Jeanne Guthrie

From: Bob Murchison <bob.murchison@me.com>
Sent: Monday, April 01, 2024 8:27 AM
To: Daryl Beardsley; Ellen Hartnett
Cc: Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; Matthew Bevers; Julie Dreyfus; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'; 'Paul Haverty'
Subject: Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #1 -- Resolution of Outstanding Concerns About Compliance with Title V Requirements

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #1:

1. ***Resolution of outstanding concerns about compliance with Title 5 requirements for mounding and nitrogen loading analyses for septic systems with flows >2,000 gallons per day.*** The Peer Reviewers' most recent comments indicated that they share concerns about these analyses, which the Board has attempted to resolve with the Applicant in a variety of ways. (See other issues noted by the Items that follow.) Given this validation of its concerns and the need for the Board to have complete confidence in being able to proceed with determinations about compliance for these matters, the Board made a motion to:

   Recommend to the ZBA that a third party carry out the analyses of hydraulic conductivity, groundwater mounding, and nitrogen loading calculations.

   The motion passed with a 3:0 vote.

Thank you for making us aware of your vote to recommend to the ZBA a third-party analysis.

As you know, the ZBA has engaged Tetra Tech as a third-party reviewer of this project and they have completed the analysis you are requesting.

Jeanne Guthrie

From: Bob Murchison <bob.murchison@me.com>
Sent: Wednesday, April 03, 2024 8:38 AM
To: Daryl Beardsley; Ellen Hartnett
Cc: Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; Matthew Bevers; Julie Dreyfus; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'; 'Paul Haverty'

Subject: Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024, Item #2 -- Profiles for Step Trenches and Location of Septic Tanks

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #2 (also presented as item #1 in March 18, 2024, email from Beardsley/Sherborn BOH):

2. ***Profiles for the step-trenches and location of the septic tanks, including the tanks utilized for the innovative technology, and the pump chamber.*** It is standard practice to include profiles on septic plans involving step-trenches (e.g., as was most recently done for Greenwood Street Homes' plans) and for the other components noted. Profiles are used to demonstrate compliance with respect to: 310 CMR 15.220(4)(o) and (s); 310 CMR 15.221(7), (8), and (13); and required distances to finished ground surface, estimated high groundwater, and other site infrastructure.

In addition to the step-trenches and other components noted above, the Board revisited the importance of profiles for understanding the placement of underground utilities and their relationships to one another (e.g., water lines must be protected from sewer lines), as was relayed in earlier written statements to ZBA.

The Board determines that these profiles are essential for compliance assessment and that it would be inappropriate for the BoH to prepare elements of what it is meant to review for compliance (as was suggested by the Applicant's team). The Peer Reviewer made similar comments.

The profiles for step-trenches were previously provided. See sheets 7 and 8 of the "Proposed Septic System" plan revised 3/13/2024.

The requested information for underground utilities was also previously provided. The installation trenches for water line, sewer line, and their crossings are provided in sheet 9 of the updated septic plan revised 3/13/2024. These details were also provided to Sherborn BOH in the Comprehensive Permit Plan revised 2/14/2024.

We agree with the Sherborn BOH that these design elements are important and we always provide the information in our design as a standard practice.

The peer reviewer stated on March 15, 2024: "*The applicant provided a utility plan and Plan and profiles.* ***In our opinion, this comment is resolved***".

Jeanne Guthrie

From: Bob Murchison <bob.murchison@me.com>
Sent: Wednesday, April 03, 2024 9:05 AM
To: Daryl Beardsley; Ellen Hartnett
Cc: Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; Matthew Bevers; Julie Dreyfus; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'; 'Paul Haverty'
Subject: Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024, Item #3 -- Proper Value for Post-Treatment Effluent Total Nitrogen Concentration

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #3 (also presented as item #2 in March 18, 2024, email from Beardsley/Sherborn BOH):

3. ***Proper value for post-treatment septic effluent total nitrogen (TN) concentration.*** For the purposes of nitrogen loading analyses, the assumption about TN in the post-treatment effluent shall be a minimum of 25 mg/l because the system is > 2,000 gallons per day; only some systems below that threshold may use the 19 mg/l value in performance calculations. Since the 25 mg/l value for TN is currently approved for various SeptiTech STAAR systems but <u>not</u> the engineered version proposed for this project, the BoH notes that assumption may have to change depending on what conditions are in a forthcoming Provisional Use Approval for the SeptiTech STAAR 13.5 system (if it is approved).

