

Title 5 Plan Review

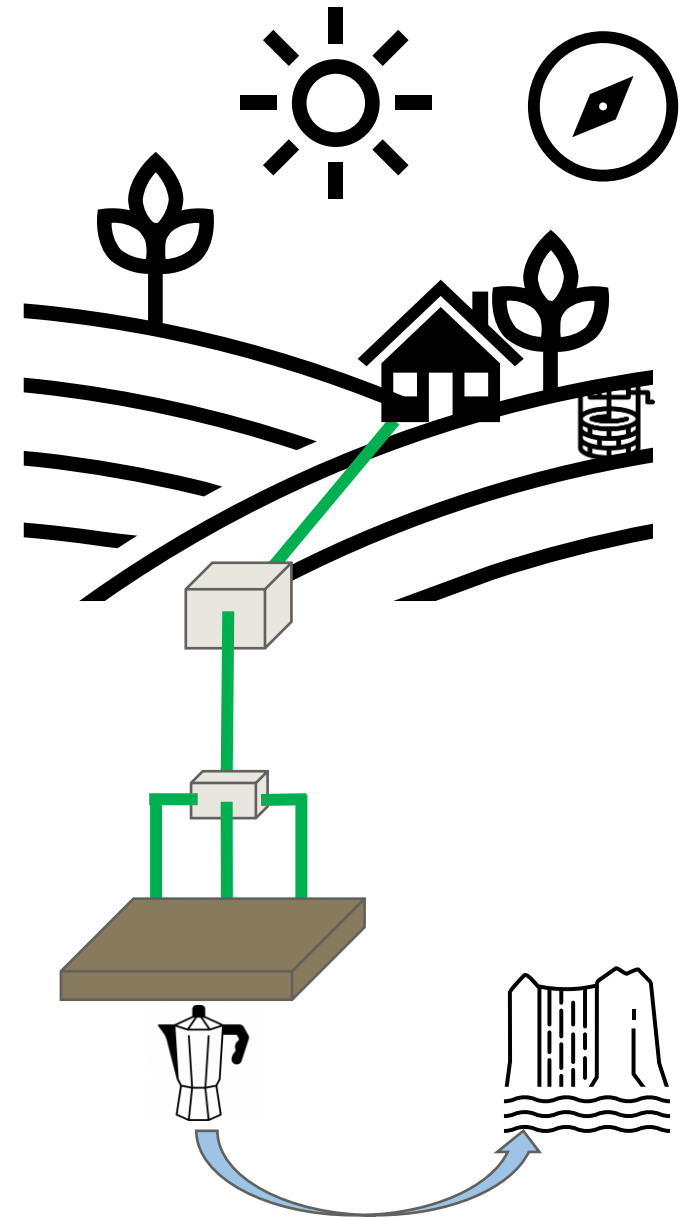
MHOA-MassDEP Seminar

February 25, 2025 – Holyoke

February 26, 2025 – Virtual Day 1

March 11, 2025 – Boylston

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MassDEP



***Disclaimers/Disclosures:**

This presentation relates solely to 310 CMR 15.000, Title 5 of the State Environmental Code.

Any proprietary technology mentioned in this presentation is used purely as an example and its inclusion does not constitute a comment on or an endorsement of the technology by the presenter or by MassDEP.

Figures, images, or diagrams used are not purely reflective of MassDEP, in essence, are generally depicted for informational purposes, a holistic view, only.

OVERVIEW

- **SEPTIC SYSTEM BASICS**

- **CONVENTIONAL SYSTEMS VS. NONCONVENTIONAL**

- **TITLE 5 PLAN REVIEW CHECKLISTS**

- **LOCAL UPGRADE APPROVAL VS. VARIANCE**

- **MASSDEP CONTACTS/ Q&A**

Participants will be able to:

1. Identify the septic system plan basics
2. Know the difference between a conventional and nonconventional system
3. Know where to access resources such as the model Title 5 plan review checklist, and I/A technology information on the mass.gov site
4. Know the difference between a Local Upgrade Approval (LUA) and a variance

SEPTIC BASICS

Title 5 is going 30 years strong (since 1995)

What is a septic system?

According to 310 CMR 15.002, Definitions section:

An on-site System or Disposal System or On-site Subsurface Sewage Disposal System or System - A system or series of systems for the treatment and disposal of sanitary sewage below the ground surface on a facility.

(a) The **standard components** of a system are: a **building sewer**; a **septic tank** to retain solids and scum; a **distribution system**; a **soil absorption system** containing effluent distribution lines to distribute and treat septic tank effluent prior to discharge to appropriate subsurface soils; and a **reserve area**.

(b) These terms also include **tight tanks**, **shared systems** and **alternative systems**. Unless the text of 310 CMR 15.000 indicates otherwise, these terms also include nonconforming systems.

Definitions

According to 310 CMR 15.002, Definitions section:

Facility - Any real property (including any abutting real property) and any buildings thereon, which is served, is proposed to be served, or could in the future be served, by a system or systems, where:

- (a) legal title is held or controlled by the same owner or owners; or
- (b) the local Approving Authority or the Department otherwise determines such real property is in single ownership or control pursuant to 310 CMR 15.011 (aggregation).

constructed of corrosion resistant material and equipped with water tight joints; cast-iron, schedule 40 PVC pipe or the equivalent.

**310 CMR 15.222:
Building Sewers**

A slope of 0.02 (¼ inch per foot) is preferable
laid on a compacted firm base.

