

* Leaching Systems

Technical Standards VIII B
Pg. 36-44

DPH Connecticut Department of Public Health
Keeping Connecticut Healthy

DPH * Leaching System

* Properly functioning leaching system should disperse and treat effluent (liquid from the septic tank) into the surrounding soils without breaking out on the ground surface or polluting the groundwater



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DPH * Leaching types

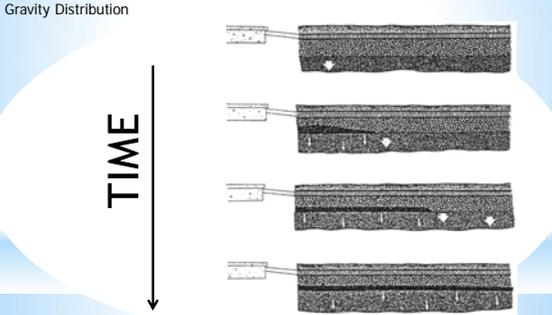
- * Trench
- * Pits
- * Galleries
- * Proprietary products
 - * Plastic chamber
 - * Mats
 - * Forms
 - * Cardboard

DPH * How does a leaching system work?

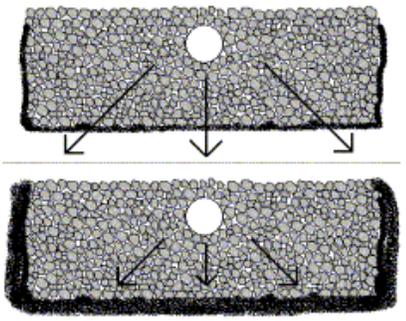
- * Effluent from the tank is directed to the leaching system by the distribution piping
- * A layer of biological slime is formed on the interface between the soil and the leaching system surface (BIOMAT)
- * The BIOMAT reduces the rate at which sewage passes into the soil which develops along the bottom and sides

DPH Formation of a Biomat

Gravity Distribution



DPH Biomat Growth



DPH Leaching Galleries

- *Hollow structures (typically concrete) with open bottoms and perforated sides
- *Must follow ground contours and be level.
- *Must use No. 4 stone (larger stone) 12" of aggregate required on gallery sides and ends
- *Minimum width of structures is 4 feet

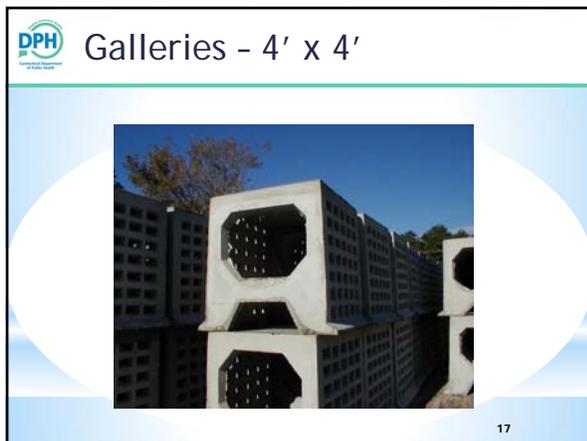
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DPH Leaching Galleries

Gallery Height (inches)	Effective Leaching Credit (SF/LF)	Center to Center Spacing (feet)
48	9.2	12
36	8.0	12
30	7.4	12
27	7.1	12
24	6.8	12
18	6.2	12
12	5.9	12

All Units are 4' Wide at Base

	4'	2.5'	2.25' to 2.5'	1' to 2'	2.5'
Height	4'	2.5'	2.25' to 2.5'	1' to 2'	2.5'
Length	4' & 8'	8'	8'	8'	8'





DPH Galleries - 27-inch Teepees

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DPH Leaching Gallery Installation

<https://www.youtube.com/watch?v=QkUQvUKuMM4>

DPH Leaching Gallery Configuration

- *Plastic proprietary leaching units can be installed side by side in a gallery configuration
- *Must be installed in a 6 foot wide excavation surrounded with stone to get gallery credit

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DPH Section VIII E:
Proprietary Leaching Systems

- *Must be installed per manufacturer's specifications
- *Several manufacturers require use of a washed sand/ASTM C 33 sand. Any sand used within proprietary leaching systems must meet or surpass select fill gradation requirements.
- *Proprietary leaching system manufacturers must ensure installers are properly trained on installation protocols

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DPH Plastic Chambers

Patented sidewall louvers allow lateral seeping of effluent into soil.

