



November 2, 2015

**BY ELECTRONIC MAIL: jeanne.guthrie@sherbornma.org
and BY HAND**

Sherborn Zoning Board of Appeals
Sherborn Town Hall
19 Washington Street
Sherborn, MA 01770

Re: Application for Comprehensive Permit – 247 Washington Street, Sherborn

Dear Members of the Board:

As you may recall, this firm represents neighbors and abutters to the proposed 36-unit residential development located at 247 Washington Street in Sherborn (the “Project” and the “Project Site”), which is the subject of a pending application for a comprehensive permit under General Laws Chapter 40B, Sections 20-23 proposed by The Fields at Sherborn, LLC (the “Developer”). At the Board’s last meeting, we expressed serious reservations with the Project’s septic system and on-site water distribution system. Specifically, we believe that that Project, as currently configured, will likely contaminate its own wells, and those of its closest neighbors, due to the size and location of its combined on-site septic system. Over the last couple of weeks, the Developer has submitted additional information on its septic and well designs, including critical data that was previously missing. Unfortunately, this latest round of submissions does not allay our concerns.

1. *Septic Design Flow / Bedroom Count*

First, we note that the Developer’s representative, Ben Stevens, represented at a Board of Selectmen meeting on September 30, 2015 that the Project septic system would be redesigned. This followed a statement made at the Zoning Board’s September 16, 2015 hearing that the Developer would be filing a hydrogeological analysis “early next week” on the septic system’s impacts on the Project’s on-site wells. This information was finally submitted on October 15th, and we are currently reviewing it with our consultants.

In the meantime we note that the septic system design is still based on an incorrect assumption concerning the total number of bedrooms in the Project. As the Board of Health noted in a letter to the Developer dated September 10, 2015, the Board’s regulations, Section 7.1, specifically require that the septic system design flow be based on an assumption that every

residence will have three bedrooms. The regulation refers to “single family dwellings,” and the Developer has latched onto this, arguing that the Project consists of multi-family dwellings and therefore the 3-bedroom assumption does not apply. This is a rigid interpretation that is both self-serving and contrary to the intent of Section 7 of the Regulations. The Developer’s proposed homes are more appropriately characterized as “single family-attached” dwelling units, in that they each have separate entrances, separate driveways and parking garages, and exclusive use areas in the exterior of the units. Based on the plans, there are no “common” areas within the interior of the buildings. The Developer appears to recognize the weakness of this position, asking for a waiver of Section 7.1 towards the end of its discussion of this issue in its Memorandum dated October 5, 2015.

In a letter dated August 10, 2015, the Zoning Board’s peer review consultant, BETA, advised the Zoning Board that the Project should be assumed to have 129 total bedrooms, based on the Developer’s floor plans. Several rooms depicted on the floor plans are not labelled as bedrooms, but are likely to be used as such. For this very reason, the Board of Health’s regulations require applicants to consider any room on the second floor of a dwelling unit to be a bedroom for purposes of the septic system’s design calculations. Likewise, any room on any level that has a door leading to a bathroom with a tub or shower must be considered a bedroom. BETA’s calculation is reproduced below as Figure 1.

We note that the Developer has recently modified its floor plans to eliminate a “study” from its “Adams 2-Bedroom” floor plan. However, the unit still has a study on the first floor, and the area now labelled as “Loft” and has a closet and a door to a full bathroom. BETA also did not have basement floor plans when it reviewed this matter in September. The Developer has since submitted basement floor plans, and they depict large open rooms with doors leading to a full bathroom. Therefore, for each unit that has a finished basement with a full bath, an additional bedroom needs to be added to this calculation.

This issue of bedroom count is more significant than one might think. In order to accurately characterize the impacts of septic system effluent on groundwater quality, the volume of wastewater entering the septic system must be determined. Under both Title 5 and the local regulations, the volume of wastewater is determined by the number of bedrooms. The Developer contends that its Project has only 84 bedrooms, while BETA’s initial analysis concluded there were 129. Even if every home is assumed to have just three bedrooms, and a deed restriction were to be recorded limited occupancy of the units to three bedrooms, the total count would 108, still significantly higher than the Developer’s design assumptions. Experience has shown that bedroom deed restrictions are nearly impossible to enforce, and that therefore a conservative assumption of three bedrooms per unit provides for a reasonable margin of error. We therefore request the Zoning Board to deny a waiver from this requirement of Section 7.1, and request BETA to update its bedroom count analysis to take into consideration the basement floor plans and the modified Adams Unit floor plan.

Figure 1 – Excerpt from BETA’s Aug. 10, 2015 Letter to ZBA

Based on floor plans and the definition above the number of bedrooms is calculated as follows -:

<u>Unit Name</u>	<u>Bedrooms</u>	<u>Studies</u>	<u>Total Rooms^a</u>	<u>Effective Bedrooms</u>	<u>Project Units^b</u>	<u>Total Bedrooms</u>
Adams 2 (in)	2	2	8	4	10	40
Adams 3 (in)	3	1	8	4	5	20
Kirkland 2 (ex) 1 st Fl. M.	2	1	7	3	6	18
Kirkland 2 (ex)	2	1	6	3	6	18
Kirkland 3 (ex)	3	1	7	4	6	24
Leverett 2 (ex)	2	1	6	3	2	6
Leverett 3 (in & ex)	3	0	6	3	1	3
Total					36	129

Notes:

- a. Architectural drawings did not include basements therefore any potential basement rooms were not considered.
- b. Floor plan options of 2 and 3 bedroom units were maintained at a ratio of 2:1 (24 to 12) respectively.

