

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH**

ACCEPTED WASTEWATER SYSTEM APPROVAL
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Accepted Wastewater System Approval Number: AWW-2005-02-R10

Issued To: EZflow, LP, a wholly owned subsidiary of Infiltrator Water Technologies, LLC
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For: EZflow by Infiltrator Bundled Expanded Polystyrene Synthetic Aggregate Units
EZ1203H and EZ1203H-GEO

Approval Date:	April 2, 2005	Accepted Status Granted for Model EZ1203H
	February 6, 2008	Addition of EZ1203H-GEO and 5-foot units
	August 18, 2010	Addition of 3-foot and 7-foot units
	May 1, 2012	Clarification of Approval Language
	August 15, 2012	Addition of Sizing for LTARs Greater Than 1.0 gpd/sq ft
	February 20, 2015	Elimination of Particle Density Specification
	August 21, 2015	Add alternating dual-field systems, update trench levelness requirements, and change company name from Infiltrator Systems, Inc. to Infiltrator Water Technologies, LLC
	February 2, 2022	Clarification of System Classification in Accordance with Table V(a) of 15A NCAC 18A .1961(b)
	February 1, 2023	Replacement of ASTM F405 with ASTM F667
	August 2, 2023	Addition of Deep Trench Installation Requirements
	November 6, 2024	Updated for 15A NCAC 18E

In accordance with G.S 130A-343 and 15A NCAC 18E, Section .1700, a petition to the Commission for Public Health by EZflow, LP, a wholly owned subsidiary of Infiltrator Water Technologies, LLC (previously Ring Industrial Group of Oakland, TN), for modification of its approved accepted status for EZflow Dispersal Field Systems has been reviewed by the Department and approved by the Commission. The EZflow systems have been found to perform in a manner that is equal or superior to a conventional wastewater system and to meet the standards of an accepted system when the following conditions are met.

I. General

A. Scope of this Accepted Approval

Use, design, and installation requirements for EZflow polystyrene aggregate dispersal field systems for new and repair systems.

- B. The following polystyrene aggregate dispersal field system models have been found to meet the standards of an accepted system:
- EZ1203H
 - EZ1203H-GEO

II. System Description

- A. Minimum pretreatment by septic tank and sized in accordance with 15A NCAC 18E .0801.
- B. EZflow expanded polystyrene aggregate particles (EPS) shall meet the following requirements:
1. EPS shall consist of three dimensional rectangular shapes resembling capital E's placed back-to-back (also known as the double E) with void channels and surface area protuberances.
 2. EPS shall range in size from 0.75 inches to 1.75 inches along any axis.
- C. The EZflow dispersal field system units (also referred to as cylindrical units) shall meet the following general specifications:
1. EPS shall be contained in cylindrical high strength netting.
 2. The physical and chemical properties of the netting shall be durable and resistive enough to retain the shape of the units and to withstand system installation, backfilling, corrosion, and loss of aggregate under intended use.
 3. Cylindrical units shall be 12-inches in diameter +/- ½ inch.
 4. Cylindrical units shall be manufactured in 3-, 5-, 7-, and 10-foot long sections, +/- 2 inches.
 5. The taper, or reduction in diameter, at each end of the cylindrical units shall not begin more than three inches from the point of enclosure, as measured along the linear axis of the unit.
 6. Cylindrical units shall be able to withstand an AASHTO H-10 axle load of 16,000 pounds when covered with 12 inches of compacted soil and a shallow cover axle load of 4,000 pounds when covered with six inches of compacted soil without collapsing, fracturing or breaking when installed in a trench equaling the product configuration width.
- D. The EZ1203H shall meet the following description and specifications:
1. The product shall be comprised of three 12-inch diameter units 3-, 5-, 7-, or 10-foot long placed side-by-side across the bottom of a 36-inch-wide trench.
 2. The outer units shall contain aggregate only, with the netting tied off at both ends to prevent the escape of aggregate.
 3. The central unit shall contain aggregate and a 4-inch diameter perforated flexible plastic pipe, which is typically used in conventional systems.
 4. The pipe shall be certified as complying with ASTM F667, Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings, and shall be in accordance with 15A NCAC 18E .0703(d).
 5. The netting for the central unit shall be tied off at both ends of the pipe.
 6. The 4-inch pipe shall be offset from center towards the top of the unit whereby five to six inches of aggregate is located between the bottom of the pipe and the bottom of the unit, and 1 ¼- to 2 ½- inches of aggregate is located between the top of the pipe and the top of the unit.

- 7. The pipe shall be connected by an internal coupling device to allow continuous connection from one section to the next.
 - 8. The end-to-end gap distance between pipe containing cylinders, as measured from the straps fixing the netting to the pipe or from the face edges of aggregate on adjoining cylinders, shall be no greater than three inches.
- E. The EZ1203H-GEO shall meet the same product specifications as the EZ1203H as described in paragraph D, above, with the addition of geotextile fabric pre-inserted between the netting and aggregate spanning 180 degrees +/- 15 degrees along the top of each cylinder. The geotextile shall have the minimum average value specifications described in Table I.