Bottom open for greater infiltration.

Large storage volume accommodates peak flows.

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DPH

DPH

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DPH Form Cell: Living Filter

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DPH Living Filter

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DPH GreenLeach Filter

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GeoMat Flat

Roll out mat



GeoMat Flat

Lay distribution pipe over system per design



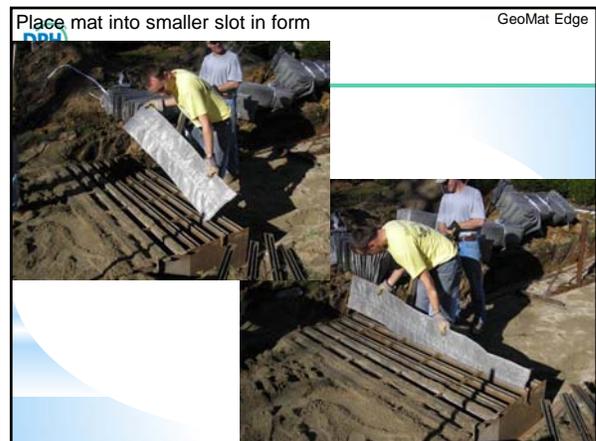
GeoMat Flat

Cover system with minimum of 2" of permeable fill over system



Set form in trench

GeoMat Edge



Place mat into smaller slot in form

GeoMat Edge

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GeoMat Edge



Fill with sand and compact

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GeoMat Edge



Continue until desired length is met

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Place distribution pipe on stone

GeoMat Edge

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GST Leaching System



Compact and level sand

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GST Leaching System



Place stone

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GST installation

<https://www.youtube.com/watch?v=hrEWuAYZGbU>

 Eljen Mantis

Excavation and Sand Leveling



 Place Units in the Trench, Glue the Joints, Adjust Modules



 Place the Specified Sand



 Pack the Sand to Stabilize Base of the Unit

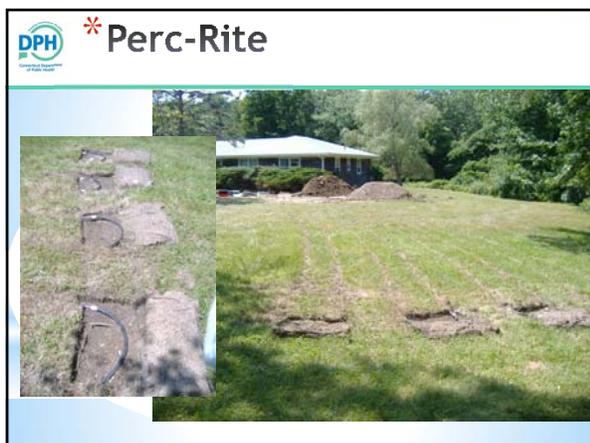
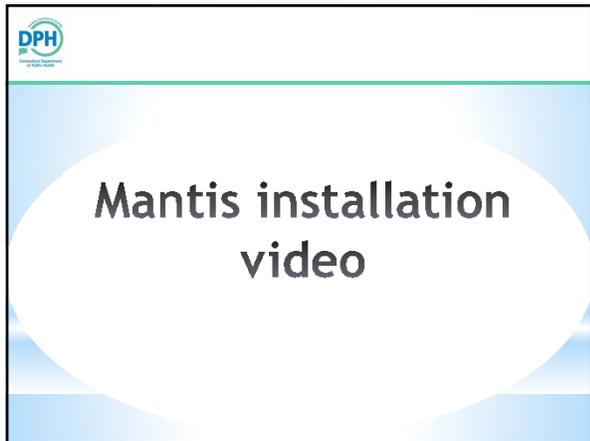
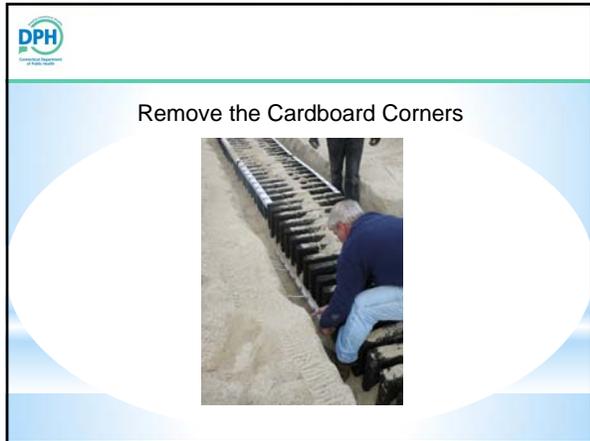