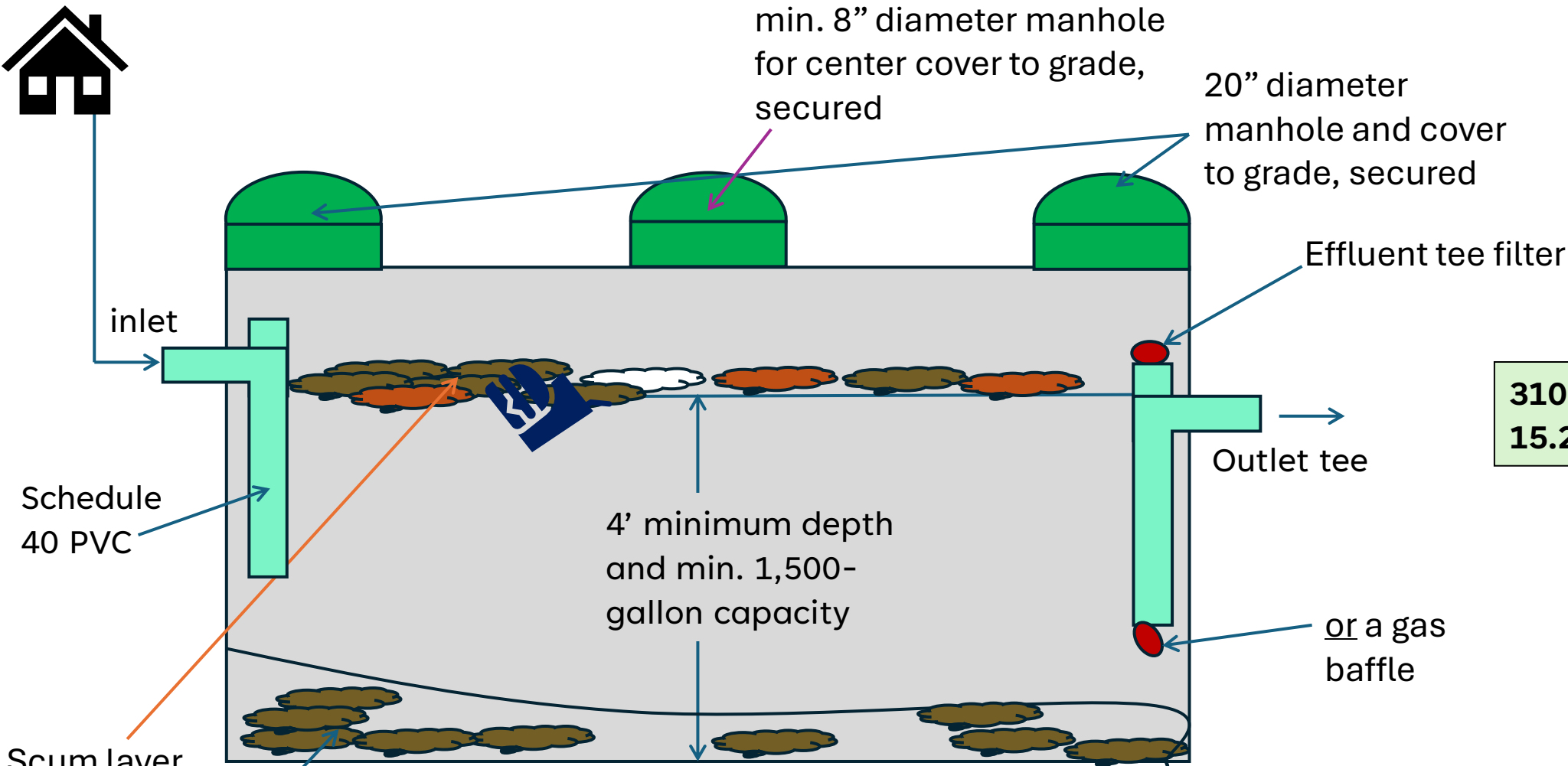
**4" minimum in
diameter**

Building Sewer

*not drawn to scale

...at all changes in direction or a change in grade of the sewers,
and at intervals no greater than 100 feet.

...change of direction in each manhole shall not exceed 90°.



Schedule 40 PVC

Scum layer

Solids/sludge

min. 8" diameter manhole for center cover to grade, secured

20" diameter manhole and cover to grade, secured

Effluent tee filter

Outlet tee

or a gas baffle

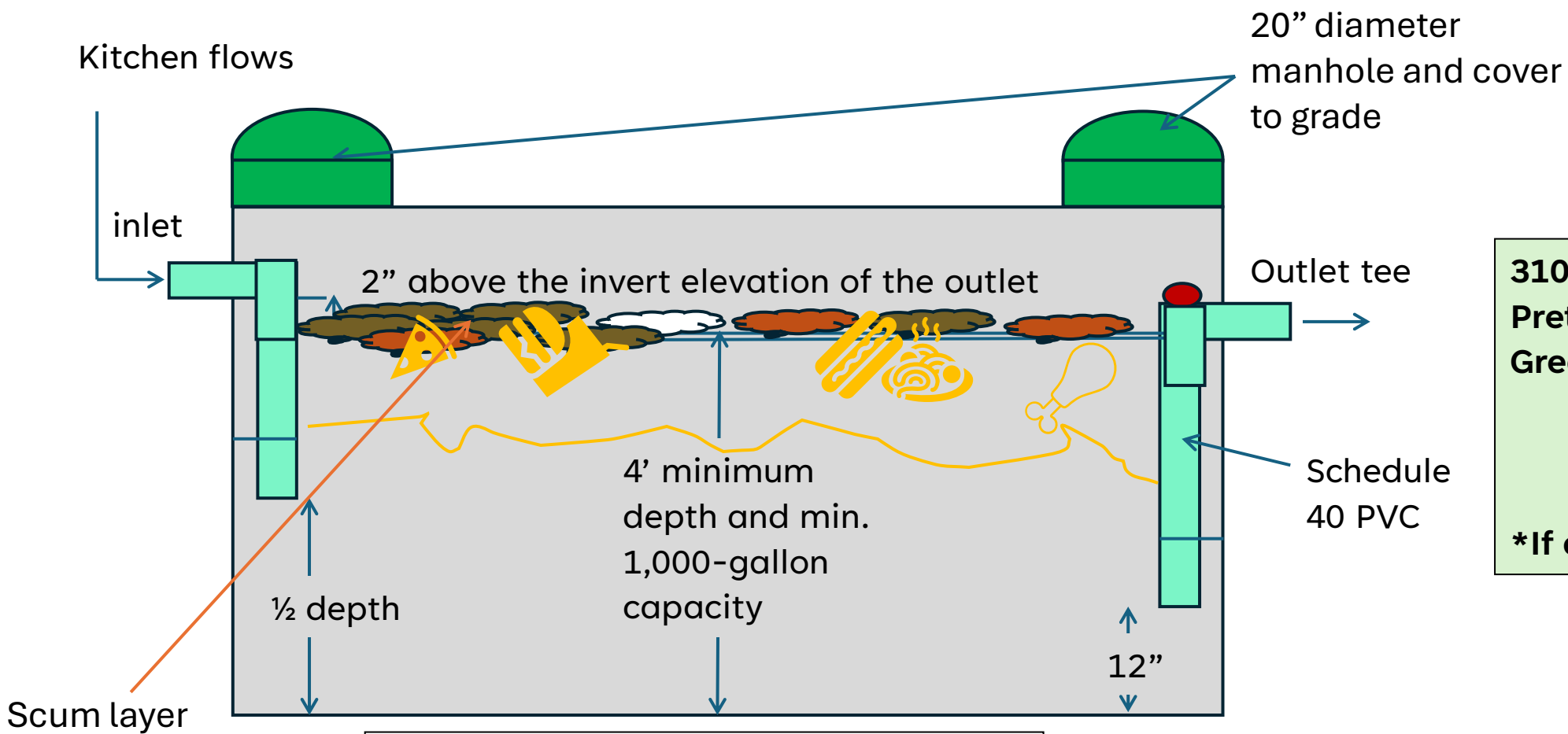
4' minimum depth and min. 1,500-gallon capacity