Table I - Minimum Geotextile Barrier Material Specifications for EZ1203H-GEO

Property	Value
Unit Weight	0.5 ounces per square yard
Tensile Strength	Cross Direction: 40 N/2.54cm +/- 20% Machine Direction: 50 N/2.54cm +/- 20%
Air Permeability	775 cubic feet per minute +/- 20%

III. Siting Criteria

The EZflow dispersal field system may be utilized on any site on which a conventional wastewater system can be installed and which meets the following criteria.

- A. Sites which are classified as Suitable for a conventional wastewater system in accordance with 15A NCAC 18E .0509(a) through (c).
- B. Sites which meet the criteria for new or existing fill in accordance with 15A NCAC 18E .0909. The provisions of 15A NCAC 18E .0909 are applicable whenever any portion of the aggregate cylinders in a trench extends into fill material. There shall be no reduction in trench length compared to a conventional gravel trench. This reference to fill material applies to the site fill and not the backfill placed between the trench and the cylinder sidewall.
- C. The required vertical separation shall be measured from the trench bottom.
- D. Where required by soil or site conditions and approved by the local health department (LHD), EZflow dispersal field systems may be installed in lieu of conventional gravel trenches or another accepted system at depths deeper than 36 inches up to a maximum of 60 inches, as measured from the base of the trench. There shall be no reduction in trench length compared to a conventional gravel trench as computed per 15A NCAC 18E .0901(c) for EZflow dispersal field systems installed greater than 36 inches deep. Sizing for all models shall be based on the minimum excavated trench width in Table III, Section IV.C of this approval, without the application of an equivalency factor. Deep installation details shall be in accordance with the manufacturer's specifications and applicable federal and state safety procedures for underground excavations.

IV. Dispersal Field System Sizing

- A. The maximum long-term acceptance rate (LTAR) shall be as follows:

Table II

Textural Group		LTAR (GPD/ft ²)	
		Natural	Saprolite
Soil/Group I (Sands)	Sand	0.8-1.0*	0.6-0.8
	Loamy Sand		0.5-0.7
Soil Group II (Coarse Loams)	Sandy Loam	0.6-0.8	0.4-0.6
	Loam		0.2-0.4
Soil Group III (Fine Loams)	Silt Loam	0.3-0.6	0.1-0.3
	Other Fine Loams		NA
Soil Group IV	Clays	0.1-0.4	NA

*When the LTAR exceeds 1.0 gpd/sq ft, the nitrification trench system shall be sized using the Equivalency Factors in Table IV.

- B. The LTAR shall be based on the most hydraulically limiting naturally occurring soil horizon within three feet of the ground surface or to a depth of one foot below the trench bottom whichever is deeper.
- C. For LTAR values equal to or less than 1.0, the minimum total trench bottom area (ft²) required shall be determined by dividing the design daily flow by the applicable LTAR shown in Table II. The minimum linear footage for EZflow dispersal field systems shall be determined by dividing the total trench bottom area by an equivalency factor in Table III.

Table III

EZflow Product Configuration	Excavated Trench Width (inches)	Equivalency Factor* (SF/LF)
EZ1203H	36	4.0
EZ1203H-GEO	36	4.0

*Reduction in trench length allowed by use of these Equivalency Factors, as compared to sizing requirements delineated in 15A NCAC 18E .0901(c) for conventional systems, apply only to dispersal field receiving effluent of domestic strength or better quality. The system may be used in an alternating dual field application pursuant to 15A NCAC 18E .0901(h) provided that the equivalency factor for sizing each of the two dispersal fields does not exceed 4.61 SF/LF. Any proposed use of the system for facilities producing higher strength wastewater shall be sized in accordance with conditions set forth in 15A NCAC 18E .1711(5) and (6).

Example:

Three bedroom residence with a design daily sewage flow of 360 gallons on a sandy clay loam (Group III) soil

Total computed trench bottom area is:

$$360 \text{ gpd} / 0.5 \text{ gpd/ft}^2 = 720 \text{ ft}^2$$

The minimum required linear footage for the accepted EZflow dispersal field system is:
 $720 \text{ ft}^2 / 4.0 = 180 \text{ linear ft.}$

Where 4.0 SF/LF is the equivalency factor for the accepted EZflow EZ1203H

- D. For LTAR values greater than 1.0, the minimum total trench bottom area (ft²) required shall be determined by dividing the design daily flow by the applicable LTAR shown in Table II. The minimum linear footage for EZflow dispersal field systems shall be determined by dividing the total trench bottom area by an equivalency factor in Table IV.

Table IV

EZflow Product Configuration	Excavated Trench Width (inches)	Equivalency Factor (SF/LF)
EZ1203H	36	3.0
EZ1203H-GEO	36	3.0

- E. The minimum area (without reduction or equivalency factor) for a bed system shall be determined as required in 15A NCAC 18E .0903, except that the three cylindrical bundles shall be placed in rows next to each other. The requirements of 15A NCAC 18E .0903 shall be met for installation of a bed system.
- F. The available space requirements of 15A NCAC 18E .0508 shall be met, and this approved accepted system may be designated as the required repair system.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed dispersal field. Refer to 15A NCAC 18E .0510.

