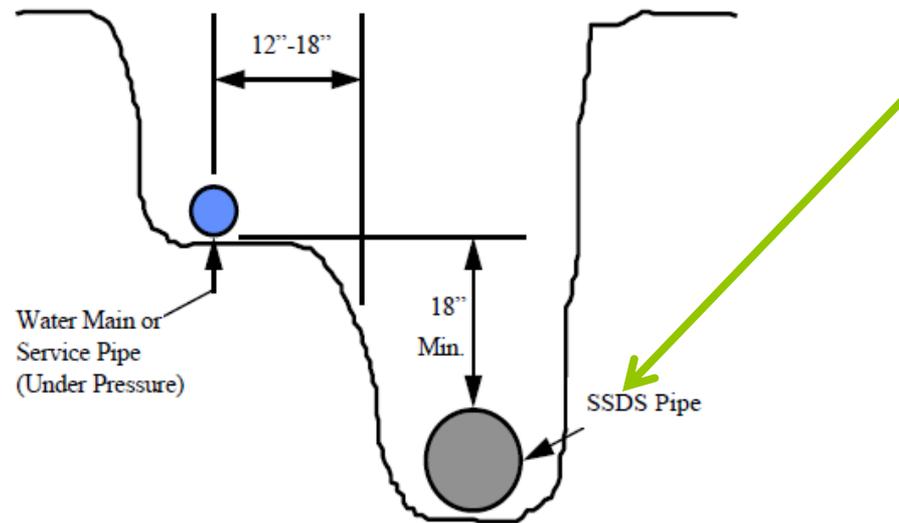
**Approved Building Sewer Pipe from Building Served to Septic Tank or Grease Interceptor Tank**

NOTE: The local director of health shall inspect all building sewer piping and joints prior to covering

USE	PIPE DESCRIPTION	ACCEPTABLE JOINT	REMARKS
<p>Building sewer from foundation wall to septic tank or grease interceptor tank.</p> <p>Building sewer within the sanitary radius of a water supply well, but no closer than the following minimum distances based on withdrawal rates:                      &lt;10 gpm: 25 feet                      10 – 50 gpm: 75 feet                      &gt;50 gpm: 100 feet</p> <p>Building sewers no less than 25 feet from a water suction pipe.</p> <p>Building sewers and pressurized water lines shall be installed in accordance with Section III D.</p> <p>Building sewers shall be kept a minimum of 10 feet from closed loop geothermal bore holes and trenches.</p> <p><b>There are no minimum distances between building sewers and other items listed in Table 1. However items placed near building sewers shall not damage or compromise the integrity of the pipe.</b></p>	<p>Cast iron hubless ASTM A 888</p>	<p>Cast iron split sleeve bolted joint with rubber gasket, MG coupling or equal</p> <p>OR</p> <p>3”-wide, heavy -duty, stainless steel banded coupling with rubber gasket; clamp-all, ANACO SD 4000, or equal</p>	<p>Roll-on “donut type” gaskets not acceptable if connection is within 25 feet of foundation wall. Pipe shall be properly bedded, laid in straight line on uniform grade</p>
	<p>Cast iron bell and spigot ASTM A 74</p>	<p>Rubber compression gaskets</p>	<p>Stainless steel 3” wide shear band coupling required for connection of dissimilar piping materials</p>
	<p>PVC Schedule 40 or 80, ASTM D 1785 or ASTM D 2665</p>	<p>Rubber compression gasket couplings, Harco Mfg., ASTM D 3139 or equal*</p> <p>OR</p> <p>Solvent weld couplings/ fittings using proper two step PVC solvent solution procedure</p>	<p>*Use of 3”-wide approved stainless steel banded couplings on PVC, ASTM D 1785 or 2665 is acceptable</p> <p>UL (gray) Piping - Schedule 40 or 80- 36”min. radius sweep piping (90°) may be utilized without a cleanout.</p> <p>ABS Schedule 40 is not acceptable</p>
	<p>Ductile iron ANSI A 21.51</p>	<p>Rubber compression gaskets</p>	<p>Connection to cast iron building sewer shall be made with compression gaskets.</p>
	<p>PVC AWWA C 900 (PC 100 psi min.)</p>	<p>Rubber compression gaskets</p>	<p>“O”-ring gasket is not acceptable</p>
	<p>PVC ASTM F 1760, Schedule 40</p>	<p>Rubber compression gaskets</p>	<p>Only 4” pipe approved</p> <p>Minimum 1’ cover in vehicular loaded traffic areas</p>

## Section III Piping pg. 19

- Modify wording in Figure 2 to reference solid SSDS pipes rather than sanitary sewer.



# Section III Piping

- Table 2-A now Effluent Distribution Pipe
- Table 2-B now Pressure Force Mains.
- Table 3 now pipe for groundwater and surface water piping <25 feet to a SSDS



## Section III Piping

- Eliminate old Subsection C (Procedure for Air Pressure Testing of Sewer Pipe) and added reference to applicable leakage test ASTM standards.
- ASTM F 1417: low pressure air test for plastic piping

# Section IV Design Flows

- Pet grooming design flow (250 GPD/station) added to Table 4
- Water use monitoring and Permits to Discharge combined into single subsection (IV C)



# Section V Septic Tanks & Grease Interceptor Tanks pg. 26

## B. Septic tank capacities

### 1. Residential Buildings

The minimum liquid capacities/volumes of septic tanks serving residential buildings shall be based on Table 5.

