

State of Vermont
Department of Environmental Conservation
Drinking Water & Groundwater Protection Division
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Agency of Natural Resources

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Innovative/Alternative System Approval For General Use

Presby Environmental Advanced Enviro-Septic[®], Enviro-Septic[®] and Simple Septic[®]

Approval Number: 2004-02-R6 (interim) **Approval Date:** June 28, 2019

Expiration Date: June 28, 2020 (or until manual updated)

Vendor Information

Presby Environmental, Inc., wholly owned subsidiary of Infiltrator Water Technologies 143 Airport Road Whitefield, NH 03598

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Contact

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I. Approval Conditions

This is a an interim temporary approval to ensure Advanced Enviro-Septic[®] (AES), the Enviro-Septic[®] (ES), and the Simple Septic[®] (SS) Pipe Leaching Systems may be used as part of a subsurface wastewater disposal system approved under the Wastewater System and Potable Water Supply Rules, effective April 12, 2019 (Rules) under the following conditions:

1. The pipe leaching systems must be designed, installed, and operated as described in the Vermont Design and Installation Manual, dated July 2014, filed with the Agency of Natural Resources (Agency), except for Section 9.0 (Table A), Section 10.0 (Table B), Section C (Table C), and Section 23.0 (Design Procedures and Examples) which have been updated to bring them into compliance with the April 12, 2019 Rules, and are provided as an addendum to this Approval. A new approval will be issued when the manual is updated.

Technology Names

Advanced Enviro-Septic® (AES) Enviro-Septic® (ES) Simple Septic® (SS) Pipe Leaching System

Technology Type

Gravelless Pipe Distribution System for Septic Tank Effluent

- 2. This approval is based on treatment of domestic wastewater of low strength only as specified in §1-805 of the Rules. No high strength wastewater shall be dispersed using this technology. An AES, ES and SS Pipe Leaching Systems shall not be used as a filtrate effluent disposal system.
- 3. The system may be used for both new and replacement systems.
- 4. If the Rules are revised during the term of this Approval, this approval may be revised as needed to conform to the revisions.
- 5. The Licensed Designer (Designer) shall provide a copy of this approval letter to any landowner who is a prospective purchaser of an AES, ES or SS Pipe Leaching System prior to the sale of the system and prior to the filing of any application for a site-specific permit by the Agency for the purchaser's property. The application filed with the Agency shall include the landowner's written acknowledgement of this Approval. Prior to any sale of the property or completion of a sales agreement to sell the property, a copy of the site-specific permit shall be provided to the prospective purchaser.
- 6. When a project is subject to the Rules, site-specific permission for the use of this product is required in the form of a Wastewater System Potable Water Supply Permit.
- 7. A site-specific permit for the use of this product may be revoked if the system fails to function properly. Revocation of the permit will require that the use of the building be discontinued unless another wastewater disposal system is installed based on prior written approval by the Agency.
- 8. This Approval is not a representation or guarantee of the effectiveness, efficiency or operation of an AES, ES or SS Pipe Leaching System.
- 9. Serial distribution shall be limited to 100 feet of pipe along the contour and 500 feet total.
- 10. The Advanced Enviro-Septic[®] pipe is comprised of corrugated, perforated plastic pipe, Bio-Accelerator[®] fabric along its bottom which is surrounded by a layer of randomized plastic fibers and a sewn geo-textile fabric which provides over 40 sq. ft. of total surface area. The Enviro-Septic[®] pipe is comprised of corrugated, perforated plastic pipe which is surrounded by a layer of randomized plastic fibers and a sewn geo-textile fabric which provides over 25 sq. ft. of total surface area. The Simple Septic[®] pipe is comprised of corrugated plastic pipe which is surrounded by a single layer of sewn geo-textile fabric which provides over 15 sq. ft. of total surface area. The limited surface area of the SS as compared with the AES and ES may result in a shorter lifespan than the AES and ES pipe leaching systems.

