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EFFECTIVE, AFFORDABLE, AND SUSTAINABLE SOLUTIONS FOR LAND & WATER ENVIRONMENT

March 1, 2024

To: Mr. Mark Oram
Sherborn BOH
19 Washington Street
Sherborn, MA 01770

Dear Mr. Oram:

Thank you for sending us your 2nd review comments. We have revised the plan to incorporate your comments and recommendations. To facilitate your review, we provided in the following a brief response point to point to your comments. Your comment is quoted first in *italics* and followed by our response in red.

The following is a review of the response letter including the septic and well plans dated February 2, 2024 in respect to the deficiencies noted on the deficiency letter dated January 18, 2024 sent by the Board of Health:

Deficiency:

#7, The water lines have been provided on the plot plan, additional details on the depth of the water lines and if there are any water shut offs are to be provided on a profile for these water lines. Also, is there any plan to double pipe the water lines when they are placed under paved areas?

Response: All waterlines will be minimal 5 ft below grade. Shut offs will be provided at the inside from branch line. The circuit breaker can turn off the pump as the general shut off. See water supply notes on utility plan.

#9, A groundwater profile is to be provided for the estimated groundwater determination at the septic tanks and the pump chamber. This detailed profile is to show the groundwater deep holes labeled SLTP 2 and SWTP 3 and the extrapolation of the groundwater from these deep observation holes to the septic tanks and pump chamber. Please define the labeling acronyms for these deep holes and provide the Frimpter method adjustments with the formula utilized including the USGS comparison well utilized in this formula for the Frimpter method.

Response: These holes are tested during high-groundwater season and no water was found. It is a conservative way that we used the bottom of the hole as the high water, which is conservatively consistent with Title 5 310CMR15.103 (3) (b) 1. This is just for checking tank buoyance and our analysis showed that just by weight is more than enough. There will be about 3 ft fill over the tank and friction around the tank. It is our professional opinion that the high groundwater used for the tank buoyance check is more than adequate. It is likely that there will be no water there at the bottom of these tanks.

#10 and Note E, The soil testing shown on the plot plans does not correspond to the field soil evaluations. This shall be resolved including the need to note the sandy loams soils that were determined in the field to allow for accurate groundwater mounding and groundwater adjustments. Please note that the determined Soil Web data determined onsite indicated the following soils: Hollis at 35%, Rock Outcrop at 30 %, Charlton at 20%, Canton at 10% and Montauk at 3%. This information will be helpful in determining the determination the soil types and with setting the groundwater adjustments and mounding.

Response: Based on our soil field testing, soil in all test pits is loamy sand. Grain size lab analysis showed one soil sample is sand. The two soil samples were taken from the depth of 5 ft to 6 ft depth well into the C layer soil. The conservative loamy sand is used here. We do not see any issue in the design of the septic with the latest soil analysis. The web soil breakdown is a very broad rough estimate, which is not in conflict with our findings as the soils in our tested area is in line with Canon or Charlton soil. The Rock outcrop is located in northern area away from the SAS location.

#14, The elevations of the percolation test holes should be shown on the percolation test table on sheet 4 of 10 to allow the transfer of this information provided in a separate location on the deep hole data.
We do not see any design reference for percolation elevation in Title 5 or BOH bylaw. The ground elevation at each test pit is provided and the depth of percolation as required by Title 5. The elevation can be figured out easily if needed. We do not see it is necessary.
Response: We provided detailed percolation information in DEP Form 12 for all percolation testing per Title 5 requirement. The Title 5 only requires percolation depth and not the elevation information. Furthermore, we provided the ground elevation in each test pit, the percolation elevation can be calculated by minus the depth of percolation from the ground surface elevation. It does not have any direct implementation in the Title 5 system design.

#15, Refusal was determined in the field for deep observation holes 55-10 and 55-10 AN. The refusal was found and recorded as being that the bottom of both these deep observation holes and have not been shown on the revised soil testing date on sheet 4 of 10 on the plot plans.