**Table 5**

	<b>Single-family</b>	<b>Multi-family</b>
<b>1-3 bedrooms</b>	1,000 gallons	1250 gallons
<b>4 bedrooms</b>	1250 gallons	1250 gallons
<b>For each bedroom beyond 4</b>	Add 125 gallons per bedroom	Add 250 gallons per bedroom

- Create new Table 5 that will include the current chart for minimum septic tank capacities for residential buildings.
- 1-3 bedroom multi-family septic tank in above chart changed to 1,250 gallons

# Section V Septic Tanks & Grease Interceptor Tanks

- *Non-concrete septic tanks* must meet IAPMO septic tank standard in 2015. Submissions from companies due by July 1, 2015. New tank marking requirements (dangerous gas warning, tank size) noted.

# Section V Septic Tanks & Grease Interceptor Tanks

- Stipulate *septic tank covers* shall be kept on the tank when riser assemblies are utilized, and in no case shall a cover be left off a tank when the riser cover weighs less than 59 pounds unless a secondary safety lid or device is provided below the riser cover.



# Section V Septic Tanks & Grease Interceptor Tanks



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# Section V Septic Tanks & Grease Interceptor Tanks

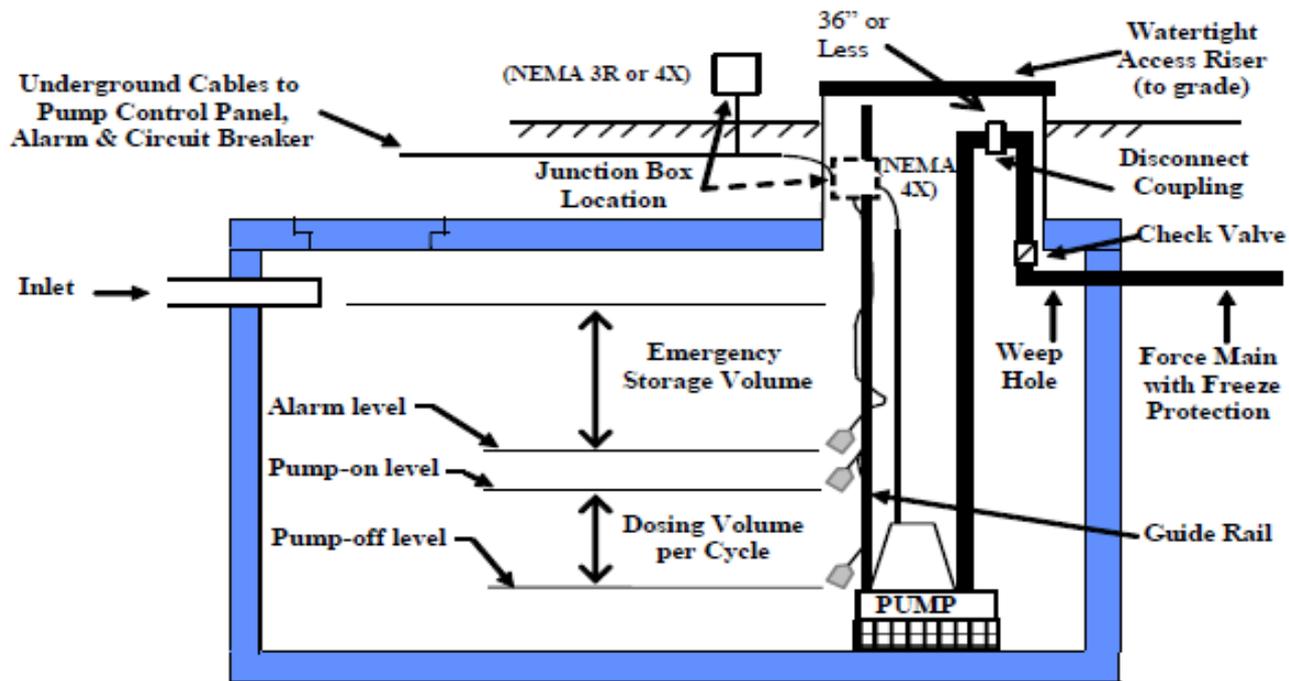


# Section V Septic Tanks & Grease Interceptor Tanks

- Add similar note to language for grease interceptor tanks, pump chambers, and holding tanks.
- *Effluent filters* must be rated for the design flow.



# Section VI Effluent Distribution, Pump Systems & Air Injection



**Figure 11 - Pump Chamber**

# Section VI

- SSDS designer must specify location of check valve and weep hole locations in Pump Chambers.
- Existing Pump Chambers to be retrofitted watertight risers manholes to grade.
- Disconnect coupling within 36 inches to access opening.

# Section VI

- Revised language concerning gas transfer in serial systems and noted holes in distribution pipe above liquid level can aid in gas transfer.
- New approved dosing methods (*Geomatrix HydroAir & Premier Plastics Flout Dosing Tanks*).



# Section VI

- Low-pressure distribution systems used in conjunction with leaching systems require PE design.

New provision allows a leaching system company to receive DPH authorization for low-pressure systems without PE design.

Company must submit supporting documentation on their low-pressure distribution system arrangements and receive DPH approval.

## Section VI

- Pumping large volumes of effluent into leaching systems with limited storage shall not exceed 20% internal storage volume unless approved by the proprietary leaching system company.