II. Landowner Requirements

- 1. A copy of the Permit shall be provided to any prospective purchaser prior to the sale.
- 2. Each new landowner of the property shall inform the appropriate Regional Environmental Office of the Agency within 30 days of the transfer of the property and include the name and mailing address of the new owner.

III. Vendor Requirements

- 1. The vendor shall submit an annual report to the Agency by April 1 of each year containing the following information for the 12-month period ending December 31 of the previous year:
 - A. New permitted systems installed in Vermont for the previous year and shall include:
 - i. Assigned Wastewater Permit Number;
 - ii. Physical and landowner mailing addresses;
 - iii. Name of current landowner;
 - iv. Name of Designer providing the installation certification; and
 - v. Name of installer.

Existing permitted systems with known changes in ownership shall include the Wastewater Permit Number; the physical and mailing address, and the name of the current landowner.

- B. All known problems, damages and/or failures, including:
- i. Description of the issues;
- ii. Potential/known causes of problems;
- iii. System operability;
- iv. Recommended repair/remediation;
- v. Date(s) of repair/remediation; and
- vi. System effectiveness.

Note: Repairs that are not defined by the Rules as a "Minor Repair" require approval by the Division prior to making the repair.

- C. A list of names of Designers and Installers trained by the vendor.
- 2. The vendor shall train and certify Designers and installers in the proper use and installation of the AES, ES or SS pipe leaching systems.

IV. Design and Review Conditions

The following conditions will be used by the Agency in reviewing Permit applications that include an Advanced Enviro-Septic[®], Enviro-Septic[®], or Simple Septic[®] Pipe Leaching System:

Design and Application

- 1. The Designer shall specify which pipe leaching system is to be installed; the Advanced Enviro-Septic®, Enviro-Septic®, or Simple Septic® Pipe Leaching System;
- 2. The leaching system shall be designed in accordance with the approved Presby Vermont Design and Installation Manual.
- 3. The designer shall assure that the system will properly function in all seasons.
- 4. The designer must assess the ventilation path for the application and make any necessary provisions to assure proper flow and control of odor emissions.
- 5. The designer shall provide the landowner with written guidance on the maintenance requirements and homeowner responsibilities in the care and use of an onsite wastewater system according to the AES, ES or SS pipe leaching system requirements for use of the product.
- 6. The designer shall include in the design a septic tank effluent filter with easy access for inspection and cleaning.

Installation Inspection

- 1. The specified pipe leaching system shall be installed in accordance with the approved plans and under the instruction and guidance of an installer/inspector trained by the vendor.
- 2. The leaching system shall be inspected by a Licensed Designer Class 1 or Class B, approved by the Vendor, during installation of the system and installation of all tanks before backfilling, and after backfilling and grading is complete. The inspection shall include checking for levelness of the pipes and inspecting for damage and proper assembly. The Designer shall inspect all transport piping for proper installation and watertightness before backfilling.
- 3. A letter certifying that the system is correctly installed (including the language specified in §1-311 of the Rules) shall be provided electronically to the vendor and the approving Regional Office that issued the Permit.
- 4. It is acceptable to substitute AES for specified ES or SS pipe; or to substitute ES for specified SS pipe for permitted wastewater designs. The above described substitutions may be accomplished in the installation certification and record drawing. All other substitutions require a Wastewater System and Potable Water Supply Permit amendment.

Permitting

1. The permit shall run with the land.

Effective Date: June 28, 2019

By

Graham Bradley

Innovative Alternative Approvals

Interim Replacement Sections for Presby Vermont Design and Installation Manual

9.0 Table A - Minimum AES or ES Pipe Length Required

	D D-4-	Minimum Pipe Length Required (ft)									
Application Rate*	Perc. Rate Range MPI	2 Bedroom	3 Bedroom	4 Bedroom	Additional Bedrooms	Commercial Rate	Max. System Slope				
	IVIPI	280 GPD	420 GPD	490 GPD	70 GPD	100 GPD					
2.4	1 to 4	85	123	165	42	47					
1.6	5 to 8	90	135	180	45	50					
1.2	9 to 16	100	150	200	50	55	20%				
1.0	17 to 24	120	180	240	60	66					
0.8	25 to 40	130	195	260	65	71					
0.6	41 to 76	140	210	280	70	77	15%				
0.4	77 to 120	140	210	280	70	77	10%				

^{*} Application Rate determined from Table B. Maximum Application Rate for in-mound system is 2.0 GPD/ff².