 Remove Cardboard Corners - Cut the Straps











* Leaching Systems

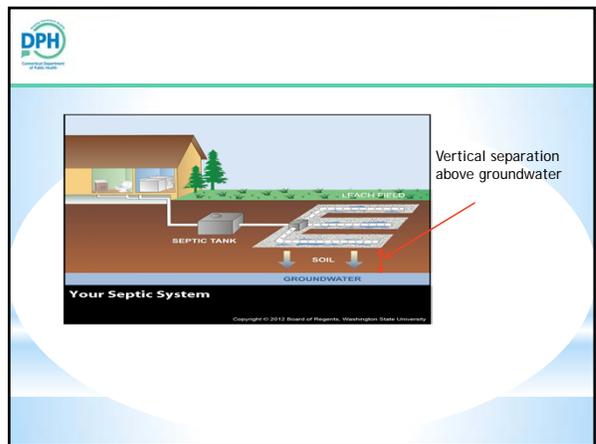
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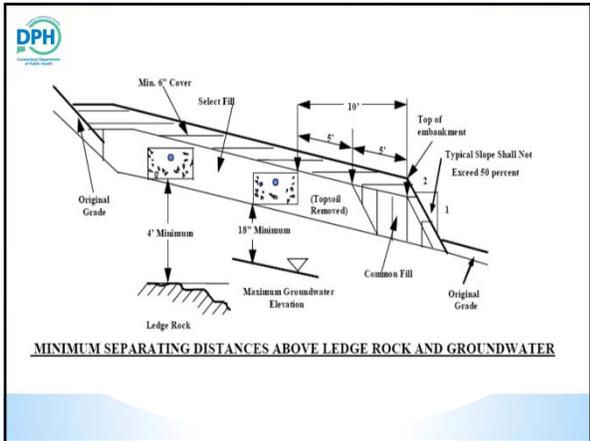

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**DPH * Section VIII A
Leaching Systems (pg. 36)**

- * To be installed as shallow as possible
- * Bottom of leaching system to be installed at least 48' above ledge rock
- * Bottom of leaching system to be installed at least 18" above maximum groundwater
- * 24" separation for systems with design flows 2000 GPD or greater or systems that are tidally influenced

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Section VIII A Leaching Systems (pg. 36)

*If design percolation rate is faster than 1.0 minute per inch the minimum separation to maximum groundwater shall be increased to 24", and the minimum separation above ledge rock shall be increased to 8' or the distances shall be doubled from any water supply well in accordance with the specific provisions in Table 1 (Item A)

Leaching System
24"
8"
Ledge Rock

Maximum Groundwater
Feb 1 to May 31

Leaching Systems

Leaching System bottom not to be installed more than 8' into finished grade.

*Max width of a leaching product is 6.5'

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Leaching Systems

- *Leaching systems under vehicular travel areas must be capable of support H-20 loads
- *Proprietary systems shall only be installed in vehicular travel areas if authorized by the manufacturer, and are required to provide H-20 loading supporting documentation to DPH

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Leaching Systems

*For suitability purposes, the leaching system area includes the soil within 10 feet in all directions of the leaching system.

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Reserve Area

- *Required for new construction where public sewers are not currently available or will not be available for at least 5 years.
- *Reserve areas are a second leaching system area where another leaching system could be constructed if the primary system failed or otherwise had to be extended/relocated.
- *Reserve areas are not required to meet MLSS, however, where feasible reserve areas should provide additional spread.