# Raw Sewage Pumps

- *Exterior raw sewage pump vaults* for buildings (other than outbuildings) shall have 1-day emergency storage or dual alternating pumps, unless the building's occupants have access to a bathroom in the building that does not rely on the raw sewage pump.



# Leaching System Enhancement / Rejuvenation

- The placement of a *plastic membrane* over a proprietary leaching system in conjunction with the SoilAir system must be authorized by the proprietary leaching system company.



# Section VII Percolation Tests

## pg. 35

- Perc readings need not be taken when there is only 2 to 3 inches of water of remaining in the hole
- Avoid perc testing if ground saturated or if deep frost layer exists.



# Section VII Percolation Tests

## pg. 35

- Perc test required in select fill whenever leaching system is elevated in a select fill package.



# Section VII Percolation Tests

## pg. 35

- Leaching system elevated entirely in select fill can be sized on assumed perc rate of select fill (potentially less than 10 minutes per inch.  
(Does not apply to MLSS for New or B100a Code complying areas)





# Section VIII Leaching Systems

- Reserve areas are not required for outbuildings w/ design flows of 150 GPD or less on single-family residential building lots.
- Removed mounding analysis option so that all large (>2,000 GPD) leaching systems must be elevated at least 24 inches above maximum ground water.

# Section VIII Leaching Systems

- Coastal areas sites with a groundwater table that is tidally impacted. Minimum separation distance for the bottom of the LS above maximum groundwater shall be 24 inches; max. groundwater determination shall take into account water level rise associated with high tides.



# Section VIII Leaching Systems

- Stipulate that in addition to covering leaching systems within 2 working days following the final inspection, systems shall also be covered prior to heavy precipitation events.



# Section VIII Leaching Systems

- Table 6 (pg. 45)
  - 1-bedroom leaching system sizing for residential outbuildings on single-family residential building lots. Minimum ELA is 50% of the required 2-bedroom ELA. MLSS Flow Factor would be 0.5
  - Required ELA for multi-family residential building shall be based on a minimum of 4 bedrooms.

## Section VIII Leaching Systems

- Added new proprietary leaching systems approved after the last Technical Standards' 2011 revision.
- Added **proprietary pressure-dosed dispersal systems** and sizing shall be correlated to an equivalent area needed for a conventional 3 foot wide leaching trench including any necessary fill extensions.

## Section VIII Leaching Systems

- Dispersal systems must meet all leaching system requirements relative to max. groundwater, ledge and cover, but do not require access points beyond those required by company.
- Language changed to reflect that **proprietary pressure-dosed dispersal systems** do not have ELA ratings based on interface factors or center to center spacing.

## Section VIII Leaching Systems

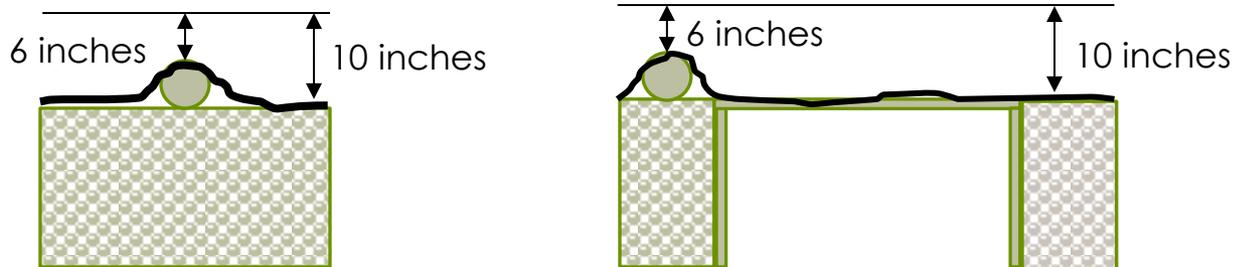
- **Perc Rite drip irrigation (dispersal) system** stipulates minimum linear footage of the drip tubing to be four (4) times the required linear footage of a 3 foot wide trench system for the particular building served. Minimum tube spacing is 1.5 feet center to center (minor deviations allowed-around tree, etc.).

# Section VIII Leaching Systems

- Proprietary leaching system products approved after January 1, 2015 will get ELA rating limitations for competing bio-mats (no credit for <math><1/2</math> inch, 50% credit for

# Section VIII Leaching Systems

- **Leaching trenches and galleries w/ piping** (SDR 35) at the top of the system. ELA credit increased by 0.6 SF/LF for trenches and 12 inch galleries. All other galleries ELA credit increased by 0.8 SF/LF.



# Section VIII Leaching Systems

- Center to center (C to C) spacing consideration language modified for possible future reductions.
- Removed 0.4 SF/LF ELA credit reduction provision for fabric lined proprietary leaching system products that are backfilled with non-select fill removed.

# Section VIII Leaching Systems

- Allow non-marked filter fabric to cover leaching systems if product information and specifications for a specific fabric are included on the engineered design plan, and documentation is submitted by the design engineer to the local health department confirming fabric meets the minimum specifications (unit weight, permittivity, trapezoid tear strength) cited in the Technical Standards. The design engineer shall submit an as-built drawing to the local health department along with a certification the designated fabric was utilized.



# Section IX Groundwater, Roof, Cellar and Yard Drainage

- Porous pavers/concrete are not considered storm water infiltration systems for the purposes of minimum separation distances in Table 1
- New language added for storm water infiltration and LID practices that may require approval from local health departments. New requirements reference in Section II.



