

Massachusetts Enviro-Septic® Wastewater Treatment System Quick Reference Guide

Preview

Background

Septic tank effluent contains suspended solids that can cause other types of leaching systems to fail prematurely. Solids can overload bacteria, cut off aeration required for bacterial activity, and/or seal the underlying soil.

What our system does

By utilizing simple, yet effective natural processes the Enviro-Septic® wastewater treatment system treats septic tank effluent in a manner that prevents solids from entering surrounding soils, increases system aeration, and provides a greater bacterial area (biomat) than traditional systems.

System parts

This picture shows the various parts used in the Enviro-Septic® system.



The Enviro-Septic® components

The Enviro-Septic® wastewater treatment system is a product consisting of three components.

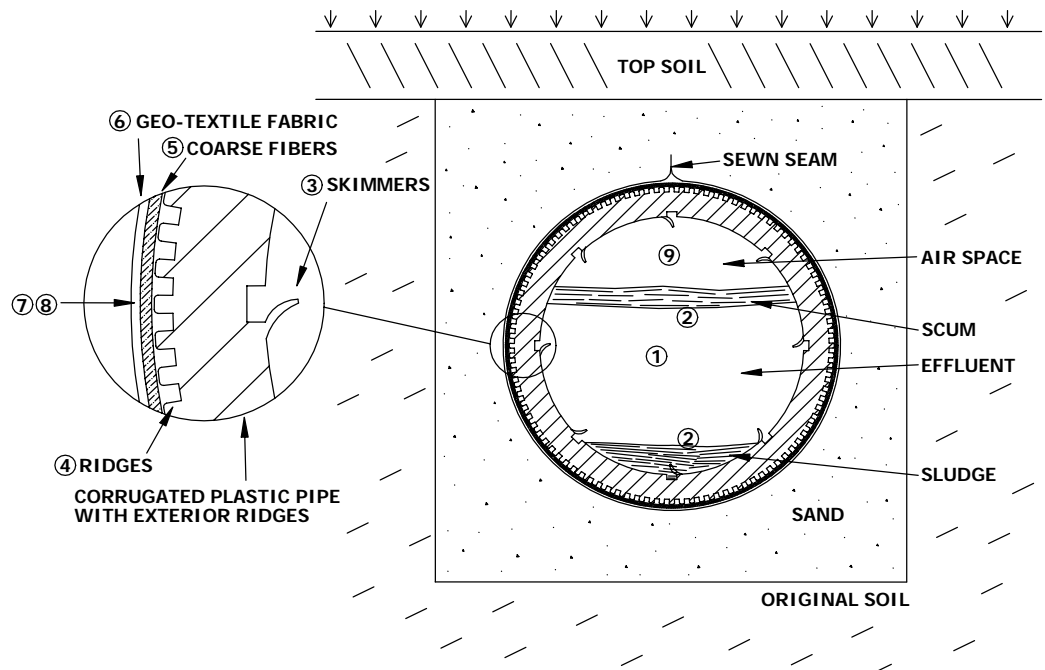
1. A corrugated, perforated, high-density plastic pipe with a unique series of ridges on the peak of each corrugation and plastic “skimmers” extending into the pipe’s interior.
 2. A thick mat of randomly oriented plastic fibers surrounding the pipe.
 3. A special non-woven geo-textile plastic fabric around the mat of fibers.
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Continued

Preview, Continued

Enviro-Septic[®]
cross section

Cross sectional diagram of Enviro-Septic[®] pipe.



How it works

These are the basic stages that take effect in the Enviro-Septic[®] wastewater treatment system.

Stage	What Happens
1	Warm effluent enters the pipe and is cooled to ground temperature.
2	Suspended solids separate from the cooled liquid effluent.
3	Skimmers further capture grease and suspended solids from the effluent as it exits through perforations in the pipe.
4	Pipe ridges allow the effluent to flow uninterrupted around the circumference of the pipe and aid in cooling.
5	A mat of random, coarse fibers separates more suspended solids from the effluent.
6	Effluent passes into the geo-textile fabric and grows a protected bacterial surface.
7	Sand wicks the treated effluent from the geo-textile fabric and enables air to transfer to the bacterial surface.
8	Fabric and fibers provide a large bacterial surface to break down solids.
9	An ample air supply and fluctuating liquid levels increase bacterial efficiency.

Continued

Preview, Continued

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Section A Introduction

Purpose	The purpose of this manual is to provide guidance in the design and installation of the Presby Environmental, Inc., Enviro-Septic [®] wastewater treatment system products.
Presby Environmental, Inc., standards	All systems using Presby Environmental, Inc., Enviro-Septic [®] wastewater treatment system products must be designed and installed in compliance with the procedures and specifications described in this manual.
State standards	Title 5, 310 CMR 15.000, the State Environmental Code for Massachusetts covers issues not addressed in this manual. Title 5 requirements take precedence unless specifically changed by the General Use or Remedial Use approvals issued for the Enviro-Septic [®] system.
Certification required	<p>MassDEP requires that all installers are trained and certified by Presby Environmental, Inc. Presby Environmental, Inc., also requires all designers to be trained and certified. Certification is obtained by attending the “Enviro-Septic[®] Designer and Installer Certification Course” presented by Presby Environmental, Inc., or its sanctioned representatives. Until designers and installers are certified, designs and installations must be approved/inspected by Presby Environmental, Inc., or its sanctioned representatives.</p> <p>While this manual includes essentials, certification courses cover a larger range of topics in much greater detail. The documentation materials provided at these courses is likewise more detailed. We also recommend that all individuals involved in the approval or permitting process attend these courses.</p>
“System Installation Form” required	<p>Installers of Enviro-Septic[®] systems shall provide Presby Environmental, Inc., and the local approving authority with a copy of a completed “System Installation Form” for each new or remedial system installed.</p> <p><u>Reference:</u> See “Appendix A – System Installation Form.”</p>
Technical support	Presby Environmental, Inc., provides technical support to all individuals using our products. For questions about the information contained in this manual, please review our website at www.presbyenvironmental.com or contact us at 1-800-473-5298.

Section B

Design Criteria, Requirements, and Restrictions

Introduction This section contains a variety of criteria, requirements, and restrictions for designing Enviro-Septic[®] wastewater treatment systems.

Subjects covered This table contains the subjects covered and the page location of each.

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D-Box inspection ports All systems shall be designed and installed using distribution boxes as inspection ports. Even basic serial distribution systems shall have straight through distribution boxes for inspection ports. The outlet of the D-Box shall be at least 2” above the inlet of the highest Enviro-Septic[®] line with the connecting pipe slope not less than 2%.

Depth of cover The minimum total depth of cover on Enviro-Septic[®] lines is 10 inches: 6” of system sand plus 4” of topsoil. Enviro-Septic[®] pipe with 12” of structural cover is designed for H-10 loading, and Enviro-Septic[®] pipe with 18” of structural cover is designed for H-20 loading.

Design flow Design flow is defined in Title 5, 310 CMR 15.002. Design flow criteria are presented in 310 CMR 15.203. When design flow is not established in 310 CMR 15.203, water meter readings can be used in accordance with 310 CMR 15.203 (6). For residential systems design flows below 330 gallons per day require a deed restriction.

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Design Criteria, Requirements, and Restrictions, Continued

Designer documentation required	<p>The designer must provide the system owner with copies of the State’s Certification for General Use and/or Approval for Remedial Use, an “Enviro-Septic® Wastewater Treatment Operating Manual,” and a “Technology Checklist.”</p> <p><u>Reference:</u> See “Appendix B, Technology Checklist.”</p>
High flow system configurations	<p>High flow is a “design flow” greater than 500 GPD. High flows in soils with perc rates of up to 60 min/inch require combination or distribution box system configurations or multiple serial beds, each limited to 500 GPD. All high flow systems in soils with perc rates of 61-90 min/inch require multiple serial beds</p>
Line orientation	<p>Enviro-Septic® lines must be laid level and should run parallel to contours (perpendicular to sloping terrain).</p>
Loading limits	<p>Each serial bed, line of a distribution box system, and section of a combination system has a maximum design flow of 500 GPD.</p>
Low flow system configuration	<p>Low flow is a “design flow” of 500 GPD or less. Basic serial system configuration is preferred for low flow systems.</p>
Minimum/maximum line lengths	<p>No single line of any system may exceed 100’ or be less than 30’ in length, but the multiple lines of a basic serial system or section of a combination system may total more than 100’ in length when connected in series using raised connections.</p> <p><u>Note:</u> In some instances site conditions may require lines shorter than 30’. These are non-standard system configurations.</p> <p><u>Reference:</u> See “Section E – Non-Standard System Configurations,” p. 16.</p>
Minimum separation distances	<p>Setback distances are measured from the outer edge of the system sand. The distances to the estimated high groundwater elevation (EHGW) and other restrictive features are measured from the bottom of the 6” of system sand below the bottom of the Enviro-Septic® pipe.</p>
New construction sizing	<p>For new construction, the system owner initially shall size a soil absorption system in accordance with 310 CMR 15.242 to demonstrate that a conventional Title 5 soil absorption system using aggregate, including a reserve area, can be installed on the site. The system owner may then size the soil absorption system for the Enviro-Septic® system.</p>

Continued

Design Criteria, Requirements, and Restrictions, Continued

Percolation rate restriction General Use systems for new construction are limited to sites with a percolation rate of up to 60 min/inch. Remedial systems can be constructed where the percolation rate is up to 90 min/inch.

