State of Delaware
Department of Natural Resources & Environmental Control
Division of Water Resources
Ground Water Discharges Section

Innovative and Alternative System Approval

ISSUED TO: Aquapoint, Inc.
241 Duchaine Blvd.
New Bedford, MA 02745

Phone (508) 998-7577
Fax (508) 998-7177

FROM: Jason Baumgartner – Environmental Scientist
Ground Water Discharges Section

FOR: Bioclere Models: 16/12, 16/15, 16/19, 24/20, 24/24, 24/30, 30/24, 30/32, 36/24, 36/30

APPROVAL DATE: 11/15/06

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated August 17, 2006, has been submitted by Aquapoint, Inc., for approval of the Bioclere advanced treatment unit as an Innovative & Alternative On-Site Wastewater Treatment Unit.

Based on the review of the application, the Department hereby grants approval of the use of the following Bioclere models, as Innovative & Alternative On-Site Wastewater Treatment Units: 16/12, 16/15, 16/19, 24/20, 24/24, 24/30, 30/24, 30/32, 36/24, 36/30. The following conditions, limitations, and requirements must be adhered to:

1. **Product Description**

   The Bioclere treatment unit uses a fixed film trickling filter for wastewater treatment. The first stage of treatment occurs in the primary treatment tank in which the solids are settled and partially digested. Septic tank effluent then flows

by gravity to the Bioclere unit. Microorganisms present in the wastewater attach to the plastic filter media and use the nutrients and organic materials provided by the constant supply of fresh wastewater to form new cell mass. The open spaces within the media allow air and wastewater to feely pass through, providing oxygen to support the microorganisms.

The system has a recycle line for pumping of recycled solids and secondary effluent from the clarifier section back to the primary treatment tank. A dosing pump circulates treated effluent from the clarifier section back to the top of the unit, where the wastewater is sprayed over the media using a manifold and nozzle system. Air is supplied to the Bioclere unit by a continuously running fan on the top of the unit.

The Bioclere unit removes total nitrogen from the wastewater through nitrification and denitrification processes. Nitrification occurs in the aerobic Bioclere unit and denitrification occurs simultaneously within the aerobic, anoxic, and anaerobic zones of the biofilms and in the primary treatment tank.

Below are the models with their associated treatment capacities:

Bioclere Model	**Maximum Flow Capacity of Residential Strength Wastewater Treated to Secondary Level [1] (GPD)**
16/12/350 & 16/12-SS	550
16/12-LS	800
16/15	1150
16/19	1600
24/20/950	4900
24/20/1600	5000
24/24/950	VARIES [2]
24/24/1600	7000
24/30/950	VARIES [2]
24/30/1600	9000
30/24	11000
30/32	13500
36/24	17500
36/30	20000

[1] THESE ARE GENERIC GUIDELINES. PROJECTS ARE SIZED ON AN INDIVIDUAL BASIS. AQUAPOINT REQUIRES THAT IT REVIEW PRELIMINARY & FINAL PLANS

[2] MODELS GENERALLY USED FOR HIGH STRENGTH COMMERCIAL WASTEWATER ONLY. EACH BIOCLERE SYSTEM IS SIZED TO INDIVIDUAL PROJECT SPECIFICATIONS

2. Claim

Approval is based on information submitted by the Manufacturer indicating the specified model will routinely provide effluent quality not exceeding 30 mg/l of $CBOD_5$, 30 mg/l of TSS, and 20 mg/l Total Nitrogen.

The 16/12-350 unit has been certified under NSF Standard 40 meeting Class I standards.

3. Use and Design Criteria

a. The Bioclere unit may be installed for new and replacement systems with conventional and innovative and alternative disposal systems.
b. An on-site wastewater treatment and disposal system permit application incorporating a Bioclere unit shall be designed in accordance with the Regulations, and manufacturer's specifications. The design shall be completed by a DNREC Class C Design Engineer unless otherwise approved by the Department. The permit application shall include proper unit specifications.
c. The designer must ensure a pre-treatment tank precedes the Bioclere unit. This tank shall have a full wall baffle at 2/3 of the length of the tank and have a minimum volume of 1000 gallons or sized per the manufacturer's recommendations.
d. The designer must assure the top of the Bioclere unit extends a minimum of 18 inches above final grade. The design also must ensure that the control panel and fan are accessible.
e. The Bioclere unit shall not be installed within areas subject to traffic loads unless specially designed on a case by case basis in accordance with the Regulations and in accordance with manufacturer's specifications.
f. The Design Engineer must specify the volume of concrete to be poured around the base of the Bioclere, if the unit is installed in groundwater.
g. The design must include a minimum 1.5" diameter PVC recycle line originating over the Bioclere inlet.
h. The manufacturer is responsible for providing the Department a list of all local distributors and their associated contact information. This list must be kept current and shall be submitted to the Department on a yearly basis.
i. All permit applications over 2500 GPD must follow large system design criteria and requirements.

4. Installation Procedures

a. The Bioclere unit shall be installed by a DNREC Class E System Contractor under the supervision of a manufacturer's representative, or by a DNREC Class E System Contractor who has been certified for unit installation. Proof of certification shall be provided in writing to the Department.

b. Start up of the system and initial operational checks shall be conducted by the Class E System Contractor (trained by the manufacturer), Design Engineer, and a Ground Water Discharges Section (Large System Branch) representative. If the Class E System Contractor is not certified, a manufacturer's representative shall perform the operational checks of the system at start up. If the manufacturer's representative can not be on site at the time of start up, they must provide final start up approval to the Department in writing.

5. Operation and Maintenance

a. The Bioclere unit shall be operated and maintained in accordance with the manufacturer's specifications.
b. The manufacturer shall comply with all Department mandated requirements as specified in permit conditions. This shall include operation and maintenance requirements.

6. Sampling and Approval

The Department reserves the right to sample any unit at any time.

7. General Conditions

a. Use of the system for wastes other than residential shall be on a case by case basis.
b. In the event that the product fails to perform as claimed by the applicant, the use of the units for new installations shall cease. Use of the units shall not resume until such time the applicant and the Department have reached an acceptable agreement for resolving the situations.
c. Any changes that deviate from the specifications as submitted with this approval shall be approved by the Department prior to use.