310 CMR 15.223-15.228

Septic Tank

*not drawn to scale
new construction
precast concrete

"When a **domestic garbage grinder** is proposed or installed, the minimum liquid capacity of the septic tank shall be **200% of the design flow with a minimum tank size of 1,500 gallons and a two compartment tank or two tanks in series shall be required** which meet the design criteria specified in 310CMR15.223(1)(b)."



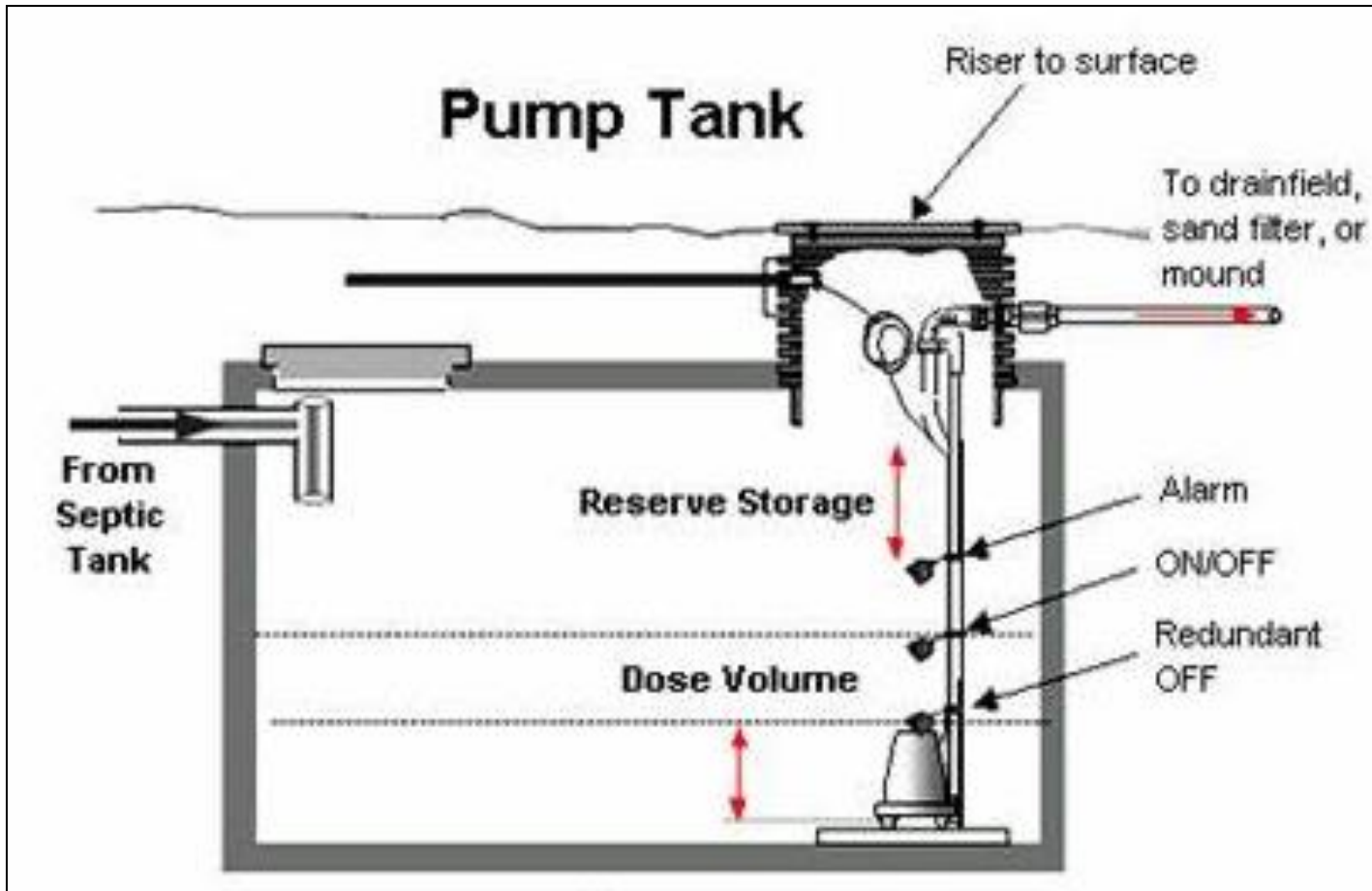
**310 CMR 15.230:
Pretreatment Units -
Grease Traps**

***If applicable**

Grease Trap

*not drawn to scale

F.O.G.