Pressure distribution lines The use of pressure distribution lines in Enviro-Septic[®] wastewater treatment systems is prohibited.

Raised systems minimum fill extensions Raised systems that slope 10% or less require 3' extensions on each side (including system sand, surrounding sand, and topsoil) before tapering.

Raised systems that slope greater than 10% require 3' extensions on three sides and a 5' extension on the down slope side before tapering.

Tapering is to be 3:1 or less (maximum 2:1 with a variance).

Topsoil is required around the fill perimeter of raised systems.

All mounded systems shall be designed and constructed in accordance with 310 CMR 15.255.

Remedial bed design restrictions – 61-90 percolation rates Remedial systems in soils with percolation rates greater than 60 and up to 90 minutes per inch must be designed as basic serial systems. A multiple bed system uses a distribution box with flow equalizers. No bed in a basic serial multiple bed system can have a design flow of more than 500 GPD. Beds shall be separated by at least six feet of naturally occurring undisturbed soil. To accommodate construction access, additional separation distance may be necessary.

Reserve area For new construction a system must contain a reserve area the size of a conventional Title 5 soil absorption system using aggregate. The Enviro-Septic[®] system may be installed within this reserved area. For Remedial systems the system owner must demonstrate that sufficient reserve is not available so that the system can be designed without a reserve area.

System Installation Form Installers of Enviro-Septic[®] systems shall provide Presby Environmental, Inc., and the approving authority with a copy of a completed "System Installation Form" for each new or replacement system installed.

Reference: See "Appendix A – System Installation Form."

Continued

Design Criteria, Requirements, and Restrictions, Continued

**System size
limitation**

To meet Massachusetts' requirements, at no time may an Enviro-Septic[®] system be designed to have a sand bed area less than 60% of a conventional Title 5 aggregate system designed in accordance with 310 CMR 15.252 for the same site. In addition, the minimum area for a system installed for new construction shall be 400 square feet.

**Venting
requirements**

Each Enviro-Septic[®] system must be installed with venting at the end of each distribution box line, section, or serial bed. Vent manifolds may be used to connect multiple vents to one vent outlet.

Section C Sand Requirements

Introduction	This section describes the sand requirements for the Enviro-Septic [®] wastewater treatment system.
System sand	<p><u>All configurations</u> of Enviro-Septic[®] require a minimum of 6" of system sand surrounding the circumference of the pipe.</p> <p><u>Percentage Restrictions</u> 35% or less of the total sand may be gravel. 40%-90% of the total sand is to be coarse and very coarse sand.</p> <p><u>Gravel Quality Restrictions</u> No gravel is to exceed ¾" in diameter. No gravel is smaller than 2mm/0.0787" in diameter. (It must not pass through a #10 sieve.)</p> <p><u>Coarse Sand Quality Restrictions</u> No coarse sand is smaller than 0.5mm/0.0196" in diameter. (It must not pass through a #35 sieve.)</p> <p><u>Fines Quality Restrictions</u> No more than 2% of the total sand may pass through a #200 sieve.</p> <p><u>ASTM Standard: C-33 (concrete sand) meets the above requirements.</u></p>
Surrounding sand	Surrounding sand may be additional system sand or Title 5 fill. Only surrounding sand may be placed under raised systems or where top soil and soil horizons with organic matter have been removed. (Surrounding sand should be either System Sand or Title 5 fill, 310 CMR 15.255 (3))
Raised systems extensions	<p>Raised systems require extensions.</p> <p><u>References:</u> See "Raised systems minimum fill extensions," p. 7 and 310 CMR 15.255.</p>
Perimeter sand bed requirements	<p>Sand beds sloping 10% or less require the system sand area to extend a minimum of 1 foot around the perimeter of the Enviro-Septic[®] pipe.</p> <p>Sand beds sloping greater than 10% require the system sand area to extend a minimum of 1 foot around the perimeter of the Enviro-Septic[®] pipe, and an additional 6" of system sand, measured from the bottom of the Enviro-Septic[®] pipe, must extend 3' on the downslope side.</p> <p><u>References:</u> See "Inground System Sections" diagrams, p. 14 and "Raised (Mounds) System Sections" diagrams, p. 15.</p>

Section D

Standard System Configurations

Preview

Introduction	This section presents the standard configurations designs in which Enviro-Septic [®] systems should be designed and installed.
<hr/>	
Elevation and slope configurations	These line configurations may be designed as inground or raised systems on level or sloping terrain.
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Sloping systems	The percentage of slope refers to the slope of the Enviro-Septic [®] system, <u>not</u> the existing terrain. The maximum sand bed slope for all systems is 25%. The maximum site slope is 3:1 (33%). A sloping system can be designed with more than one distinct slope and/or center-to-center pipe spacing in the same system.
<hr/>	
Line orientation	Enviro-Septic [®] lines must be laid level and should run parallel to contours (perpendicular to sloping terrain).
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Velocity reduction	If the slope of piping from the septic tank to the Enviro-Septic [®] is 10% or more up to a length of 50', or 5% or more for lengths over 50', a velocity reducer is necessary in the D-Box. A baffle or an inlet tee may be an adequate velocity reducer.
<hr/>	
Flow equalizers required	All distribution boxes that divide effluent flow in pump or gravity systems require flow equalizers in their outlets.
<hr/>	
Pump system definition	A pump system uses a pump to elevate effluent to a D-Box which is required for velocity reduction in a basic serial system and also equally distributes effluent in combination, distribution box, or multiple bed systems.

In this section This section contains the following subjects.

Subject	Page
Basic Serial Systems	11
Combination Systems	12
Distribution Box Systems	13
Inground System Sections	14
Raised (Mounds) System Sections	15

Basic Serial Systems

Introduction

Basic serial distribution is preferred for single beds of 500 GPD or less and multiple bed systems where each bed receives 500 GPD or less. Basic serial distribution is quick to develop a strong biomat in the first line, providing improved effluent treatment. Basic serial distribution provides a longer flow route to allow decomposition of solids and greases, providing improved long term treatment.

Definition

A basic serial system is a single bed with a series of Enviro-Septic[®] lines connected at the ends with raised connections, using offset adapters and PVC pipe. One offset adapter is installed at the single inlet, and one offset adapter installed at the end of the system is connected to a single vent.

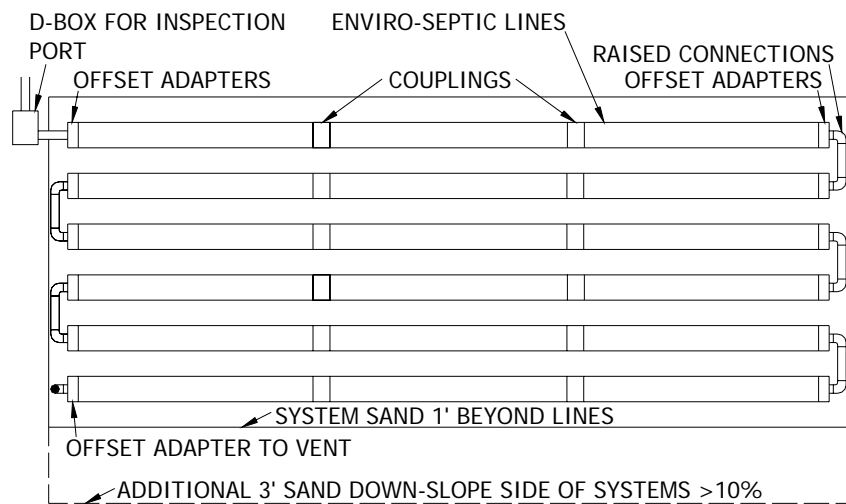
Line length

Each line of a basic serial system has a maximum length of 100'.

Basic serial system diagram

Here's a plan view of an Enviro-Septic[®] basic serial system.

Note: All systems require a D-Box as an observation port.



Combination Systems

Introduction Combination distribution is required for systems with greater than 500 GPD and for multiple bed systems where each section receives no greater than 500 GPD. Combination distribution is quick to develop a strong biomat in the first line of each section providing improved effluent treatment. All systems require a distribution box for use as an observation port. Combination systems also use the same distribution box for dividing flow to multiple serial sections to provide longer flow routes to allow decomposition of solids and greases, providing improved long term treatment.

