



STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
& ENVIRONMENTAL CONTROL  
DIVISION OF WATER RESOURCES  
20653 DUPONT BLVD  
UNIT 5  
GEORGETOWN, DE 19947

April 1, 2009

Ben Berteau  
Engineering Manager  
Ring Industrial Group  
30 Industrial Park  
Oakland, TN 38060

Subject: Product approval for EZ Flow Aggregate-Free drainfield products:  
Models: 1202H-GEO and 1203H-GEO

Dear Mr. Berteau,

The Division of Water Resources has received and reviewed your request that the EZ Flow 1202H-GEO and 1203H-GEO drainfield systems be approved for use in Delaware. We are pleased to inform you that we are able to approve both the 1202H and 1203H systems in accordance with all accepted and approved Departmental regulations and policies regarding the use of aggregate-free drainfield systems in on-site wastewater treatment and disposal systems in Delaware. This includes the ability to take a 25% reduction in the required drainfield area.

Please be advised that any changes in the design, materials or processes used in the manufacturing of these products may negate this approval and require a re-submittal of the approval request.

If you have any questions please feel free to contact me at (302) 856-4561.

Sincerely,

A handwritten signature in black ink, appearing to read "James Cassidy".

James Cassidy  
Environmental Program Manager I  
Groundwater Discharges Section

*Delaware's good nature depends on you!*

# Installation Instructions for **EZflow** Systems in Delaware



Infiltrator Systems Inc. requests approval from the State of Delaware Department of Natural Resources and Environmental Control, Ground Water Discharge Section for **EZflow** branded products 1201P-GEO, 1202H-GEO, and 1203H-GEO for use as part of a wastewater disposal system in the following applications as described in *The Regulations Governing The Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems*:

## 1. Gravity Trenches and Beds

- Standard Trenches and Beds
- Capping Fill Trenches and Beds
- Sand-lined Trenches and Beds

## 2. Pressure Dosed Trenches and Beds\*

- Full Depth Trenches and Beds
- Capping Fill Trenches and Beds
- Mound Systems
- Low Pressure Pipe Systems\*\*
- Sand-lined Trenches and Beds

\* **EZflow** 1202H-GEO and 1203H-GEO are designed to sleeve a pressurized distribution pipe within the four-inch perforated pipe present in the cylinder.

\*\* For LPP systems a single pipe-containing cylinder, 1201-P-GEO, found in both 1202H-GEO and 1203H-GEO configurations is recommended for use.

## Materials and Equipment needed

- **EZflow** Bundles
- **EZflow** Barrier Paper
- **EZflow** Internal Pipe Couplers
- **EZflow** Versa Couplers
- Pipe for Header and Inlet

## Installation Instructions

The instructions for installation of **EZflow** products are given below. This product must be installed in accordance with Wastewater System and Potable Water Supply Rules, effective January 1, 2005 (Rules), as well as the local health department's current design manual.

1. The **EZflow** 1201-P-GEO product is 12 inches in diameter by 5 or 10 feet long, containing a 4-inch perforated pipe surrounded by EPS aggregate, with a prefabricated geotextile barrier material.
2. The **EZflow** 1202H product is 12 inches in diameter by 5 or 10 feet long. One of the polyethylene net bundles contains expanded polystyrene aggregate only and one contains a four-inch pipe surrounded by EPS aggregate, with a prefabricated geotextile barrier material.
3. The **EZflow** 1203H product is 12 inches in diameter 5 or by 10 feet long. Two of the polyethylene net bundles contain expanded polystyrene aggregate only and one contains a four-inch pipe surrounded by EPS aggregate.

In cases where linear footage required is not in multiples of 5 or 10, the installer may (a): reduce the product to the needed length and refasten the netting to the pipe or, (b): use an additional 5' or 10' of product to exceed the required trench length.