## Section X Other Wastewater

- DPH may allow Point of Use (i.e., kitchen tap treatment system) water treatment wastewater to discharge to a SSDS if the discharge is deemed to be minor and incidental (other than water softener).



# Section X Other Wastewater

- Point of Entry water treatment wastewater shall be discharged in accordance with DEEP's General Permit (GP) for the Discharge of Low Flow Water Treatment Wastewater issued January 30, 2014, which authorizes on-site discharges to dedicated disposal systems (up to 500gpd)



# Section XI Non-Discharging Systems

- Stipulate holding tank covers shall be kept on the tank when a riser assembly is utilized, unless a secondary safety lid or device is provided below the riser cover or the riser cover to grade weighs more than 59 pounds.



# Appendix A, MLSS Revisions

- Relocated language concerning naturally occurring soil and PE hydraulic assessments into Section VIII.
- Receiving soil language revised. Receiving soil includes both the soil in the leaching system area and the surrounding soil.

## Appendix A, MLSS Revisions

- The actual percolation rate of the select fill can be used for non-compliant repair (NCR) MLSS. Testing must be conducted after placement to confirm rate.
- Flow Factor (0.5) for 1-bedroom residential buildings.
- Note: The minimum leaching system size for residential buildings (other than outbuildings on single-family lots) is still 2-bedrooms even if the building only has 1-bedroom.

# Use of MLSS Formula

- Created 3 categories for the use of MLSS:
  - 1) New SSDS, code-complying areas and conceptual SSDS for new lots
  - 2) Leaching system repairs and B100a potential repair area
  - 3) Non-compliant MLSS repairs

# MLSS Depth to Restrictive Layer Determination

## DTH1

0-6" Top Soil  
 6-24" Orange Brown Fine Sandy Loam  
 24-96" Dense Hardpan (Mottling throughout)

## DTH2

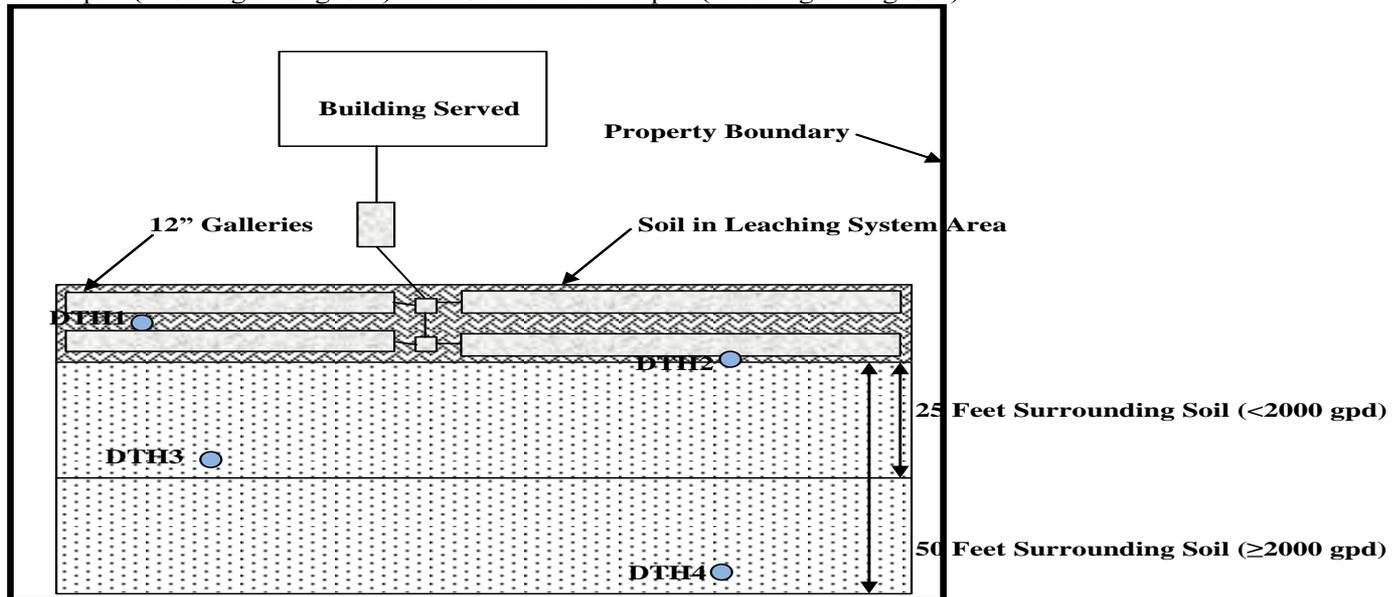
0-6" Top Soil  
 6-22" Orange Brown Fine Sandy Loam  
 22-96" Dense Hardpan (Mottling throughout)

## DTH3

0-6" Top Soil  
 6-19" Orange Brown Fine Sandy Loam  
 19-96" Dense Hardpan (Mottling throughout)

## DTH4

0-6" Top Soil  
 6-18" Orange Brown Fine Sandy Loam  
 18-96" Dense Hardpan (Mottling throughout)

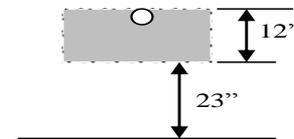


### MLSS Depth to restrictive layer (systems <2000 gpd)

Average of deep test hole restrictive layer depths in leaching system area and surrounding soil  
 $(DTH1 + DTH2)/2 + 12''$  (gallery height) =  $23'' + 12'' = 35'' = (35'' + 19'')/2 = 27''$