**310 CMR 15.231:
Dosing Chambers and
Pumps**

**310 CMR 15.229:
Pumping to Septic
Tanks**

***If applicable**

Source: <http://malabanapro.com/how-the-septic-systemworks/>



D-box

*not drawn to scale

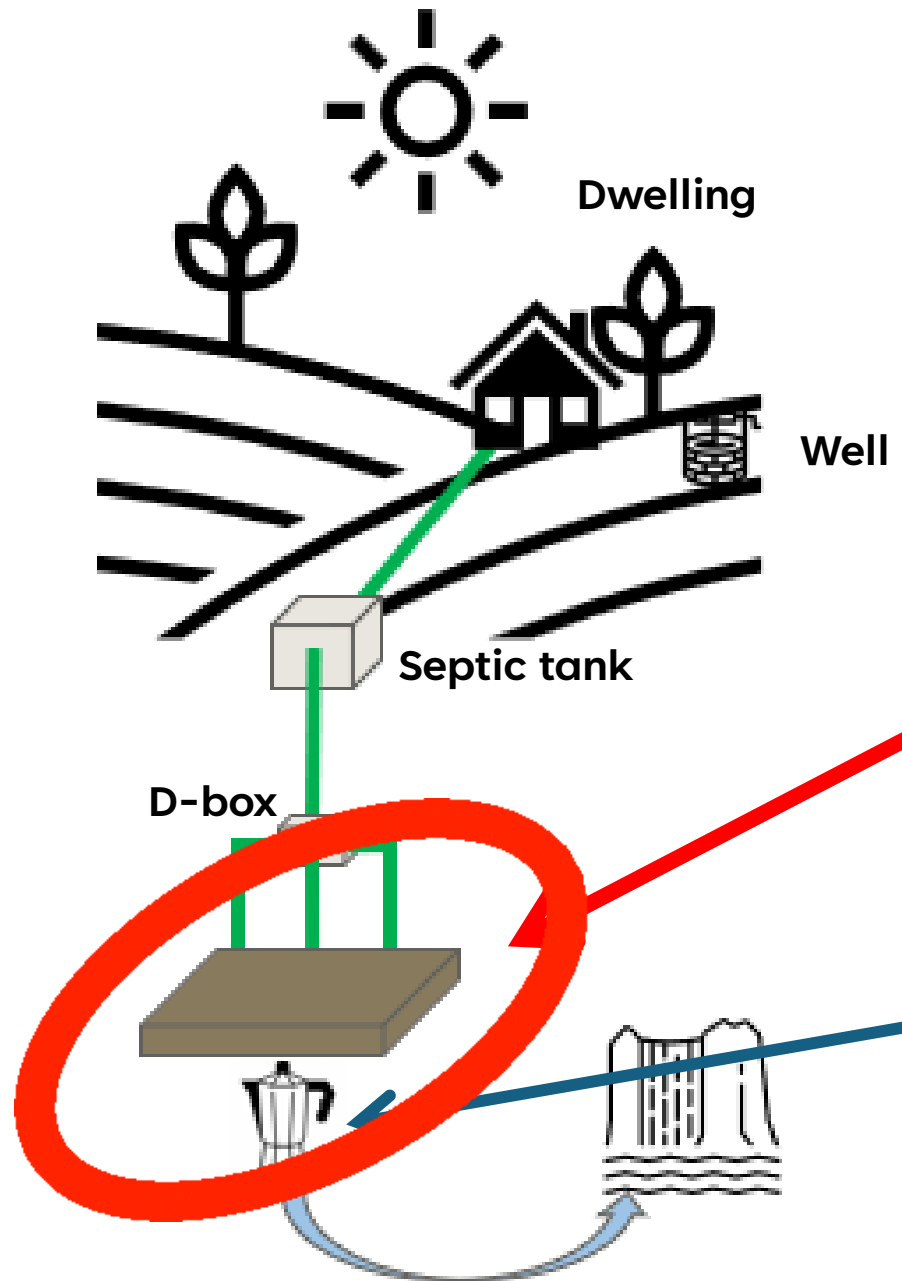
Outlet distribution lines shall be level for a minimum of the first two feet of their length. There shall be at least one outlet for each effluent distribution line.

310 CMR 15.232: Distribution Boxes

The invert elevation of all outlets shall be equal to each other and located at least two inches below the invert elevation of the inlet.

The minimum inside dimension of the distribution box, regardless of material, shall be 12 inches.

The minimum wall thickness for reinforced concrete shall be two inches.