   The Board's discussion of 3-18-2024 included not only this issue but the overall situation of the outstanding approval from MassDEP for the engineered SeptiTech STAAR 13.5 system. Related comments are provided below under Item 8.

The SeptiTech STAAR 13.5 Engineered system provides 19 mg/l effluent treatment as approved by DEP. The design for this project is simply a series of STAAR 4.5 systems as we previously explained. While this Engineered STAAR technology is currently approved, the vendor is seeking more clear wording in the approval from DEP for STAAR 13.5. The system can treat effluent to 19 mg/l as described in the DEP approval. The approval letter says:

"The System is approved for facilities where the design flow is less than 10,000 gpd and

where a conventional system with a reserve area exists or can be built on-site in full compliance with the new construction requirements of 310 CMR 15.000 and has been
approved by the local approving authority."

"The System shall be installed in series between the septic tank and the soil absorption
system of a standard Title 5 system constructed in accordance with 310 CMR 15.100 -
15.279, subject to the provisions of this Approval."

Jeanne Guthrie

From: Bob Murchison <bob.murchison@me.com>

Sent: Sunday, March 31, 2024 8:28 AM
To: Daryl Beardsley; Ellen Hartnett
Cc: Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; 'Paul Haverty'; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'
Subject: Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #4 -- Alternative USGS Comparison Wells

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #4 (also presented as item #3 in March 18, 2024, email from Beardsley/Sherborn BOH):

4. ***Alternative USGS comparison wells.*** As it relates to the status of the Frimpter metl utilized, the correct formula was utilized for the Winchendon well but this well is nc closest USGS well to use for Sherborn (as also noted by the Peer Reviewer). It is re that other USGS wells, with the same/similar type of terrain and soil, be utilized for comparison. In particular, the type of soil at this location is closer to a sandy loam - sand mix.

   The Board maintains that there is value in performing these comparison evaluations large project.

After considering soil type, terrain and location, the project engineer Desheng Wang has stated that the most appropriate USGS comparison well is Winchendon. The Peer Reviewer Tetra Tech has agreed.

Health Agent Oram and the Sherborn Board of Health have used the Winchendon well for the Frimpter calculation at numerous Sherborn properties in recent years. Notably, the Winchendon reference well was used by Oram and the Sherborn Board of Health in the permitting of a market rate single family home at 53 Farm Road in 2022. This property also has Loamy Sand and is contiguous with the Farm Road Homes site.

Jeanne Guthrie

From:	Bob Murchison <bob.murchison@me.com>
Sent:	Sunday, March 31, 2024 8:41 AM
To:	Daryl Beardsley; Ellen Hartnett
Cc:	Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; 'Paul Haverty'; 'Bouley, Steven'; 'Desheng Wang'; 'Paul Haverty'; Matthew Bevers; Julie Dreyfus
Subject:	Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #5 -- Adjustments to Groundwater Data

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #5 (also presented as item #4 in March 18, 2024, email from Beardsley/Sherborn BOH):

5. ***Adjustments to groundwater data***. Information on groundwater adjustments, as the Applicant on March 12, 2024, does not correspond to the BoH Agent's obse the field for monitor pipe 55 – 11 AN. Groundwater was recorded in the Agent at this monitor pipe at 15.75 feet but the engineer shows the groundwater at 16.2 date this monitor pipe was read was April 27, 2021. Data for other monitor pipe

area are not per the Agents field notes and 5-1, 5-2, 5-3, and SLTP -2 were not o the Agent.

These are not necessarily critical issues, since they appear to be minor variations should be accurate. An overall issue is that a variety of data used by the enginee these noted, including Item 6 below) does not correspond to the Agent's field no communicated in previous deficiency letters.

(See additional comments under Item 6.)

Project engineer Desheng Wang will check his field notes and confirm that the data he recorded in his notes is consistent with the plans. As you note, this data is not material to the BOH review and approval of the system.