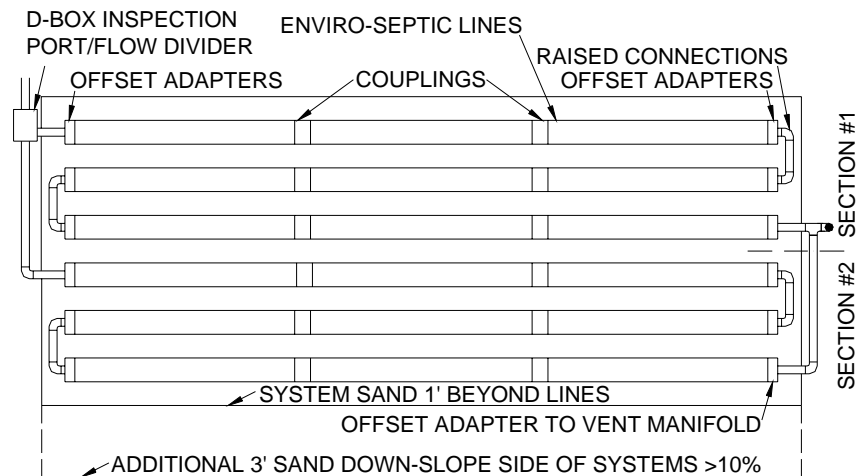
Definition A combination system is a bed of two or more sections of Enviro-Septic® lines in serial configuration supplied equally through a distribution box. Each section of a combination system is a series of Enviro-Septic® lines connected at the ends with raised connections, using offset adapters and PVC sewer and drain pipe. An offset adapter is installed at each section inlet, and at the end of each section where it is connected to a vent or vent manifold.

Loading Each section of a combination system has a maximum design flow of 500 GPD.

Line length Each line of a combination system has a maximum length of 100’.

Section length requirement Each section of a combination system must have at least the same minimum linear feet of pipe. The minimum linear feet of pipe per section is determined by dividing the total linear feet required by the number of sections. A section may exceed the minimum linear length. Lines within a section may vary in length to accommodate site constraints.

Combination system diagram Here’s a plan view of an Enviro-Septic® combination system.



Distribution Box Systems

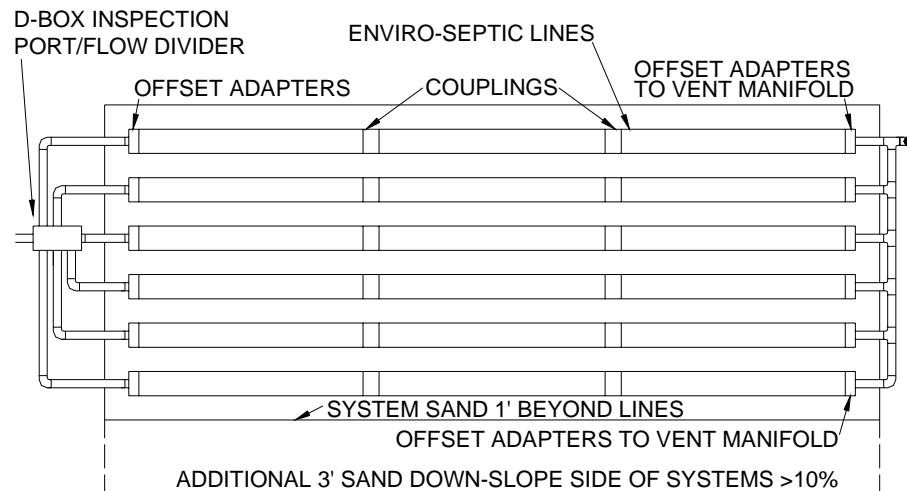
Introduction All systems require a distribution box for use as an observation port. Distribution box systems also use the same distribution box for dividing flow equally to individual lines of Enviro-Septic[®] pipe.

Definition A distribution box system is a bed with each Enviro-Septic[®] line supplied equally through a distribution box. Each Enviro-Septic[®] line of a distribution box system has one offset adapter at each line inlet and one offset adapter at the end of each line connected to a vent or vent manifold.

Flow equalizers required All distribution boxes that divide effluent flow in pump or gravity systems require flow equalizers in their outlets.

Line length requirement Each line of a distribution box system has a maximum length of 100'. Each line of a distribution box system must have the same minimum linear feet of pipe. The minimum linear feet of each line is determined by dividing the total linear feet required by the number of lines.

Distribution box system diagram Here's a plan view of an Enviro-Septic[®] distribution box system.

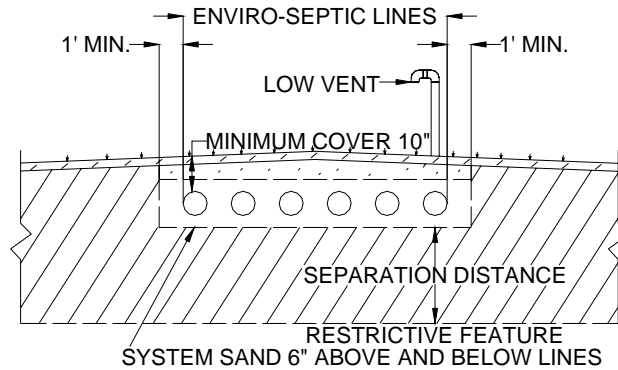


Inground System Sections

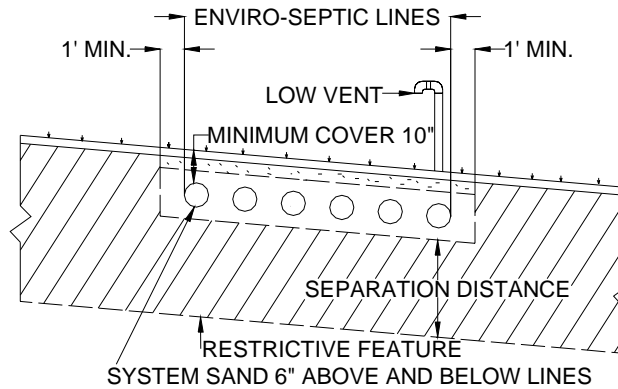
Introduction Inground Enviro-Septic® systems are the preferred configuration for sites with no soil constraints to limit placement.

Definition Inground systems are configurations where the bottom of the system sand bed is below the existing grade.

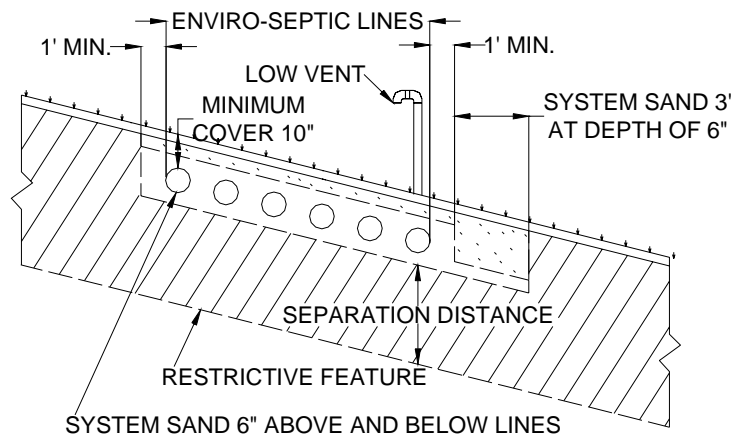
Inground level section



Inground sloping to 10%



Inground sloping >10%

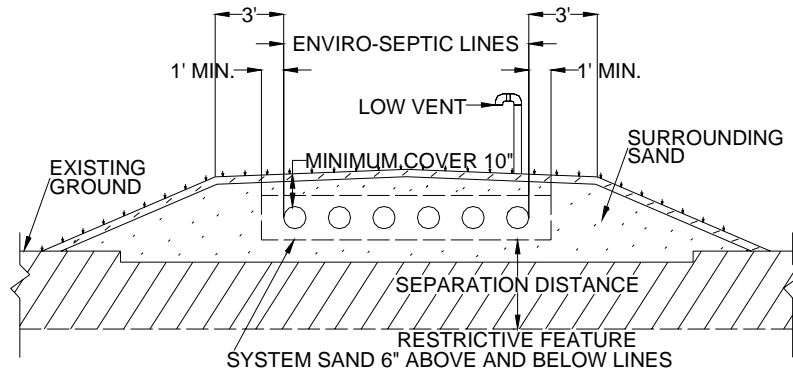


Raised (Mounds) System Sections

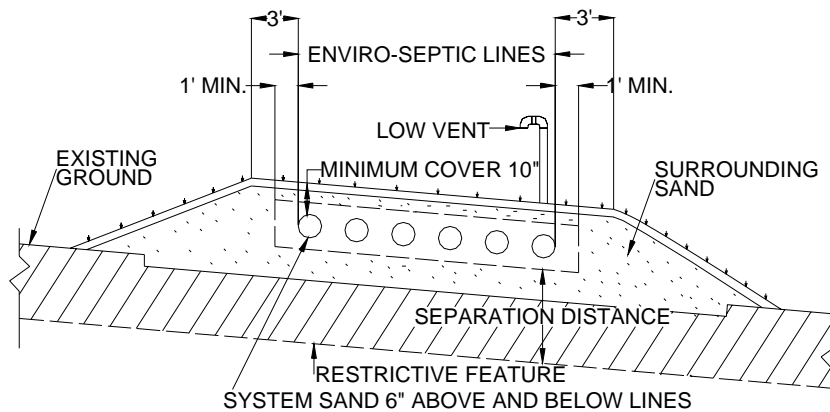
Introduction All mounded systems shall be designed and constructed in accordance with 310 CMR 15.255. Raised Enviro-Septic® systems are designed for sites with soil or depth constraints that do not allow inground configurations.

Definition Raised systems are configurations where the bottom of the system sand bed is at or above the existing ground.

