



Janice K. Brewer
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov



Henry R. Darwin
Director

Notice of Proprietary Treatment Product Listing Pursuant to Arizona Administrative Code R18-9-A309(E)

ADEQ File No. 20100165

1. Proprietary Treatment Product Name, Model, and Description

Product Name: Nitrex™ Series

Model: Nitrex™ Denitrification Filter¹

Description: The Nitrex™ Denitrification Filter is an anaerobic filter denitrification system that consists of a nitrate-reactive media contained within the Nitrex™ Tank with optional temperature sensor, and associated piping. Pretreatment is required for nitrification of wastewater prior to denitrification in the Nitrex™ filter. This listing is applicable for design flows up to 24,000 gpd

2. Manufacturer Information

Name: Nutrient Removal Technologies, Inc. (NRTI)

Address: 188 Church Street

City/State/Zip: Newton/Massachusetts/02458

Phone: 617-964-2924

Fax: 617-332-5477

Website: www.LombardoAssociates.com

3. Recognized Treatment Performance

Parameter	Averaging Time	Parameter Value for Averaging Time
5-Day Biochemical Oxygen Demand (BOD ₅), mg/l	30-day arithmetic mean	30(100 ²)
Total Suspended Solids (TSS), mg/l	30-day arithmetic mean	10
Total nitrogen as nitrogen(TN), mg/l	five-month arithmetic mean	10
Total coliform, colony forming units/100ml	95th percentile	1,000,000

NOTES:

1 See "Manufacture Model Number" in Limitations B, Section 4

2 BOD₅ at start up, See Section 4 Limitations, Note B.1.

4. Product Applicability and Limitations for Use for a Recognized General Permit Technology

Applicability: This listing is for only the Nitrex™ Denitrification Filter product line treatment technology specified in A.A.C. R18-9-E316 used in conjunction with a septic tank and/or ADEQ listed pretreatment systems.

Limitations:

A. The product, including the pretreatment works, is subject to A.A.C. R18-9-A312(F)(2) through (4).

B. Nitrex™ Treatment System shall conform the following:

Maximum Treatment System Design Flow (gallons per day) per R18-9-A309(B)(3)		Manufacturer's Model Number By Specified Pretreatment Technology		Nitrex™ Treatment Tank Size (gallons) (see NOTE B.3)	
Start-up Flow (gpd) (see NOTE B.1 & B.2)	Normal Operating Design Flow (gpd)	Recirculating Textile Filter R18-9-E312	Intermittent Sand Filter or Single Pass Peat Filter R18-9-E310 or R18-9-E311	Pretreatment by Recirculating Textile Filter	Pretreatment by Intermittent Sand Filter or Single Pass Peat Filter
150	300	300-SFD-RMF-R	300-SFD-ISF-R	1,000	2,250
225	450	450-SFD-RMF-R	450-SFD-ISF-R	1,500	3,375
300	600	600-SFD-RMF-R	600-SFD-ISF-R	2,000	4,500
375	750	750-SFD-RMF-R	750-SFD-ISF-R	2,500	5,625
450	900	900-SFD-RMF-R	900-SFD-ISF-R	3,000	6,750
525	1,050	1050-SFD-RMF-R	1050-SFD-ISF-R	3,500	7,875
600	1,200	1200-SFD-RMF-R	1050-SFD-ISF-R	4,000	9,000
675	1,350	1350-SFD-RMF-R	1350-SFD-ISF-R	4,500	10,125
750	1,500	1500-SFD-RMF-R	1500-SFD-ISF-R	5,000	11,250
900	1,800	1800-SFDRMF-R	1800-SFD-ISF-R	6,000	13,500
1,050	2,100	2100-SFDRMF-R	2100-SFD-ISF-R	7,000	15,750
1,200	2,400	2400-SFDRMF-R	2400-SFD-ISF-R	8,000	18,000
1,350	2,700	2700-SFDRMF-R	2700-SFD-ISF-R	9,000	20,250
1,500	3,000	3000-SFDRMF-R	3000-SFD-ISF-R	10,000	22,500
1,875	3,750	3750-SFDRMF-R	3750-SFD-ISF-R	12,500	28,125
2,250	4,500	4500-SFDRMF-R	4500-SFD-ISF-R	15,000	33,750

2,625	5,250	5250-SFDRMF-R	5250-SFD-ISF-R	17,500	39,375
3,000	6,000	6000-SFDRMF-R	6000-SFD-ISF-R	20,000	45,000
3,375	6,750	6750-SFDRMF-R	6750-SFD-ISF-R	22,500	50,625
3,750	7,500	7500-SFDRMF-R	7500-SFD-ISF-R	25,000	56,250
4,500	9,000	9000-SFDRMF-R	9000-SFD-ISF-R	30,000	67,500
5,250	10,500	10500-SFDRMF-R	10500-SFD-ISF-R	35,000	78,750
6,000	12,000	12000-SFDRMF-R	12000-SFD-ISF-R	40,000	90,000
6,750	13,500	13500-SFDRMF-R	13500-SFD-ISF-R	45,000	101,250
7,500	15,000	15000-SFDRMF-R	15000-SFD-ISF-R	50,000	112,500
8,250	16,500	16500-SFDRMF-R	16500-SFD-ISF-R	55,000	123,750
9,000	18,000	18000-SFDRMF-R	18000-SFD-ISF-R	60,000	135,000
9,750	19,500	19500-SFDRMF-R	19500-SFD-ISF-R	65,000	146,250
10,500	21,000	21000-SFDRMF-R	21000-SFD-ISF-R	70,000	157,500
11,250	22,500	22500-SFDRMF-R	22500-SFD-ISF-R	75,000	168,750
12,000	24,000	24000-SFDRMF-R	24000-SFD-ISF-R	80,000	180,000

NOTES:

B.1 – In accordance with the manufacturer’s Operation & Maintenance Manual, and the Nitrex™ warranty wastewater influent flow must be limited to not more than 50% of the permitted design flow or 50% of the Nitrex™ filter effluent must be recycled to the pretreatment system during the 9 month start-up period. After the start up period the recognized treatment performance for BOD₅ is 30 mg/l. The disposal works design shall be based on the adjusted SAR per R18-9-A312(D)(3) using the recognized value for BOD₅ and TSS.

B.2 – Monitoring Requirements are listed in Section 4.7 of the Operation & Maintenance Manuals, dated August 29, 2011.

B.3 – For each project application: all documents (including, but not limited to those required for the Notice of Intent to Discharge per R18-9-A309(B); and the additional documents per R18-9-A309(C), R18-9-A312 thru 314, and the applicable parts of 18 A.A.C. 9, Article 3, Part E) shall be provided for each specified pretreatment technology that comprises the Nitrex™ Treatment System. The Nitrex™ Filter tank sizes may be increased by the manufacturer based upon site conditions and proposed applications for non-residential domestic wastewater.

C. Appurtenances for the Nitrex™ Treatment Tank include the Nitrex™ Filter and interconnecting piping. The temperature sensor may be required when recommended by the manufacturer. A 24-inch diameter concrete vault and flow meter is required when multiple Nitrex™ Treatment Tanks will be used.

D. This listing EXCLUDES appurtenances which are considered to be an alarm, control panel, control, switch, timer, wiring, other electrical devices, and installation components; which are subject to both the manufacturer specifications and any more restrictive requirement in 18 A.A.C. 9, Article 3.

E. The nominal hydraulic application (loading) rate for the Nitrex™ Tank cannot be more than 3.50 gpd/ft³ and must be based on the rated daily design flow and a hydraulic retention time of 24 hours.

- F. Treated wastewater from the listed product shall be delivered to a disposal works which conforms to R18-9-A312(C) through (F)(1), R18-9-A313, and the applicable criteria in 18 A.A.C, Article 3, Part E for the selected disposal technology.
- G. When the wastewater source is other than from single family dwelling, a manufacturer's "Basis of Design Report" shall be submitted with the Notice of Intent to Discharge to specify component capacities, pipe settings, control settings, and supplemental installation and operational practices.

5. Alternative Criteria and Exceptions for Use under the Recognized General Permit Technology

Alternative:	None
Exception:	Waiver of maximum 5 gpd/ft ² of media inlet surface area as stated in R18-9-E316(E)(2).