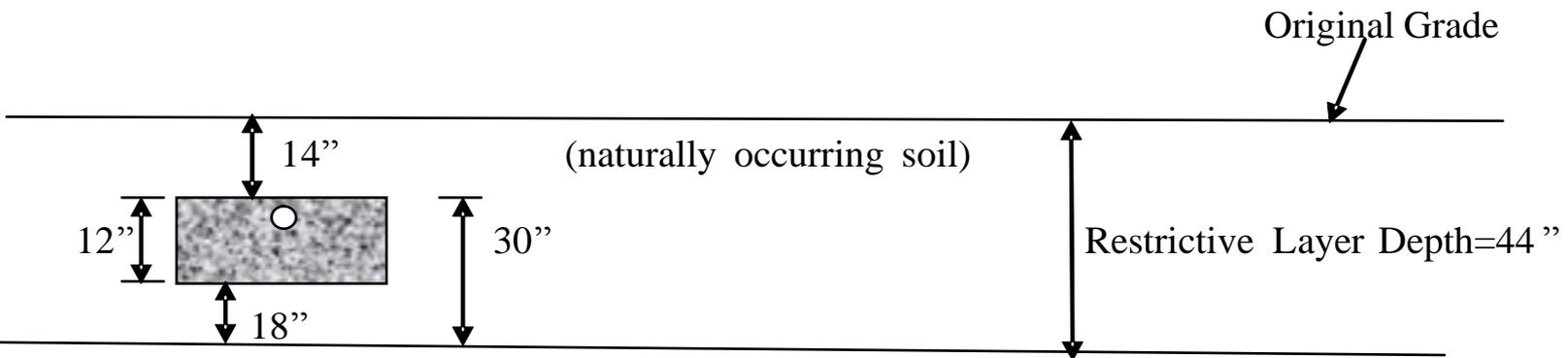
### MLSS Depth to restrictive layer (systems ≥2000 gpd)

Average of deep test hole restrictive layer depths in leaching system area and surrounding soil  
 $(DTH1 + DTH2)/2 + 12''$  (gallery height) =  $23'' + 12'' = 35'' = (35'' + 19'' + 18'')/3 = 24''$



# New SSDS, Code-Complying Areas and Conceptual Areas for New Lots

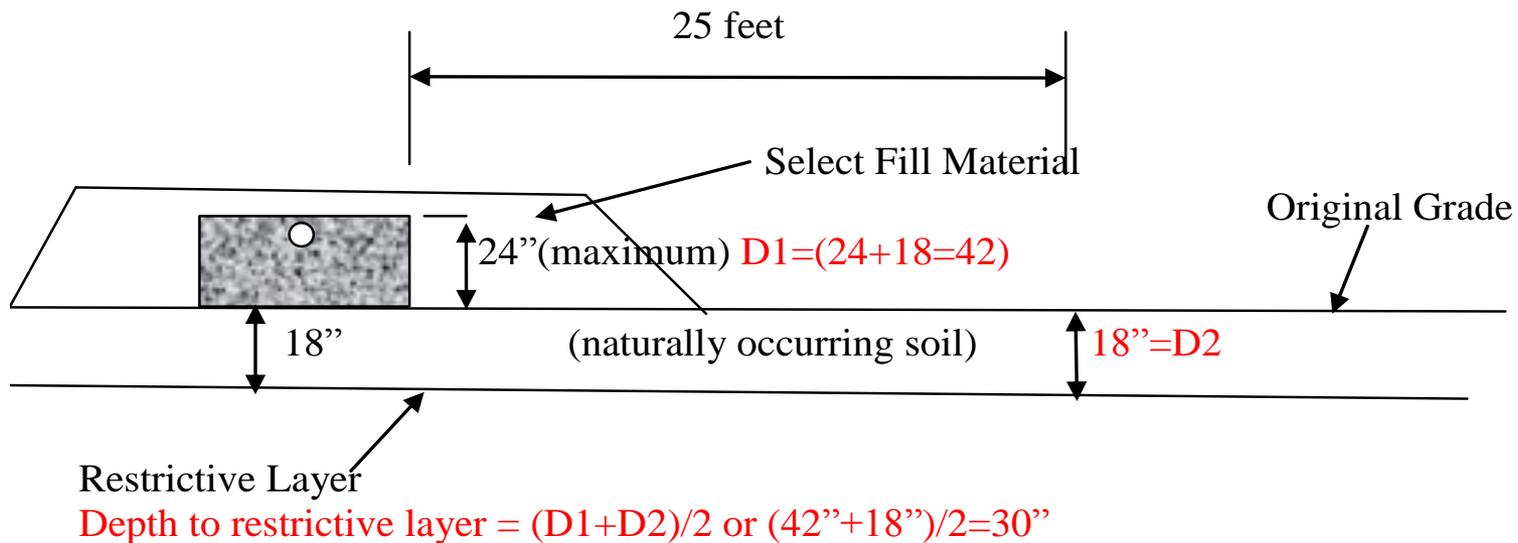
- The depth to the restrictive layer shall be measured from the top of the leaching system if the system is more than 12 inches below grade.



**New RS Depth =  $(30 + 44)/2 = 37$  inches**

# New SSDS & Code-Complying Areas

- Leaching systems being installed above natural grade and that have all the receiving soil (minimum 18 inches of naturally occurring soil) on the property may include select fill (maximum 24 inches) measured from the top of the leaching system in the leaching system area.



