Title 5 Review for Boards of Health

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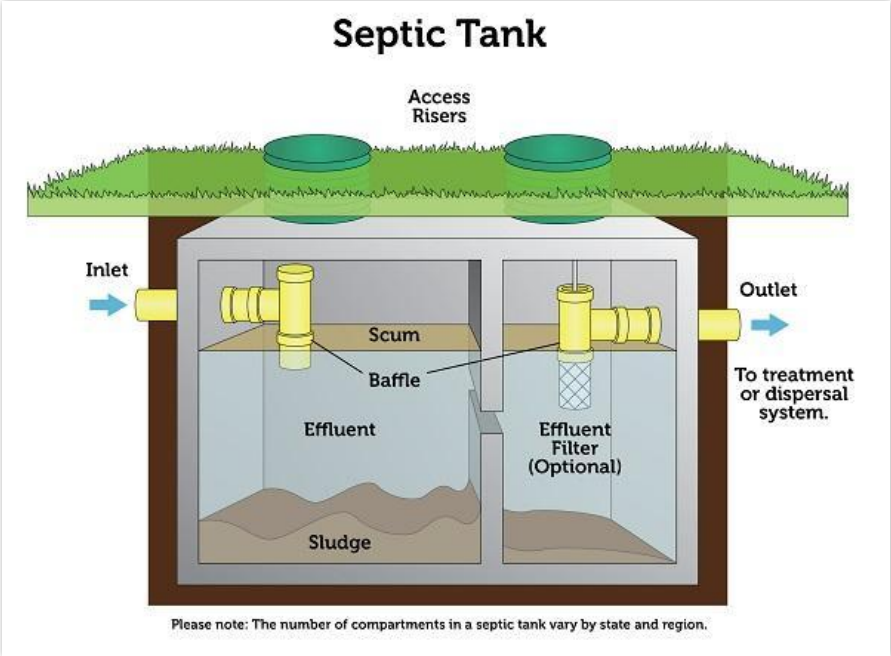
Based on Jayne Smith BCBOHA presentation

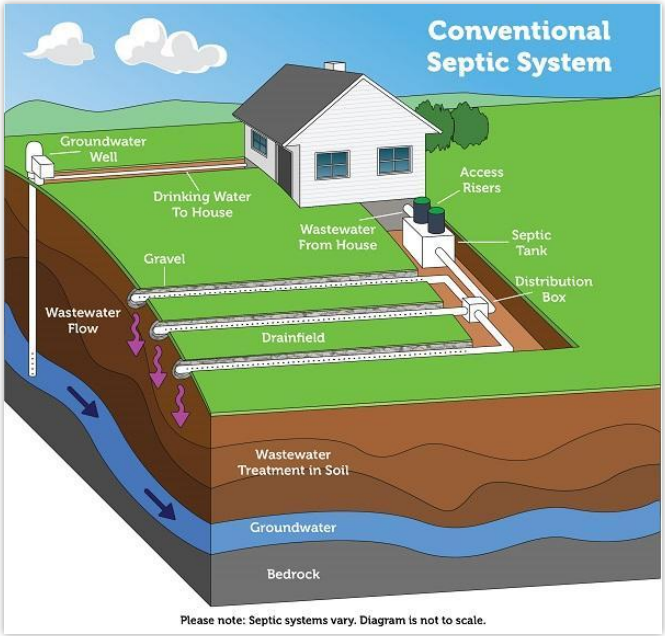
Basics: Septic Tank



Basics: Leaching Field

Figure 1: A mound system for distributing treated wastewater to the soil.

Basics: Leaching Field



What is “Title 5” ?

- 310 CMR 15:00: Regulations for on-site septic systems including
  - Where they are sited
  - How big, how high and how they are constructed
  - How far from other structures like wells, property lines and foundations
  - What can go into them
  - What causes them to meet failure criteria
  - How can they be fixed
  - When they have to be inspected
  - Who does what, how and when and more…

Quick Title 5 Review
310 CMR 15.00

- 15.100: General Provisions
- 15.101: Site Evaluation Criteria
- 15.102: Deep Observation Hole Test
- 15.103: Soil Profile
- 15.104: Percolation Testing
- 15.105: Procedure for Performing a Percolation Test
- 15.106: Landscape Position
- 15.107: Hydrogeologic Properties
- 15.245: Soil Absorption System Siting Requirements
- 15.246: Excavation and Flagging of Soil Absorption System
- 15.247: Aggregate
- 15.248: Reserve Area
- 15.249: Design Criteria for Soil Absorption Systems

Who Does What?