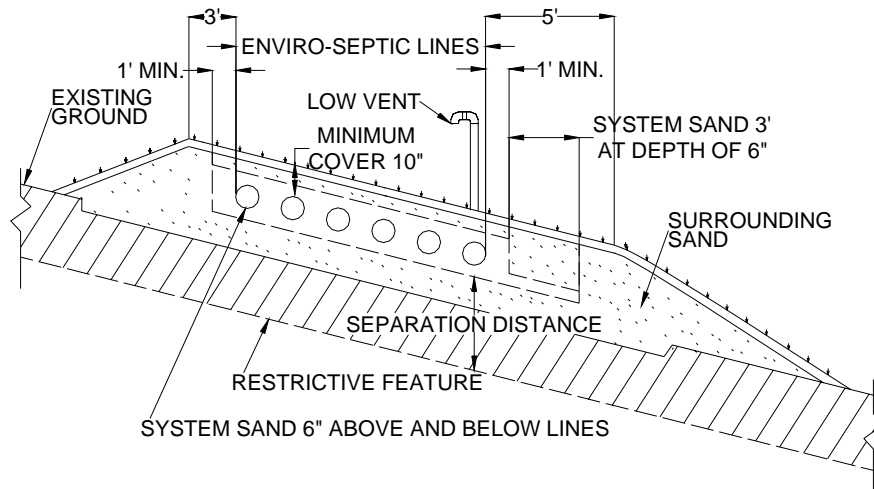
Raised level section



Raised sloping to 10%



Raised sloping >10%



Section E

Non-Standard System Configurations

Introduction Non- standard configurations may accommodate system lengths longer than 100' and pipe lines shorter than 30'.

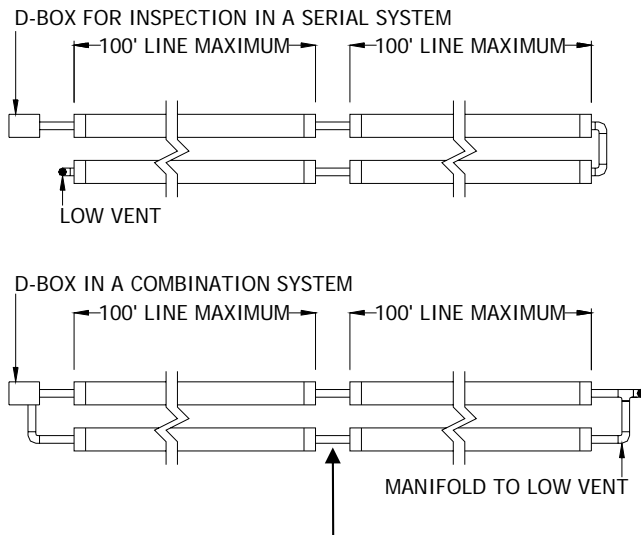
Total linear feet requirement Each line of a distribution box system and each section of a combination system must have the same minimum linear feet of pipe. A section or line may exceed the minimum linear length. Lines within a section may vary in length to accommodate site constraints.

Non-standard restriction Non-standard system configurations are not allowed for soils with percolation rates of 61-90 min/inch.

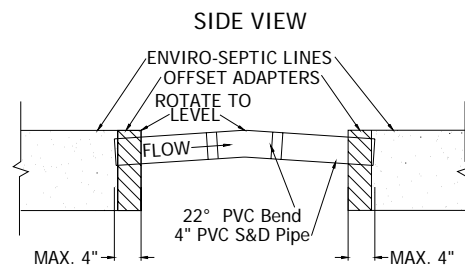
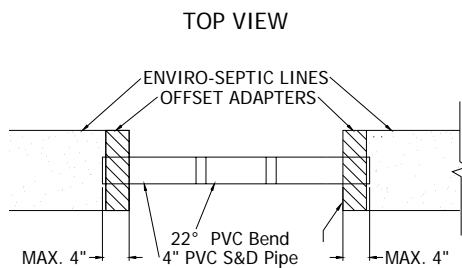
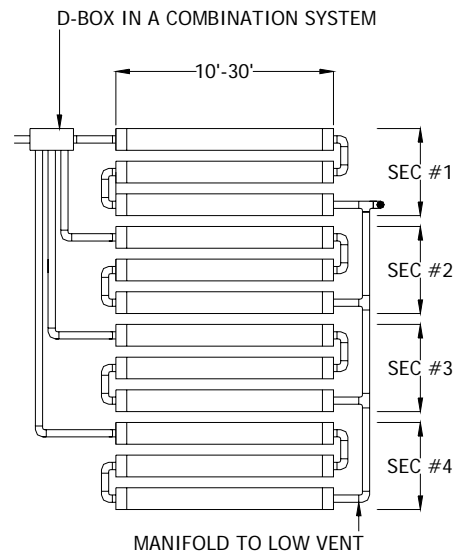
Examples Here are some examples using offset adapters and distribution boxes.

Offset adapters with raised connections allow systems to exceed 100' in length

Combination configuration minimizes groundwater mounding with pipe lengths less than 30'



Offset adapter (detail below)



Continued

Section F

Quick Reference Guide for Percolation Rates Up to 60 Minutes/Inch

Purpose The unique Enviro-Septic[®] design provides an infinite number of system configurations that vary in length, width, slope, and shape. The purpose of this guide is to help designers compare layouts for any site quickly and easily. We recommend designers read this entire manual before using this Quick Reference Guide.

Exceptions require variance Exceptions to any requirements used in this quick reference guide require a variance from the local approving authority.

Minimum separation distances Title 5, 310 CMR 15.000 of the State Environmental Code establishes rules for minimum vertical and horizontal separation distances. Setback distances are measured from the outer edge of the system sand. The distances to EHGW and other restrictive features are measured from the bottom of the 6” of system sand below the Enviro-Septic[®] pipe.

System configuration Basic serial configuration is recommended for low flow systems. High flow systems are preferably designed as combination systems or multiple serial bed systems, but distribution box systems may also be used.

Procedure Complete these tasks to size a single level Enviro-Septic[®] system.

Task 1: Determine the linear feet of Enviro-Septic[®] pipe required.

Use the percolation rate and the number of bedrooms or the commercial GPD in Table A below to determine the linear feet of Enviro-Septic[®] pipe required.

Table A: Linear Footage

Perc rate Min/Inch	Number of Bedrooms						Add'l Room	Commercial Per 100 GPD
	2	3	4	5	6			
1-9	100	150	200	250	300	55	50	
10-13	110	165	220	275	330	60	55	
14-19	120	180	240	300	360	66	60	
20-30	130	195	260	325	390	71	65	
31-40	140	210	280	350	420	77	70	
41-50	150	225	300	375	450	83	75	
51-60	160	240	320	400	480	89	80	

Example: A three-bedroom home with an 18 min/inch percolation rate requires 180 feet of pipe.

Note: Each bedroom has a design flow of 110 GPD.

Continued

Quick Reference Guide for Percolation Rates Up to 60 Minutes/Inch, Continued

Task 2: Determine the percentage of slope on the proposed system.

Note: The maximum slope for a sand bed system is 25%. However, the site slope may be greater if fill or excavation is used to keep the system slope within the maximum.

Do you know the percentage of slope on the proposed system?

If yes, go to Task 3.

If no, follow this procedure to determine the percentage of system slope.

Step	Action
1	Identify the highest elevation of the proposed system site.
2	Identify the lowest elevation of the proposed system site.
3	Subtract the lowest elevation from the highest elevation = elevation change.
4	Measure the horizontal distance between the two elevations = horizontal length.
5	Divide the elevation change by the horizontal length = percentage of site slope.
6	Choose a percentage of slope to be used for the system. <u>Note:</u> The system slope does not need to be the same as the site slope.
7	Go to Task 3.

Task 3: Determine the minimum center-to-center pipe spacing.

Use the percolation rate and the percentage of system slope in Table B below to determine the required minimum center-to-center pipe spacing for a sand bed.

Table B: Pipe Spacing

Percentage of System Slope	Percolation Rate Min/Inch					
	1-10	11-20	21-30	31-40	41-50	51-60
0-10%	1.5'	1.5'	1.75'	2.0'	2.5'	3.0'
11-15%	1.5'	1.75'	2.0'	2.25'	2.75'	3.25'
16-20%	1.75'	2.0'	2.25'	2.5'	3.0'	3.5'
21-25%	2.0'	2.25'	2.5'	2.75'	3.25'	3.75'

Example: A slope of ten percent or less with an 18 min/inch percolation rate requires pipe spacing of 1.5'.

Continued

Quick Reference Guide for Percolation Rates Up to 60 Minutes/Inch, Continued

Task 4: Determine pipe line layout.

IF...	THEN use Table C below to...
system length is not a limiting factor (Preferred)	<ul style="list-style-type: none"> find the pipe “line length/Ft” in the left column follow that row across to a number equal to or greater than the required “Linear Feet of Enviro-Septic®” follow that column down through the “# of Lines” row and across left to the required “Ctr to Ctr Spacing.”
system length is a limiting factor	<ul style="list-style-type: none"> find the pipe spacing in the bottom left hand column and follow that row across to the desired layout width follow that column up through the # of lines row and up to the required linear feet of Enviro-Septic® follow that row left to determine the pipe line length.

Note: Dark shading in table highlights figures used in the example.

