



Monitoring Protocol for Nitrogen Removal Systems

All new N-removal technologies approved under OWTS Rules 6.41.D.2.b (1), or (2), must be monitored according to the terms of this protocol.

System Monitoring

A minimum of 10 systems, with a minimum of four (4) sampling events for each is required. Data may be collected from systems located in RI or from systems equivalent to those approved in RI which are located in another jurisdiction in an area where the temperature conditions are similar or colder than those in RI. RIDEM may relieve an installation from this monitoring protocol based on extenuating circumstances, and order discontinuance and/or enrollment of a replacement system at its discretion.

For each system that will be monitored, the Vendor shall provide the following information to RIDEM as part of the Final Report:

- Owner(s') name(s)
- OWTS permit number
- Address at which the system is installed
- Occupancy (estimated number of occupants)
- Occupancy conditions (seasonal, or full time)
- Copy of the O&M contract and name and contact information of service provider
- Name and contact information of the third-party performing sample collection and analysis

Frequency of Monitoring

Year-round occupancy: Samples shall be collected quarterly.

Seasonal occupancy: Samples shall be collected monthly.

Sample Collection & Analysis

The Vendor shall submit a copy of the system-specific sampling protocol to the RIDEM as part of the Final Report. The protocol shall specify the location of sample collection and the procedures for collection of the sample and forward flow information. Samples shall be taken after the full treatment step but before delivery to the leaching field or drainfield.

A third-party¹ trained by the Vendor shall collect all effluent samples to be analyzed in the lab for the parameters in Table 1. All systems being monitored must incorporate a means of measuring and recording forward flow from the treatment system into the leachfield. This may be accomplished using a pressurized in-line wastewater flow meter, a cycle event counter, elapsed time meter, tipping d-box with an event counter, or other suitable method. The forward flow shall be reported as an average daily flow in gallons per day. A chain-of-custody shall be completed for each laboratory sample. Copies of field test procedures, documentation of field-testing equipment calibration, chain-of-custody forms and analytical data reports must be provided as part of the Final Report.

Effluent will be collected and sampled in accordance with laboratory methods. Sample bottles will be prepared, and sampling equipment will be cleaned between sampling events, following standard laboratory protocols.

¹ Service Providers, Distributors, or Equipment Dealers are not considered to be a third party.

Analysis of the wastewater samples will be performed by a laboratory certified for testing water samples. All samples shall be representative (i.e. samples must not be collected within one week following a service visit or a septage pump out).

Table 1. Testing and Reporting Parameters

Average Daily Forward Flow (gpd)
Dissolved Oxygen (mg/L) - (<i>Field Test</i>)
Effluent temperature (F) - (<i>Field Test</i>)
BOD5 (mg/L)
TSS (mg/L)
pH (s.u.)
Total Nitrogen (TN) (mg/L)
Nitrate (mg/L)
Nitrite (mg/L)
Ammonia (mg/L)
Alkalinity (mg/L)
TKN (mg/L)
Oil & Grease (mg/L)

Resampling Option

The Vendor may direct resampling of a system if the Vendor has reason to believe the results are not representative. Reasons may include evidence of excess occupancy, possible shock load from the home, effects of antibiotics or other drugs, or system needing service or adjustment. The system must be resampled no sooner than seven (7) days after any adjustment is made to the system and within thirty (30) days of the original sample collection for that round. Resampling may be performed only once per sampling event. The sample must be analyzed for each of the parameters noted in Table 1 for any resampling events. When resampling is performed, the Vendor shall submit as part of the Final Report to the RIDEM, an explanation of the reasons for resampling and any measures taken to correct the system’s performance prior to resampling.

Final Report

The Vendor is responsible for the submittal of all data generated under this protocol to the RIDEM in the form of a Final Report. This includes the average daily forward flow volume, chain-of-custody forms, analytical reports for all sampling events including resampling and reason for resampling, field equipment analysis procedures, field equipment calibration notes, and any other explanatory notes. The Final Report should summarize all monitoring results and demonstrate whether the A/E Technology was able to meet the requirements outlined in the A/E Technology Certification. Based on the results submitted the RIDEM reserves the right to suspend or revoke the A/E Technology Certification.

Additional RIDEM Onsite Wastewater Treatment System (OWTS) construction permit applications beyond the first ten (10) systems conformed in RI and/or first ten (10) systems under construction in RI will not be entertained by the RIDEM until such time that a Final Report is submitted and approved by the RIDEM.