310 CMR 15.240:
Soil Absorption Systems
(SAS)

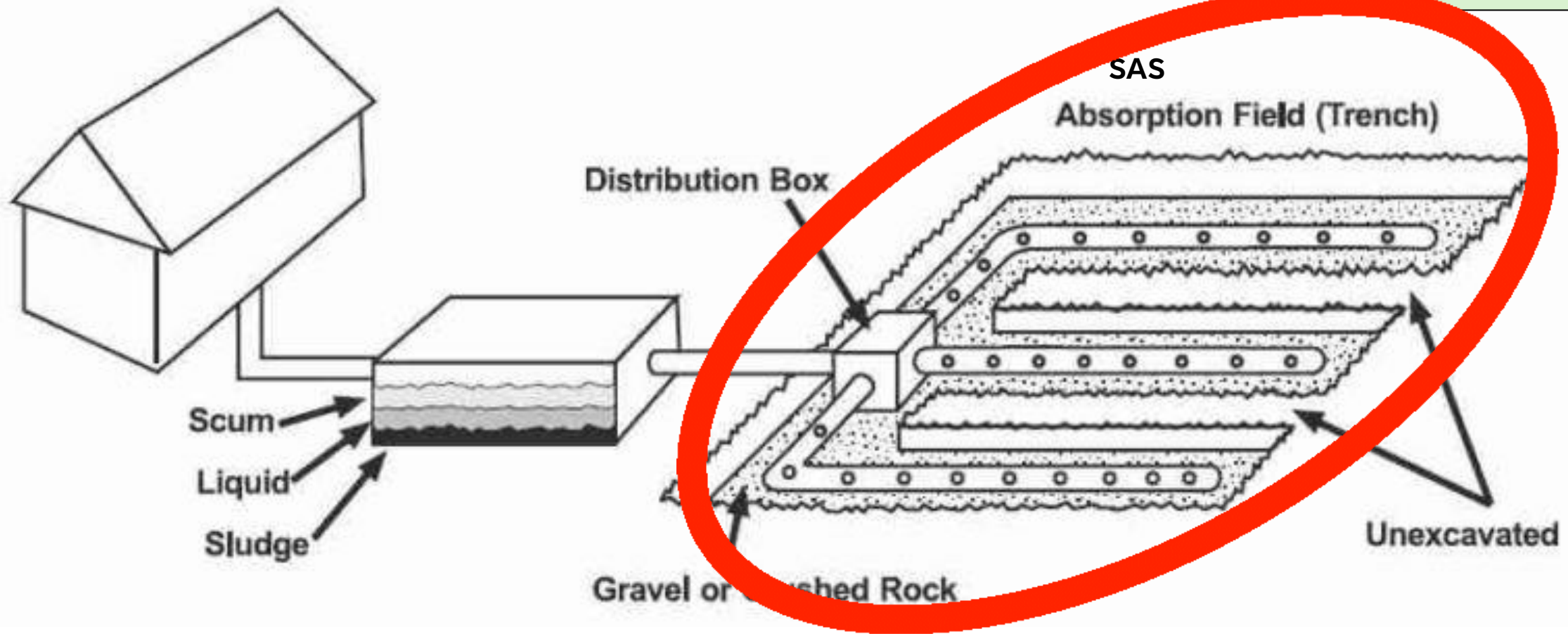
thru

15.249: Design Criteria for
Soil Absorption Systems

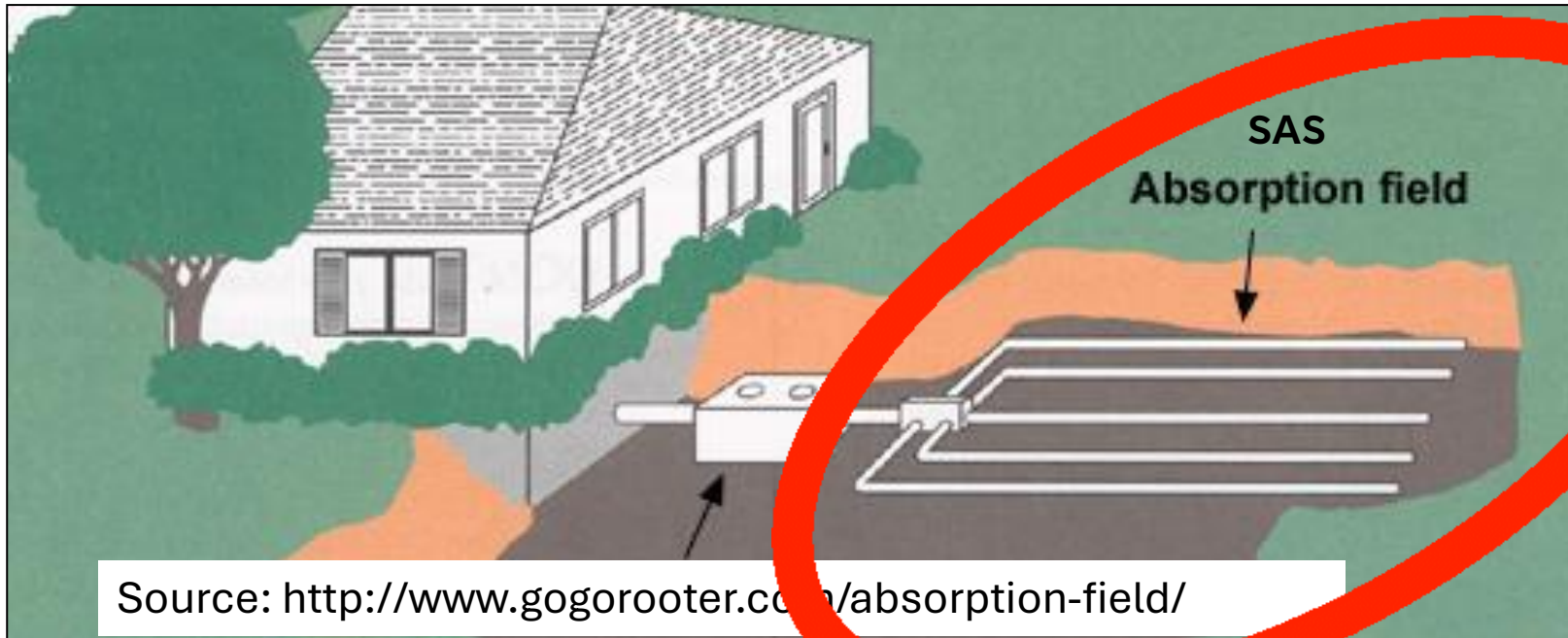
Represents the “percolation”
of the effluent flows which are
filtered via the soil back into
the receiving groundwater to
continue with the water cycle.

