

**NORTH CAROLINA DEPARTMENT  
OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL HEALTH  
ON-SITE WATER PROTECTION SECTION**

<b>CONTROLLED DEMONSTRATION SYSTEM APPROVAL</b>
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**CONTROLLED DEMONSTRATION WASTEWATER SYSTEM NO: 2007-03**

**ISSUED TO:** Marie-Christine Bélanger  
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**FOR:** Ecoflo® Peat Biofilter System STB-650(H3)

**APPROVAL DATES:** November 16, 2007

In accordance with 15A NCAC 18A.1969, an application by Premier Tech Environment Inc., Rivière-du-Loup, Canada, for modification of subsurface wastewater systems utilizing the Ecoflo® Peat Biofilter has been reviewed and the system has been found to meet the standards of a controlled demonstration system when all of the following conditions are met:

**A. GENERAL**

1. This Controlled Demonstration Approval arises from Premier Tech Environment's ("PTE") application to modify the Ecoflo® Peat Biofilter Innovative Approval, Innovative Wastewater System No. IWWS-2000-3-R4 (incorporated herein by reference), by adding two concrete versions of the Ecoflo® system, the H1 and H3. In response to PTE's Application for Modification, the Innovative & Experimental Committee ("I&E Committee") recommended and the NC Onsite Staff approved the H1 as a modification of the Ecoflo® Innovative Approval ("Ecoflo® Approval"), and that the H3 be approved as a Controlled Demonstration.

2. The purpose of this Controlled Demonstration is to evaluate the performance of certain aspects of the H3 concrete Ecoflo® Peat Biofilter, specifically the pump vault dimensions and pump vault components. All other aspects of the H3 System are considered sufficient to qualify for inclusion as part of the Ecoflo® Approval.

3. The scope of this Controlled Demonstration Approval is limited to evaluating performance of the pump vault and pump vault components of the H3. Except for the criteria provided herein with regard to the pump vault and components, all other aspects of the H3 system, including design, siting, permitting, operation and maintenance shall be governed by the provisions of the Ecoflo® Innovative Approval and the applicable laws and regulations of the State of North Carolina.

## **B. H3 DESCRIPTION, SITING, AND DESIGN CRITERIA**

1. Model STB-650B(H3) is a Type B Peat system used as a stand alone pretreatment system in conjunction with other gravity or pressure dosed subsurface final treatment and disposal systems.

2. Model STB-650B(H3) are pre-cast concrete containment modules made of pre-assembled, reinforced concrete, with approximate dimensions of: 12 feet 8 inches long by 6 feet 10 inches wide by 7 feet 8 inches deep. The modules are fitted with UV-protected, removable polyethylene main access lids, which contain ventilation. The modules contain a funnel access allowing air circulation between top and bottom of the filtering media and access for sampling of treated effluent and for pump and control installation. A secondary access lid made with UV-protected polyethylene is provided over the funnel access. The pumping unit is integrated in the access funnel, and comprises a pump, a float tree, an ON/OFF float, an alarm float and a pump control/alarm panel (located outside of the Biofilter module).

3. Design Flow rate per module is 480 gpd (for systems with design flows exceeding 1000 gpd, use 400 gpd/module, maximum).

4. Effluent after passing through the peat media is collected and pumped from the base of the sealed bottom of the unit either directly to subsurface trenches or to a conventional, modified, alternative or innovative system in accordance with Rules.1900 et seq. Pump is manufactured for Premier Tech by ABS Canada and shall be Scavenger Series EF 04W-2, or manufacturer-approved alternate. Pump curve for this ABS pump is appended to this approval. To control pump and alarm activation, switches manufactured by; SJE Rhombus (SJE Verticalmaster® Pump Switch), or MDI, or a manufacturer-approved alternate, shall be used. Control panel shall have elapsed time clock and cycle counter for the pump and event counter for the high water alarm.

5. Sites for Model STB-650B(H3) are limited to drainfields which require no more than 150 gallons per dose (per module), and where the pumping rate and total dynamic head shall be within the capabilities of the Scavenger Series EF 04W-2 effluent pump (or manufacturer-approved alternate). Where these conditions are met, the requirement in the Ecoflo® Innovative Approval for the pump tank to have a liquid capacity equal to the septic tank liquid capacity is not applicable.

### C. CONTROLLED DEMONSTRATION CRITERIA

1. The Controlled Demonstration study shall consist of a two year period from the date of the first H-3 system, during which a minimum of 10 and a maximum of 200 systems will be installed. These systems will be located in at least two different counties, and be identified by street address, city, and gps coordinates.

2. As part of the first two system installations under this controlled demonstration, Premier Tech shall develop a table showing the gallons-per-inch capacity, relative to the depth down from the top edge of the 12-inch riser over the funnel, by measuring the actual liquid volume per inch-increment to the system. These two measurements shall be considered sufficient if they differ by no more than 5-percent (otherwise, at least two more such measurements shall be made during the next two installations).

3. As part of the start-up measurements for each system installation, the set-points for the pump “off”- level (which shall be at least 3.5-inches above the tank bottom), “on”- level, and high water alarm activation level shall be recorded; the design dosing volume specified; and the pump delivery rate measured and recorded.

4. During each required biannual visit, the ORC of record shall make a written record of system performance related to the pump chamber and related components, in addition to other requirements. The written record shall include observations of: whether any maintenance or repair was required for the pump chamber or associated components. Where there is any question of proper function with regard to the target components, the ORC shall test the pump and floats (including the alarm) to confirm they are in good working condition. Any maintenance or repair issues shall be described in detail.

5. At the conclusion of the controlled demonstration period, it shall be determined whether the pump chamber and other associated components perform satisfactorily based on a review of all data obtained during the study period. **Criterion for evaluation of each system are appended to this approval.** A written report summarizing the results of the review shall be developed by a third party, approved by both the NC Onsite Section and Premier Tech Environment, and submitted along with any recommendations for changes as identified during the demonstration period. Copies of all field reports shall be submitted with the final report.

6. During the period of the controlled demonstration approval, a repair option in the form of space adequate for a 24” wet well shall be included as part of the system design.

Approved by: \_\_\_\_\_

Date: \_\_\_\_\_

**North Carolina Controlled Demo Criterion for evaluating the  
Performance of the Pump Vault and Components**

<b>System Component Question</b>	<b>Satisfactory Yes/No</b>	<b>Unsatisfactory Yes/No (Comment required)</b>	<b>Comments</b>
<b>INSTALLATION</b>			
Could the pump be installed within 2 hour timeframe?			
Did it take more than one attempt to set up the pump? (If so, please explain?)			
Could the floats be installed and calibrated within 2 hour timeframe?			
Did it take more than one attempt to set up the floats? (If so, please explain?)			
Could the alarm and electrical connections be installed?			
Can the “on” and “off” elevations for the floats and alarm be measured?			
Can the pump delivery rate be accurately measured?			
<b>MAINTENANCE</b>			
Can the pump be removed without cutting pipes or entering the system?			

Can the floats be removed and calibrated?			
Can the floats be removed without removing the pump?			
Is the pump in good working order?			
Are the floats in good working order?			
Has the high water alarm been triggered? (If so, indicate # of times and potential cause)			
Are the pump doses in correct range?			
Have there been alarm conditions? (If so, please explain)			
Can required influent and effluent sampling be performed?			
Any issues encountered related to poor alignment of threaded fittings?			
<b>SURVEY QUESTIONS</b>			
Do the pump and floats work within expected performance conditions?			
Is the pump vault too small for performing regular maintenance and repair activities?			