# Non-Compliant MLSS Repairs

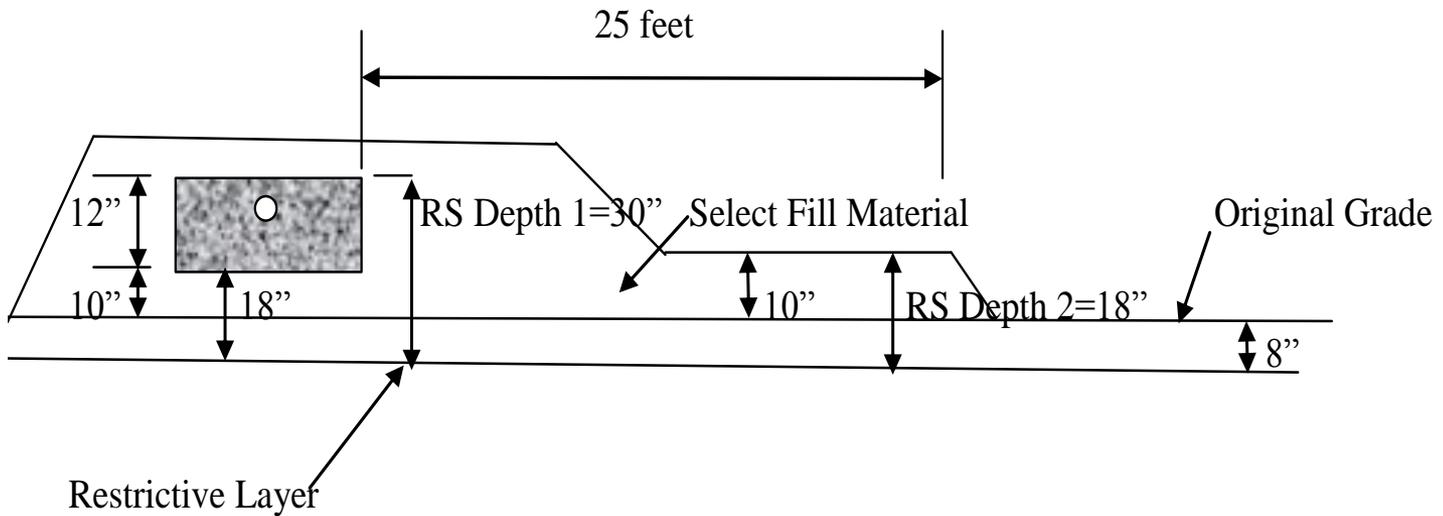
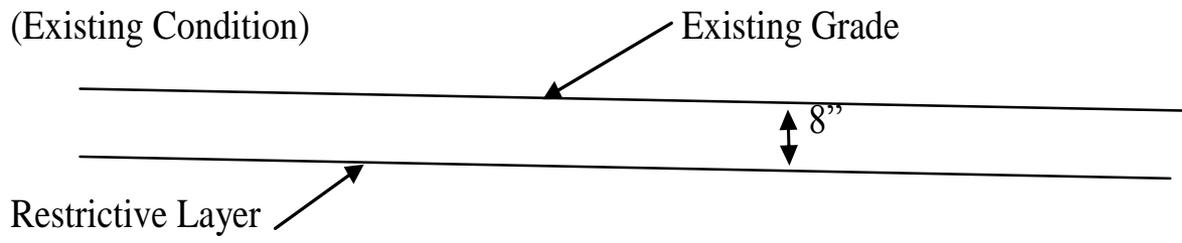
- Receiving soil in the leaching system area shall be measured from the top of the leaching system to the restrictive layer.
- PE plan required if less than 25% compliant with required NCR MLSS.

# Non-Compliant MLSS Repairs

- Actual percolation rate of select fill can be used for NCR MLSS design purposes (ELA and MLSS). Must perc test after placed to confirm.
- The leaching system spread must be the maximum percent possible of the NCR MLSS based on RS depth of 18-22 inches, or based on the depth of the existing receiving soil if greater.