Source: <https://rci-plus-topsail.com/septic-system-care/>

310 CMR 15.251:
Trenches

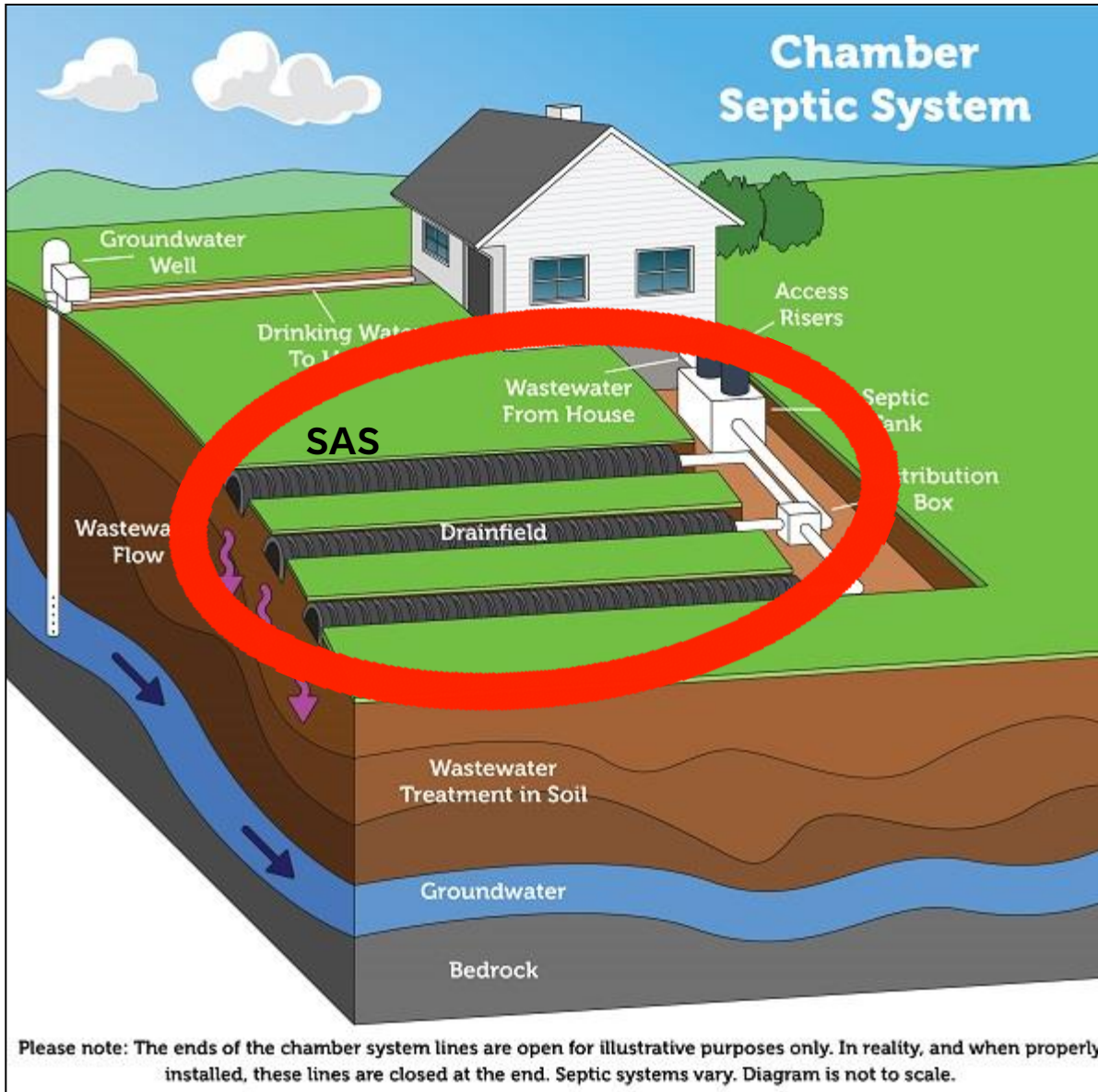


“Minimum diameter of each gravity distribution line shall be three inches.”



**310 CMR 15.252:
Beds or Fields**

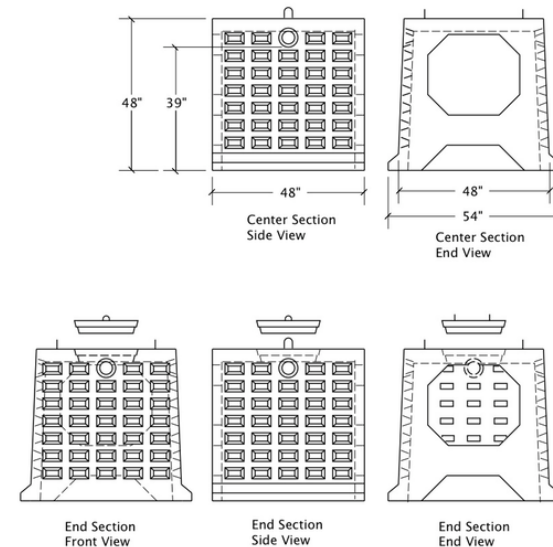
“The use of leaching beds or fields is restricted to systems with a calculated design flow of less than 5,000 gpd per leaching bed or field.”



Source: Types of Septic Systems | US EPA

310 CMR 15.253: Pits, Galleries, or Chambers

“Each pit, gallery or chamber shall have a minimum of one inspection access cover per unit.”

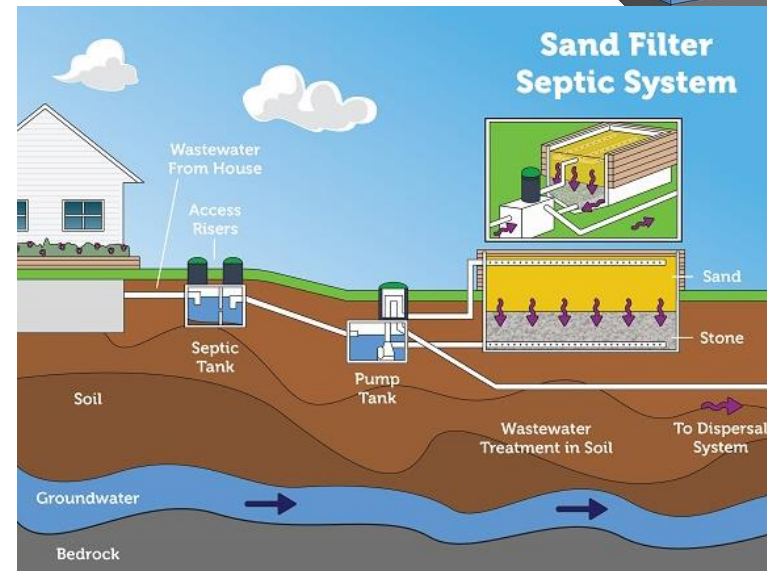
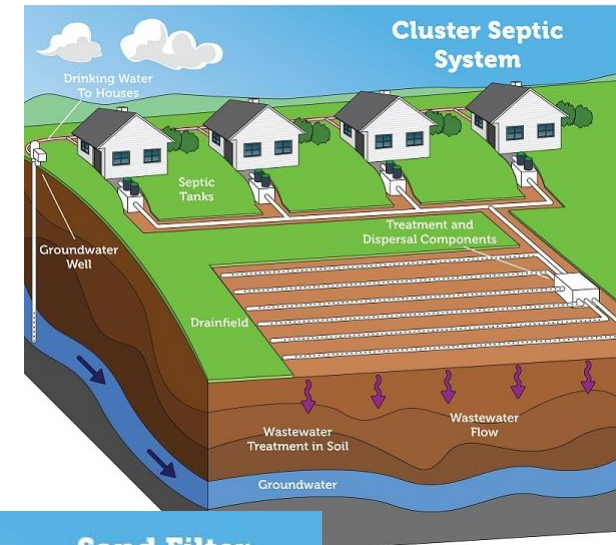


Galleries

Source: <http://richardseptic.com/products/leaching-chambers/4x4x4-galleries-2.html>