10.0 Table B – Minimum System Sand Bed Area Required

		Amuliantian	Davis Data	Minimum Bed Area Required (ft²)							
Texture	Structure	Application Rate	Perc. Rate Range	2 Bedroom	3 Bedroom	4 Bedroom	Add'l Bedrooms	Commercial Rate			
		GPD/ft²	MPI	280 GPD	420 GPD	490 GPD	70 GPD	100 GPD			
Very Coarse Sand or Coarser	SG				See §1-919(b))					
Coarse Sand, Sand	SG	2.4*	1 to 4	117	175	204	29	42			
Fine Sand.	SG	1.6	5 to 8	175	263	306	47	63.5			
Very Fine Sand,	MA/PL	0.8	25 to 40	350	525	613	88	125			
Loamy Fine Sand, Loamy Very Fine Sand	PR/SBK/ ABK/GR	1.2	9 to 16	233	350	408	58	83			
Sandy Loam,	MA/PL	0.8	25 to 40	350	525	613	88	125			
Coarse Sandy Loam	PR/SBK/ ABK/GR	1.2	9 to 16	233	350	408	58	83			
Fine Sandy Loam,	MA/PL	0.8	25 to 40	350	525	613	88	125			
Very Fine Sandy Loam	PR/SBK/ ABK/GR	1	17 to 24	280	420	490	70	100			
	MA/PL	0.8	25 to 40	350	525	613	88	125			
Loam	PR/SBK/ ABK/GR	1	17 to 24	280	420	490	70	100			
Silt Loam,	MA/PL	0.4	77 to 120	700	1050	1225	175	250			
Silt Loan,	PR/SBK/ ABK/GR	0.6	41 to 76	467	700	817	117	167			
Sandy Clay Loam,	MA/PL	0.4	77 to 120	700	1050	1225	175	250			
Clay Loam, Silty Clay Loam	PR/SBK/ ABK/GR	0.4	77 to 120	700	1050	1225	175	250			
Sandy Clay, Clay, Silty Clay		See §1-926									

Interim Replacement Sections for Presby Vermont Design and Installation Manual

11:0 Table C: Row Length and Pipe Layout Width

		Total Linear Feet of Presby Pipe													
	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450
	35	70	105	140	175	210	245	280	315	350	385	420	455	490	525
	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600
	45	90	135	180	225	270	315	360	405	450	495	540	585	630	675
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750
(ft)	55	110	165	220	275	330	385	440	495	550	605	660	715	770	825
	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900
Length	65	130	190	260	325	390	455	520	585	650	715	780	845	910	975
Row L	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1,050
쮼	75	150	225	300	375	450	525	600	675	750	825	900	975	1,050	1,125
	80	160	240	320	400	480	560	640	720	800	880	960	1,040	1,120	1,200
	85	170	255	340	425	510	595	680	765	850	935	1,020	1,105	1,190	1,275
	90	180	270	360	450	540	630	720	810	900	990	1,080	1,170	1,260	1,350
	95	190	285	380	475	570	665	760	855	950	1,045	1,140	1,235	1,330	1,425
	100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
#	of Rows	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	1.50'	2.50	4.00	5.50	7.00	8.50	10.00	11.50	13.00	14.50	16.00	17.50	19.00	20.50	22.00
			Pip	e Layo	ut Wid	h at 1.5	(ft) Cer	nter-to-(Center r	ow spac	ing (out	ermost	width of	rows)	

Ex: select a row length and move right until the minimum amount of pipe is found (more is allowed). Then move down to find the number of rows required; continue downward in the same column to find the pipe layout width for your spacing.

