



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

February 23, 2012

Pio Lombardo
Lombardo Associates, Inc.
~~49 Edge Hill Road~~ New Address: 188 Church Street
~~Newton, MA 02467~~ Newton, MA 02458

RE: ***Restriction on use of Nitrex with Bottomless Sand Filters (BSFs) & Pressurized Shallow Narrow Drainfields (PSNDs) and related actions***

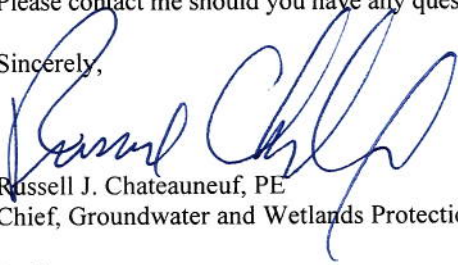
Dear Mr. Lombardo:

Thank you for your memorandum dated December 29, 2011 concerning the issues that developed on a recent installation of the Nitrex system on a design incorporating the use of a pressurized shallow narrow drainfield (PSND). According to your memorandum, the Nitrex media lifecycle starts with a period during which elevated levels of soluble BOD are released, lasting typically 6-9 months. The normal sizing criteria established by DEM that is applicable to PSNDs may result in drainfields that are undersized, as evidenced in the recent installation. DEM is currently evaluating the options that you have proposed as possible solutions to this development.

In the meantime, DEM has taken the precaution to revise the certification for the Nitrex technology (see attached) to eliminate design allowances and requirements that relate to the fact the initial BOD concentrations exceed limits that may be safely accommodated by reduced sized drainfields. This revised certification shall remain in place until further notice. Also, please note that your renewal application has been received and is pending review and that the certification will remain valid until the renewal application is processed.

Please contact me should you have any questions regarding this letter (401- 222-4700 ext. 7700).

Sincerely,



Russell J. Chateaufneuf, PE
Chief, Groundwater and Wetlands Protection

Enclosure

cc: TRC Members





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Alternative / Experimental OWTS Technology Program

Vendor Information:

Lombardo Associates, Inc.
~~49 Edge Hill Road~~ New address:
Newton, MA 02467 188 Church Street
Newton, MA 02458

Contact:

Pio Lombardo
Tel: (617) 964-2924
Fax: (617) 332-5477
E-mail: pio@LombardoAssociates.com

Technology Name:

Nitrex™

Technology Type:

Nitrogen Reducing Technology – Class II
≤TN 10 mg/L

Certification Date:

Issued: February 8, 2008 with renewal required
in two years

Renewal: Application submitted & Pending

Revised: February 23, 2012

CERTIFICATION

The RI Department of Environmental Management has reviewed the Class II Alternative / Experimental (A/E) Technology application for the Nitrex™ Filter submitted by Lombardo Associates, Incorporated (LAI) hereinafter referred to as the Vendor. The Nitrex™ Filter performs a treatment step as part of a multi-component onsite wastewater treatment system. The Nitrex™ Filter is preceded by a nitrifying advanced pretreatment system designed to convert organic nitrogen and/or ammonium to nitrate, prior to the Nitrex™ Filter performing the denitrification step. Any advanced treatment system used in conjunction with a Nitrex™ Filter must also be a Department approved A/E Technology and must be approved by the Vendor for use with the Nitrex™ Filter. The term “Nitrex™ Filter” as used herein shall mean the media-filled tank and associated components and controls produced by the Vendor to cause denitrification. The term Nitrex™ Filter System as used herein shall mean the Nitrex™ Filter and the advanced pretreatment system.

The Nitrex™ Filter provides a carbon source in the form of wood media for heterotrophic bacteria operating in an anerobic environment to reduce the nitrate to nitrogen gas. Nitrified effluent is piped into the bottom of the Nitrex™ Filter and moves vertically through the media under a slight pressure head caused by gravity or pressure; the denitrified effluent is then discharged to a drainfield.

The pretreatment system used in advance of the Nitrex™ Filter must be designed, installed, operated and maintained in accordance with the terms of the certification issued by the Department for use of that system.