VI. Design Criteria

Refer to Siting Criteria in Section III and Installation information in Section VII for design details.

VII. Installation

- A. The EZflow dispersal field system shall be installed according to the minimum and maximum dimensions in Table V.

Table V

Product Configuration	Minimum Trench Spacing (ft on center)	Maximum Trench Width (in)	Minimum Soil Cover ¹ (in)	Minimum Trench Depth (in)	Minimum Pipe Depth Below Grade ² (in)
EZ1203H	9	36	6	18	12
EZ1203H-GEO	9	36	6	18	12

¹ On sloping lots, minimum required trench depths may be greater

² Measurements for pipe height are to the pipe invert or bottom of pipe

- B. A backfill barrier shall be placed over the EZ1203H cylinders to prevent the infiltration of backfill material into the trench void spaces. The backfill barrier shall be 60 pound weight untreated building paper provided by the manufacturer, or an alternate with equal or better performance characteristics. An alternate backfill barrier shall be approved in writing by the manufacturer on a case-by-case basis. The barrier shall not be placed along the trench sidewalls below the pipe invert elevation. The barrier shall be protected from becoming wet enough to tear until backfilling is completed. The EZ1203H-GEO units are prefabricated with a geotextile backfill barrier between the netting and aggregate. The EZ1203H-GEO units shall be oriented in the trench with the geotextile covering the top of the system. No additional backfill barrier material shall be required.
- C. Native soil removed from the trench excavation may be used as backfill. Backfill shall be free of trash or debris. Vehicular traffic and excavation equipment shall not travel over any uncovered dispersal field. The latest version of the manufacturer's installation procedures shall be followed.
- D. EZflow trenches shall be installed level in all directions with a plus or minus one-half-inch tolerance from side-to-side and maximum fall in a single trench bottom not exceeding one-fourth inch in 10 feet end-to-end for any continuous contoured segment. Trenches shall have a uniform depth that follows the contours of the ground surface elevation. Trenches shall be constructed with all continuous adjoining 3-, 5-, 7- or 10-foot units placed end-to-end, with the central cylinder distribution pipe interconnected, without any dams, stepdowns, or other water stops.
- E. The 10-foot-long units shall be used to make up the majority of the line length, with the 3-, 5-, and 7-foot units being used only at the distal end of the trench. A maximum of three 3-, 5-, or 7-foot units may be used in any one line length. Examples: A 65-foot trench would utilize six 10-foot units and one 5-foot unit. A 71-foot trench would utilize six 10-foot units, one 5-foot unit, and two 3-foot units.
- F. EZflow dispersal field systems installed on sloping sites may use distribution devices or step downs as described in 15A NCAC 18E .0901(g)(9) and (11) when it is necessary to change level trench line segments from upper to lower elevations.
- G. Manufacturer's installation instructions for the EZflow dispersal field systems shall be followed, except as required herein or by 15A NCAC 18E.
- H. All EZflow dispersal field systems shall be installed by an installer authorized in writing by EZflow LP or its designated representative.

VIII. Operation, Maintenance, and Monitoring

The accepted EZflow dispersal field system shall have a System Classification of IIb in accordance with 15A NCAC 18E .1301(b), Table XXXII.

IX. Responsibilities and Permitting

- A. The LHD shall permit these accepted systems in an equivalent manner as a conventional system, when the requirements of 15A NCAC 18E, laws, and conditions of this accepted system approval are met.
- B. When use of this accepted system is requested in the application for a Construction Authorization (CA), the LHD shall include a design for the designated accepted system in accordance with the approved siting, sizing, and design criteria on the CA.
- C. When an Improvement Permit (IP) or CA is issued for a conventional system, the IP or CA shall contain a statement that indicates that an accepted system may also be used.
- D. When substitution with an accepted system is made, IP or CA modification, prior approval of the LHD, or separate owner sign-off is not required as long as the accepted system can be installed in the permitted initial dispersal field area in accordance with this accepted system approval and without unauthorized product alteration, and no changes are proposed for any of the following:
 - 1. Trench depth;
 - 2. Slope correction;
 - 3. Effluent distribution method;
 - 4. Design daily flow; or
 - 5. Wastewater strength.
- E. Notwithstanding Paragraphs C and D above, when a substitution in system type compared to a previously permitted or authorized system type shall result in a change in any of the items listed in Paragraph D, prior approval by the LHD is required before system installation. The LHD shall modify the IP and/or CA upon a finding that all provisions of this approval and all other applicable rules are met.
- F. The type of system installed shall be indicated on the Operation Permit, including designation of the manufacturer and model or unique code.

X. Repair of Systems

The provisions of 15A NCAC 18E .1306 shall govern the use of the EZflow dispersal field systems for repairs to existing malfunctioning on-site wastewater systems.

Approved By: _____

Date: _____