Jeanne Guthrie

From:	Bob Murchison <bob.murchison@me.com>
Sent:	Sunday, March 31, 2024 9:16 AM
To:	Daryl Beardsley; Ellen Hartnett
Cc:	Matthew Bevers; Julie Dreyfus; Jeanne Guthrie; Jeremy Marsette; Rick Novak; 'Paul Haverty'; 'Dillon, Peter'; 'Bouley, Steven'; 'Desheng Wang'; Jean Greco
Subject:	Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #6 -- Soil Absorption System Design Flow Rate Adjustment
Attachments:	soil texture trangle.pdf; Field notes and lab sieving analysis report; Re: Farm Road Homes meeting

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #6 (also presented as item #5 in March 18, 2024, email from Beardsley/Sherborn BOH):

6. ***Soil absorption system design flow rate adjustment.*** As reviewed previously, a design flow rate of 0.74 gallons per day per square foot is being used rather than 0.60 gallons per day per square foot as required for a Class II soil (per 310 CMR 15.242 and .243. The Class II soil classification is based on the BoH Agent's soil evaluations in the field.

   The Board concluded that, when discrepancies exist between soil classifications and other field observations made by the project engineer and by Sherborn's Health Agent, the Agent's classification shall be used. The differences are small and using the more conservative classifications (i.e., the Agent's) is recommended by MassDEP.

   To use an applicant's interpretation over that of a regulatory body's Agent would be setting a new precedent.

Farm Road Homes has previously addressed Sherborn BOH's repeated incorrect assertions on soil classification for the septic field at Farm Road Homes. Health Agent Oram has repeatedly said "we must agree to disagree". We do not "agree to disagree".

We now have dispositive lab-based test results that confirm the soil types in the septic area are medium sand and medium loamy sand (See attached). There cannot any longer be a dispute on soil classification.

At the time of the original septic field soil testing in 2021, Project Engineer Desheng Wang classified the soil as loamy sand verbally (I personally witnessed it). The perc rates recorded later in the day were very scientifically consistent with loamy sand. He documented the soil as loamy sand in his field notes that day. His soil report filed with BOH documented the soil as loamy sand. Health Agent Oram did not object to the soil report classification at the time of the filing.

Dr. Wang and Health Agent Oram met with peer reviewer Peter Dillon of TetraTech on December 20, 2023. At that time, it was agreed among the three of them to do lab testing to resolve the issue of soil type. See attached email exchange summarizing the meeting.

The testing was conducted on January 3, 2024. The peer reviewer and agent were invited to witness it. Health Agent Oram was present. The soils were properly taken from approximately five feet depth.

See attached (and screenshot below) soil test results which were transmitted to BOH on January 25, 2024. The two soil tests in the septic field area came back as "medium sand" and "medium loamy sand".

Figure 1: SOIL TEXTURAL TRIANGLE

Table Summary of soil texture analysis based on sieve analysis, 65 Farm Rd, Sherbon

Soil Sample	Location	Sand, silt, and Clay compsiti		
		Sand % 0.05-2 mm	Silt % 0.002-0.05mm	Clay % <0.002m
S1	lower edge of SAS	92.53	5.6	1.87
S2	upper edge of SAS	73.66	24.56	1.78

Jeanne Guthrie

From:	Bob Murchison <bob.murchison@me.com>
Sent:	Wednesday, April 03, 2024 9:29 AM
To:	Daryl Beardsley; Ellen Hartnett
Cc:	Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; Matthew Bevers; Julie Dreyfus; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'; 'Paul Haverty'
Subject:	Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20,2024, Item #7 -- Groundwater Flow Direction

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #7 (also presented as item #6 in March 18, 2024, email from Beardsley/Sherborn BOH):

7. *Groundwater flow direction.* Although the project engineer has stated in various responses that the "7" to a "dozen" monitoring wells have been installed in accordance with BoH standards, it needs to be pointed out that monitoring wells in test pits --advanced during subsurface investigation for the soil absorption system-- are serving a different purpose than groundwater slope/flow direction assessment.

   Thus, to comply with Title 5 mounding and nitrogen loading evaluations for systems with flows > 2000 gallons per day, an appropriate method for determining groundwater flow direction shall be applied, including any additional data collection needed.

   (See Items 1 and 9.)

As a trained professional engineer working in both academic research and engineering design, Dr. Desheng Wang is not aware of any difference between a drilled groundwater monitoring well and monitoring well installed by excavator in reading groundwater elevations in the unconsolidated soil layer.

The groundwater flow for the Fields at Sherborn development was determined with wells all installed with an excavator.

The groundwater contour map provided by Dr. Wang together with 1 ft topographic map are adequate for determining the groundwater flow for this project.

