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DEPARTMENT OF ENVIRONMENTAL PROTECTION
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CERTIFICATION FOR GENERAL USE
Pursuant to Title 5, 310 CMR 15.000

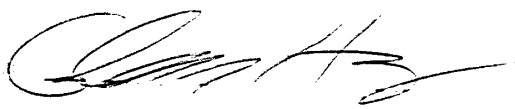
GENERIC – Recirculating Sand Filter (secondary or nitrogen reducing)

Trade name of technology and model: **Recirculating Sand Filter** designed in accordance with Department guidance (hereinafter the "System"). An inspection checklist and design guidance are part of this approval.

Date of Issuance: September 9, 2008

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection hereby issues this Certification for General Use certifying General Use in the Commonwealth of Massachusetts of the System described herein. Installation and use of the System are conditioned on and subject to compliance by the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Certification constitutes a violation of 310 CMR 15.000.



Glenn Haas, Acting Assistant Commissioner
Bureau of Resource Protection

September 9, 2008
Date

I. Purpose

1. The purpose of this Certification is to clarify the use of the Recirculating Sand Filter (the 'System' or 'RSF') in Massachusetts on a General Use basis in accordance with 310 CMR 15.202(3).
2. With the necessary permits and approvals required by 310 CMR 15.000, this Certification authorizes the installation and use of the System in Massachusetts.
3. The System may be installed on all facilities where a system in compliance with 310 CMR 15.000 exists on site or could be built and for which a site evaluation in compliance with 310 CMR 15.000 has been approved by the local approving authority; or by DEP, if DEP approval is required by 310 CMR 15.000.
4. Use of the System technology shall meet the following requirements:

   Effluent discharge concentrations shall not exceed 30 mg/L BOD and 30 mg/L TSS, and, total nitrogen of 25 mg/L when increasing the loading rate to 550 gallons per day/acre (gpda) in accordance with 310 CMR 15.217(2). Effluent shall also have a pH range of 6.0 to 9.0 and a maximum design flow of 10,000 gpd.

II. Design Standards

1. The System must be designed in accordance with the Department's guidance titled *Recirculating Sand Filters Design Guidance*, dated April 2006, and as it may be amended from time to time. This guidance can be viewed on DEP's internet site at *http://www.mass.gov/dep/water/laws/policies.htm#t5guid* , within the *Title 5/Septic Systems Guidance* section.
2. The System shall be installed in series between the septic tank and the soil absorption system (SAS) of a standard Title 5 system in a manner which neither intrudes on, replaces a component of, or adversely affects the operation of a Title 5 system as constructed in accordance with 310 CMR 15.100 through 15.279, subject to the provisions of this Certification. A Massachusetts registered professional engineer or registered sanitarian shall design a System in accordance with 310 CMR 15.220(1).
3. The System consists of a recirculation tank and pump, and an underdrained sand filter. Effluent from a standard septic tank discharges to the recirculation tank, where it mixes with the effluent returned from the sand filter. The mixture is periodically pumped onto and evenly distributed over the surface of the sand filter. A collection underdrain, at the bottom of the filter collects the effluent and returns it by gravity to the recirculation tank (or if the tank is full, to the pump chamber). The mixture of septic tank effluent and filter effluent is periodically discharged either by gravity or by pumping to the SAS for final disposal.
4. Access shall be provided to all System tanks in accordance with 310 CMR 15.228 (2) for proper operation and maintenance. Septic tanks and Systems with integrated septic tanks incorporating settling compartments, shall have at least three manholes with readily removable impermeable covers of durable material provided at grade. Two manholes, over the inlet and outlet, shall have a minimum opening of 20 inches. All other access ports and manhole covers shall be installed and maintained at grade to allow for maintenance of the System. Control panel(s) including alarms shall be mounted in a location accessible to the System operator.

5. New Construction less than 2000 GPD: For residential Systems less than 2,000 GPD, the SAS size required by 310 CMR 15.242, *LTAR: Effluent Loading Rates* can be reduced by 50 percent provided that the facility is designed according to Section I, item 4(a) and complies with the requirements of Section IV, item 2.
   a. Systems with a 50 percent reduced SAS shall include a pressure distribution system for effluent disposal designed in accordance with Department guidance.

6. New Construction for All Non-Residential Facilities and Residential Facilities with Design Flows 2,000 GPD to less than 10,000 GPD: No reduction in SAS field size is allowed under this approval.