Based on the information contained in the Application submitted by Lombardo Associates, Inc., hereafter referred to as the “Vendor”, the Department hereby accepts the Nitrex™ Filter for listing in the RIDEM Alternative / Experimental Technology list. Design and installation of the Nitrex™ Filter System shall be in accordance with the following terms and conditions:

I. Design Requirements

A. General

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6. All Nitrex™ Filter System tanks, dosing chambers, pumping chambers, and riser assemblies must be certified watertight by the manufacturer or by on-site testing in accordance with the OWTS rules.
7. Aeration is key to the performance of the pre-treatment systems preceding the Nitrex Filter. To ensure Owner/Operator compliance with the pre-treatment system's operating requirements, all Nitrex™ Filter Systems shall be equipped with a run-time meter and audible and visual alarms to indicate power interruption to the Nitrex™ Filter System. These indicators shall be mounted on a NEMA approved cabinet on the exterior of the building. All Nitrex™ Filter Systems shall be equipped with a programmable logic controller. In commercial applications the Department may allow alarms to be installed inside provided the Department has access to the building at all reasonable times.
8. Each Nitrex™ Filter System installation shall meet all other applicable OWTS standards and receive prior approval by the Department pursuant to the rules in effect at the time of application.
9. Design and installation shall be in strict conformance with the approved pretreatment system and Nitrex™ Filter design and installation manuals. The design shall be prepared by a Rhode Island Licensed Designer and the installation shall be performed by a Rhode Island Licensed Installer each of whom has received training and is authorized in writing by the Vendor to perform the applicable work on the Nitrex™ Filter System.
10. All Nitrex™ Filter System designs shall be reviewed by and deemed acceptable to the Vendor or its authorized agent prior to submittal to the Department.

11. Training

- a.) The Vendor shall hold two training seminars for Rhode Island Licensed Designers and Installers (and homeowners) who wish to be trained during the term of this certification.
- b.) The first shall be held within the first six (6) months of the date of this certification.
- c.) The Vendor shall submit to the Department a detailed agenda, material to be distributed to attendees and a list of presenters and their credentials prior to offering a training seminar.
- d.) Following the seminar, the Vendor is required to provide each attendee who successfully completes the training with documentation of having done so.
- e.) Following each training seminar, a list of those who have satisfactorily completed the training shall be submitted to the Department.
- f.) No OWTS construction permit application incorporating the Nitrex™ Filter System will be accepted by the Department prior to the successful completion of all required activities associated with the first training event.

B. Nitrogen Reduction Provisions

1. The Nitrex™ Filter System is recognized as a nitrogen reducing system. Total Nitrogen concentration in the effluent as measured prior to entry into the drainfield shall not exceed 10 mg/l and shall be demonstrated to be representative of removal of 75% total nitrogen in the septic tank effluent.
2. The Nitrex™ Filter System is recognized for nitrogen reduction for all uses and design flows, with the following provisions for proposed use at schools and for other uses which generate high strength wastewater, including restaurants.
 - a.) The application shall be reviewed on a case-by-case basis by the Department, for acceptability.
 - b.) At a minimum, the Department will require sampling and testing of the wastewater (or an estimate / projection of wastewater characteristics for applications for new construction), an assessment by the vendor of the wastewater characteristics, and a certification by the vendor that the Nitrex™ Filter System as designed can meet treatment objectives.

II. General Certification Requirements

1. This revised Class II approval shall be effective until further notice by the Department.
2. If the Vendor wishes to extend this Class II Certification beyond its expiration date, they shall apply for and obtain a renewal of this certification. The Vendor shall submit a renewal application along with the appropriate renewal fee as denoted in the Fee Schedule in the Rules at least 90 days in advance of the expiration date of the certification.
3. The Vendor shall notify the Department at least 30 days prior to any proposed transfer of ownership of the Nitrex™ Filter technology. Notification shall include the name and address of the new owner and a written agreement between the existing and new owner specifying a date for transfer of ownership, responsibility, and liability for the technology. All provisions of this approval shall be applicable to any new owners.

4. The Vendor shall provide any purchaser of the Nitrex™ Filter with a copy of this approval letter prior to the sale of the Nitrex™ Filter.
5. The Vendor must notify the Department of any discontinuation of equipment and may not substitute material or components without Department approval.

III. Operation and Maintenance Requirements

1. Detailed Nitrex™ Filter System operating instructions shall be provided to the Owner/Operator.
2. The Nitrex™ Filter System shall be maintained according to the Vendors' specifications.
3. For seasonally used Nitrex™ Filter Systems, the Vendor shall provide specifications for protection of the Nitrex™ Filter System and the biological component from freezing, and conditions under which power to the Nitrex™ Filter System may be turned off.
4. The Applicant/Owner shall record the operation and maintenance requirements for the Nitrex™ Filter, and all other A/E components in the treatment train, in the land evidence records of the applicable city or town prior to the Department issuing the Certificate of Conformance for each installation.
5. The Vendor must offer for sale a minimum two-year service contract that must include, as an option, service to all A/E components of the treatment train in addition to the Nitrex™ Filter.
6. A public or private maintenance entity (O & M provider) shall be retained continuously for the life of the Nitrex™ Filter and all other A/E components of the treatment train. The O & M provider shall be available to perform needed preventative maintenance, perform repairs, respond to emergency calls and conduct performance monitoring when required by this certification or by permit. Such entity shall perform an inspection of the Nitrex™ Filter System at least quarterly for design flows of 2,000 gpd or more, and at least twice annually for smaller design flows. The O & M provider shall report to the Vendor, all inspections and maintenance calls conducted and all problems or failures observed with a summary of the cause and remedial measures taken. No agreement with a maintenance entity shall be for less than two years.
7. The Vendor shall provide to the Department within six months of the issuance of this certification, a list of trained O & M providers. The names of at least two qualified service providers shall be maintained on the list at all times. Properly trained homeowners may perform operation and maintenance on their own Nitrex™ Filter System.
8. No permit application incorporating the Nitrex™ Filter System will be accepted by the department until the names of two qualified service providers have been provided.
9. The Vendor shall have an inventory of Nitrex™ Filter replacement parts available locally.