Line Length/Ft	40	60	80	100	120	140	160	180	200	220	240	260	280	300
20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375
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
60	120	180	240	300	360	420	480	540	600	660	720	780	840	900
65	130	190	260	325	390	455	520	585	650	715	780	845	910	975
70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050
75	150	225	300	375	450	525	600	675	750	825	900	975	1050	1125
80	160	240	320	400	480	560	640	720	800	880	960	1040	1120	1200
85	170	255	340	425	510	595	680	765	850	935	1020	1105	1190	1275
90	180	270	360	450	540	630	720	810	900	990	1080	1170	1260	1350
95	190	285	380	475	570	665	760	855	950	1045	1140	1235	1330	1425
100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
# of Lines	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ctr to Ctr Spacing														
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
1.75	2.75	4.50	6.25	8.00	9.75	11.50	13.25	15.00	16.75	18.50	20.25	22.00	23.75	25.50
2.00	3.00	5.00	7.00	9.00	11.00	13.00	15.00	17.00	19.00	21.00	23.00	25.00	27.00	29.00
2.25	3.25	5.50	7.75	10.00	12.25	14.50	16.75	19.00	21.25	23.50	25.75	28.00	30.25	32.50
2.50	3.50	6.00	8.50	11.00	13.50	16.00	18.50	21.00	23.50	26.00	28.50	31.00	33.50	36.00
2.75	3.75	6.50	9.25	12.00	14.75	17.50	20.25	23.00	25.75	28.50	31.25	34.00	36.76	39.50
3.00	4.00	7.00	10.00	13.00	16.00	19.00	22.00	25.00	28.00	31.00	34.00	37.00	40.00	43.00
3.25	4.25	7.50	10.75	14.00	17.25	20.50	23.75	27.00	30.25	33.50	36.75	40.00	43.25	46.50
3.50	4.50	8.00	11.50	15.00	18.50	22.00	25.50	29.00	32.50	36.00	39.50	43.00	46.50	50.00
3.75	4.75	8.50	12.25	16.00	19.75	23.50	27.25	31.00	34.75	38.50	42.25	46.00	49.75	53.50
4.00	5.00	9.00	13.00	17.00	21.00	25.00	29.00	33.00	37.00	41.00	45.00	49.00	53.00	57.00
4.25	5.25	9.50	13.75	18.00	22.25	26.50	30.75	35.00	39.25	43.50	47.75	52.00	56.25	60.50
4.50	5.50	10.00	14.50	19.00	23.50	28.00	32.50	37.00	41.50	46.00	50.50	55.00	59.50	64.00
4.75	5.75	10.50	15.25	20.00	24.75	29.50	34.25	39.00	43.75	48.50	53.25	58.00	62.75	67.50
5.00	6.00	11.00	16.00	21.00	26.00	31.00	36.00	41.00	46.00	51.00	56.00	61.00	66.00	71.00
Layout Width/Ft.														

Continued

Quick Reference Guide for Percolation Rates Up to 60 Minutes/Inch, Continued

Task 5: Calculate the total system sand bed area.

Massachusetts requires that Enviro-Septic[®] systems be no less than 60% of the area of a pipe and aggregate system and no less than 400 square feet. Complete this task to determine area size.

Add two feet to the layout width and line length from Table C and multiply them together to obtain the sand bed area in sq.ft. For sloping systems greater than 10%, add 5 feet to the system width and two feet to the pipe length and multiply them together. (The 5 foot width accounts for the 4 foot sand bed extension required on slopes of 10% or more.)

If the area calculated above is less than the minimum sand bed area size required by Massachusetts in Table D, see “Increasing sand bed area footage”, next page.

Table D – Minimum Sand bed Area Size (sq.ft.)

PERC RATE Min/Inch	2 BEDROOM 220 GPD				3 BEDROOM 330 GPD				4 BEDROOM 440 GPD				5 BEDROOM 550 GPD			
	SOIL CLASS				SOIL CLASS				SOIL CLASS				SOIL CLASS			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1-5	400	400			400	400			400	440			446	550		
6	400	400			400	400			400	440			471	550		
7	400	400			400	400			400	440			485	550		
8	400	400			400	400			400	440			500	550		
10		400				400				440				550		
15		400	400			400	535			471	714			589	892	
20		400	400			400	582			498	776			623	971	
25		400	400			495	600			660	800			825	1000	
30		400	455			600	683			800	910			1000	1138	
40			528				792				1056				1320	
50			660	660			990	990			1320	1320			1650	1650
60			880	880			1320	1320			1760	1760			2200	2200

PERC RATE Min/Inch	6 BEDROOM 660 GPD				ADD'L. BEDROOM 110 GPD				COMMERICAL PER 100 GPD			
	SOIL CLASS				SOIL CLASS				SOIL CLASS			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
1-5	535	660			89	110			81	100		
6	566	660			94	110			86	100		
7	582	660			97	110			88	100		
8	600	660			100	110			91	100		
10		660				110				100		
15		707	1070			117	178			107	162	
20		747	1165			124	194			113	176	
25		990	1200			165	200			150	182	
30		1200	1366			200	227			182	207	
40			1584				264				240	
50			1980	1980			330	330			300	300
60			2640	2640			440	440			400	400

Continued

Quick Reference Guide for Percolation Rates of Up to 60 Minutes/Inch, Continued

Increasing sand bed area footage Our 3-bedroom home requires 180 linear feet of pipe at 1.5' on center. Using Table C, with 30' lines the system width is 8.5' with a sand bed area of 32'x10.5' for a total of 336 square feet of sand bed. To meet the Massachusetts minimum bed area requirement of 400 square feet for soil class II from Table D, our sand bed area must be increased. Our sand bed area may be increased by adding width and/or length to the system.

Adding width: To meet the minimum sand bed area size required, the minimum pipe spacing may be increased. Add 2 feet to the pipe length and divide the minimum sand bed area size by that amount to obtain the minimum sand bed width. Subtract 2 feet from the minimum sand bed width and find the line spacing that provides at least that layout width in Table C. For slopes greater than 10%, subtract 5 feet from the minimum sand bed width before referring to Table C for line spacing.

Adding width example: To increase the sand bed area footage in our example by adding width, divide 400' by 32' to obtain a minimum sand bed width of 12.5'. Subtract 2' from that to obtain the minimum layout width of 10.5'. Table C indicates that a line spacing of 1.75' on center provides a layout width of only 9.75' for a 6-line system, therefore, a line spacing of 2.0' on center and a layout width of 11' is needed to provide a sand bed width of 13' to meet the required 12.5' minimum sand bed width. This now gives us a sand bed area of 416 square feet (13'x32') and a system configuration of 6-30' lines spaced 2' on center.

Adding length: Add 2 feet to the system width (5 feet for slopes over 10%) and divide the minimum sand bed area size by that amount to obtain the minimum sand bed length required. Subtract 2 feet from the minimum sand bed length to obtain the pipe line length.

Adding length example: To increase the sand bed area footage in our example by adding length, divide 400' by 10.5' to obtain a sand bed length of 39'. Subtract 2' from that to obtain a line length of 37'. 39'x10.5' equals 410 square feet of sand bed area. The system configuration would be 6-37' lines spaced 1.5' on center.

Note: This example uses 6-37' line lengths. Limiting pipe to 5' and 10' lengths makes systems simpler to construct. This system would be more easily installed as 6-40' lines, eliminating the need to cut the pipe.

Section G

Quick Reference Guide for Percolation Rates of 61-90 Minutes/Inch

Introduction Systems in high-density soils or soils with slow percolation rates are limited in configuration to adequately disperse and treat effluent and minimize groundwater mounding.

Purpose The purpose of this guide is to help designers choose system layouts for percolation rates in the 61-90 minutes/inch range.

We recommend designers read this entire manual before using this Quick Reference Guide.

Restriction Installations in soils with percolation rates of 61-90 minutes/inch are restricted to remedial use systems only.

Exceptions require variance Exceptions to any requirements used in this quick reference guide require a variance from the local approving authority.

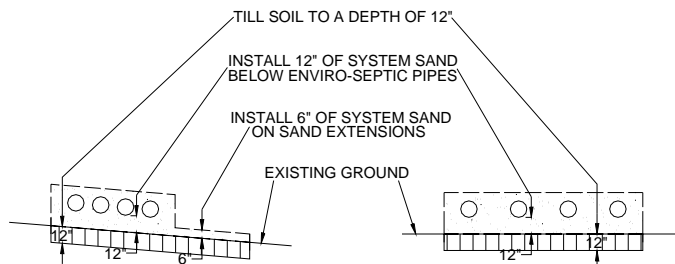
Minimum separation distances Title 5, 310 CMR 15.000 of the State Environmental Code for Massachusetts establishes rules for minimum vertical and horizontal separation distances. Setback distances are measured from the outer edge of the system sand. The distances to EHGW and other restrictive features are measured from the bottom of the 6" of system sand below the Enviro-Septic® pipe.

Slope percentages allowed Use Table E below to determine the maximum slope percentages allowed.

Table E – Maximum Slopes for Perc. Rates 61-90 Min./Inch

Perc. Rate	% Slope
61-70	15%
71-90	10%

Additional site preparation requirement For these dense soil systems, plow the system bed and sand extension area to a depth of 12" traveling parallel to the contour of the site. Place 12" of system sand (as measured from existing ground) on the bed area and 6" on sand extensions immediately to protect the site from damage by precipitation.