7. New Construction: When the System is used in areas subject to the nitrogen loading limitations of 310 CMR 15.214, an increase in calculated allowable nitrogen loading per acre is allowed for facilities as provided in 310 CMR 15.217(2). When used in such areas:
   a. For all facilities, the design flow shall not exceed 550 gpda, and the System effluent shall not exceed 25 milligrams per liter (mg/L) total nitrogen (TN) concentration measured as the total of TKN (Total Kjeldhal Nitrogen), NO3-N (Nitrate nitrogen) and NO2-N (Nitrite nitrogen).

III. General Conditions

1. The provisions of 310 CMR 15.000 are applicable to the use and operation of this System, the System owner and the System designer, except those that specifically have been varied by the terms of this Certification.
2. Department approval of Systems serving residential facilities with design flows less than 2000 gpd is not required, unless a DEP variance to Title 5 is required for the facility.
3. The applicant shall obtain approval from the local approving authority and shall submit an application for approval using form BRP WP 57 to the Regional Office of DEP for Systems serving all non-residential facilities and all residential facilities with design flows of 2000 gpd or greater.
4. The local approving authority shall submit a copy of all System approvals, including the date of approval, design flow of System, applicant and location of the System to the Department at the following address:

   Wastewater Management Program, Title 5
   Department of Environmental Protection
   One Winter Street - 5th floor
   Boston, Massachusetts 02108

5. Any required operation and maintenance, monitoring and testing shall be performed in accordance with a Department approved plan. Any required sample analysis shall be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory, unless otherwise provided in the Department's written approval. It shall be a violation of this Certification to falsify any data collected

pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.

6. The facility served by the System and the System itself, shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times.
7. In accordance with applicable law, the Department and the local approving authority may require the owner of the System to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare or the environment.
8. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer. Accordingly, no System shall be upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004.
9. Design, installation and operation of the System shall be in strict conformance with the Department's Guidance titled *Recirculating Sand Filters Design Guidance*, dated April 2006 and as it may be amended from time to time, and this Certification.

IV. Conditions Applicable to the System Owner

1. The System is certified in connection with the discharge of sanitary wastewater only. Any non-sanitary wastewater generated and/or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed of.
2. New Construction less than 2000 gpd: For residential Systems with a design flow less than 2000 GPD, the System owner initially shall size the SAS in accordance with 310 CMR 15.242 to demonstrate that a conventional Title 5 SAS, including a reserve area, can be installed on the site. The System owner can then reduce the size of the SAS as calculated in 310 CMR 15.242 by 50 percent. No additional reduction in sizing based on innovative technology shall be taken. The total area required in the initial sizing, which must include the area designated for the System and the primary and reserve area, shall be preserved and the System owner shall ensure that no permanent structures, excluding the System and 50 percent reduced SAS, or other structures are constructed on that area and that the area is not disturbed in any manner that will render it unusable for future installation of a conventional Title 5 SAS.
3. All samples shall be taken at a flowing discharge point, i.e. distribution box, pipe entering a pump chamber or other Department approved location from the treatment unit. Any required influent sample shall be taken at a point that will provide a representative sample of the influent. Influent sample locations shall be determined by the system designer, subject to the Department's written approval.
4. Operation and Maintenance

   A. General Requirements:

      i. Throughout its life, the owner shall operate and maintain the System in accordance with the RSF design guidance, the System designer's operation and maintenance requirements and this Approval. To ensure proper operation and maintenance (O&M), the owner shall enter into an O&M agreement. No O&M agreement shall be for less than one year.

ii. No System shall be used until an O&M agreement is submitted to the local approving authority which:

a Provides the name of an operator competent in providing services consistent with the System's specifications, which must be a Massachusetts certified operator if one is required by 257 CMR 2.00, that will operate and monitor the System (hereinafter the "System operator"). The System owner shall notify the Department and local approving authority, in writing, within seven days of a change in the operator of the System.

b. Contains procedures for notification to the Department and the local approving authority within five days of knowledge of a System failure, malfunction or alarm event and for corrective measures to be taken immediately;

B. Systems designed in accordance with Section II, item 7, in a Department designated nitrogen sensitive or limited area as defined in 310 CMR 15.214 and 15.215 shall meet the following requirements:

i. Effluent shall meet the requirements in 310 CMR 15.202(4): 30 mg/L Carbonaceous Biochemical Oxygen Demand (CBOD5), 30 mg/L Total Suspended Solids (TSS), and 25 mg/L Total Nitrogen (TN). Effluent pH shall be maintained between 6.0 and 9.0.

ii. The operator must inspect, and maintain the System according to the following, and anytime there is an alarm event.

