



COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

21 Depot Street
Merrimack, NH 03054
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July 14, 2020

Kim Reed, Town Planner
Town of Rye
10 Central Road,
Rye, NH 03870

RE: Webster at Rye – 975 Washington Road - Septic System Review

Dear Ms. Reed:

Comprehensive Environmental Inc. (CEI) has reviewed the materials from the Town of Rye and Altus Engineering received on July 13, 2020 for proposed Webster at Rye development. The review included the following materials:

1. Emailed questions from the Planning Board regarding septic system capacity;
2. A 34-page drawing set of project plans as prepared by the project team with the most recent revision completed June 30, 2020.
3. The Alternation of Terrain Permit Application for Webster at Rye West Wing Expansion dated June 23, 2020;
4. A cover letter from Altus Engineering for submission of revised plans dated May 1, 2020;
5. An Addendum to the Hydrogeologic Study report from StoneHill Environmental dated April 28, 2020;
6. A review letter from Sebago Technics dated April 28, 2020;
7. A review letter from Attorney Michael Donovan dated April 21, 2020;
8. The Notice of Acceptance of AoT Permit Application from NHDES dated April 14, 2020;
9. A brief summary and map of porewater sampling locations dated April 9, 2020;
10. A drainage study prepared by Altus Engineering dated March 27, 2020;
11. The Altus Engineering response letter (dated March 27, 2020);
12. A review letter of the Hydrogeologic Study report from Truslow Resource Consulting LLC dated March 20, 2020; and
13. A Hydrogeologic Study report from StoneHill Environmental dated February 25, 2020.

This review focuses on the septic system details and additional questions provided by the Planning Board regarding system capacity. Based on our review of these materials, we offer the following comments:

Project Summary

The Webster at Rye senior housing property totals approximately 49 acres. The proposed expansion of the Webster at Rye senior housing complex will increase capacity of the facility from 135 to 158 residents. There are currently six existing septic tanks with four associated 2,500 GPD leach fields on the property.

The proposed expansion will include the replacement of one of the 2,500 GPD leach fields with a 3,000 GPD leach field as well as the installation of two additional 3,000 GPD leach fields and four reserve areas for a total leachfield capacity of 24,800 gallons. Septic tank capacity will be reduced from 31,000 gallons to 30,000 gallons.

Two questions from the Planning Board were received on July 13, 2020:

1. JM Lord: It would be interesting to know if the septic expansion would potentially include additional beds for a second story if it was added in the future. If it did, and with no footprint expansion, I would question whether or not they would require further PB review for that. If not, we should be assessing visual impacts for that as well at this time.
2. Pat Losik: An expansion of 23 beds has resulted in significant proposed changes in septic infrastructure. During the site walk on 6/15/20 several PB members asked whether alternative locations, including the front lawn, or different configurations have been considered. The Applicant noted that Webster had previously committed to no building on the front lawn. Eric Weinrieb noted per 5/12/20 minutes that Webster was "right on the cusp". The most recent updates to the system were completed in 2014, and the current proposal modifies septic tank capacity by a 1K GPD decrease, grease trap capacity by 6K GPD increase, and two additional leach fields. The discussion during the May meeting noted that the proposed system would not be used at full capacity. If the proposed system is eventually used at full capacity, how many beds will that support?

Comments:

1. Overall, the septic system plans are adequate for the proposed expansion at Webster at Rye. The proposed aerobic treatment units (ATUs) planned for installation on this site are an improvement over conventional septic system. As shown in the "Final Report Recommendations for Individual Sewage Disposal Systems that Minimize the Release of Pathogenic Organisms to the Parsons Creek Watershed" dated December 20, 2017, typical ATUs have been shown to reduce by bacteria by approximately 98% and other pollutants by up to 99%. As such, the proposed ATU is appropriate for use at this site. It is recommended that any replacement systems or future installations at the site be an ATU system or other system that provides equal or better water quality treatment. All proposed leachfields and septic systems are outside of the 100-foot wetland buffer and no surface waters are present on the property. A hydrogeologic study conducted by Truslow Resource Consulting and StoneHill Environmental show that the septic system plumes associated with each new leach field will not exceed NHDES Ambient Groundwater Quality Standards (AGQS).
2. It is recommended to maintain a four-foot separation distance from the bottom of the leach field to the seasonal high water table (SHWT). On page SS-1, SHWT is estimated to be approximately 90" for leachfield 1 and 38" for leachfields #5 and #6. It is not clear on the plans that the separation will be at a four-foot separation from the bottom of the leachfield to the SHWT. Please provide detail about the depths.
3. To address the two questions posed by the Planning Board on July 13, 2020, a review of the leachfield and tank capacity calculations was conducted. As described on page SS-1, the proposed septic tank and leachfield capacity for the addition of 23 beds at the Webster at Rye development are 30,000 gallons and 24,800 GPD respectively. Leachfield capacity is 16,500 GPD for the six leachfields with four reserve areas with capacity of 8,300 GPD. Generally, assisted living facility usage rates are estimated at 125 GPD/bed. As shown in the calculations on page SS-1, the metered flow for the Webster at Rye facility was shown to be lower than this estimate based on

2014 measurements of 70 GPD/bed and 2018/2019 measurements of 81 GPD/bed (2018/2019 measurements includes in-house laundry service). To determine the total facility demand, loading estimates at 125 GPD and 104 GPD (metered rates with a 1.3 peak factor) were used. The addition of 35 GPD for 75 employees was also included.

a) The usage calculations on page SS-1 warrant the following comments:

- The total usage at the expanded facility is miscalculated. The calculations for the 75 employees was listed as 2,450 GPD when it should be **2,625 GPD** (75 employees * 35 GPD).
- The estimated usage calculated at the specified assisted living facility rate (125 GPD/bed) should be **22,375 GPD** (listed as 22,200 GPD). The estimated usage based on the lower metered rate of 104 GPD should be **19,057 GPD**.

b) Based on an estimated usage of 22,375 GPD (125 GPD/bed), the proposed 30,000-gallon tank system provides adequate capacity. However, the method used to calculate the daily loading capacity from the septic tanks to the leachfields does not appear to be provided for review. It is requested that the calculations for daily loading rates to the leachfields be provided to allow for review of the proposed system's full capacity under proposed and potential future conditions (i.e., if additional beds are added).

4. As indicated on page SS-1, annual pumping of septic tanks and grease traps should occur. These inspection reports should be submitted to the Building Inspector. It is recommended that within 180 days (6 months) after the system has gone online, an initial sample of effluent shall be collected for effluent testing to assess system performance. Additional wastewater sampling and testing should be done every 12 months after the initial inspection.

If you have any questions or would like to discuss this review, please give me a call at (603) 343-6311 or email at edifranco@ceiengineers.com.

Sincerely,



Emily DiFranco
Comprehensive Environmental, Inc.