Town of Sherborn
Zoning Board of Appeals
Town Hall
19 Washington Street
Sherborn, MA 01770
(508) 651-7850

June 6, 2016

Mr. James Persky
Massachusetts Department of Environmental Protection
Northeast Region
Drinking Water Program
205B Lowell Street
Wilmington, MA 01887

Re: The Fields at Sherborn

Dear Mr. Persky:

By email dated September 28, 2015, you informed various officials of the Town of Sherborn that the Department of Environmental Protection, Drinking Water Program ("MassDEP") had been contacted by Dr. Deshang Wang of Creative Land & Water Engineering, LLC, and by Mr. Stephen Smith of GeoHydroCycle, Inc., concerning The Fields at Sherborn ("The Fields") development, a proposed Chapter 40B project. The developers of The Fields project were seeking to classify the proposed system of private wells for the project as a private, rather than a public, water system under the terms of 310 CMR 22.02. Your September 28, 2015 email stated that MassDEP had not heard directly from the Town of Sherborn and that it was not clear exactly what information the Town was seeking.

On behalf of the Sherborn Zoning Board of Appeals ("ZBA"), of which I am chairman, I responded by e-mail dated October 23, 2015. I informed you that the ZBA was in the process of conducting hearings on The Fields project and that, as of that time, the ZBA had already received some evidence concerning the risk posed to public health given the particular location and design of the on-site septic system, the groundwater flow characteristics, and the proximity of the drinking water wells. I informed you that the hearings were ongoing and that the ZBA expected to hear additional evidence concerning the risk to public health posed by the proximity of the septic leaching fields to the drinking water wells, and I suggested that MassDEP defer any decision on whether the water supply system is a public or private system until the ZBA had

concluded its hearings and had heard all of the relevant evidence. Those hearings are now concluded, and the purpose of this letter is to summarize the evidence heard by the ZBA and to urge MassDEP to exercise its prerogative under 310 CMR 22.02, in the interest of the public health, to declare that the proposed water supply wells at The Fields project constitute a public water system.[1]

As originally proposed, The Fields project was to consist of 36 units in 10 separate buildings, each of which was to be served by a water supply well. During the course of the hearings, the developer modified the design, reducing the number of units to 32, in 9 buildings, with 9 separate water supply wells. The project will also have one irrigation well. It is located on a 17.55 acre site, of which 6.89 acres are wetlands. A portion of the site is within the Zone II of a public water supply well of the Town of Holliston. The entire project will be served by a single on-site septic system. The proposed project wells are generally downgradient of the leaching fields for the septic system. The Fields project will be organized as a fully integrated single condominium development. As proposed, drinking water well control and maintenance will be the only functions administered separately, seemingly to avoid having the water supply designated as a public water supply pursuant to 310 CMR 22.02, despite the risk to the public health.

As you know, 310 CMR 22.02 gives MassDEP the right to evaluate and determine whether two or more wells located on commonly owned property, that individually serve less than 25 people, but collectively serve more than 25 people for more than 60 days of the year, should be regulated as a public water system "taking into account the risk to public health." The ZBA is aware that MassDEP typically approaches this determination by looking to whether the condominium documents are structured such that the actual users of each well have control of that well so that decisions regarding maintenance, upgrade, or replacement of the well can be made by those actual users without interference or control by any larger entity such as the condominium association. The developer of The Fields has agreed to structure the condominium documents such that the users of each individual well will theoretically have such control. Nevertheless, the applicable regulation, 310 CMR 22.02, allows (if not requires) MassDEP to take into account, not just how the documents are structured, but also "the risk to public health," in making its determination. We ask that it do so here.

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[1] This letter is the product of a formal vote of the ZBA to recommend that MassDEP determine that the proposed water supply wells constitute a public water system.

The project is subject to the nitrogen loading limitations of 310 CMR 15.214(2). As such, the maximum allowed septic design flow is 440 gallons per acre per day, calculated on the basis of 110 gallons per bedroom. According to the developer, the project will consist of a maximum of 76 bedrooms,[2] and the design flow will be 8,360 gallons per day. The entire project site is 17.55 acres (including wetlands and impervious surfaces). That translates to 19.11 "Title 5 acres,"[3] or a maximum permitted flow of 8,409 gallons per day. Thus, assuming 76 bedrooms, the actual project design flow for this nitrogen sensitive area is virtually at the maximum flow permitted by the Title 5 regulations, leaving no room for error.

