



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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RENEWAL OF CERTIFICATION FOR GENERAL USE

Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

Innovative RUCK Systems, Inc.
362 Gifford Street
Falmouth, MA 02540

Trade name of technology and model number: RUCK System for residential facilities with a design flow of less than 2000 gallons per day (hereinafter the "System"). Schematic drawings illustrating the System and an Inspection Checklist are attached and are part of this Certification.

Transmittal Number: W152782
Date of Issuance: November 7, 2005, renewal November 29, 2007
Expiration date: November 29, 2012

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 to: Innovative RUCK Systems, Inc., 362 Gifford Street, Falmouth, MA 02540 (hereinafter "the Company"), certifying for General Use in the Commonwealth of Massachusetts of the System described herein. Sale and use of the System are conditioned on and subject to compliance by the Company and the owner(s) of each installed system (hereinafter, the "owner(s)" or the "System owner(s)") 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

November 29, 2007
Date

I. Purpose

1. The purpose of this Certification is to allow the use of the System in Massachusetts on a General Use basis.
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 the Department if Department approval is required by 310 CMR 15.000.
4. The System is approved for use at facilities with a maximum design flow less than 2000 gallons per day (gpd).

II. Design Standards

1. The System consists of two septic tanks, a pump chamber, a RUCK filter and a carbon source unit. The first septic tank (pre-RUCK filter) collects all wastewater from the facility building sewer. Effluent from the first septic tank flows by gravity to a pump chamber that pressure doses the RUCK filter. The filter construction includes alternating layers of sand and stone, plastic indrains installed within the sand layer and an impermeable liner. The effluent from the RUCK filter is collected in the underdrain system and piped by gravity to the second septic tank (post RUCK filter). A carbon source unit adds carbon to this tank which mixes with the nitrified effluent. The nitrogen reduced effluent is then discharged to a soil absorption system (SAS).
2. The System shall be installed between the building sewer and the SAS designed and constructed in accordance with 310 CMR 15.100 - 15.279, subject to the provisions of this Certification.
3. The System is vented at two locations, through a roof vent on the facility and through a surface vent located at the filter.
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.
5. The control panel including alarms shall be mounted in a location accessible to the operator of the System.
6. New Construction: In accordance with 310 CMR 15.217(2), an increase in calculated nitrogen loading per acre is allowed for residential facilities *with a design flow of less than 2000 gpd*, with the use of the System in areas subject to nitrogen loading limitations, under 310 CMR 15.214. When used in such areas:

- i. The design flow shall not exceed **660** gallons per day of design flow per acre (gpda) and the total nitrogen (TN) concentration in the effluent shall not exceed 19 milligrams per liter (mg/L); or
- ii. The design flow shall not exceed **550** gallons per day of design flow per acre (gpda) and the total nitrogen (TN) concentration in the effluent shall not exceed 25 milligrams per liter (mg/L).

III. General Conditions

1. All provisions of 310 CMR 15.000 are applicable to the use and operation of this System, the System owner and the Company, except those that specifically have been varied by the terms of this Certification.
2. 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.
3. 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.
4. 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.
5. 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 sanitary sewer system. 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.
6. Design and installation and use of the System shall be in strict conformance with the Company's DEP approved plans and specifications and 310 CMR 15.000, subject to this Certification.

IV. Conditions Applicable to the System Owner

1. The System is certified only in connection with the discharge of sanitary wastewater. 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. Effluent TN concentrations for residential facilities shall not exceed 19 mg/L. For all non-residential facilities TN concentration in the System effluent shall not exceed 25 mg/L. The effluent pH shall not be less than 6.0 or more than 9.0.

Renewal of Certification General Use for RUCK System

Page 4 of 7

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.
4. Operation and Maintenance agreement:
 - i. Throughout its life, the System shall be under an operation and maintenance (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 for the contracting of a person or firm trained by the Company as provided in Section V (5) and competent in providing services consistent with the System's specifications, with the operation and maintenance requirements specified by the Company and the designer and with any specified by the Department. In accordance with the Board of Certification of Wastewater Treatment Plant Operators opinion, the operator need not be a Massachusetts certified operator unless the system includes pumps or other mechanical devices;
 - 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;
 - c. Contains a plan to determine the cause of effluent limit violations for total nitrogen if violations occur on two consecutive sampling events; and
 - d. The operator must operate and maintain the System in accordance with Department policy or at least every three months and any time there is an alarm event (also see Item 8 below).
5. The System owner shall at all times have the System properly operated and maintained in accordance with this Certification, the designer's operation and maintenance requirements and the Company's approved procedures. 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.
6. 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.
7. 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.
8. In areas subject to the nitrogen load limitations in 310 CMR 15.214:
 - i. For year round residential and non-residential use, effluent from the System shall be monitored quarterly. At a minimum, the following

parameters shall be monitored: pH and total nitrogen (TN). Each time the System is monitored, the water meter reading also shall be recorded. All monitoring data shall be submitted to the Department within 45 days of the sampling date. After one year of monitoring and at the written request of the owner, the Department may reduce the monitoring requirements.

