



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

## **Innovative and Alternative System Approval**

**ISSUED TO:** Anua  
P.O. Box 77457  
Greensboro, NC 27417

Phone (336) 547-9338  
Fax (336) 547-8559

**FROM:** Jason Baumgartner – Environmental Scientist  
Ground Water Discharges Section

**FOR:** PuraSys SBR Advanced Treatment Unit

**APPROVAL DATE: January 11, 2017**

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In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated August 8, 2014 has been submitted by Anua, for approval of the PuraSys SBR 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 PuraSys SBR Advanced Treatment Unit as an Innovative & Alternative On-Site Wastewater Treatment Unit subject to the conditions, limitations, and requirements set forth herein:

### **1. Product Description**

The PuraSys SBR utilizes a batch process, allowing the controller to fill the reactor and adjust aeration to each batch. Since treatment occurs this way, nitrification and denitrification can occur in the same chamber.

Adjusting aeration is important in small treatment plants because flows vary widely and often. Too much air can lead to system failure through sludge bulking. The PuraSys SBR automatically recognizes when water is being used and adjusts aeration to maintain a healthy environment for the proper bacteria to thrive. The Purists SBR uses a step-fill SBR process, meaning that it fills the reactor several times during each cycle. At the beginning of each step, water is brought from the pretreatment to the reactor. It is then aerated for nitrification to occur. Water is then brought again from the pretreatment to the reactor, bringing with it an anoxic carbon source, ideal for denitrification. In this way, the step-fill SBR can attain high levels of nitrogen reduction without an external carbon source.

The various model numbers have the following treatment capabilities and reactor tank sizing requirements:

MODEL	DAILY FLOW (GAL)	REACTOR TANK SIZE (GAL)	MINIMUM (GAL)	MAXIMUM (GAL)
PSB1-400	400	605	545	665
PSB1-500	500	756	681	832
PSB1-600	600	908	817	998
PSB1-700	700	1,059	953	1,165
PSB1-800	800	1,210	1,089	1,331
PSB1-900	900	1,361	1,225	1,497
PSB1-1000	1000	1,513	1,361	1,664
PSB1-1100	1100	1,664	1,497	1,830
PSB-1200	1200	1,815	1,634	1,997
PSB-1300	1300	1,966	1,770	2,163
PSB-1400	1400	2,188	1,906	2,329

**\*The minimum pretreatment tank volume shall be 250 gallons per bedroom.**

## 2. Claim

**Approval is based on information submitted by the Manufacturer indicating the specified model will routinely provide effluent quality not exceeding 10 mg/l of BOD<sub>5</sub>, 10 mg/l of TSS, and 20 mg/l of Total Nitrogen (TN) assuming influent loading does not exceed the treatment capabilities of the units.**

**This unit has been certified under NSF Standard 40 NSF 245 standards.**

## 3. Use and Design Criteria

- a. The PuraSys SBR unit may be installed for new and replacement systems with conventional and innovative and alternative disposal systems.
- b. The PuraSys SBR unit shall be utilized for residential applications up to 1400 gallons per day. Additional flows will require manufacturer's guidance.

- c. An on-site wastewater treatment and disposal system permit application incorporating a PuraSys SBR 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.
- d. The minimum pre-treatment tank/chamber volume shall be 250 gallons per bedroom.
- e. The designer must assure that pre-treatment and reactor tanks/chambers have above grade access. The design also must ensure that the control panel is accessible.
- f. The PuraSys SBR 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.
- g. 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.

#### **4. Installation Procedures**

- a. The PuraSys SBR 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. Startup 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 PuraSys SBR 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.