



Board of Health

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MEMORANDUM

TO: Sherborn Zoning Board of Appeals, ZBA
FROM: Daryl Beardsley, Julie Dreyfus, Mark Oram -- Sherborn Board of Health (BoH)
DATE: November 2, 2024
RE: 34 Brush Hill Homes 40B – Supplemental Percolation Testing

Introduction

At its meeting of October 16, 2024, the Sherborn BoH voted to require up to 3 additional percolation tests in the vicinity of Trenches 1 and 2 of the 9/23/24 Subsurface Sewage Disposal System Plan for the Brush Hill Homes project at 34 Brush Hill Road. The purpose of this memorandum is to describe the impetus for the additional testing and to provide regulatory sections giving Boards of Health the authority to do so.

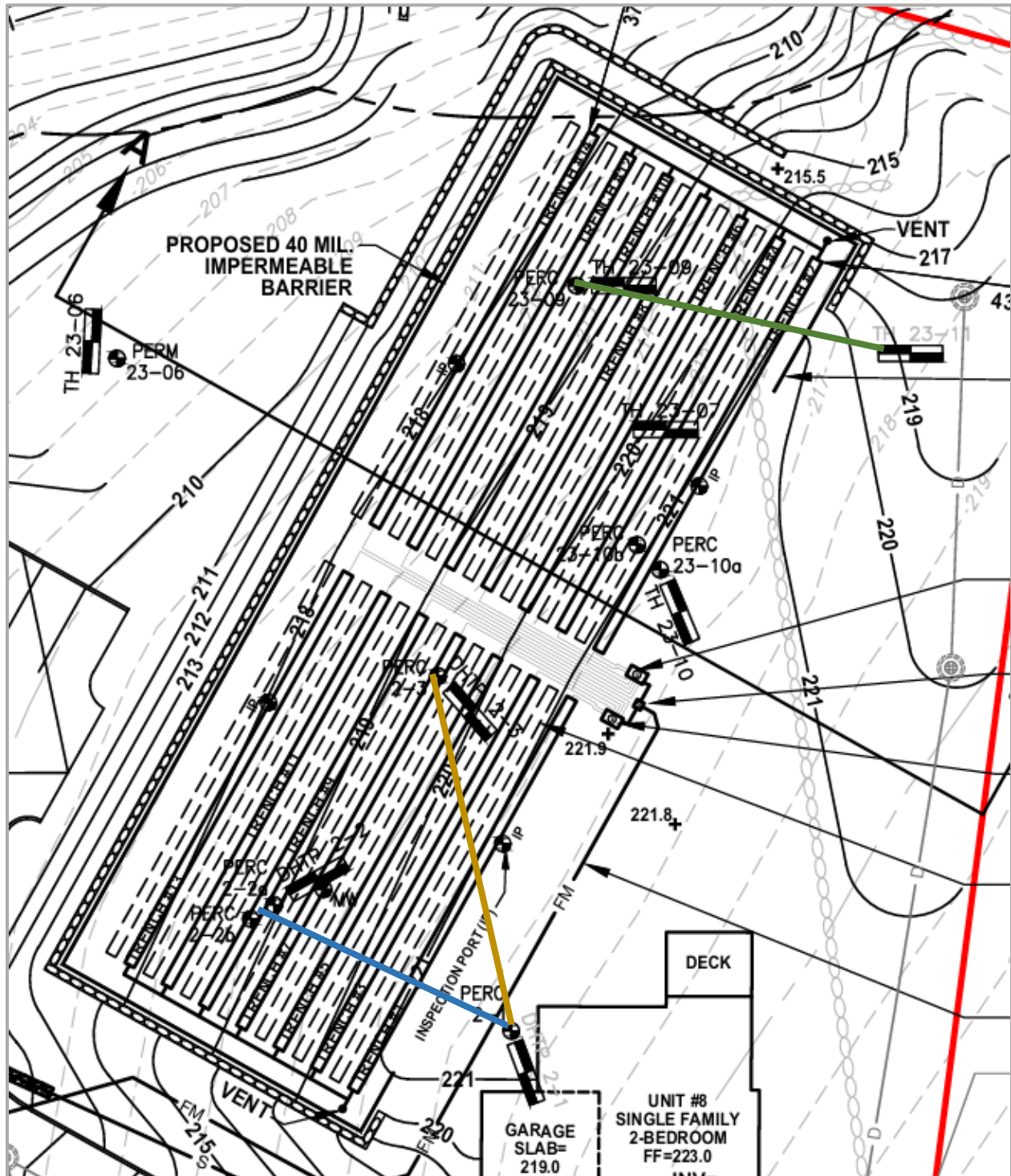
Technical Overview

The primary reason the BoH is requiring additional testing is the uncertainty about the soil conditions in a significant portion of the proposed large soil absorption system for the property. In the plan excerpt shown on the following page and somewhere along each color-coded transect superimposed on the plan, a transition from a faster to a slower percolation rate is expected.

Transects [a]			
Inside the Proposed SAS		Outside the Proposed SAS	
Location ID	Percolation Rate [b]	Location ID	Percolation Rate [b]
23-09	20 MPI	23-11	47 MPI
2-3	39 MPI	2-1	67 MPI
2-2a / 2-2b	6 MPI / 3 MPI	2-1	67 MPI
<p>[a] Transects have been superimposed on the plan excerpt for issue illustration purposes. The percolation tests do not need to be exactly on these transect lines but do need to satisfy the objective of the requirement for additional testing and be in close proximity to Trench 1 or Trench 2.</p> <p>[b] MPI = minutes per inch, i.e., the number of minutes it takes for 1 inch of a column of water to infiltrate the soil beneath it. In accordance with 310 CMR 15.245(1) “Systems serving new construction shall not be sited in areas with percolation rates slower than 60 minutes per inch.” To be slower means having a percolation rate that is above (greater than) 60 MPI.</p>			