This additional requirement must be included on the system plan.

Continued

Quick Reference Guide for Percolation Rates of 61-90 Minutes/Inch, Continued

Procedure Complete these tasks to design a single level Enviro-Septic® leaching system with percolation rates between 61-90 minutes/inch.

Task 1: Determine the percentage of slope on the proposed system.

Note: The maximum system slope is limited to 15% depending on percolation rates. However, the site slope may be greater if fill or excavation is used to keep the system slope within the maximum.

Do you know the percentage of slope on the proposed system?

If yes, go to Task 2.

If no, follow this procedure to determine the percentage of system slope.

Step	Action
1	Identify the highest elevation of the proposed system site.
2	Identify the lowest elevation of the proposed system site.
3	Subtract the lowest elevation from the highest elevation = elevation change.
4	Measure the horizontal distance between the two elevations = horizontal length.
5	Divide the elevation change by the horizontal length = percentage of site slope.
6	Choose a percentage of slope to be used for the system. <u>Note:</u> The system slope does not need to be the same as the site slope.
7	Go to Task 2.

Task 2: Choose the proper sizing table.

Sizing tables use the number of bedrooms for homes or the GPD flow in commercial installations to determine system size. System size is the total square footage of sand bed area required for a system. Sand bed area is designed as one or more individual sand beds. Sand bed widths are pre-established at 12', 9', and 6'. Sand bed lengths vary according to percolation rates and slope percentages.

Reference: See Level and Sloping Bed Diagrams, pp. 31, 32.

When the system is for...	THEN use the following table to complete Task 3.
2-bedrooms	2-Bedroom Sizing, page 27
3-bedrooms	3-Bedroom Sizing, page 27
4-bedrooms	4-Bedroom Sizing, page 28
5-bedrooms	5-Bedroom Sizing, page 28
6-bedrooms	6-Bedroom Sizing, page 29
more than 6 bedrooms	Additional Bedroom Sizing, page 29
commercial use	Commercial System Sizing, page 30

Continued

Quick Reference Guide for Percolation Rates of 61-90 Minutes/Inch, Continued

Task 3: Determine bed(s) widths and lengths.

To determine the number and sizes of beds required, use the proper sizing table identified in task 2.

- Find your percolation rate and slope in the left hand column.
Note: Percolation rates/slopes limit system widths to 12', 9', or 6'. No other system widths are allowed without approval by the local approval authority.
- Follow the row(s) across to the minimum bed length column and choose the longest bed length your site will accommodate.
Note: Beds must be 32'-102' in length.
- If the minimum bed length exceeds 102 feet, divide the system into multiple beds of equal length.
Example: A minimum bed length of 288' could be designed as 3 beds of 96' each.
Note: This example supports using the longest beds possible. Four beds of 72', five beds of 58', etc., are other alternatives. Remember that 32' is the minimum bed length allowable.

Task 4: Design beds.

- Design as many beds as required, inserting 4, 3, or 2 lines of Enviro-Septic[®] pipe in each as dictated by the bed width.
Note: Pipe is designed 1 foot from the end of the sand bed.
Example: A line of pipe in a 96' bed would be 94' long.
Reference: See pipe lengths in Table F below
- Use the bed diagrams on pp. 31, 32 to aid in the design of each bed.

Pipe line and total footage lengths

Based on the bed width and length, this table lists pipe line lengths and total pipe footage in 5' increments.

Table F – Pipe Line and Total Footage Lengths

Bed Width	Number of pipe lines	Bed Length	32	37	42	47	52	57	62	67
		Pipe Length	30	35	40	45	50	55	60	65
6'	2	Total Pipe Ftg.	60	70	80	90	100	110	120	130
9'	3	Total Pipe Ftg.	90	105	120	135	150	165	180	195
12'	4	Total Pipe Ftg.	120	140	160	180	200	220	240	260

Table F – Pipe Line and Total Footage Lengths

Bed Width	Number of pipe lines	Bed Length	72	77	82	87	92	97	102
		Pipe Length	70	75	80	85	90	95	100
6'	2	Total Pipe Ftg.	140	150	160	170	180	190	200
9'	3	Total Pipe Ftg.	210	225	240	255	270	285	300
12'	4	Total Pipe Ftg.	280	300	320	340	360	380	400

Continued

Quick Reference Guide for Percolation Rates of 61-90 Minutes/Inch, Continued

Avoiding cutting Enviro-Septic[®] pipe It is possible to keep pipe line lengths as multiples of 10' and avoid cutting a 10' pipe section.

Example: Let's say we have a 12' x 88' bed (4-lines of pipe) requiring a total pipe footage of 344'. Dividing 344' by 4 would suggest 4 lines of 86' each. Extending the bed 4 feet would allow 4 lines of 90 feet each and eliminate cutting a section of pipe.

Task 5: Increase system size to meet Massachusetts' requirements.

Massachusetts requires that Enviro-Septic[®] systems be no less than 60% of the area of a pipe and aggregate system. Complete this task to determine the area size required by Massachusetts. Use Table G below to find the appropriate minimum sand bed area size required by the State of Massachusetts.

Table G – Minimum Sand Bed Area Size (sq.ft.)

Perc Rate Min/Inch	2-Bedroom	3-Bedroom	4-Bedroom	5-Bedroom	6-Bedroom	Add'l Bedroom	Commercial Per 100 GPD
61-90	880	1320	1760	2200	2640	440	400

Example: Let's say we have a 4-bedroom system in soil with a perc rate of 66 min/inch on a 4% slope. Our 4-bedroom sizing table requires a minimum bed length of 88' with 4 lines and a sand bed width of 12'. To meet Massachusetts' requirements in Table G, our 4-bedroom house requires a minimum sand bed area size of 1760 sq. ft. The 88' x 12' bed would use 86' line lengths to provide a total of 1056 sq.ft. Instead of cutting the last pipe of each line to 6', the full 10' should be used to provide 4-90' lines. The 90' lines will provide a bed length of 92'. Divide the needed 1760 sq.ft. by the 92' bed to obtain a width of 20'. The 4-90' lines spaced 3' apart should be centered in the 20' by 92' bed.

Note 1: Sand bed extensions at the pipe ends are limited to 1 foot from the end cap or offset adapter for purposes of calculating the effective bed size.

Note 2: Sand bed extensions on systems sloping 5-15% are limited to 1 foot from the upslope side of the highest pipe for purposes of calculating bed size. Additional bed width must be made on the down slope side.

Quick Reference Guide for Percolation Rates of 61-90 Minutes/Inch, Continued

**System
configuration
requirement**

Basic serial configuration is required for systems in soils with perc rates of 61-90 min/inch.

Systems with a design flow greater than 500 GPD must be divided into multiple beds. No bed in a multiple bed system can accept more than 500 GPD.

Sizing Tables (percolation rates 61-90 min/inch)

2-Bedroom

Perc. Rate/Slope	Sand Bed Area(sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	523	12'	4	3'	44'
61-70 / 0%<5%	523	9'	3	3'	58'
61-70 / 0%<5%	523	6'	2	3'	87'
61-70 / 5%<10%	601	12'	4	1.5'	50'
61-70 / 5%<10%	601	9'	3	1.5'	67'
61-70 / 5%<10%	601	6'	2	1.5'	100'
61-70 / 10%-15%	628	12'	4	1.5'	53'
61-70 / 10%-15%	628	9'	3	1.5'	73'
71-80 / 0%<5%	559	12'	4	3'	47'
71-80 / 0%<5%	559	9'	3	3'	62'
71-80 / 0%<5%	559	6'	2	3'	93'
71-80 / 5-10%	643	12'	4	1.5'	54'
71-80 / 5%-10%	643	9'	3	1.5'	71'
71-80 / 5%-10%	643	6'	2	1.5'	107'
81-90 / 0%<5%	602	9'	3	3'	67'
81-90 / 0%<5%	602	6'	2	3'	100'
81-90 / 5%-10%	692	9'	3	1.5'	77'
81-90 / 5%-10%	692	6'	2	1.5'	115'

3-Bedroom

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	784	12'	4	3'	65'
61-70 / 0%<5%	784	9'	3	3'	87'
61-70 / 0%<5%	784	6'	2	3'	131'
61-70 / 5%<10%	902	12'	4	1.5'	75'
61-70 / 5%<10%	902	9'	3	1.5'	100'
61-70 / 5%<10%	902	6'	2	1.5'	150'
61-70 / 10%-15%	941	12'	4	1.5'	78'
61-70 / 10%-15%	941	9'	3	1.5'	105'
71-80 / 0%<5%	839	12'	4	3'	70'
71-80 / 0%<5%	839	9'	3	3'	93'
71-80 / 0%<5%	839	6'	2	3'	140'
71-80 / 5-10%	965	12'	4	1.5	80'
71-80 / 5%-10%	965	9'	3	1.5'	107'
71-80 / 5%-10%	965	6'	2	1.5'	161'
81-90 / 0%<5%	902	9'	3	3'	100'
81-90 / 0%<5%	902	6'	2	3'	150'
81-90 / 5%-10%	1038	9'	3	1.5'	115'
81-90 / 5%-10%	1038	6'	2	1.5'	173'