There are two wells in the SAS area and a well up near the driveway at 55 Farm Road. These three wells show groundwater is flowing from east to west on the site.

In addition, Dr. Wang used the groundwater data from many other wells further away from the SAS area to generate a more comprehensive groundwater flow map that is in line with the topographic map and more than enough to understand the groundwater flow for this type of project.

Dr. Wang would further recommend to the Sherborn BOH that they request a sample of groundwater quality from the toe of the slope at the newly installed septic system at 49 Farm Road which currently has a breakout condition. The area in breakout is very close to the property line with the project.

Jeanne Guthrie

From:	Bob Murchison <bob.murchison@me.com>
Sent:	Sunday, March 31, 2024 9:30 AM
To:	Daryl Beardsley; Ellen Hartnett
Cc:	Jean Greco; Julie Dreyfus; Matthew Bevers; Jeanne Guthrie; Jeremy Marsette; Rick Novak; 'Paul Haverty'; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'
Subject:	Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #8 -- Outstanding MA DEP Provisional Use Approval for the Propose Septi Tech STAAR Engineered System

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #8:

8. ***Outstanding MassDEP Provisional Use Approval for the proposed SeptiTech STAAR engineered system.*** Given that:
   - a Provisional Use Approval has not yet been issued for the engineered system proposed for Farm Road Homes, and
   - Provisional Use Approvals typically contain more conditions of use than do General Use Approvals and those conditions are unpredictable at this time,

the Board concludes that it is not feasible (even if there were no other existing septic plan deficiencies, such as Items 6 and 9) to approve the septic system proposed, conditional to receipt of Provisional Use Approval for SeptiTech STAAR 13.5 from MassDEP because requirements potentially associated with MassDEP's approval are too speculative and complex to frame.

Farm Road Homes previously provided Sherborn BOH the MA DEP approval letter for the STAAR 13.5 which is known as an "Engineered System" because it is three STAAR 4.5 systems in sequence. This technology was originally approved more than a decade ago and the approval was updated in 2023 for five additional years.

While there does seem to be confusion within MA DEP on the approval status for this sequenced design, MA DEP is currently reviewing the matter and is likely to respond before the completion of the BOH review process. We are comfortable with a condition from BOH requiring final sign off from MA DEP prior to construction. Please note that MA DEP's confusion on the status of this technology likely emanates from their subject matter expert being on an extended leave.

Jeanne Guthrie

From:	Bob Murchison <bob.murchison@me.com>
Sent:	Sunday, March 31, 2024 9:56 AM
To:	Daryl Beardsley; Ellen Hartnett
Cc:	Jean Greco; Jeanne Guthrie; Jeremy Marsette; Rick Novak; Matthew Bevers; Julie Dreyfus; 'Desheng Wang'; 'Bouley, Steven'; 'Dillon, Peter'; 'Paul Haverty'
Subject:	Title V Application Farm Road Homes Reply to Sherborn BOH Memo March 20, 2024 Item #9 -- Additional Subsurface Investigations

Sherborn BOH,

See below reply in blue to Sherborn BOH March 20, 2024, memo item #9:

9. ***Additional subsurface investigations.*** The Health Agent noted that he has not witnessed test pit and other subsurface investigations performed by the Applicant's consultants. Wh that is not required for all instances, it is necessary for key observations that affect system compliance. The Board supports the Agent's:
    - request for additional test pits in the tanks' areas and another in the SAS area; and
    - recommendation that such subsurface investigations be witnessed by the Health Agent and a third party (e.g., the Peer Reviewer).

Farm Road Homes has met all Title V (and local BOH) requirements for testing in the SAS field area and elsewhere. There are no regulatory requirements for witnessed testing in the tank areas or other areas outside the SAS field. Furthermore, there are no unique circumstances indicating any need for this request.

Could the Sherborn BOH please provide a citation in Title V (or local by-law) detailing this requirement for our review.

There are many aspects of testing, analysis and design of an SAS that are confirmed by the Project Engineer's stamp and not witnessed.

In addition, I will note that witnessed testing at the tank area (or elsewhere outside the SAS field) was not required at Fenix Partners' market rate

development projects at 53 Farm Road (contiguous with Farm Road Homes) or Abbey Road in Sherborn (18 homes). Furthermore, Health Agent Oram's normal practice for market rate homes does not require a test hole at the tank site and instead allows applicants to interpolate from other test holes on the site. In this case, we have provided a test hole for analysis.