Percolation rate accuracy is important because it is used to determine appropriate septic system sizing. A reason that 310 CMR 15 (a.k.a. Title 5) subsurface investigation requirements include soil type *and* percolation rate determinations is that soil types are known to exhibit a range of percolation rates depending on localized conditions (e.g., degree of soil compaction and other in situ soil characteristics). In brief, slower percolation rates require a larger system size. Thus, per 15.104(4), the BoH (i.e., Approving Authority) seeks to resolve the uncertainty “where soil conditions vary”. Soil types may be similar across this site but percolation rates are not.

Excerpt from the 9/23/24 Subsurface Sewage Disposal System Plan for Brush Hill Homes (at 34 Brush Hill Road), amended to illustrate concerns regarding percolation rate variability and transition identification.



Relevant Regulatory Excerpts

The following sections of Title 5 (from 310 CMR 15.104: Percolation Testing) are relevant to the issue of additional percolation testing. Selected text has been italicized to highlight key phrases.

(2) A percolation test shall provide data necessary to assess the suitability of the soil to transmit water from the soil absorption system and to a depth of four feet below this elevation. Where the soil varies with depth as indicated by the results of the deep observation hole testing performed pursuant to 310 CMR 15.102, percolation tests shall be conducted in the soil which is identified to be the most restrictive by the Soil Evaluator *with the concurrence of the Approving Authority*.

(4) *At least one* percolation test shall be performed at every proposed disposal area, one in the primary area in which the soil absorption system is to be located and one in the proposed reserve area. *Additional tests shall be required where soil conditions vary* or as determined by the Approving Authority or where system design exceeds 2,000 gpd. In such instances, a minimum of three percolation tests, spaced uniformly over the proposed soil absorption area, shall be performed in addition to the test in the proposed reserve area.

(5) Where 310 CMR 15.104(4) or the Approving Authority requires multiple percolation tests, the *results of the test providing the slowest rate shall be used for system design*. Averaging of percolation test rates across the site is prohibited.

Note that “soil conditions” include not only soil composition but also percolation rate and other conditions/characteristics.