# NCR MLSS example

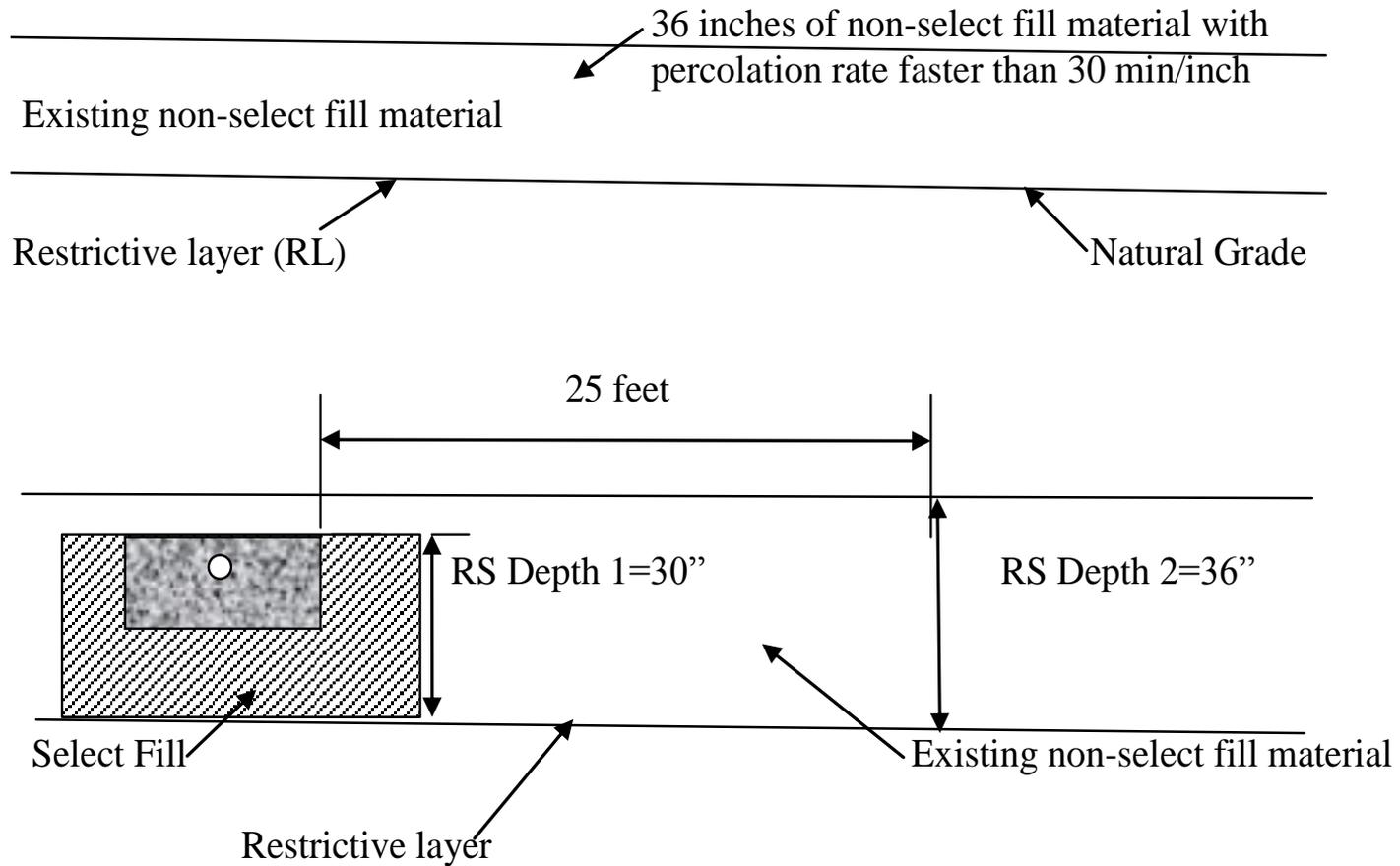
Lots with Gradient  
(Existing Condition)



RS depth is average of RS Depth 1 and RS Depth 2 =  $(30''+18'')/2=24''$

## NCR MLSS example

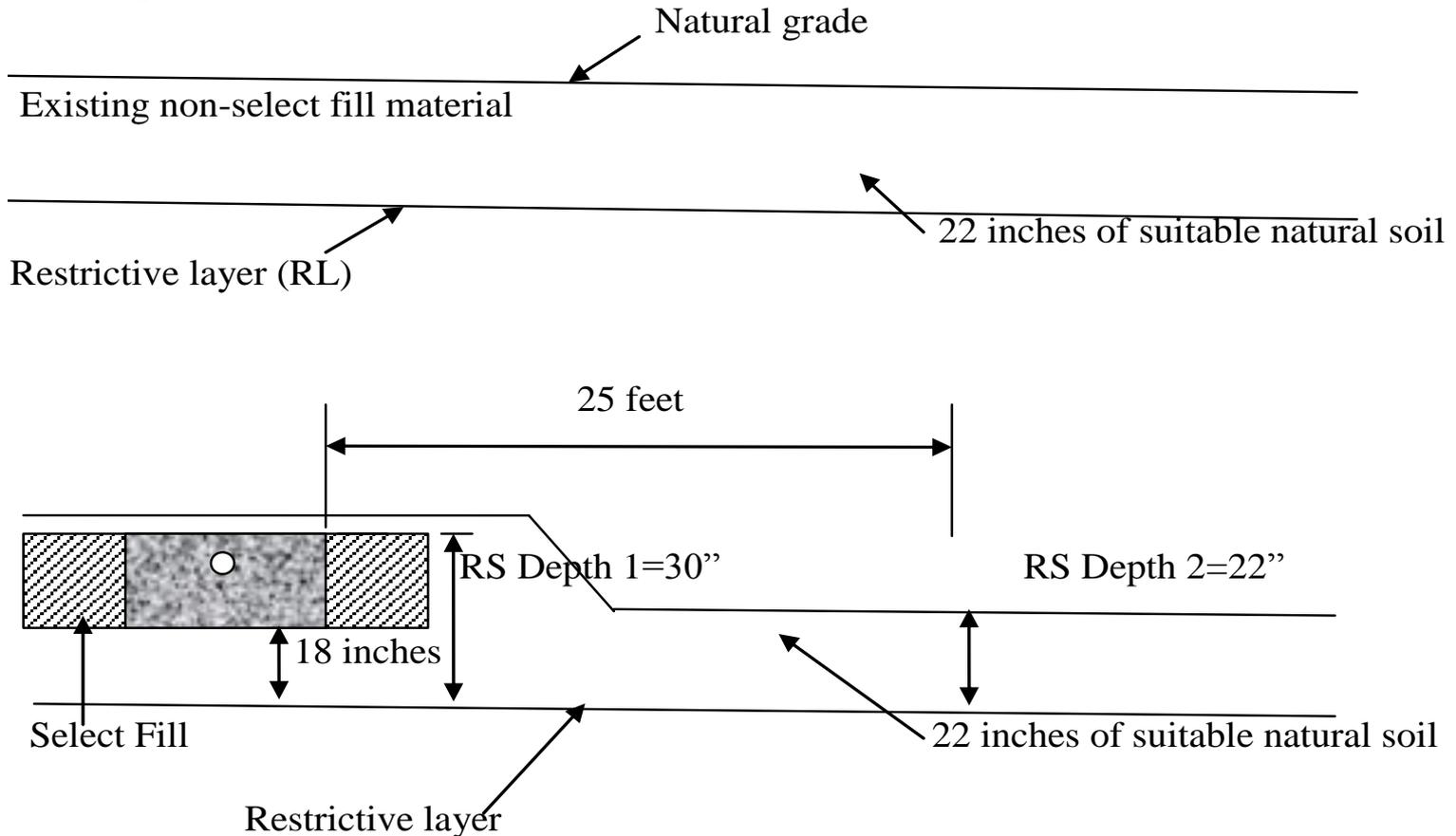
Lots with Gradient  
(Existing Conditions)