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DPH* Reserve Area

- *Reserve area preparation required for multi-family and commercial buildings that are located under paved asphalt or poured concrete vehicular travel areas only.
- *Reserve areas are not required for outbuildings with design flows of 150 GPD or less on single-family residential building lots



DPH* Leaching System: Grading

- *Entire system area must be graded & maintained to lead surface water away from area
- *The licensed installer is responsible to provide erosion & sedimentation controls (i.e., grass seeded/covered with hay)
- *The entire subsurface sewage disposal system must be protected from erosion not just leaching system



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DPH* Leaching System: Minimum Cover

- *Six inches minimum cover over leaching systems is required
- *Some proprietary leaching systems require additional cover especially in cases where vehicle loading is anticipated
- *The installer must cover the leaching system within 2 working days following final inspection by local health department or prior to heavy precipitation events

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DPH* Metal Pipe Prohibition

- *No metal pipe (cast or ductile iron) shall be used after the septic tank
- *Only non-corrosive pipe (plastic) approved distribution pipe is listed in Table 2-A can be used
- *Thin wall 4-inch pipe must be bedded in stone

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DPH* Leaching Systems: Stone

SIEVE SIZE	No. 4 Stone Aggregate (A.K.A. 1 & 1/4" Stone)	No. 6 Stone Aggregate (A.K.A. 3/4" Stone)
	PERCENT PASSING (by weight)	PERCENT PASSING (by weight)
3-inch	100	N/A
1.5-inch	90 - 100	N/A
1-inch	20 - 55	100
3/4-inch	0 - 15	90 - 100
1/2-inch	N/A	20 - 55
3/8-inch	0 - 5	0 - 15
#4	N/A	0 - 5
#40	0 - 3	0 - 3
#200	0 - 1.5	0 - 1.5

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DPH * **Filter Fabric**

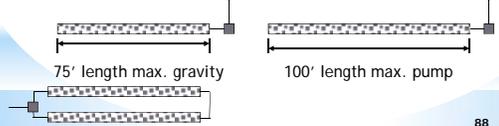
*All leaching system stone (trenches, galleries, pits) must be properly covered with approved filter fabric as listed in Appendix C.



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DPH * **Row Length**

*Individual leaching rows shall not exceed 75' in length, unless dosing (min. 25 gallons/cycle) is provided, in which case a maximum length of 100' may be utilized.

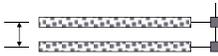


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DPH * **Center to Center Spacing**

*Leaching system trenches, rows, or pits must provide the minimum center to center spacing requirements listed in the appropriate subsections B (trenches), C (pits), D (galleries), or E (proprietary products)

*Center to center requirement applies also to reserve system location relative to the primary system

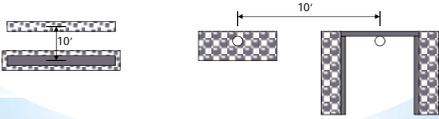


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DPH * **Center to Center Spacing**

*If two different types of leaching systems are utilized side by side, the average c-to-c spacing shall be maintained

Example: 12" x 48" stone trenches next to 4' x 4' galleries= 10' c-to-c required (Average of 8 and 12)

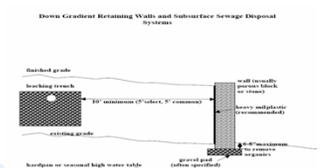


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DPH **Leaching System: Retaining Walls**

*SSDS design plans that include retaining walls shall provide retaining wall information and specifications including type of structure, groundwater control mechanisms (drains, weep holes), footings, and a cross section showing existing and proposed grades

Down Gradient Retaining Walls and Subsurface Sewage Disposal Systems



The diagram shows a cross-section of a retaining wall. On the left, the existing ground surface is shown with a 'backfill trench' and 'existing grade'. A '10' minimum (3' water, 7' concrete)' structure is shown. On the right, the 'wall structure' is shown with '10' minimum concrete' and '10' minimum gravel and fabric geotextile'. A 'drainage or weep hole' is shown at the base of the wall. A '10' minimum gravel and fabric geotextile' layer is shown below the wall. A '10' minimum gravel and fabric geotextile' layer is shown below the wall. A '10' minimum gravel and fabric geotextile' layer is shown below the wall.

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