As currently proposed, the septic system will not have an enhanced nitrogen removal component. The nitrogen concentration in the so-called "Area of Influence" of the septic plume will be well in excess of the drinking water standard of 10 mg/liter. The ZBA heard evidence concerning the expected contours of the Area of Influence. Due to a lack of precise information concerning groundwater elevations, the Area of Influence could not be determined with any degree of certainty, but a conservative view is that it will be close to at least some of the water supply wells because those wells are generally downgradient from the leaching fields. All witnesses were in agreement, however, that because the project wells will be bedrock wells, there is inherent uncertainty about where those bedrock wells will draw water from, and, in particular, whether they will draw water from the overburden within the Area of Influence. Hence, the risk that the nitrogen concentration in those wells will be in excess 10 mg/liter cannot be known for certain. However, one witness, Dr. James Vernon, testified that, in his opinion, the probability that the nitrogen concentration in at least one of the project wells will exceed the drinking water standard of 10 mg/liter is greater than 50% during low groundwater conditions. Dr. Vernon based that opinion on an independent hydrogeologic study he conducted for the Sherborn Board of Health and the Sherborn Conservation Commission.[4]

Dr. Vernon's hydrogeologic study, his calculations, and his conclusions were set forth in an extensive written report dated March 4, 2016, submitted to the ZBA. I am enclosing a copy of that report with this letter. With regard to the anticipated nitrate concentrations in the

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[2] The ZBA heard considerable evidence concerning the correct bedroom count, given the design of the units. Several witnesses, including the Sherborn Board of Health, considered the correct bedroom count to be well in excess of 76 bedrooms. For the purpose of this letter, however, the ZBA assumes the correct bedroom count is 76.

[3] An acre for Title 5 purposes consists of 40,000 square feet.

[4] The Board of Health has denied a Disposal Works Construction Permit under Title 5 for the project, and the Conservation Commission has denied an Order of Conditions under the Wetlands Protection Act. Both decisions have been appealed.

groundwater in the area of the project wells, Dr. Vernon's conclusions are summarized on page 20 and on page 25 of the enclosed report. Dr. Vernon concludes on page 25:

> Some plausible groundwater contour and flow maps indicate that nitrate concentrations based on Title 5 Guidelines methods could be greater than 20 mg/l in the overburden groundwater at Wells F and G.

The Board also heard testimony from another hydrogeologist, Scott W. Horsley. Mr. Horsley's conclusions are summarized in a letter dated February 29, 2016, which was also submitted to the ZBA. A copy of that letter is also enclosed. Mr. Horsley concludes that (1) the nitrate nitrogen concentration at the 100 foot protective radius of the well at 257 Washington Street (an abutter to the project) can be expected to be 31 mg/l, and (2) the project wells are positioned directly downgradient of the stormwater infiltration system, and that by virtue of impervious surfaces, there will be little opportunity for recharge to dilute the stormwater runoff in the short distance between the recharge chambers and the downgradient drinking water wells. Mr. Horsley concludes:

> In summary I believe that the proposed project presents significant threats to public health.

The ZBA also received written evidence from Charles A. Morris, M.D., and from Barry S. Levy, M.D. In addition to being physicians, Drs. Morris and Levy each hold Masters Degrees in public health. The written evidence received from Dr. Morris and Dr. Levy is set forth in letters dated February 27, 2016, and February 26, 2016, addressed to the Board of Health, copies of which are also enclosed. As you can see, Dr. Morris and Dr. Levy each conclude that The Fields project poses an unacceptable risk to public health and that "that risk is not speculative, but in fact likely."

As the Massachusetts Appeals Court has recently noted in Reynolds v. Zoning Board of Appeals of Stow, 88 Mass. App. Ct. 339 (2015), maintaining clean groundwater for private wells in an "important public health issue." Reynolds, 88 Mass. App. Ct. at 350. Moreover, where evidence is presented (as in the case of The Fields project) that "it is more likely than not" that the project will cause excessive nitrogen levels in private drinking water wells, there is no longer any presumption that the public health and safety will be protected if the project complies with state regulations. Id. at 349. Stated otherwise, even if the proposed wastewater discharge system complies with Title 5 (which the Board of Health has concluded it does not), the project may nonetheless constitute a threat to public health sufficient to justify the denial of a comprehensive permit under Chapter 40B and, I would respectfully suggest, sufficient to justify

MassDEP's determination that the risk requires designating the project wells to be a public water system.

Given the evidence heard by the ZBA, which the Board is now sharing with MassDEP, the ZBA believes that MassDEP should find that the risk to public health clearly warrants the determination that the 9 project wells constitute a public water system, thereby affording the greater protections required for such a system under 310 CMR 22.00 et seq.

Finally, please note that the Sherborn Board of Selectmen voted on May 25, 2016 to support the ZBA's request that DEP determine that the nine project wells be considered a public water system under 310 CMR 22.02.

Very truly yours,

Alan B. Rubenstein

Alan B. Rubenstein
Chairman

ABR:slf
cc: Mr. Ben Stevens
The Fields of Sherborn, LLC