1. After the local health department has determined sizing, configuration, and layout for the **EZflow** systems, stake or mark with paint the location of trenches and lines. Be careful to set correct tank, invert pipe, header line or distribution box and trench bottom elevations before installation of pipe bundles.
2. If smearing or glazing of trench sidewalls and bottom has occurred in clay soils, it is recommended that these soil surfaces be raked or scarified.
3. The proper elevation of solid PVC effluent pipe going to each trench should be determined to ensure compliance with the required maximum trench bottom depth as shown on the approved permit. This height may vary dependent on system height and configuration used.
4. Remove **EZflow** stretch wrap prior to placing bundles in the trench(es). Remove any stretch wrap in the trench before system is covered.
5. Place **EZflow** bundle(s) in the **EZflow** configuration approved by system design permit specified for the particular site. The top or center-most bundles containing pipe are joined end to end with an internal pipe coupler. Any additional aggregate only bundles that may be required, should be butted against the other aggregate-only bundles and do not require any type of connection.
6. The top of each 1201-P-GEO, 1202H-GEO, and 1203H-GEO cylinder contains a filter fabric pre-manufactured in between the netting and aggregate. The fabric is inserted to prevent soil intrusion. The installer shall make sure that the fabric is positioned upward and is in contact with the fabric contained in the adjacent cylinder before backfilling.
7. Header or lead lines from distribution box or device will be connected to the top or center-most pipe bundle in each trench or inserted into the pipe.
8. The **EZflow** Drainfield Systems should be installed in a level trench in all directions (both across and along the trench bottom) and should follow the contour of the ground surface elevation (uniform depth), with all continuous adjoining 10-foot cylindrical bundles placed end to end, with the central bundle distribution pipe interconnected, without any dams, stepdowns or other water stops.
9. When surface slopes are greater than two percent, the bottom of the nitrification trenches shall follow the contour of the ground. An engineer's level or equivalent shall be used for installation and inspection.

10. **EZ<sub>flow</sub>** EPS bundles are flexible and can fit in curved trenches as may be necessary to avoid trees, boulders, or other obstacles.
11. The soil cover over the nitrification field should be to a depth of at least six inches.
12. The finished grade over the nitrification field should be landscaped to prevent the ponding of surface water.
13. Soil cover above the original grade should be placed at a uniform depth over the entire nitrification field, except as required to prevent the ponding of surface water.
14. The soil cover should be placed over nitrification field after proper preparation of the original ground surface.

Repeat steps 1 thru 14 for each required trench.

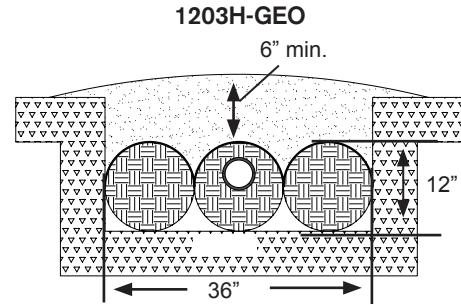
The area of the disposal field shall not be used for vehicular traffic or parking or underground utilities to include water lines. Dozers, trucks, and other heavy vehicles shall not be allowed to run over the septic tank, field lines or other parts of the system.

Sod or seed the drainfield area to control erosion, as may be required by Permit or local policy.

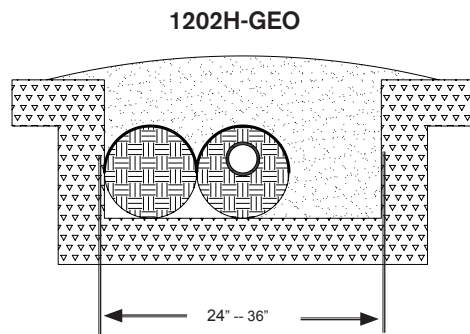
#### **EZ<sub>flow</sub> Inspection**

As required by state or local regulations, be sure to obtain proper installation inspection and authorization from the health department prior to covering the system.

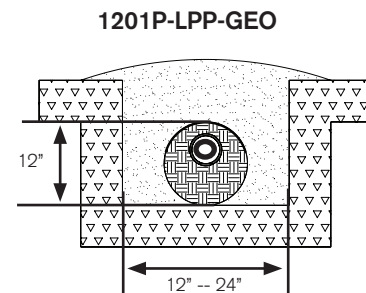
Septic tank, header pipe or D box, trench bottom, grade, depth, and cover shall be in accordance with state rules and regulations unless otherwise specified.



EXAMPLE: 300 sq. ft. required.  
 $300 \text{ sf} \div 4 = 75 \text{ lin. ft. required}$



EXAMPLE: 300 sq. ft. required.  
 $300 \text{ sf} \div 2.67 = 112 \text{ lin. ft. required}$



**INFILTRATOR®**  
 systems inc.

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EZflow by Infiltrator is an environmentally friendly replacement to traditional stone and pipe drainfields using an engineered geosynthetic aggregate modular design. The EZflow system is designed to improve infiltration performance by eliminating the fines associated with crushed stone, and reducing compaction and embedment associated with stone. Preassembled units include a 3" or 4" perforated pipe surrounded by aggregate and held in place with a durable high-strength netting. This product comes in easy-to-contour 5' and 10' lengths and in diameters of 7, 8, 9, 10, 12, 13, or 14 inches. Diameters of 18 inches available in select markets.

#### **Lightweight expanded polystyrene**

construction offers structural integrity and resists compaction. Engineered flow-channels increase void space creating improved water flow and greater storage.

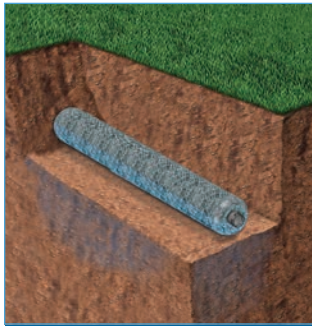


## **Compared with stone and pipe, benefits include:**

- Always clean and free of fines
- Bundles are quick to install, saving costs on heavy machinery and labor
- Modular construction allows configurations to match trench dimensions for most system shapes and sizes
- Engineered for optimal storage and absorption efficiencies
- Ability to contour along sloped sites and around trees or landscaping
- Lightweight system is perfect for repairs and tight job sites
- Easily hand-carried into position reducing time and labor
- 5' or 10' lengths with simple snap, internal couplers
- Easier cleanup at the job site with the elimination of stone
- Manufactured from recycled materials rather than a mined natural resource
- A wide variety of diameters and configurations to meet any installation professional's needs
- Approved in many jurisdictions with an increased efficiency rating, reducing drainfield size
- Backed by the leader in the onsite wastewater industry



**Bundle System Configurations:** Available in 7", 8", 9", 10", 12", 13" and 14" diameter bundles.



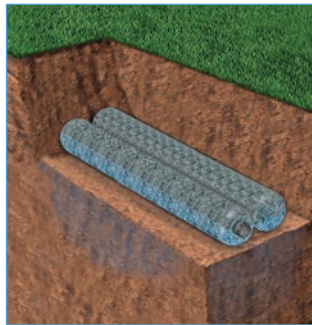
**Single Bundle**

0701P-GEO	1201P-GEO
0801P-GEO	1401P-GEO
1201P-GEO	1801P-GEO
1001P-GEO	



**Triangular Bundle**

1003T-GEO	1303T-GEO
1203T-GEO	1403T-GEO



**Horizontal Bundles**

0705H-GEO	1303H-GEO	1206H-GEO	1402H-GEO
0904H-GEO	1202H-GEO	1303H-GEO	1802H-GEO
1002H-GEO	1203H-GEO		



**Vertical Bundles**

1002V-GEO	1006V-GEO	1203V-GEO	1206V-GEO
1003V-GEO	1202V-GEO	1204V-GEO	1402V-GEO
1004V-GEO			

**Notes:**

1. Other systems include 10" and 12" bed systems. Bed size will dictate the number of bundles.
2. System dimensions are dependent upon bundle diameter and configuration.
3. LLP is for "Low Pressure Pipe" in which a pressurized distribution pipe is field installed within the corrugated pipe.
4. Internal pipe and couplings meet the requirements of ASTM F405.
5. Bundles are also available without geotextile between the netting and synthetic aggregate.

**INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY**

(a) The structural integrity of each EZflow by Infiltrator expanded polystyrene drainfield system and other accessories manufactured by EZflow by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by EZflow by Infiltrator to be covered by this Limited Warranty. EZflow by Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the EZflow system is manufactured by anyone other than EZflow by Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.



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U.S. Patents: 8322948; 8337119; 8297880; 7914230; 7008138. Other patents pending. Infiltrator, Quick4 and EZflow are registered trademarks of Infiltrator Water Technologies. Infiltrator Water Technologies is a wholly-owned subsidiary of, Advanced Drainage Systems, Inc. (ADS).

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**Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436**