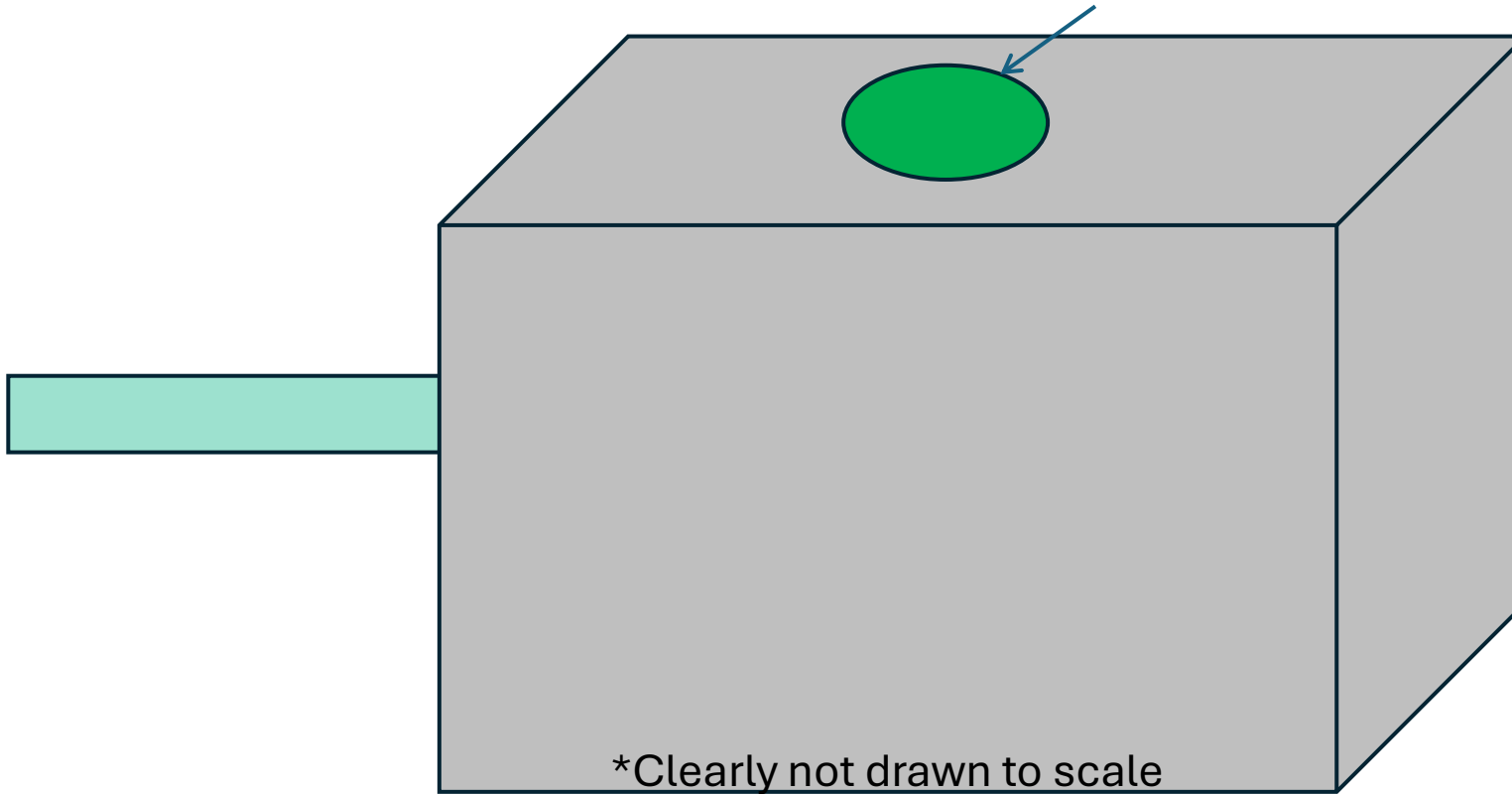
NONCONVENTIONAL SYSTEMS

- Tight tank
- Shared system (cluster or not)
- Nitrogen aggregation approval
- Innovative/Alternative (I/A) technology
- Secondary treatment unit (STU)
- Bottomless sand filter
- Patented sand filter
- Drip dispersal system
- Plastic septic tanks
- Many others!!



SAS

24" diameter
manhole for access



**310 CMR 15.260:
Tight Tanks**

TIGHT TANK

“The tight tank shall be sized at a minimum of 500% of the system sewage design flow established by 310 CMR 15.203, but in no case less than 2,000 gallons.”

I/A Technology Plan Considerations

Type of Approval

- Remedial
- Piloting
- Provisional
- General

Model of tech

- Be specific!

There is a big difference between a General Use Approval for the Presby “Advanced Enviro-Septic® Wastewater Treatment System (Alternative SAS with 12" C-33 Sand Treatment)” and the Presby “Advanced Enviro-Septic® Wastewater Treatment System”. One (with the 12” of C-33 sand) has a max size of 880 gpd while the other one has a max size up to 10,000 gpd.

All Technologies Approved for Use

Approved for
General Use →

Approved for
Provisional Use →

Approved for
Piloting →

Approved for
Remedial Use →

I/A Technology Conditions

Every I/A technology is different, and it is critical to review the **specific I/A tech approval letter**. Certain conditions must be met for the proposed system.


Also review **the Standard Conditions Letter** (General or Remedial; Alternate SAS or STU) as applicable.

I/A Technology Conditions (cont'd)

Any requirements for:


- Deed notices, certifications (installer, designer)
- O&M contract with service provider
- Sampling and reporting requirements
- Notices (failure events), disclosures
- System owner acknowledgments

Where does one find a list of approved innovative/alternative technologies?

 **Mass.gov**

Search Mass.gov [SEARCH](#)

[Home](#) > [MassDEP](#) > [Septic systems & Title 5](#)

 OFFERED BY [Massachusetts Department of Environmental Protection](#)

Approved Title 5 innovative/alternative technologies

MassDEP must approve alternative septic systems for use in Massachusetts.

TABLE OF CONTENTS

- Overview
- Best Available Nitrogen Reducing Technologies
- All Technologies Approved for Use
- Approved for General Use
- Approved for Provisional Use
- Approved for Piloting Use
- Approved for Remedial Use
- Effluent Tee Filters
- Expired or Inactive Technology Permits
- Contact



<https://www.mass.gov/info-details/approved-title-5-innovativealternative-technologies>

How about MassDEP guidance or policy?



Search Mass.gov

SEARCH

[Home](#) > [MassDEP](#) > [Septic systems & Title 5](#)

OFFERED BY [Massachusetts Department of Environmental Protection](#)

Title 5/Septic Systems Policies & Guidance

These documents govern how MassDEP administers the Title 5 program.

Title 5 Guidance

<https://www.mass.gov/lists/title-5septic-systems-policies-guidance>



[Laboratories: Environmental Compliance](#)

(English, PDF 229.66 KB)

Covers industrial wastewater, hazardous waste management and other requirements.



