PHASE I: Technology Assessment

1. Survey existing knowledge base for both individual as well as cluster denitrifying septic systems (DSS):
   • Synthesize key databases and reports on DSS, based on input from BCDHE (George Heufelder) and independent research. Include relevant information from Chapter 7 of Falmouth’s Alternatives Screening Analysis Report (Stearns and Wheeler).
   • Prepare a comprehensive list of commercial or near commercial denitrifying septic systems that achieve nitrogen-removal rates down to treated effluent levels of 5 mgN/l or less and are currently in operation (either commercially or at test centers) and characterize their efficacy in the long term. Estimate cost per unit and cost per pound of nitrogen removed for a DSS (either individual or cluster).
   • Describe monitoring protocols that have been developed for installed DSS.
   • Note the ability of any DSS to sequester phosphorus for reuse, or treat chemicals of emerging concern.

2. Assist WQMC and Wastewater Superintendent in determining the operational parameters of a DSS that are preferred as a demonstration project, such as technical performance (especially target nitrogen removal rate), commercialization level (such as having received Piloting Approval in MA), size and space requirements, reliability, cost and other relevant factors.

3. Based on the findings above, assist in identifying a demonstration site for a potential cluster or individual denitrifying septic system. Anticipate that the demonstration site is the first step in implementing denitrifying septic systems as a long-term solution for achieving TMDL-compliance for a particular watershed. Link demonstration site to Adaptive Management Plan for a particular watershed.

4. Solicit quotes from vendors whose DSS meet the operational parameters defined in Task 2.

It is expected that Phase I will take approximately 40 hours to complete.

PHASE II: Engineering Design (RFP will be issued for these tasks, if warranted)

1. Design and permit a DSS individual or cluster system of optimum size and performance for the selected location. Design or recommend (if already available) appropriate monitoring system for proposed DSS demonstration system, including frequency and type of analysis both prior to and after DSS installation. Coordinate with Barnstable County Department of Health and Environment (BCDHE).

2. After evaluating the density, occupancy and usage of homes and businesses in each of the sites, calculate the unit cost per home/business and unit cost per pound of nitrogen estimated to be intercepted by the DSS.

It is expected that Phase II will take two (2) months to complete.