- **DEP** licenses Soil Evaluators and System Inspectors, issues variances and monitors large systems.
- **Board of Health** reviews plans, grants Local Upgrade approvals, smaller variances and issues permits.
- **Title 5 System Inspector** inspects septic systems at time of property transfer or for an evaluation
- **Soil Evaluator** does percolation (perc) and deep hole tests witnessed by the Local Board of Health.
- **Engineer** or Sanitarian designs system.
- **Installer** builds and repairs septic systems
- **Plumbers** work inside the house and on the sewer pipe up to 10 feet from the house.
- **Electrician** wires sewage pumps for dosed systems or raised systems.

What does DEP do?

- DEP has scaled back their participation, putting more on BOH
- The Massachusetts Department of Environmental Protection (DEP) is responsible for Septic Systems over 10,000 gallons per day.
- Camps, motels large restaurants and shared systems are often over 10,000 gallons
- DEP approves some variances.
- Enforce Clean Waters regulations

What do Local Boards of Health do?

- Pass local septic regulations (subject to DEP approval)
- Review Title 5 inspection reports
- Review septic plans
- Issue Disposal System Construction Permits
- Grants LUA or Variances
- License the local septic installers
- Make sure the septic field excavation is inspected
- Inspect the final installation and repairs
- Issue the Certificate of Compliance
- Enforce Title 5 regulations
- Keep records and review pumping reports

What does a "Title 5 inspection" mean?

- The "Title 5 Inspection" is a snapshot in time.
- It represents an educated guess as to the condition of the septic system on that date and time.
- It does not guarantee that the system will function tomorrow or under different loads and conditions.
- It does not mean the system is big enough.

When do we inspect septic systems?

- Whenever the property is transferred, with exceptions.
- When there is a problem with the system.
- When the Board of Health orders an inspection
- When there is a change in use or design flows
- When there is a change in building foundation footprints
- When the property is divided or joined with another property

Most common triggers for an Inspection

- **When the property transfers to someone other than a close relative if it has been:**
  - More than three years since new construction
  - More than three years since the last inspection
  - More than two years since the last inspection and no pumping was done every year
- **When there is a change of use or increase in flow**
- **As requested by the Board of Health**

Exceptions Inspection Requirement

Less than two years since the last Title 5 inspection

New system less than three years old that has been pumped once in the third year.

Less than three years since the last Title 5 inspection **and** the tank has been pumped every year.

Owner has already agreed to upgrade system

Property transferred to a spouse or close relative

On a regular inspection schedule/plan approved by the LBOH and DEP.

Who is responsible for getting the Title 5?

- Current owners of the property are ALWAYS the responsible party.
- Owners are responsible for obtaining a Title 5 report before a property transfer (up to two years before or six months after if the weather doesn't permit a proper inspection.)
- The report does not have to be passing, it only has to be done and **all** of it given to the new owner.
- Who does any repairs is a negotiation between the buyer and seller. LBOH enforce against the current owner only.

What do System Inspectors do?

- System Inspectors are licensed by the DEP
- On request, they can assess a septic system without filing a report but only if it was not declared an official “Title 5” inspection beforehand..
- If an official inspection is done, the report must be filed in 30 days and is subject to Local Board of Health review.

What are Inspectors looking for during inspection?

- Inside the house
  - Water and sewer lines
  - Garbage disposals, water softeners, laundry, leaky pipes
  - Number of bedrooms and condition of bathrooms and kitchen
  - Floor drains and other environmental issues
- Septic tank or cesspool
  - Water levels too high or low
  - Outlet baffle decayed
  - Evidence that the tank overflows
  - Metal tanks
  - Sludge and scum layers in the tank

Inspection of Components

- Distribution box
  - Even distribution
  - Solids carryover
  - Evidence of back up
- Septic Field
  - High ground water evidence
  - Drainage systems
  - Hydraulic failure signs
    - black stone or soils
    - ponding – wet areas around the SAS
    - very green grass