RS depth is average of RS Depth 1 and RS Depth 2 =  $(30''+36'')/2=33''$

## NCR MLSS example

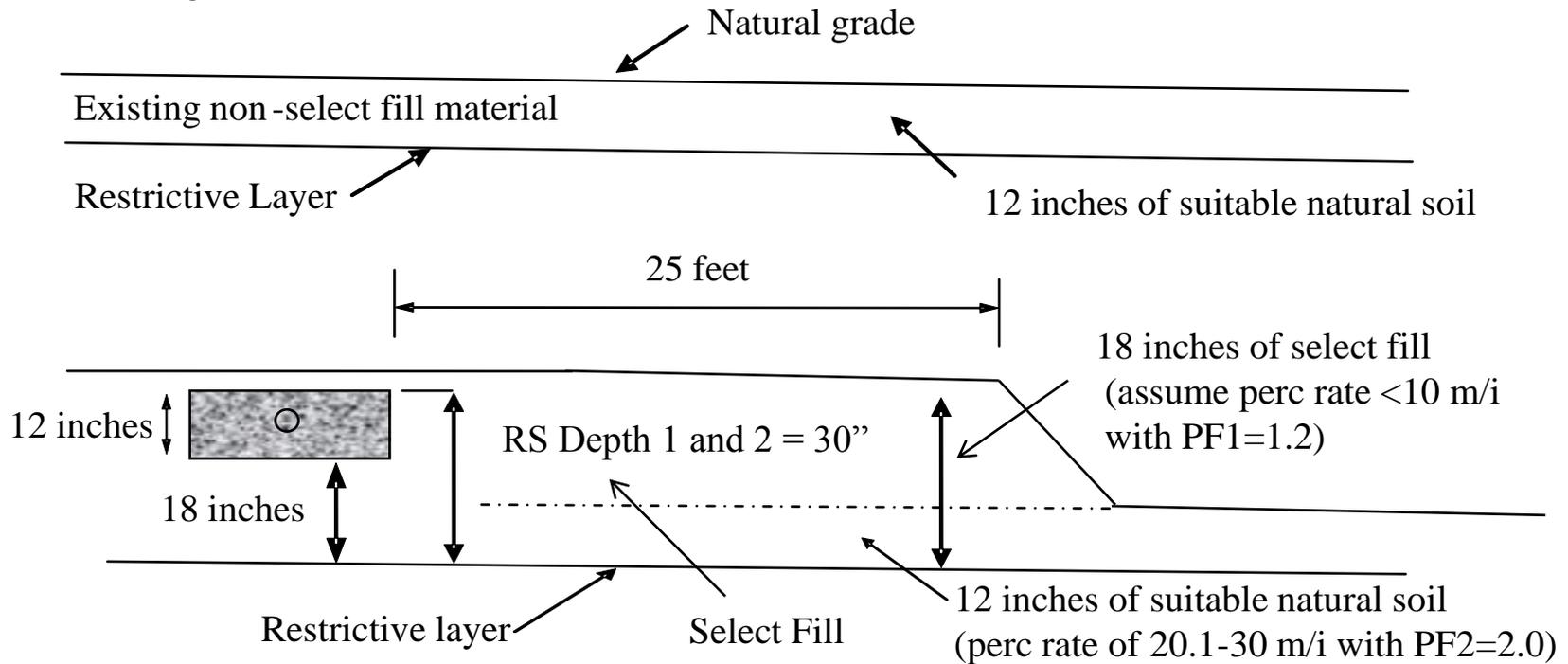
### Lots with Gradient (Existing Conditions)



RS depth is average of RS Depth 1 and RS Depth 2 =  $(30''+22'')/2=26''$

## NCR MLSS example

### Lots with Gradient (Existing Conditions)



How to determine Perc Factor (PF) for soil layers with different percolation rates:

$$PF = 18/30(PF1) + 12/30(PF2) = 18/30(1.2) + 12/30(2.0)$$

$$PF = .72 + .8 = 1.52 \leftarrow \text{proportionate PF for NCR MLSS calculation}$$

# Appendix

- **Appendix B**

- Appendix B to include new filters and company names, and delete filters no longer approved.

- **Appendix D, Approved Non-Concrete Septic Tanks:**

- Appendix updated.