23.0 Design Procedure and Examples

Step 1: From **Table B**, determine the application rate corresponding to the soil texture and structure. The perc. rate range column is included to determine the maximum application rate when a percolation test has been performed.

Step 2: From **Table A**, calculate the minimum amount of AES or ES pipe required using the number of bedrooms (residential) or daily design flow (commercial) using the application rate determined from Table B.

Step 3: From **Table B**, calculate the minimum bed area required using the number of bedrooms (residential) or daily design flow (commercial) for the application rate based on soil texture and structure.

Step 4: From **Table C**, select a pipe row length from the left-hand column, read across to the total length of pipe required, then read down to find the number of rows required at the base of the column. Also determine the pipe layout width based on the system's center-to-center row spacing.

Step 5: Using the values derived from **Table C**, calculate the system sand total bed length (i.e. row length + 2 ft) and the system sand total bed width (i.e. pipe layout width + 2 ft).

Step 6: Calculate the bed width needed to provide the minimum bed area from Table B, i.e. minimum bed area from Step 3 (Table B) ÷ total bed length from Step 5 (Table C). The larger of the two total bed width values must be used.

Interim Replacement Sections for Presby Vermont Design and Installation Manual

23.1 Design Example: Single Family Residence

Three-bedroom design flow: 420 GPD

Soil description: loamy fine sand, subangular blocky

Design type: in-mound leachfield with 10% system slope (Advanced Enviro-Septic or Enviro-Septic)

Row spacing: 1.5 ft. row spacing

Step 1: From **Table B**, the application rate corresponding to loamy fine sand texture with subangular block structure is 1.2 GPD/ft². (The equivalent perc. rate range is 9 to 16 MPI.)

Step 2: From **Table A**, the minimum length of AES or ES pipe for a three-bedroom design flow of 420 GPD and an application rate of 1.2 GPD/ft² is 150 ft.

Step 3: From **Table B**, the minimum bed area for a three-bedroom design flow of 420 GPD and an application rate of 1.2 GPD/ft² is 350 ft².

10.0 Table B - Minimum System Sand Bed Area Required

		A P 0	D D(-	Minimum Bed Area Required (ft²)							
Texture	Structure	Application Rate	Perc. Rate Range	2 Bedroom	3 Bedroom	4 Bedroom	Add'l Bedrooms	Commercial Rate			
		GPD/ft ²	MPI	280 GPD	420 GPD	490 GPD	70 GPD	100 GPD			
Very Coarse Sand or Coarser	SG			S	See §1 919(b)					
Coarse Sand, Sand	SG	2.4	1 to 4	117	175	204	29	42			
Fine Sand,	SG	1.6	5 to 8	175	263	306	47	63.5			
Very Fine Sand, Loamy Fine Sand,	MA/PL	0.8	25 to 40	350	57 5	613	88	125			
Loamy Very Fine Sand	PR SBK/ ABK/GR	<u>→</u> 1.2 S	tep _{to} 1 ₁₆	233	350	Step 3	58	83			
Condulos	MA/PL	0.8	25 to 40	350	525	613	88	125			
Sandy Loam, Coarse Sandy Loam	PR/SBK/ ABK/GR	1.2	9 to 16	233	350	408	58	83			
Fine Sandy Loam,	MA/PL	0.8	25 to 40	350	525	613	88	125			
Very Fine Sandy Loam	PR/SBK/ ABK/GR	1	17 to 24	280	420	490	70	100			
	MA/PL	0.8	25 to 40	350	525	613	88	125			
Loam	PR/SBK/ ABK/GR	1	17 to 24	280	420	490	70	100			
Silt Loam,	MA/PL	0.4	77 to 120	700	1050	1225	175	250			
Silt Loam, Silt	PR/SBK/ ABK/GR	0.6	41 to 76	467	700	817	117	167			
Sandy Clay Loam,	MA/PL	0.4	77 to 120	700	1050	1225	175	250			
Clay Loam, Silty Clay Loam	PR/SBK/ ABK/GR	0.4	77 to 120	700	1050	1225	175	250			
Sandy Clay, Clay, Silty Clay				See §1-926							