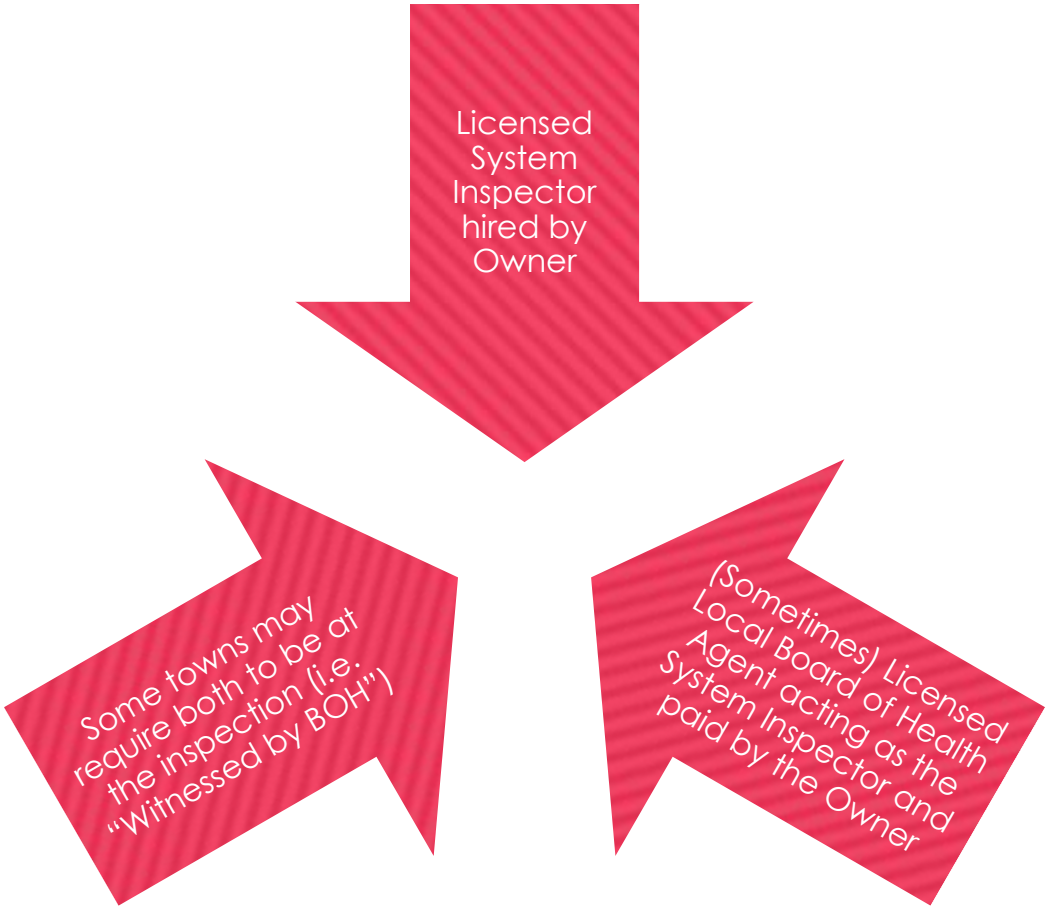
What is a "bedroom"?

- There is the building code definition…
- There is the public drinking water definition…
- There is the real estate definition…
- And there is the Title 5 definition:
  - Privacy
  - Window and ventilation
  - Electricity
  - 70 square feet
  - 7 Ft. ceiling height

  Most dwellings are assumed to have at least 3 bedrooms

  System design is based on how the room could be used by a person who might own the property now or in the future.

Who does Title 5 Inspections?



T5 Results

- Passes
- Conditional Pass
- Need Further Evaluation by the Local Approving Authority
- Fails

Pass

No information found which indicates that any of the failure criteria described in 310 CMR 15.303 or in 310 CMR 15.304 exist.

Gives space to explain criteria that was not evaluated during the time of inspection.

System Conditionally Passes

- One or more system components as described in the "Conditional Pass" section need to be replaced or repaired. The system, upon completion of the replacement or repair, as approved by the Board of Health, will pass.
  - Septic tank is leaking
    - Fix: Install new tank or re-seal old tank if in good condition
  - Pipe is cracked, broken or bowed
    - Fix: Replace pipe with SDR 35 or Schedule 40
  - Distribution box is decayed or leaking
    - Fix: Replace d-box
  - Septic tank outlet baffle is eroded
    - Fix: Install a plastic outlet tee and filter

Further evaluation is required by the board of health

SYSTEM WILL PASS UNLESS BOARD OF HEALTH DETERMINES IN ACCORDANCE WITH 310 CMR 15.303(1)(B) THAT THE SYSTEM IS NOT FUNCTIONING IN A MANNER WHICH WILL PROTECT PUBLIC HEALTH, SAFETY AND THE ENVIRONMENT:

- Cesspool or privy is within 50 feet of a surface water
- Cesspool or privy is within 50 feet of a bordering vegetated wetland

SYSTEM WILL FAIL UNLESS THE BOH DETERMINES THE SYSTEM IS FUNCTIONING IN A MANNER THAT PROTECTS THE PUBLIC HEALTH, SAFETY AND ENVIRONMENT

- Soil absorption system is within 100' of a surface water supply or tributary to a surface water supply.
- The system has a septic tank and SAS within Zone 1 of a public water supply
- The system has a septic tank and SAS within 50' of a private water supply well
- The system has a septic tank and SAS and the SAS is less than 100' but 50' or more from a private water supply well.