Continued

Sizing Tables (percolation rates 61-90 min/inch), Continued

4-Bedroom

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	1046	12'	4	3'	88'
61-70 / 0%<5%	1046	9'	3	3	116'
61-70 / 0%<5%	1046	6'	2	3'	174'
61-70 / 5%<10%	1203	12'	4	1.5'	101'
61-70 / 5%<10%	1203	9'	3	1.5'	134'
61-70 / 5%<10%	1203	6	2	1.5'	201'
61-70 / 10%-15%	1255	12'	4	1.5'	105'
61-70 / 10%-15%	1255	9'	3	1.5'	139'
71-80 / 0%<5%	1118	12'	4	3'	94'
71-80 / 0%<5%	1118	9'	3	3'	124'
71-80 / 0%<5%	1118	6'	2	3'	186'
71-80 / 5-10%	1286	12'	4	1.5'	108'
71-80 / 5%-10%	1286	9'	3	1.5'	143'
71-80 / 5%-10%	1286	6'	2	1.5'	214'
81-90 / 0%<5%	1203	9'	3	3'	134'
81-90 / 0%<5%	1203	6'	2	3'	201'
81-90 / 5%-10%	1383	9'	3	1.5'	154'
81-90 / 5%-10%	1383	6'	2	1.5'	231'

5-Bedroom

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	1307	12'	4	3'	109'
61-70 / 0%<5%	1307	9'	3	3'	145'
61-70 / 0%<5%	1307	6'	2	3'	218'
61-70 / 5%<10%	1503	12'	4	1.5'	126'
61-70 / 5%<10%	1503	9'	3	1.5'	167'
61-70 / 5%<10%	1503	6	2	1.5'	251'
61-70 / 10%-15%	1568	12'	4	1.5'	131'
61-70 / 10%-15%	1568	9'	3	1.5'	174'
71-80 / 0%<5%	1398	12'	4	3'	117'
71-80 / 0%<5%	1398	9'	3	3'	155'
71-80 / 0%<5%	1398	6'	2	3'	233'
71-80 / 5-10%	1608	12'	4	1.5'	134'
71-80 / 5%-10%	1608	9'	3	1.5'	179'
71-80 / 5%-10%	1608	6'	2	1.5'	268'
81-90 / 0%<5%	1504	9'	3	3'	168'
81-90 / 0%<5%	1504	6'	2	3'	251'
81-90 / 5%-10%	1730	9'	3	1.5'	193'
81-90 / 5%-10%	1730	6'	2	1.5'	288'

Continued

Sizing Tables (percolation rates 61-90 min/inch), Continued

6-Bedroom

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	1569	12'	4	3'	131'
61-70 / 0%<5%	1569	9'	3	3'	174'
61-70 / 0%<5%	1569	6'	2	3'	262'
61-70 / 5%<10%	1804	12'	4	1.5'	150'
61-70 / 5%<10%	1804	9'	3	1.5'	200'
61-70 / 5%<10%	1804	6	2	1.5'	301'
61-70 / 10%-15%	1883	12'	4	1.5'	157'
61-70 / 10%-15%	1883	9'	3	1.5'	209'
71-80 / 0%<5%	1677	12'	4	3'	140'
71-80 / 0%<5%	1677	9'	3	3'	186'
71-80 / 0%<5%	1677	6'	2	3'	280'
71-80 / 5-10%	1929	12'	4	1.5'	161'
71-80 / 5%-10%	1929	9'	3	1.5'	214'
71-80 / 5%-10%	1929	6'	2	1.5'	322'
81-90 / 0%<5%	1805	9'	3	3'	201'
81-90 / 0%<5%	1805	6'	2	3'	301'
81-90 / 5%-10%	2076	9'	3	1.5'	231'
81-90 / 5%-10%	2076	6'	2	1.5'	346'

Additional bedroom

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<5%	261	12'	4	3'	22'
61-70 / 0%<5%	261	9'	3	3'	29'
61-70 / 0%<5%	261	6'	2	3'	44'
61-70 / 5%<10%	300	12'	4	1.5'	25'
61-70 / 5%<10%	300	9'	3	1.5'	33'
61-70 / 5%<10%	300	6	2	1.5'	50'
61-70 / 10%-15%	313	12'	4	1.5'	26'
61-70 / 10%-15%	313	9'	3	1.5'	35'
71-80 / 0%<5%	280	12'	4	3'	24'
71-80 / 0%<5%	280	9'	3	3'	31'
71-80 / 0%<5%	280	6'	2	3'	47'
71-80 / 5-10%	322	12'	4	1.5'	27'
71-80 / 5%-10%	322	9'	3	1.5'	36'
71-80 / 5%-10%	322	6'	2	1.5'	54'
81-90 / 0%<5%	301	9'	3	3'	34'
81-90 / 0%<5%	301	6'	2	3'	50'
81-90 / 5%-10%	346	9'	3	1.5'	39'
81-90 / 5%-10%	346	6'	2	1.5'	58'

Continued

Sizing Tables (percolation rates 61-90 min/inch), Continued

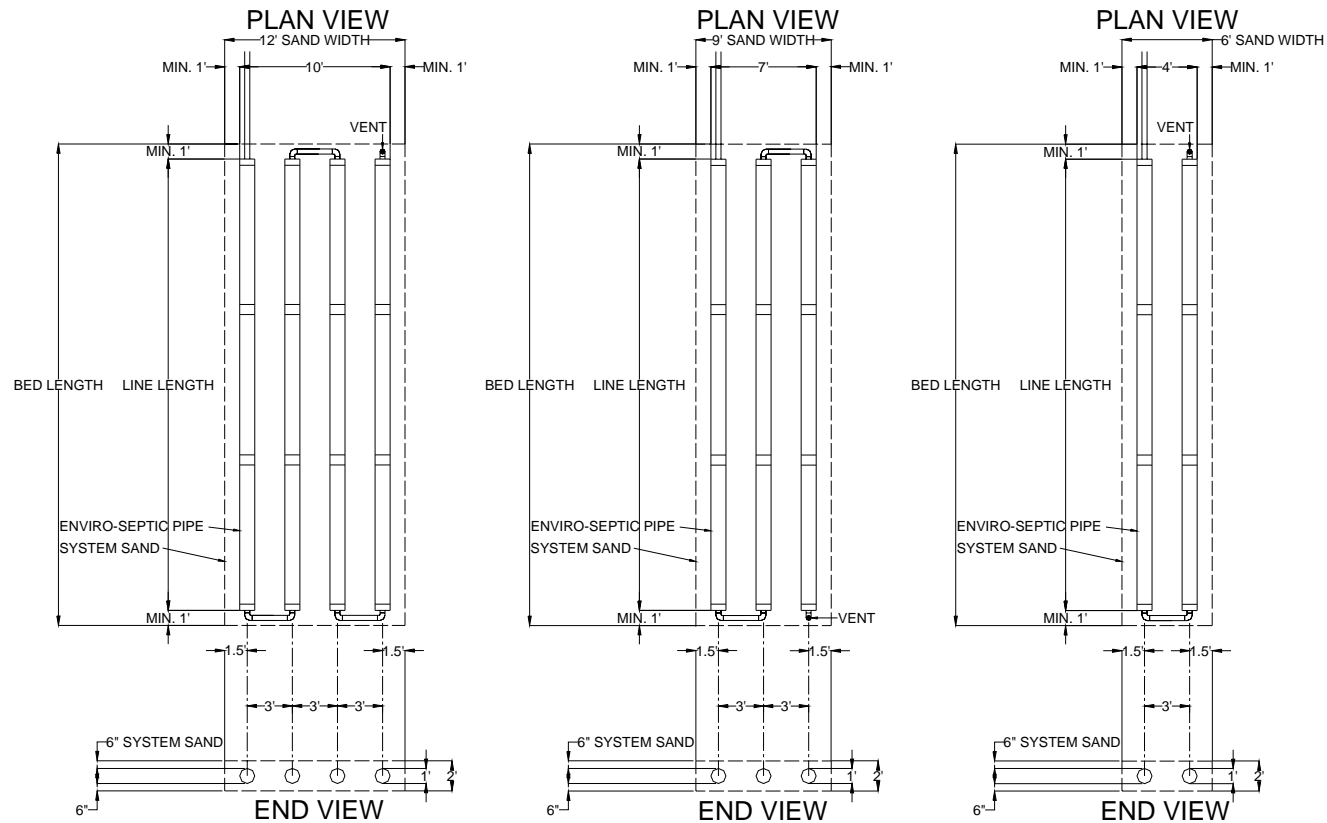
Commercial
(per 100 GPD)

Perc. Rate/Slope	Sand Bed Area (sq. ft.)	Sand Bed Width	Number of Lines	Ctr. to Ctr. Spacing	Min. Bed Length
61-70 / 0%<-5%	261	12'	4	3'	22'
61-70 / 0%<-5%	261	9'	3	3'	29'
61-70 / 0%<-5%	261	6'	2	3'	44'
61-70 / 5%<-10%	300	12'	4	1.5'	25'
61-70 / 5%<-10%	300	9'	3	1.5'	33'
61-70 / 5%<-10%	300	6	2	1.5'	50'
61-70 / 10%-15%	313	12'	4	1.5'	26'
61-70 / 10%-15%	313	9'	3	1.5'	35'
71-80 / 0%<-5%	280	12'	4	3'	24'
71-80 / 0%<-5%	280	9'	3	3'	31'
71-80 / 0%<-5%	280	6'	2	3'	47'
71-80 / 5-10%	322	12'	4	1.5'	27'
71-80 / 5%-10%	322	9'	3	1.5'	36'
71-80 / 5%-10%	322	6'	2	1.5'	54'
81-90 / 0%<-5%	301	9'	3	3'	34'
81-90 / 0%<-5%	301	6'	2	3'	50'
81-90 / 5%-10%	346	9'	3	1.5'	39'
81-90 / 5%-10%	346	6'	2	1.5'	58'

Level Bed Diagrams (percolation rates 61-90 min/inch)

Introduction

Level beds for percolation rates 61-90 min/inch installations are designed in 12', 9', or 6' widths. Here are three diagrams.