a. For Systems in use year round: effluent from the System shall be monitored at least once per calendar quarter. Any sample collected within 60 days or more than 90 days of a previous sample shall not be considered a required quarterly sample. The following parameters shall be monitored: pH, effluent CBOD5, TSS, alkalinity and TN (TKN+NO3-N+NO2-N). Each time the System is monitored, the water meter, if a water meter is installed, shall be read and the water use recorded. All monitoring data shall be submitted to the Department and the local approving authority per Section IV, item 8 below. After two years of monitoring and at the written request of the System owner, the local approving authority may reduce the inspection and monitoring requirements for residential systems to two inspections per year with field testing for pH, DO and turbidity and laboratory testing for TN.

b. For Systems in use seasonally, where the facility is occupied fewer than six months per year; effluent from the System shall be monitored twice per season; initially 45 days after occupancy and prior to shutdown, and if the facility is occupied during an additional calendar quarter, once during that following quarter prior to System shut down. The following parameters shall be monitored: pH, CBOD5, TSS, TN and alkalinity. Each time the System is monitored, the water meter, if a water meter is installed, shall be read and the water use recorded. All monitoring data shall be submitted to the Department and the local approving authority per Section IV, item 8 below. After two seasons of monitoring and at the written request of the System owner, the local approving authority may reduce the inspection and monitoring requirements for residential systems to annual inspections with field testing for pH, DO and turbidity and laboratory testing for TN.

c. For all non-residential systems after three years of monitoring and at the written request of the System owner, the local approving authority may reduce the inspection and monitoring requirements to quarterly inspections with field testing for pH, DO and turbidity and effluent-only laboratory testing for TN.

iii. The System Owner or Operator shall provide a plan to the local approving authority within 30 days to determine the cause of effluent limit violations for TN if violations occur on two consecutive sampling events.

C. Systems designed in accordance with Section II, items 5 and 6, shall meet the following requirements:

i. Effluent shall not exceed 30 mg/L TSS and 30 mg/L BOD5. Effluent pH shall be maintained between 6.0 and 9.0.

ii. The operator must inspect and maintain the System according to the following, and anytime there is an alarm event:

a. For residential Systems installed with a 50 percent reduced SAS, the operator must inspect, field test effluent and maintain the System at least every six months. For single family residential Systems installed with a standard sized SAS, the inspections and field testing of effluent shall be conducted at least once per year in accordance with the Departments policy, *Inspection and Sampling in Title 5 I/A Single Family Home Remedial and General Use Treatment Systems with Design Flows less than 2,000 GPD* dated January 1, 2006. The Department's Inspection and Sampling policy can be viewed on the internet at *http://mass.gov/dep/water/laws/policies.htm#t5pols*.

b. For all other Systems 2,000 GPD or greater, and non-residential Systems, the operator must inspect, field test effluent and maintain the System at least every three months. For all non-residential systems after three years of monitoring and at the written request of the System owner, the local approving authority may reduce the monitoring requirements to effluent-only laboratory sampling of BOD5 and TSS. Quarterly inspections can not be reduced for these large systems.

iii. The System Owner or System Operator shall provide a plan to the local approving authority within 30 days to determine the cause of effluent limit violations for BOD and or TSS if violations occur on two consecutive sampling events for the same parameter.

5. The System owner shall provide a copy of this Certification, prior to the signing of a purchase and sale agreement for the facility served by the System or any portion thereof, to the proposed new owner.

6. The System owner shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.

7. By September 30th of each year, the System owner shall submit to the Department and the local approving authority a *DEP Inspection O&M Form for Title 5 I/A Treatment and Disposal Systems* and RSF technology checklist, completed by the System operator for each inspection performed during the previous 12 months. Any effluent quality data obtained shall also be provided.

8. Prior to the issuance of a Certificate of Compliance for the System, the System owner shall record and/or register in the appropriate Registry of Deeds and/or Land Registration Office, a Notice disclosing the existence of the alternative septic system subject to this Approval on the property. If the property subject to the Notice is unregistered land, the Notice shall be marginally referenced on the owner's deed to the property. Within 30 days of recording and/or registering the Notice, the System owner shall submit the following to the local approving authority: (i) a certified Registry copy of the Notice bearing the book and page/instrument number and/or document number; and (ii) if the property is unregistered land, a Registry copy of the owner's deed to the property, bearing the marginal reference.

V. Reporting

1. All notices and documents required to be submitted to the Department by this Certification shall be submitted to:

Director
Wastewater Management Program
Department of Environmental Protection
One Winter Street - 5th floor
Boston, Massachusetts 02108

VI. Rights of the Department

1. The Department may suspend, modify or revoke this Certification for cause, including, but not limited to, non-compliance with the terms of this Certification, any change in or discovery of conditions that would constitute grounds for discontinuance of the Certification, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Certification and/or the System against the owner or operator of the System and/or the designer or the installer.