



**Low TN Limit Imposes Technical Challenge on MA On-Site Wastewater Solution**

**Special Points of Interest**

- Effluent TN ≤ 5
- Assisted Living Facility
- Biological Active Filter
- Stantec Engineers
- WhiteWater Inc.
- Amphidrome®

**Mashpee , Massachusetts**

Stantec Engineers was challenged by the Massachusetts Cape Cod Commission to design a nitrogen reducing system with stringent limits for Epoch Assisted Living in Mashpee, MA .

After discussion with the CCC, an effluent limit of ≤ 5 TN was determined to be required. Stantec set a design target of ≤3 TN.

An Amphidrome® system was chosen as the best technical solution.

The process is a **biologically active filter** (BAF) and provides up to 15,000 mg/l of active volatile solids (VS) in a small footprint.

The media also provides physical filtration and therefore the need for solids separation after the biological treatment process is eliminated.

The 8,500 gpd system incorporates an 8 ft. dia. Amphidrome® reactor, a 3 ft. dia. Plus™ denitrifying filter and a 2.5 ft. dia. polishing filter.

The system has attained an effluent of < 2 mg/L TN since it was put into operation by WhiteWater Inc. in the fall of 2015.

The control system is PLC based with a user friendly touch screen interface that allows real time control and observation of the system via the internet.

Remote access to system, trending data, alarm history etc. provides valuable insight on system operation and any adjustments that may need to be made to optimize performance. These adjustments can be made remotely in real time.

**2017 Operational Data**

Month	Influent TKN	Effluent TKN	Effluent TN	Effluent BOD	Effluent TSS
February	62	1.6	1.6	15	12
March	31	1.2	1.2	5.2	4.0
April	59	2.1	3.5	9	7.3
May	26	.92	.92	<3	2.2
June	62	1.6	1.92	<3	2.5
July	24	.84	.84	<3	10