12' WIDE BED

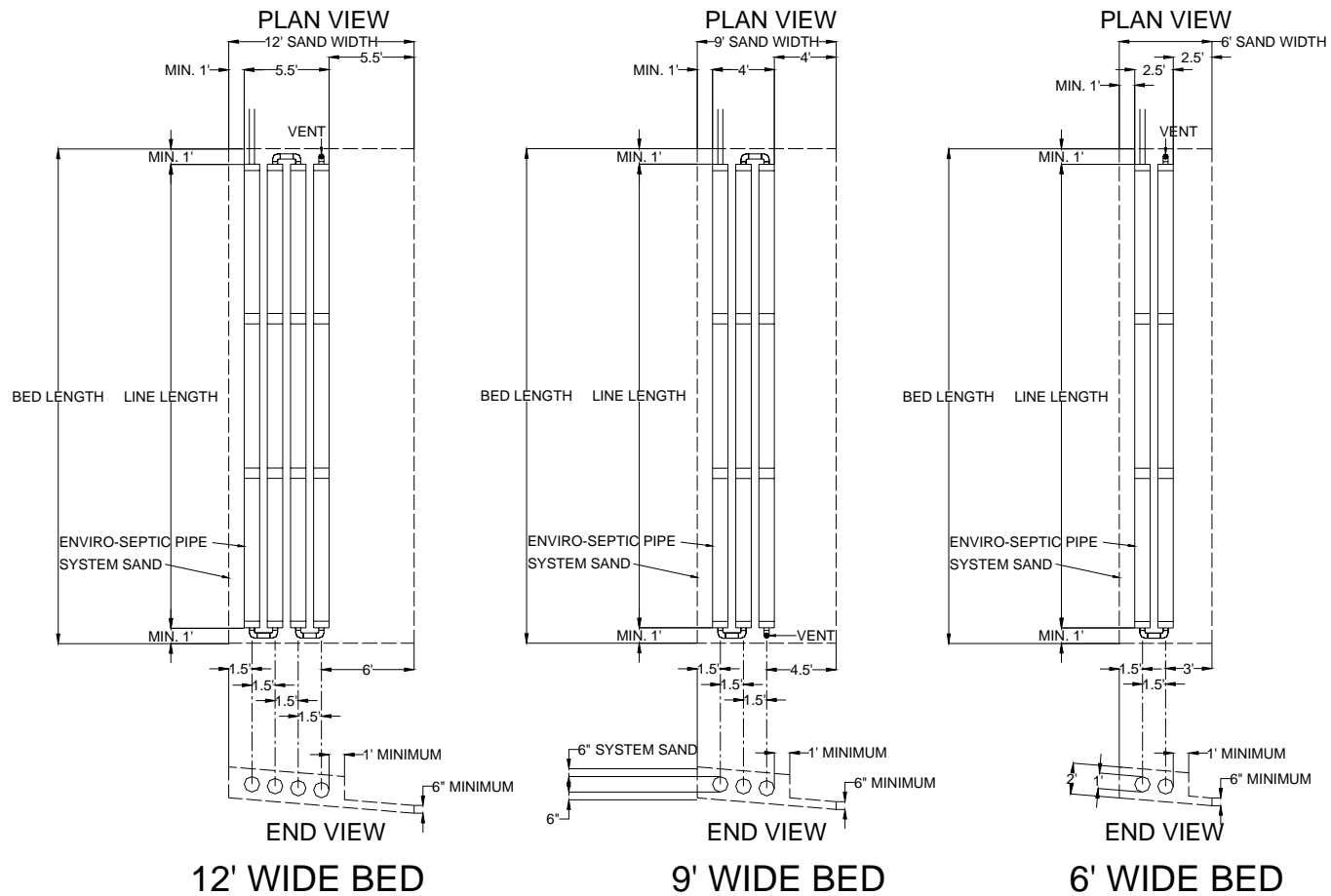
9' WIDE BED

6' WIDE BED

ENVIRO-SEPTIC PIPE CONSTANT 3.0 FEET ON CENTER AT <5% SLOPE IN RESTRICTIVE SOILS
NOTE: SYSTEM MUST ALWAYS INLET TO THE HIGHEST PIPE

Sloping Bed Diagrams (percolation rates 61-90 min/inch)

Introduction Sloping beds for percolation rates 61-90 min/inch installations are designed in 12', 9', or 6' widths. Here are three diagrams.



ENVIRO-SEPTIC PIPE CONSTANT 1.5 FEET ON CENTER AT 5-15% SLOPE IN RESTRICTIVE SOILS
 NOTE: SYSTEM MUST ALWAYS INLET TO THE HIGHEST PIPE

Appendix A - System Installation Form

In accordance with the technology approval, or each new or replacement installation, Massachusetts installers of Enviro-Septic® systems must complete and fax or mail a copy of this form to the local approving authority and to:

Presby Environmental, Inc.
143 Airport Road
Whitefield, NH 03598
Fax: (603) 837-9864

Installer's Name:		
Company Name:		
Street Address:		
City:	State:	Zip:
Property Owner:		
Site Street Address:		
City:	State:	Zip:
System Type: (Residential, Commercial, School, etc.)	Design Flow:	
Installation Date:	System Startup Date:	
Permit Number:		
Comments:		

This form may also be completed online at
[presbyenvironmental.com/state_approvals/massachusetts/system installation form](http://presbyenvironmental.com/state_approvals/massachusetts/system_installation_form)

Appendix B
Enviro-Septic® Wastewater Treatment System Technology Checklist

Purpose This technology checklist is to be completed by an operator trained by Presby Environmental, Inc., to inspect Enviro-Septic® wastewater treatment systems.

Note: The Department's technology approval requires all Enviro-Septic® systems to be inspected annually.

Submit copies to the local authority and the DEP A completed copy of this checklist and the DEP Approved Inspection and O&M Form for Title 5 I/A Treatment and Disposal Systems must be submitted to the local approving authority and the Department. Copies of the inspection forms shall be submitted by January 30th for remedial systems inspected during the prior year and by September 31st for General use systems.

Any required sampling and test results should accompany this completed checklist.

DEP address Mail a copy of this checklist to

Department of Environmental Protection
Title 5 I/A Program
One Winter Street, 6th Floor
Boston, Massachusetts 02108

1. Facility Owner: _____
 2. Facility Address: _____
 3. Installation Date: _____ Previous Inspection Date: _____
 4. Date of Inspection: _____
 5. Residential Number of Bedrooms: _____ /Commercial Design Flow _____ GPD
 6. Observation Port Locations: _____
 7. Other (Explain): _____
-

Inspection data (Complete all fields)

8. Is daily flow within the system design flow? Yes No If no, explain: _____
 9. Does the owner verify the system use as described above? Yes No
If no, explain: _____
-

Over

Enviro-Septic® Wastewater Treatment System Technology Checklist, page 2

10. Septic tank last inspection date: _____ Inspected by: _____
11. Septic tank last pumped date: _____ Is pumping recommended? Yes No
12. Condition of the soil absorption system: (wet/dry/firm/soft/vegetative/other) _____
-
13. Is there evidence of storm water flows or erosion over the septic system?: Yes No
If yes, explain: _____
14. Is there evidence of soil slump or compaction by traffic or other means in the vicinity of the soil absorption system?: Yes No If yes, describe: _____
-
15. Is effluent visible through the observation port? Yes No If yes, describe the condition and the fluid level: _____
-
16. Are solids visible through the observation port?: Yes No If yes, describe the condition and depth of solids: _____
-
17. Is there evidence of surcharging or effluent ponding in the D-Box?: Yes No
If yes, describe and measure: _____
-
18. Are the system vents in place?: Yes No If no, describe: _____
-
19. Describe any other pertinent issues: _____
-

System Pump Inspection data (If applicable)

20. Pump Chamber?: Yes No Condition: _____
21. Pumps Inspected: ? Yes No Number of Pumps: _____
22. Condition of Pumps: _____
23. System Alarms: Yes No N/A
24. Condition of Alarms: _____
25. Date of Last Alarm Test: _____

Inspected by: _____
Date: _____
Time: _____
Signature of Inspector: _____

I certify: I have inspected the sewage treatment and disposal system at the address above, have completed this report, and the information reported is true, accurate, and complete as of the time of the inspection.