USUALLY DEMONSTRATED BY WATER TEST OF AMMONIA, NITRATE IS $\leq$5PPM

Failure Criteria

- Most common causes of failure?
  - Septic bed (Soil Absorption System or SAS) is in groundwater
  - System is backed up or there are signs of regular backup
  - Septic tank is broken, leaking or inlet/outlet are not solid
  - Distribution box (d-box) is decayed or not evenly distributing
  - Leaking faucets or toilets have over-burdened the septic system, causing pre-mature failure.

Less Common Failure Criteria

- Pipes are decayed, clogged, broken or don't have proper pitch
- SAS too close to well (50 feet)
- Metal septic tank or cesspool
- SAS pipe empties to grade – daylight
- Pumping four times per year
- System is causing a nuisance or is a threat to the Public Health
- Zone I of a Public water supply
- Pump chamber or tank is taking on ground water
- Paint or clay has clogged the leach field

Things we don't like to see:

- Inaccessible Septic tanks (under a deck)
- Crumbling, old orangeburg pipe
- Vastly undersized SAS or tank
- Cesspools
- Crumbling outlet baffle
- No distribution box (manifold for distribution)
- Heavy, wet soils
- System on a neighbor's property
- System not properly vented
- Garbage grinders
- Water conditioners emptying into the System
- Floor drains that don't empty to grade

How soon must the repairs be done?

Unless the system failure endangers the Public Health, the owner has *two years* to complete the repairs

If a sewer hook up is pending, the LBOH can allow up to five years.

Don't forget the tax credits for a system repair: 40% of the costs up to $1500/year available to the homeowner for a primary residence. LBOH may have to certify that the system is in failure.

Perc tests: the A, B, C of Soils

- **A layer** is the "topsoil" and is usually dark brown
- **B layer** is the subsoil and is usually orange
- **C layer** is the undisturbed, compact soils where the ground water is found in spring.

