MEMORANDUM

PROVENCHER ENGINEERING, LLC

Donald A. Provencher, PE
6 Wasserman Heights
Merrimack, NH 03054

Phone / fax: (603) 883-4444
E-mail: Don@Provencher.com

TO: Chris Claussen

FROM: Donald A. Provencher, P.E.

DATE: April 27, 2020

REFERENCE: Response to Peer Review Comments – Design Flow & SAS
Cold Brook Crossing, North Road, Sudbury, Massachusetts
Project No. PE344.02

Below are our responses to comments in a letter dated April 23, 2020 from Horsley Witten Group for the above project. Our responses below address comments on the design flow and soil absorption system (SAS) design, and are numbered according to the peer review letter:

Comment #1:
The narrative does not break down the subtotals of bedrooms (i.e. there will be 101 one, two-, and three-bedroom rental units), because of this, it is difficult to verify the total bedroom count listed on the plans.

Response #1:
The design flow is based on 110 GPD / bedroom for non-age restricted units, and on 150 GPD / unit for 55+ age-restricted units. A summary table has been provided to the Town by the applicant, and is attached to this memorandum.

Comment #2: The design flow calculated is based on the number of bedrooms and the number of age-restricted units for a total flow of 49,730 gallons per day (gpd). However, the actual design flow is also listed as 49,755 gpd on the plans, which is 25 gpd higher than the bedroom count design flow. There is a clubhouse and potentially office flow that may account for this additional flow. HW recommends that the Applicant confirm that the design flow includes any additional areas other than bedrooms (such as fitness room, meeting room, and other amenities) as required.

Response #2:
The 49,755 GPD design flow was used in the DEP-approved Hydrogeologic Report submission, and was carried over to the SAS design. That design flow was subsequently revised down to 49,730 GPD as provided in the attached summary table provided by the applicant in #1 above. At our Hydrogeologic Report pre-scoping meeting with DEP, we discussed that since the amenities provided are primarily available to support the tenants only, that the design flows for those amenities should not need to be double counted because the tenants using those facilities are generating the same wastewater whether at those amenities, or in their own dwelling units.

Comment #3: The design flow of 49,755 gpd is a maximum daily flow. The average daily flow is 50% of 49,755 gpd or 24,878 gpd, which is less than the threshold average daily flow of 50,000 gpd. Therefore, there is no redundancy requirement necessary in accordance with the Guidelines for the Design, Construction, Operation, and Maintenance of Small Wastewater Treatment Facilities with Land Disposal.

Response #3:
Our understanding is that the 50,000 GPD treatment redundancy requirement is based on design flow, not on assumed average daily flow of 50%. However, this advisory comment does not impact the project, since our design flow is less than 50,000 GPD.

Comment #17: The design plan should show the setback requirement to all basements surrounding the leach field and reserve leach field area.

Response #17:
The design complies with the minimum 25-foot setback dimensions between the primary & reserve leach fields and the dwelling units. The site plans by Civil Design Group will be revised to indicate the minimum 25-foot setback to dwelling units and their basements.

Comment #18: The design plan (M-2) mentioned that the leach field is designed for 37,380 gpd. However, the sewerage absorption system (SAS 2) details show a design capacity of 51,003 gpd, which is higher than 49,755 gpd.

Response #18:
The 37,380 GPD design flow was erroneously indicated by On-Site Engineering, and will be corrected on a revised plan. The 51,003 GPD leach field capacity was necessary to ensure even effluent distribution across the leach fields, by feeding an equal number of rows of chambers. We couldn't make the leach fields smaller by deleting a row of chambers, or by deleting some chambers on some rows, but not on all rows, because some rows of chambers would be feed more effluent than other rows. Each D-Box outlet essentially feeds 4 rows of chambers in a common header pipe, and it is important to maintain that equal distribution. It is acceptable and conservative to have a leach field installed with extra capacity beyond the design flow.

Comment #19: The leaching field reserve indicates a capacity of 25,500 gpd, which is 50% of the design SAS capacity of 51,003 gpd. The proposed reserve area is under a steep slope and may be a challenge to construct if needed.

Response #19:
Acknowledged. In fact, we included a note on the "Schedule of Primary Soil Absorption System Inverts and Elevations" table on plan sheet SAS-2 that reads: "All future reserve areas are proposed to be constructed at an elevation of 5 feet higher than the above primary elevations. The reserve areas would require additional earthwork and retaining walls."

Comment #20: The existing grade at the proposed leach field/SAS is between 152 and 172. The proposed bottom of the leaching chambers is 155.67. A significant amount of grading will be required to construct the leach field/SAS.

Response #20:
Acknowledged. No further action is required.