[Alternative to Percolation Testing: Guidance for System Upgrades](#)

(English, PDF 37.05 KB)

This guidance applies to applications for Local Upgrade Approval for system upgrades where percolation testing in accordance with Title 5 cannot be performed.



[Alternative Sewage Disposal System Deed](#)

How about MassDEP guidance or policy?



[Cost Consideration for Maximum Feasible Compliance - 310 CMR 15.404 and 310 CMR 15.405](#) (English, PDF 21.23 KB)

Guidance for Boards of Health in considering local upgrade approvals under Title 5.

<https://www.mass.gov/lists/title-5septic-systems-policies-guidance>



[Nitrogen Loading and Aggregation of Flows - 310 CMR 15.216 Guidelines](#)

(English, PDF 155.96 KB)

How to calculate nitrogen loading limitations under the provisions of Title 5.



[Pressure Distribution Guidance](#) (English, PDF 272.19 KB)

Guidelines for the design and construction of on-site wastewater pressure distribution systems consistent with the requirements of Title 5.



[Recirculating Sand Filters \(RSF\) Design Guidance](#) (English, PDF 103.73 KB)

Guidance for the design of alternative septic systems using recirculating-sand-filter technology.



TITLE 5 PLAN REVIEW

Design plan components

310 CMR 15.220: Preparation of Plans and Specifications

- Professional Engineer or Registered Sanitarian (design flow \leq 2,000 gpd) stamp, dated and signature
- Plan drawn to scale
- Property lines, location of all dwellings and buildings and impervious areas, existing and proposed, easements/ROWs/setbacks (15.211)
- Soil evaluation (location and log of deep hole observations, perc tests), groundwater elevation
 - Soil Evaluator name and approval date
 - BOH witness name
- Reserve area
- System calculations (including design flows based on 15.203)
- North arrow and locus plan
- Any Variances/LUA
- Location of water supply, public and/or private, surface waters
- Utilities, elevation (benchmark)
- Proposed system design (plan) and specifications and profile (detail of components)
- Materials of construction and specs of system (for example the building sewer)

*not a complete list

General Construction Requirements for All System Components

Watertight and set level?

Marked with magnetic tape or comparable means?

Piping minimum of SDR 35 PVC? Schedule 40 PVC or equivalent?

Top of all system components installed no more than 36" below finish grade?

Pipes connected with full?

Placement and access of tank?

A LOT OF REQUIREMENTS AND THINGS TO CONSIDER DURING PLAN REVIEW!

flowing

Making a List, checking it twice, going to find out...If Title 5 is met!

- Who benefits from a checklist?
- Why use a checklist?
- What to include in a checklist?
- Where to use a checklist?
- How to use a checklist?



MASSDEP MODEL TITLE 5 PLAN REVIEW CHECKLIST



Mass.gov

SEARCH

[Home](#) > [MassDEP](#) > [Permitting & reporting](#) > [Wastewater permitting](#)

OFFERED BY [Massachusetts Department of Environmental Protection](#)

Title 5 septic system forms

Forms for inspection of septic systems, enforcement, innovative technologies, and more.

<https://www.mass.gov/lists/title-5-septic-system-forms>

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- ▼ [Title 5 Enforcement Forms](#)
- ▼ [Title 5 Innovative/Alternative Technologies Forms](#)
- ▼ [Title 5 Inspections & Pumping Forms](#)
- ▼ [Title 5 Construction & Repairs Forms](#)
- ▼ [Title 5 Shared Systems Forms](#)
- ▼ [Title 5 Variances & Local Upgrade Approval Forms](#)

MASSDEP MODEL TITLE 5 PLAN REVIEW CHECKLIST

<https://www.mass.gov/lists/title-5-septic-system-forms>



Customization!

AutoSave Off model-title-5-plan-review-checklis... Saved to this PC

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat

Paste Font Alignment Number Styles

A15 Soil logs and percolation testing results submitted to the Approving Auth

	A	B	C	D
1	APPLICANT:			
2	FACILITY ADDRESS:			
3	SYSTEM DESIGN FLOW: gpd			
4	FACILITY AGGREGATE DESIGN FLOW: gpd			
5	<input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> UPGRADE/REPAIR			
6	REVIEWED BY:			
7	DATE:			
8				
9		N/A	OK	NO
10	SOIL TESTING			
11	Performed by a currently approved Soil Evaluator [310 CMR 15.018(1)]			
12	Witnessed by the Approving Authority [310 CMR 15.101(1)]			
13	Soil testing complete and prepared on MassDEP-approved form [310 CMR 15.103(1), (2) and (4)]			
14	Percolation testing witnessed by the Approving Authority [310 CMR 15.104(1)]			
15	Soil logs and percolation testing results submitted to the Approving Authority within 60 days of testing including the certification statement [310 CMR 15.018(2)]			
16	Four feet of naturally occurring pervious material beneath the proposed SAS.			

Sheet1 Sheet2 Sheet3 +

LUA v. VARIANCE

15.405: CONTENTS OF LOCAL UPGRADE APPROVAL

- Local Upgrade Approval - An approval granted by the Approving Authority allowing the owner or operator of an existing system, including a nonconforming system, to perform an upgrade of that system to the maximum feasible extent, all in accordance with the provisions of 310 CMR 15.401 through 15.405.
 - For upgrades only
 - No increase in flow
- Reductions
 - Setbacks
 - 25% of subsurface disposal design area requirement
 - Four-foot separation between the bottom of the SAS and the high groundwater elevation, if all conditions are met?
- Has the applicant notified all abutters whose property or well is affected? Public Hearing?



[Application for Local Upgrade Approval \(Title 5\)](#) (English, PDF 28.54 KB)



[Local Upgrade Approval Form \(Title 5\)](#) (English, PDF 19 KB)

15.410: Variances - Standard of Review

- Local Approving Authorities and the Department may vary the application of any provisions of 310 CMR 15.000 with respect to any particular case except those listed in 310 CMR 15.415.
- With regard to variances for new construction, enforcement of the provision from which a variance is sought must be shown to deprive the applicant of substantially all beneficial use of the subject property in order to be manifestly unjust.
- Any variance allowed by the Local Approving Authority shall be in writing. Any denial of a variance shall also be in writing and shall contain a brief statement of the reasons for the denial.

MassDEP Regional Contacts (Title 5)

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Title 5 Helpline
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THANK YOU!

QUESTIONS?

Central Region

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