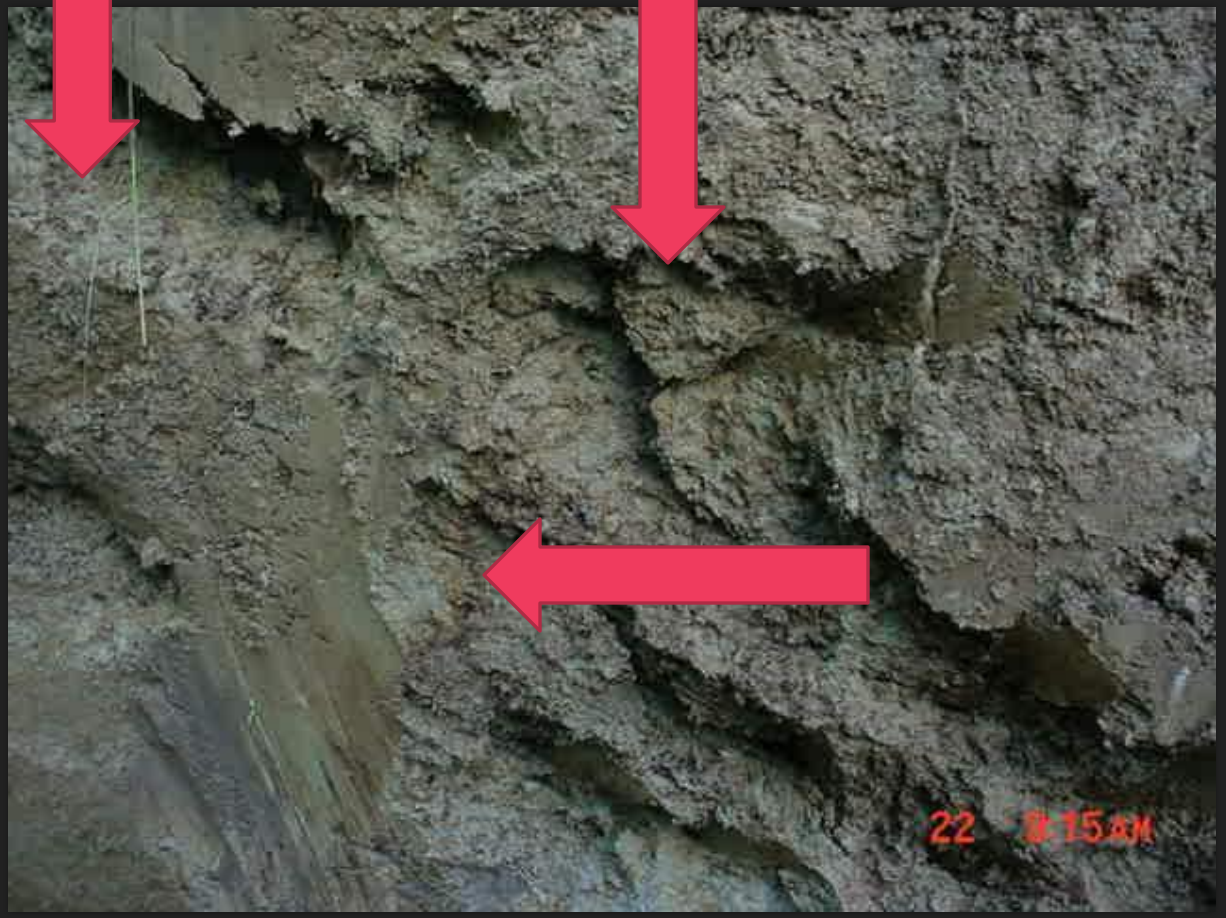
Deep hole tells how high system is

Deep holes determine the seasonal ground water table and therefore how far out of the ground the field will be to get separation.

- **Repairs** require 2 deep holes (and one perc test)
- **New construction** requires 4 deep holes: 2 in primary and 2 in reserve areas (with a perc test in each)
- Soil Morphology – Soil Classifications/ texture determine the Perc Rates.
- Mottles – Redoximorphic features show the Estimated Seasonal High Groundwater (ESHG)


B
A
C
22 9:16AM

Colors due to water movement



Distance from ESHGW

- 4’ Distance from ESHGW to bottom of leach field for full compliance (New construction).
- 1’ Reduction for upgrades common (reduce from 4’ to 3’)

*Additional foot required when perc rate is <2 min/inch

Perc hole tells how big system is

Perc test rate and Soil Texture tell how large the field will be.

Perc hole should be near the deep holes

Conducted in the most restrictive layer

"Alternate to Perc test" available for repairs is a soil sample when soils too wet to perc

Typical Perc Hole

Perc hole tips

- Remove Topsoil in an area at least 4 feet square.
- Dig hole 12 inch wide hole, 18 inches deep with post hole digger/shovel.
- Clean out hole.
- Scratch sides and bottom and clean out again.
- Cover bottom of hole with gravel and mark starting depth or a use a 4 inch perforated pipe with bottom cap marked in twelve, one inch increments starting several inches from the bottom.
- Gently pour in clean water that isn't too cold (no ice please) without disturbing the hole. (Should have a minimum of 24 gallons on hand.)
- Protect the hole from dirt, rocks, water.
- Soak hole for 15 minutes, then fill and start timing the water drop.
- Note the time at the 12 inch, the 9 inch and the 6 inch marks.
- The "Perc Rate" is the time for the last 3 inches of water to drop from the 9 inch to the 6 inch mark, divided by 3.
- If too wet to perc, try digging a trench on the uphill side to keep water from flowing into the perc hole.

Plan Review

- Checklists available to determine compliance
- BOH must determine whether to grant Local Upgrade Approvals or Variances

Local Upgrade Approvals

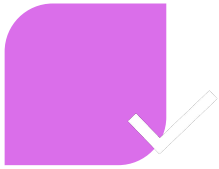
REDUCTION IN SETBACKS

REDUCTION IN SAS (LEACH FIELD) SIZE OF UP TO 25%

REDUCTION IN THE SEPARATION BETWEEN THE SAS AND HIGH GROUNDWATER (IF WITNESS IS A SOIL EVALUATOR)

REDUCTION OF 12" SEPARATION BETWEEN INLET/OUTLET TEES AND HIGH GROUNDWATER

USE OF ONLY ONE DEEP HOLE IN PROPOSED DISPOSAL AREA



USE OF SIEVE ANALYSIS TO SUBSTITUTE FOR A PERC TEST

Variances

- Required beyond LUA Scope
- Multiple requests
- Must show that they are providing protection to groundwater and environment

Installation Best Practices

Protect SAS area from compaction and disturbance.

No Driveways or other structures on SAS or Reserve Area.

Properly install and maintain any required silt fences.

Dry is always best.

Avoid frozen and clumpy ground

Remove the trees and topsoil, scratch the bottom and sides and call for an excavation inspection.

May be installed under driveways or parking lots if no other choice, but requires special pipe and venting.

Questions?

- Official forms, information and regulations at https://www.mass.gov/lists/title-5-septic-system-forms

- Questions:

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