- ii. For seasonal residential use where the residence is occupied fewer than six months per year, effluent from the System shall be monitored twice per season. At a minimum, the following parameters shall be monitored: pH and TN. Each time the System is monitored, the water meter reading also shall be recorded. All monitoring data shall be submitted to the Department within 45 days of the sampling date.
- 9.** By September 30th of each year, the System owner shall submit to the Department and the local approving authority an O&M and technology checklist, completed by the System operator for each inspection performed during the previous 12 months. A copy of this checklist can be obtained on the internet at <http://mass.gov/dep/water/approvals/t5forms.htm#inspect>.

V. Conditions Applicable to the Company

1. By January 31st of each year, the Company shall submit to the Department, a report, signed by a corporate officer, general partner or Company owner that contains information on the System for the previous calendar year. The report shall state: the number of units of the System sold for use in Massachusetts during the previous year; the address of each installed System, the owner's name and address, the type of residential use and the design flow; and for all Systems installed since the first issuance of Certification for the System, all known failures, malfunctions, and corrective actions taken and the address of each such event.
2. Within 60 days of the date of issuance of this Certification, the Company shall conduct and submit to the Department a performance review of all installed Systems. The evaluation shall include the following:
 - i. Analysis of the sampling results for all the Systems including but not limited to mean and median values and the percentage of systems that are meeting the TN effluent limits compared to the systems that are out of compliance;
 - ii. A detailed review of Systems that are out of compliance;
 - iii. Reasons for non-compliance and any corrective action that needs to be taken including design, installation and/or operation or maintenance changes required to reach compliance; and
 - iv. A summary of the results for the last 12 months of operation, any recommended changes to the design, installation and/or operation and maintenance procedures and a schedule for implementing those changes.
3. The Company shall notify the Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Certification is issued. Said notification shall include

Renewal of Certification General Use for RUCK System

Page 6 of 7

the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Certification applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.

4. The Company shall make available, in printed and electronic format, minimum installation requirements; an operating manual, including information on substances that should not be discharged to the System; and a recommended schedule for maintenance of the System essential to consistent successful performance of the installed Systems to owners, operators, designers and installers of the System.
5. The Company shall institute and maintain a program of operator training and continuing education. The Company shall maintain and annually update, and make available the list of qualified operators by January 31st and make the list known to local approving authorities, the Department and to users of the technology.
6. The Company 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. The Company shall include copies of this Certification and the procedures described in Section V (4) with each System that is sold. In any contract executed by the Company for distribution or re-sale of the System, the Company shall require the distributor or re-seller to provide each purchaser of the System with copies of this Certification and the procedures described in Section V (4). Also, the Company shall require the distributors or re-sellers to provide the Company with 5 days notice prior to System installations, allowing for a Company representative to be present.
8. Notwithstanding the expiration date of this Certification, any System sold and installed prior to the expiration date of this Certification, and approved, installed and maintained in compliance with this Certification (as it may be modified) and 310 CMR 15.000, may remain in use unless the Department, the local approval authority, or a court requires the System to be modified or removed, or requires discharges to the System to cease.
9. If the Company wishes to continue this Certification after its expiration date, the Company shall apply for and obtain a renewal of this Certification. The Company shall submit a renewal application at least 180 days before the expiration date of this Certification, unless written permission for a later date has been granted in writing by the Department. This Certification shall continue in force until the Department has acted on the renewal application.

VI. 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

VII. 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, non-payment of the annual compliance assurance fee, for obtaining the Certification by misrepresentation or failure to disclose fully all relevant facts or 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 Company.

RUCK System Maintenance Inspection Checklist

Location _____

Date of Service _____
Operator/Firm _____

1. Inspect Septic Tanks:

(1st-pre Ruck Filter) (2nd-post Ruck Filter)

- Inspect the condition of the tank: _____
- Measure distance between bottom of scum/grease layer and bottom of the outlet baffle.
Distance: _____
- Measure distance between top of scum layer and top of the outlet tee.
Distance: _____
- Measure thickness of scum/grease layer.
Distance: _____
- Measure the sludge layer and distance from sludge to outlet tee.
Thickness/Distance: _____
- Inspect the condition of the inlet and outlet tees.
Description of Inlet/Outlet: _____
- Report any evidence of leakage into or out of the tank.
Leakage (Yes or No): _____
- Report any evidence of backup of effluent into the tank.
Backup (Yes or No): _____

2. Inspect Ruck Filter Pump Chamber (Post 2006 Designs):

- Inspect the pumps, alarm and the floats: _____
- Check that the pumps are functioning and that they are not obstructed: _____
- Record pump amps: _____
- Test the alarm system. Check both the audible alarm and the inaudible alarm by manually activating the alarm: _____
- Make sure that the floats are working properly and not hung up: _____
- Check all the distribution lines to make sure that distribution is equal and that there are no obstructions in the lines: _____

3. Inspect RUCK Filter D-box for evidence of clogging, blockage or backup (Pre 2006 Designs):

- Description: _____

4. Inspect vents for evidence of clogging or blockage:

- Inspect vent tee and insure insect screens are in place and that no insect or bird nests are blocking the vent line. : _____

5. Monitoring:

- Certain systems are installed in Nitrogen sensitive area with Nitrogen concentration limits on the effluent. If monitoring is required, collect sample in accordance with the latest Certification for General Use.
- Sample (Yes or No) _____:
- If Yes, BOD _____, TSS _____, TN _____, pH _____, Other _____

6. Odor Problem:

- Source and Description (Yes or No): _____

7. Carbon Source Unit:

- Amount left and or refill (Yes or No): _____

Note: The Local Approving Authority May Specify Additional Requirements