Response: We provided our field notes and found no refusal information for the two holes. Test pit 55-10 was found dry at the time of soil testing during high groundwater season (4/21/2021) and in follow up monitoring with SBOH. Based on what we observed at the site, it could be large boulders which did not restrict groundwater movement there. Test Pit 55-10N was excavated down to depth of 14 ft to the elevation of downgradient wetland at about 178-179 ft. Based on nearby drinking water drilling data, during high groundwater season, there would be about 15 ft aquifer depth below the water table. So, given the depth is way larger than 10 ft, we do not see any impact on the septic system design under both Title 5 and Sherborn bylaw.

The following is still pending further review:

The groundwater adjustment data and formula utilizing the Frimpter method is to be provided including the USGS reference well for the groundwater adjustment noted on deep observation holes 55-2 and 55-11 shown on Sheet 4 of 10.

Response: Those are the wells in which no water was observed. As we have done work in Sherborn when test pit is dry and the well found water was normally be allowed to be used to determine the water table rather than the dry well. Test 55-2 is not in the SAS area. It might be test pit 5-2, which is a dry well and has very deep soil.

In the review of the revised septic plans, it was determined that the required maximum cover allowed over the septic tanks, pump chamber and the soil absorption system has been exceeded by more than 36 inches and is not in compliance with Title 5, 310 CMR 15.221 (7). The profiles for the septic tanks and pump chamber are to indicated the final grades on the profile. The stepped soil absorption system utilizing Cultecs are to be shown on a profile with the adjusted groundwater, the Cultecs chambers and final cover.

Response: We checked out grading elevation over the concerned components of the septic system including the septic tank, pump chamber, I/A tanks, valve vault, and the cultec chambers, all areas have less than 3 ft fill. Therefore, the design is in compliance with 310 CMR 15.221 (7). See the following table for details.

Table Backfil cover depth calculation over the common septic system

Structure/component	Top	Grade	Cover (ft.)					
Septic Tank	215.40	217.85	2.45					
Processor Tank 1	215.55	217.70	2.15					
Processor Tank 2	215.55	217.70	2.15					
Processor Tank 3	215.55	217.35	1.8					
Secondary Pump Chamber	215.22	217.25	2.03					
Primary Pump Chamber	215.49	217.25	1.76					
Valve Vault	216.50	217.25	0.75					
Leaching Trenches	T.O. Pipe	T.O. Sand	Grade		Cover (T.O.Pipe to Grade), ft		Cover (T.O Sand to Grade), ft	
			Beg.	End	Beg.	End	Beg.	End
1-1	197.50	197.75	199.90	199.90	2.40	2.40	2.15	2.15
1-2	197.00	197.25	199.40	199.30	2.40	2.30	2.15	2.05
1-3	196.50	196.75	198.90	198.80	2.40	2.30	2.15	2.05
1-4	196.00	196.25	198.40	198.30	2.40	2.30	2.15	2.05
1-5	195.50	195.75	197.95	197.80	2.45	2.30	2.20	2.05
1-6	195.00	195.25	197.50	197.30	2.50	2.30	2.25	2.05
2-1	194.50	194.75	197.00	196.90	2.50	2.40	2.25	2.15
2-2	194.00	194.25	196.50	196.40	2.50	2.40	2.25	2.15
2-3	193.50	193.75	196.00	195.90	2.50	2.40	2.25	2.15
2-4	193.00	193.25	195.50	195.40	2.50	2.40	2.25	2.15
2-5	192.50	192.75	195.10	194.95	2.60	2.45	2.35	2.20
2-6	192.00	192.25	194.60	194.70	2.60	2.70	2.35	2.45
3-1	195.50	195.75	197.95	197.80	2.45	2.30	2.20	2.05
3-2	195.00	195.25	197.50	197.40	2.50	2.40	2.25	2.15
3-3	194.50	194.75	197.00	196.90	2.50	2.40	2.25	2.15
3-4	194.00	194.25	196.50	196.40	2.50	2.40	2.25	2.15
3-5	193.50	193.75	196.00	195.90	2.50	2.40	2.25	2.15
3-6	193.00	193.25	195.50	195.40	2.50	2.40	2.25	2.15

Feel free to contact us if you have any questions.

Sincerely,

Creative Land & Water Engineering, LLC

By

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