IV. Reporting Requirements

1. The Vendor shall submit an annual report to the Department by January 25 of each year containing the following information for the previous 12 month period: the number of Nitrex™ Filter Systems installed in RI, the address of each installation and name of the owner and permit number, the number of inspections/ maintenance calls conducted, and all known problems or failures experienced, with a brief summary of the cause and remedial measures taken.
2. For Nitrex™ Filter Systems serving single-family homes, the Vendor shall monitor the treatment efficiency of all Nitrex™ Filter Systems installed in Rhode Island after the date of this certification, for two years; the Department may require extension of this requirement. Grab samples shall be taken from the d-box or pump chamber prior to the leachfield, as appropriate. Each of the Nitrex™ Filter Systems shall be monitored at least four times a year for the first two years. Two samples shall be taken in the summer months and two in the winter months; seasonally used Nitrex™ Filter Systems shall be monitored once at the beginning and once at the end of the season during which they are used. At a minimum the following parameters shall be monitored: BOD5, TSS, pH, TKN, nitrate, nitrite, ammonia, alkalinity and fecal coliform. This information shall be included in the annual report submitted to the Department as directed by item 1 above. Sampling requirements may be extended or sampling frequency for a Nitrex™ Filter System may be reduced at the discretion of the Department after two years' data have been evaluated.

If, at any time, the information gathered from the monitoring indicates that a Nitrex™ Filter System's performance is not in compliance with the terms of this certification, measures shall be taken to correct its treatment of the wastewater, and additional sampling and analysis shall be conducted. The Nitrex™ Filter System shall be re-sampled as necessary until it is operating in compliance with this certification. The O & M provider shall submit to the Department and to the Vendor, an explanation of the measures taken to correct the Nitrex™ Filter System's performance and the laboratory analyses for each sampling event. This information shall be submitted as soon as it is available after each re-sampling event; electronic submission is encouraged.

3. For any Nitrex™ Filter System with a design flow of 2,000 gpd or more, the O & M provider shall monitor the treatment efficiency of the Nitrex™ Filter System. Grab samples shall be taken from the d-box or pump chamber prior to the leachfield as appropriate, and water use since the last sampling event shall be recorded. The Nitrex™ Filter System shall be monitored at least four times a year for a period of two years. Two samples shall be taken in the summer months and two in the winter months. At a minimum the following parameters shall be monitored: BOD5, TSS, pH, TKN, nitrate, nitrite, ammonia, alkalinity and fecal coliform. This information shall be provided to the Department and to the Vendor. The Vendor shall include this information in the annual report submitted to the Department as directed by item 1 above. In order to monitor change in performance related to potential depletion of the wood media, sampling and testing for performance as required in this section shall be conducted at least once per year for the life of the Nitrex™ Filter.

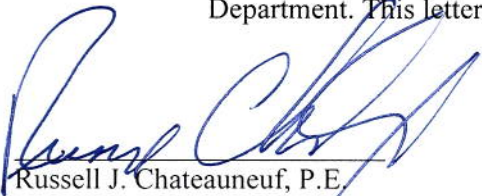
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M provider shall submit to the Department and to the Vendor, an explanation of the measures taken to correct the Nitrex™ Filter System's performance and the laboratory analyses for each sampling event. This information shall be submitted as soon as it is available after each re-sampling event.

4. The O & M provider shall report any termination or non-renewal of maintenance agreements to the Department, the Vendor and to the local wastewater management authority should one exist for that area.

V. Rights of the Department

1. The Department may suspend, modify or revoke this approval for cause, including but not limited to: non-compliance with any of the conditions or provisions of this approval, misrepresentation or failure to disclose fully all relevant data, or receipt of new information indicating that the use of the Nitrex™ Filter System is contrary to the public interest, public health or the environment.
2. This approval does not represent an endorsement of the Nitrex™ Filter System by the Department. This letter of approval may be reproduced only in its entirety.


Russell J. Chateaufneuf, P.E.
Chief of Groundwater and Wetlands Protection

Issuance Date: 2/23/12