Interim Replacement Sections for Presby Vermont Design and Installation Manual

9.0 Table A - Minimum AES or ES Pipe Length Required

	D D(-	Minimum Pipe Length Required (ft)							
Application Rate GPD/ft ²	Perc. Rate Range	2 3 Bedroom Bedroom 280 GPD 420 GPD		4 Bedroom	·		Max. System Slope		
	MPI			490 GPD	70 GPD	100 GPD			
2.4	1 to 4	85	123	165	42	47			
1.6	5 to 8	90	10/5	180	45	50			
1.2	9 to 16	100	> 150	200	50	55	20%		
1.0	17 to 24	120	180 Ste	p 2 240	60	66			
0.8	25 to 40	130	195	260	65	71			
0.6	41 to 76	140	210	280	70	77	15%		
0.4	77 to 120	140	210	280	70	77	10%		

^{*} See Table B for Application Rate corresponding to soil texture and structure

Step 4: From **Table C**, using a row length of 50 ft. and minimum total pipe length of 150 feet, three rows are required. Table C also shows the pipe layout width (with 1.5 ft. center-to-center spacing) is 4 ft.

11:0 Table C: Row Length and Pipe Layout Width

		Total Linear Feet of Presby Pipe													
	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450
	35	70	105	140	175	210	245	280	315	350	385	420	455	490	525
	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600
	45	90	135	180	225	270	315	360	405	450	495	540	585	630	675
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750
£	55	110	165	220	275	330	385	440	495	550	605	660	715	770	825
Length (ft)	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900
eng	65	130	190	260	325	390	455	520	585	650	715	780	845	910	975
Row L	70	140	2 0	280	350	420	490	560	630	700	770	840	910	980	1,050
~	75	150	225	300	375	450	525	600	675	750	825	900	975	1,050	1,125
	80	160	240	320	400	480	560	640	720	800	880	960	1,040	1,120	1,200
	85	170	255	340	425	510	595	680	765	850	935	1,020	1,105	1,190	1,275
	90	180	270	360	450	540	630	720	810	900	990	1,080	1,170	1,260	1,350
	95	190	285	380	475	570	665	760	855	950	1,045	1,140	1,235	1,330	1,425
	100	200	300	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500
#	of Rows	2	3	Step 4	5	6	7	8	9	10	11	12	13	14	15
	1.50'	2.50	4.00	5.50	7.00	8.50	10.00	11.50	13.00	14.50	16.00	17.50	19.00	20.50	22.00
			Pip	e Layo	ut Wid	th at 1.5	(ft) Cer	nter-to-	Center r	ow spac	ing (out	ermost	width of	rows)	

Ex: select a row length and move right until the minimum amount of pipe is found (more is allowed). Then move down to find the number of rows required; continue downward in the same column to find the pipe layout width for your spacing.

Step 5: Using the values derived from Table C

System sand total bed length = 50 ft + 2 ft. = 52 ft.

System sand total bed width = 4 ft. + 2 ft. = 6 ft.

Interim Replacement Sections for Presby Vermont Design and Installation Manual

Step 6: The bed width needed to provide the minimum bed area from Table B = $350 \text{ sq. ft.} \div 52 \text{ ft.} = 6.73 \text{ ft.}$ (round up to 6.75 ft.). 6.75 ft is larger than 6.00 ft., therefore use 6.75 ft minimum system sand bed width. As a result, there will be a 0.75 ft system sand extension placed on the down slope side of the field (see illustration below). The system sand bed area provided = $52 \text{ ft.} \times 6.75 \text{ ft.} = 351 \text{ sq. ft.}$

Illustration of Example 1:

