

* TS Section VI: Effluent Distribution, Pump Systems & Air Injection Process

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DPH Connecticut Department of Public Health
Keeping Connecticut Healthy

* Effluent Distribution, Pump Systems & Air Injection Process

* Three way to distribute effluent:
1. Gravity
2. Pump
3. Siphon

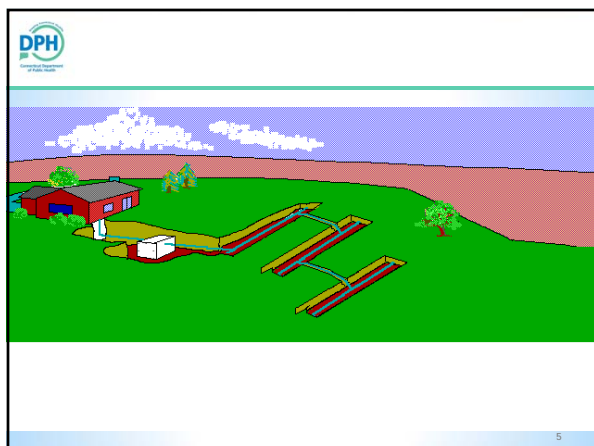
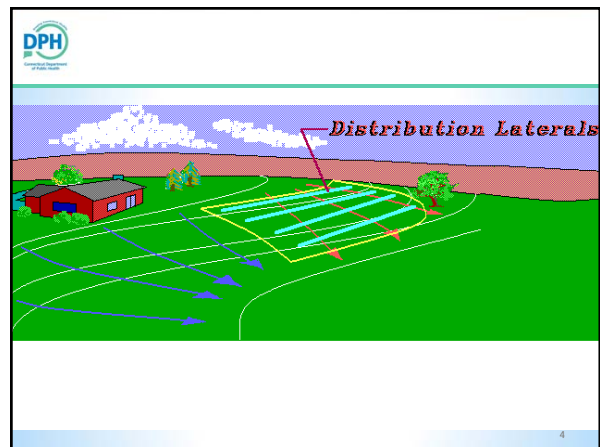
Distribution method must:
* Promote uniform distribution
* Fully utilize leaching system
* Allows for air transfer

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* Effluent Distribution, Pump Systems & Air Injection

* Serial systems: High-level overflows must be set in the upper 3 inches (0.25 feet) of the leaching structure. This will assist in leaching system venting that will promote air /gas transfer.

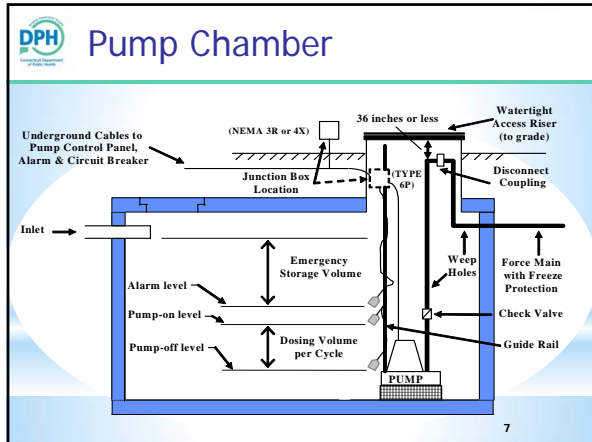
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* Pump Systems

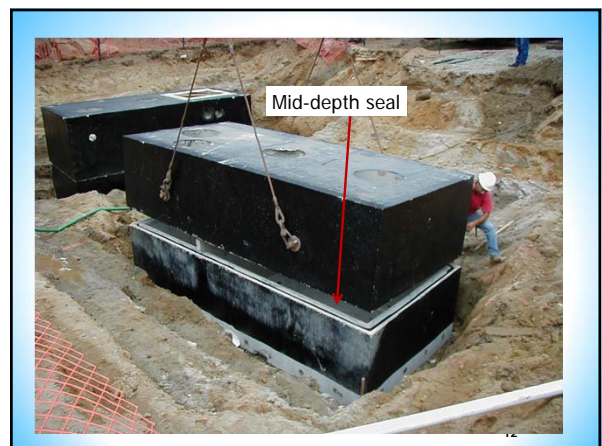
* Utilized when a gravity system can't be installed.
* If a single pump installed, 24 hour emergency storage above the alarm float shall be provided.
* Emergency storage not required if dual pumps installed.
* Manholes to grade
* Equipped with a high level alarm, both visual and audible, to warn of pump shut-off or malfunction.

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DPH * **Pump Systems/Mandatory Dosing**

- Dosing required for large systems (>2,000 GPD with 600 linear feet of leaching system) By means of pumps, siphon or other approved method
 - * Dosing volume of 3-6 cycles per day or 50% minimum of distribution piping volume
 - * Dosing chamber shall have access manholes to grade. Secondary safety lids needed when tank cover is removed.





* Pump Systems

- * Can utilize timed-dosed or volume-dosed
- * Avoid dosing large volumes of effluent into leaching systems with limited internal storage capacities.
- * Recommended that dosed volumes not exceed 20% of the leaching system internal storage capacity unless otherwise approved by the proprietary leaching system manufacturer.

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* Pump Systems

- * Electrical connections readily accessible from ground surface.
- * Piping attached to pump close to top of tank to allow for servicing and quick disconnect for servicing.
- * Pump chambers in shallow groundwater areas shall utilize watertight tank seals.

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DPH * Pump Systems

- * Pump systems can utilize mechanical float switches (DEEP has banned the sale of mercury float switches in CT) or pressure transducers
- * Pump chamber risers must have a minimum inside diameter of 24 inches
- * Pump chambers under vehicular travel areas must be rated for H-20 loads (including riser and cover)

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DPH * Pump Systems

- * Combination septic tank/pump chambers must use tee baffle piping so that drawdown occurs in second compartment only

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DPH * **Baffled Distribution / Splash Box**

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DPH * **PUMP CHAMBER**

- * Freeze protection
 - Freeze protection for force main (weep hole, below frost line, insulation).
 - When using weep hole for frost protection, avoid back siphonage and excessive cycling.

DPH * **Weep hole**

DPH * **Prevent Back Siphonage**

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DPH * **Pump Systems**

- * Interior raw sewage pump vaults below basement slab elevation must be installed in a sealed pit or otherwise designed to contain leakage in the basement. Foundation penetration per plumbing code.
- * Exterior raw sewage pump systems must meet SSDS setbacks and be equipped with either 24 hour storage or dual alternating pumps

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DPH * **Distribution: Access Ports**

Leaching systems must have access ports: D-box, cleanouts (galleries, pits) or capped sanitary tees extended to grade.

DPH * **Distribution: Access Ports**

- *Single d-box feeding rows at same elevation will be considered an access point for both rows.
- *Access points on large (2000 GPD and greater) and non-residential leaching systems shall be extended to grade in paved areas.

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DPH * **Access Port Level System**



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DPH * **Pump Systems**

- Low pressure distribution systems:
 - PE design required unless low pressure distribution system manufacturers provide supporting documentation
 - Design must include access & flushing provisions, ability to check pressure in lines, pressure filters, orifice shields, manifold access, and pipe info: size, specs, holes etc. PE must stipulate O & M requirements (i.e., flushing of lines, checking pressure heads).

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* **Proprietary and Non-Proprietary Low Pressure Distribution Systems**



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DPH * **Passive Nitrogen Reduction**

- * May be used in conjunction with a septic system.
- * Requires strict design and installation controls.
- * Detailed plans including information on the dosing system, wood product, and soil treatment horizon.
- * More detailed discussion in Phase II.

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DPH * **Leaching System Enhancement/Rejuvenation**

* **Soil Air Systems**



- * Adding air to a SSDS
- * Permit required
- * Must provide the minimum separation above ledge rock and groundwater
- * Effluent filter can be removed if designer approves

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* Leaching System Clogging Break-up

* Terra-lift and EarthBuster

* Permit required

* Must provide the minimum separation above ledge rock and groundwater

* Air injection must not exceed depth of system.