Since the number of bedrooms are used to calculation water usage and sewer treatment facility sizing, the Board should evaluate the project on the potential construction of 129 bedrooms.

2. *The Septic System’s Nitrogen Removal Capabilities*

In a document entitled “Environmental Impact Report,” prepared by the Developer’s civil engineer and submitted to the Board of Health on October 15, 2015, the Developer contends that its septic system, with a design flow of 9,240 gallons per day, will generate effluent at its discharge point with a total nitrogen concentration of 10 mg/l, and therefore the Project will not cause a concentration of nitrogen in the groundwater at the downgradient property boundaries or at the Project’s own wells in excess of 10 mg/l.

As you may recall, our hydrologist Scott Horsley performed a mass balance analysis (nitrogen loading model) that predicted nitrogen concentrations in excess of 15 mg/l in the groundwater at both the downgradient property line and the Project’s wells. Mr. Horsley’s analysis assumed that the nitrogen concentration of the wastewater leaving the septic system would be 19 mg/l, which is the standard used by the state Department of Environmental Protection (“DEP”) for smaller-sized alternative technology systems such as the FAST system. If the Project’s septic system actually achieves a much lower concentration of 10 mg/l of nitrogen leaving the system, that would obviously change the outcome.

This issue was raised by the Conservation Commission in a memo to the Developer a few weeks ago, and I specifically asked the Developer at the Commission’s meeting on October 27, 2015 whether DEP has authorized the use of 10 mg/l for this FAST system. The Developer stated that DEP had authorized the use of this concentration, and that this was evidenced in a

document he submitted to the Board of Health on or about October 15, 2015. We have not seen any such document and do not believe it is contained within the October 15th submission.

Coincidentally, the Barnstable County Department of Health and Environment published a report in 2007 that studied the nitrogen-removal performance of alternative technology septic systems, including the FAST system, that have been in use on Cape Cod since 1999, serving both single-family and multi-family residences. A copy of the Study is attached for your reference. I was surprised to learn that effluent nitrogen concentrations vary considerably within the same system, from day to day. In other words, there is not a consistent nitrogen concentration (i.e., 19 mg/l) for each system location. Further, there is also variability between the various FAST systems that were studied – with median concentrations ranging from 5 mg/l to 58 mg/l. Overall, of the 35 FAST systems serving multi-family developments that were studied, 15 (43%) had a median nitrogen concentration above 19 mg/l. Nine of these systems recorded concentrations in excess of 40 mg/l. See, Study, Figure 9.

The “take away” from this Study is that the concentration of nitrogen (and presumably pathogens) from effluent is highly variable, and that absent some additional technology being employed that was not employed on the systems studied on the Cape, we can expect to see nitrogen concentrations from this Project’s septic system routinely in excess of 10 mg/l (and, indeed, in excess of 19 mg/l). To that end, Mr. Horsley’s analysis was probably too generous to the Developer. We would request the Zoning Board, Board of Health and Conservation Commission to demand that the Developer demonstrate that applying a 10 mg/l concentration assumption is correct or reasonable, whether pursuant to a DEP approval letter or not. Absent that demonstration, the town boards should apply a higher concentration assumption that allows for a sufficient margin of error, to ensure that the abutters’ wells and those of the Project’s future residents are fully protected. This is an issue where there can be no compromising.

3. *Outstanding Wetland and Stormwater Management Design Issues*

Finally, we have raised several concerns with the Project’s stormwater management design and its impacts on the fragile wetland system on the Project Site. There are significant encroachments into the 100-foot jurisdictional buffer zone associated with these wetland areas. At the Commission’s meeting on October 27, 2015, the Commission’s peer review consultant, Lenore White, expressed concern that the Project’s impacts on the wetlands have not been adequately characterized by the Developer, and that changes to the hydrology of the Site will likely have adverse impacts that need to be addressed. Our wetland consultant, Patrick Garner, echoed these concerns in a comment letter dated October 21, 2015 (copy attached as Exhibit B).

We also understand that the Commission has yet to weigh in on the only wetland bylaw waiver being requested – the 50-foot no alteration zone provision. The Commission stated on October 27th that it would be deliberating on that issue at its next meeting. Our position is that the Bylaw should not be waived unless the Developer can demonstrate that the waiver is necessary to make the Project “economic.” This is the developer’s burden of proof under Chapter 40B. G.L. c. 40B, §21. Assuming that a case can be made that the Project will have a

deleterious impact on the wetland resource areas, which we believe to be true, the Board should not waive the bylaw provision unless the Developer can justify it on economic grounds, and even then it need not waive the bylaw if the reasons to preserve the bylaw outweigh the need for housing being addressed by this application.

Thank you for your continued diligence in your review of this application.

Very truly yours,


Daniel C. Hill

Enc.
cc: Sherborn Board of Health
Sherborn Conservation Commission
Sherborn Board of Selectmen
Developer