EPA QA Tracking Number RFA 17011

**QAPP Review Comments and Responses**

1. EPA Signatures: Please provide signature lines for both MaryJo Feuerbach, EPA Project Officer, and Nora Conlon, EPA QA Reviewer.

**Response:** See revised signature page. **Julie, I assume you will do this**

2. Secondary Data Collection and Evaluation: I have no comments to address on this activity.

**Response:** None needed.

3. Section 4.2, Monitoring Site Selection: For the Jewett Brook Watershed, is there a map that shows the tile drainage sample locations?

**Response:** No map showing the selected monitoring locations or other tile drain outlets is provided in keeping with the confidentiality requirements of the Vermont Agency of Agriculture, Food, and Markets and with our commitments to participating farmers.

4. Section 4.5 Monitoring Duration and Frequency: I understand that 12 of the possible 18 locations are slated for sampling. Is there a minimum number of locations that need to be sampled over the course of the study to provide sufficient information? Do they all need to be sampled at the same frequency to understand the outputs from the various farming activities and/or the system designs? It may be helpful to expand Table 3 or provide a different table that shows how the total number of samples was determined. (is it 12 locations X 52 weeks for 624 samples plus 62 duplicates for approximately 700 samples?) Is there the possibility that there will be no flow during some of the winter?

**Response:** We are not entirely sure we understand the first part of your comment regarding a minimum number of stations to be sampled. The scope of this study entails continuous monitoring of 12 tile drainage systems. There is a large investment in equipment and labor for each of the 12 stations selected. We believe monitoring fewer than 12 stations would decrease our ability to analyze associations between certain land management variables and nutrient concentrations and loads measured at the tile outlets. Monitoring more tile drains would likely improve our ability to quantify relationships among land management and water quality variables; however, we submit that continuous monitoring of the 12 tile drains selected strikes an appropriate balance between the cost and value of the resulting data.

By design, all tile drains will be monitored according to the same schedule. The sampling frequency and methods should be the same at all stations to facilitate statistical comparisons among monitored tile drainage systems. Due to strong dependency on management events (e.g., manure spreading) and weather, intensive and continuous monitoring is appropriate to characterize the output from tile drained fields. We expect the majority of the drains will cease flowing for a period in the summer and that some drains may cease flowing for a period in the winter.

Regarding the sample number estimates, a table has been added to Section 4.7 illustrating how these estimates were calculated.

5. Section 4.10 Quality Assurance/Quality Control (QA/QC): For the QC samples, will field duplicates also be collected for Total Nitrogen? Table 5 only says lab duplicate. Also, how will the field duplicates be distributed throughout the project? Will they rotate between locations? Will there be one per week? In Section 4.11 indicates that 10 % of composite samples will be split. Will grab samples during the winter months also be split for field duplicates? Please provide additional information.

**Response:** See revised Section 4.10.

6. SOPs: Are there SOPs available for the autosamplers, grab sampling, and for the lab analyses? The QAPP references the VAEL Quality System Manual, however, the QAPP should contain the analytical SOPs and the document should explicitly state the laboratory reporting limits (perhaps an additional column on Table 4?).

**Response:** A Study Specific Procedure has been drafted detailing the sampling procedures (see Appendix A). Section 4.7 of the QAPP has been revised accordingly.

The SOPs used by VAEL for Total N and Total P analyses are included as Appendices B and C, respectively. Note that the Practical Quantitation Limit (PQL) of each analyte is given in Table 5.