6. Documents Used as the Basis for this Proprietary Treatment Product Listing Notice

Application for Treatment Product Listing:	Dated 08-02-2010, total of 2 pages plus attachments (NOTE 1).
Monitoring Requirements (Section 4.7 of Manufacturer's Operation and Maintenance Manual):	Dated 08-29-2011, Page 9 of O & M Manuals(NOTE 1).
Supporting Information:	Dated 08-02-2010, Page 50 with 5 Appendices (NOTE 1).
System components:	Dated 08-19-2009 & Revised 08-1-2011 (NOTE 1).
Manufacturer's Design Criteria:	Dated 08-29-2011 (NOTE 1).
Manufacturer's Installation Guides:	Dated 08-29-2011 (NOTE 1).
Manufacturer's Operation and Maintenance Manual:	Dated 08-29-2011 (NOTE 1).
Manufacturer's Warrantee:	Dated 08-29-2011 (NOTE 1).
Third party test data accepted by ADEQ:	Treatment performance values for BOD ₅ and TSS in Section 3 on page 1 of this Notice are based on third party test results accepted by ADEQ. Default treatment performance value for Total Nitrogen is used based on A.A.C. R18-9-E316(C)(3) (NOTE 1).
Pre-treatment effluent performance	All proprietary pre-treatment products identified in Section 4.B on page 2 of this Notice shall be listed by ADEQ pursuant to R18-9-A309(E) and should, at a minimum, meet the default treatment performance values specified in the corresponding rules.
NOTE 1 – This document is an integral part of this Proprietary Treatment Product Listing Notice and is included in the Arizona Department of Environmental Quality website.	

7. Terms and Conditions for this Proprietary Treatment Product Listing Notice

- A. This Notice of Proprietary Treatment Product Listing shall remain in effect until any of the following occurs:
 - i. Applicable provisions of the Arizona Administrative Code, Title 18, Chapter 9, Article 3 are revised;
 - ii. Documents used for the basis of this listing are altered or modified;
 - iii. Manufacturer claims which are relied upon for this listing are later determined to contain an error or omission;
 - iv. The manufacturer requests termination of this listing;
 - v. A listing error or omission is identified; or
 - vi. The manufacturer and ADEQ mutually agree to reissue this notification to incorporate correction or update for any reason.
- B. This Notice of Proprietary Treatment Product Listing does not apply when the:
 - i. The listed proprietary treatment product is modified or operated in a manner that conflicts with Arizona law or the documents used for the basis of this listing action in Section 6.
 - ii. The listed proprietary treatment product is used in a manner that cannot achieve the performance in Section 3 above.
- C. This Notice of Proprietary Treatment Product Listing applies solely to the product specified in Section 1 above.
- D. The manufacturer is responsible for notifying the ADEQ of changes to contact information at the following address:
 - Attention: Product Listing Supervisor
 - Engineering Review Desk,
 - 1110 West Washington Street
 - Phoenix, AZ 85007.
- E. The listing by ADEQ of any proprietary product or service is not an endorsement by ADEQ or the State of Arizona. ADEQ does not endorse, represent, guarantee, warranty or defend the use of any product which is authorized for use pursuant to A.A.C. R18-9-A309(E). Product providers are a direct source unrelated to ADEQ or the State of Arizona. Use of any listed product is at the user's risk and the State assumes no liability.

Signature:		Date Signed:	November 8, 2011
-------------------	---	---------------------	------------------

Title:	Water Quality Division Director
---------------	---------------------------------

**Note 1 – Documentation Package for
Notice of Proprietary Treatment Product Listing
NitrexTM Filter Treatment System**

A. Application for Treatment Product Listing: 2 pages
B. Supporting Information: 50 pages with 5 APPENDICES
C. System components: 2 pages
D. Manufacturer's Design & Installation Manual: 14pages
E. Manufacturer's Operation and Maintenance Manual, Part 1: 9 pages
F. Manufacturer's Warrantee: 1 page
G. Third party test data: 44 pages and 16 pages

ERP: 11-364
ADEQ File Number: 20100165
Reviewer: TF1