GEOPHYTA

Home Septic System Site Evaluation And Replacement System Design

For:

Lisa Swickard (WPCLF)

211 W. C.R. 30
Tiffin, OH 44883

Property Location:

211 W. C.R. 30
Tiffin, OH 44883

Pleasant Township, Seneca County

SYSTEM TYPE:

Shallow Gravelless Leach Trenches with Interceptor Drain

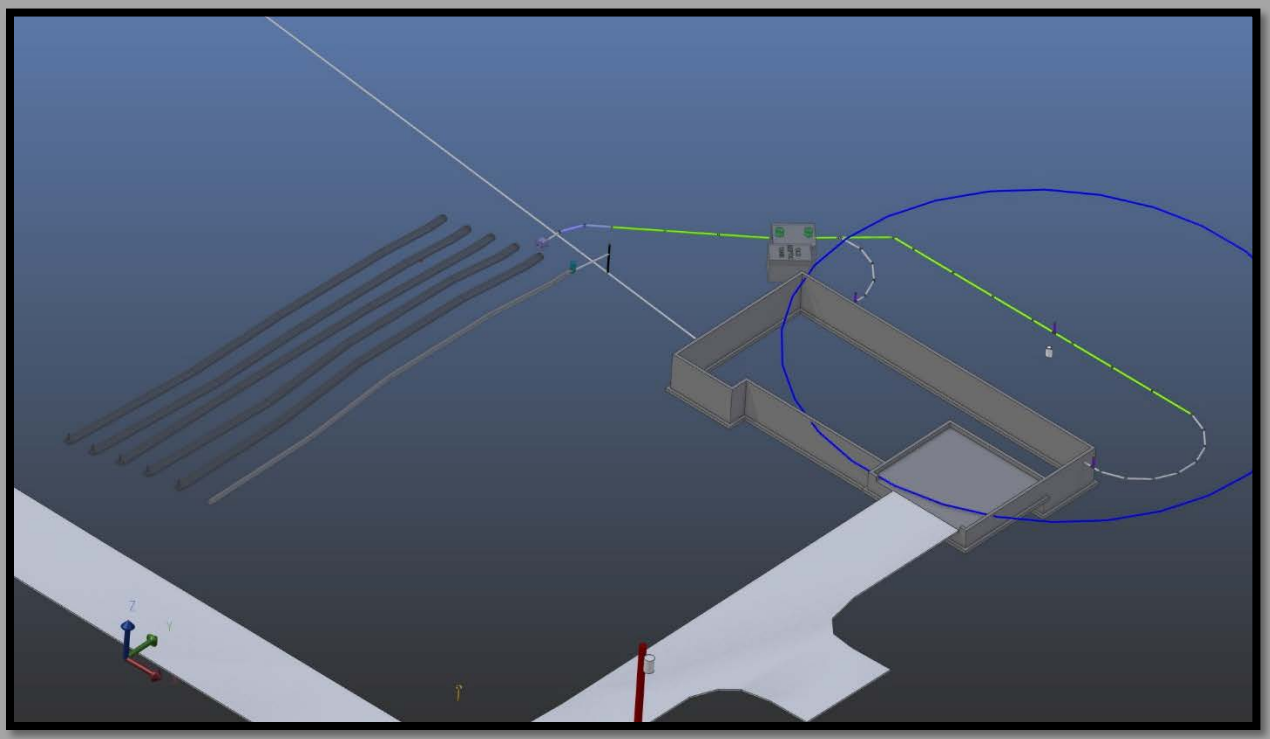
Nathan Wright (Soil Scientist)
Seth V. Layne (Designer)

Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464

419-547-8538

March 7th, 2023

◊ The Swickard Residence ◊



1. Disclaimer
2. Info Sheet
3. Internal Sewer Exit Pictures (2X Total)
4. Layout Map
5. Soil Report (2X Total)
6. Calculation Sheet
7. 3D CAD Layout
8. Top CAD Layout
9. Elevation CAD Layout
10. Component Detail Prints (11X Total)
11. Bill of Materials
12. Operation & Maintenance (4X Total)

To The Homeowner:

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

To The Installer:

The registered installer of this septic system design is responsible for preparing an "as-built" record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the "Sewage Treatment System Rules," Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. VI(p.93) of above referenced rules.

If the installer requests "as-built" record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.

HSTS Site/Soil Evaluation Information Sheet

Client Contact	Name(s)	Name of the person building or replacing a septic system.	LISA A SWICKARD					
	Mailing Address(s)	Where you would like the hard copy of the report mailed to? (Include City, State & Zip code Please)	211 W CR. 30, TIFFIN, OH 44883					
	Phone(s)	Please provide best number to reach client.	567-938-1697					
	Email(s)	Where you would like the soft copy(s) of the report sent to?	virginalleypress@gmail.com					
Property Info	Parcel ID(s)	Leave this blank if you are onsite right now. (We already have this)						
	Current Owner(s)	Who owns the property currently? (Put Same as Above if Same as Client Contact)	Same as above					
	Site Address	What is the Address of the Property or Road Name (Put Same as Above if Same as Client Contact)	Same as above					
	Right of Ways(s)	What Utilities Are on Along the Road of the Property Being Evaluated.	Gas, electric					
	Easement (s)	Does anybody have legal access to cross the property for any reason by the means of drainage or access?	NO					
********New Construction ONLY (SKIP TO NEXT SECTION IF THIS IS A REPLACEMENT)********								
New Construction ONLY	Daily Flow/ Bedrooms	How many total bedrooms? (Health Departments May Include Offices/Dens if They have Doors.)	3					
	Dimensions	Do you know the overall dimensions of the structure/house? (Provide Plans if you have them)						
	Outbuildings	Will you have any outbuildings? Approx. Size?	YES ☐	NO ☑	SIZE:			
	Pond	Is there a pond or do you wish to have a pond? How Many Acres? (50' setback applies to ponds for any septic component)	YES ☐	NO ☑	Acres?			
	Sump Pump	Will you have any sump pumps for House Drainage Purposes? Discharge Where? (NO discharge Into Septic is Allowed)	YES ☐	NO ☑	Discharge Location:			
	Electric	Will you have buried or Overhead to the house/structure?	Overhead ☐	Buried ☑	Unsure ☐			
	Phone/Cable	Will you have buried or Overhead or N/A to the house/structure?	Overhead ☐	Buried ☑	N/A ☐			
	Heating	Will you have Natural, Propane, Geothermal (Please list Horizontal or Vertical loops in Comments) or Electric	Natural ☑	Propane ☐	Geothermal ☐	Electric ☐		
	Water Source	Will you have a cistern, drill, well or have access to rural city water? (If you drill a well, no water softener discharge allowed into septic.)	Well ☑	Cistern ☐	Rural ☐			
	Internal Hot Tubs/Large	Will you have any large tubs in the house that would result in more water usage?	YES ☐	NO ☑	Unsure ☐			
*********Replacement of a septic ONLY*********								
Replacement of a septic ONLY	Replace	Please check the reason for the replacement?	Failure ☐	Addition ☐	Inspection ☑	N/A ☐		
	Daily Flow/ Bedrooms	How many total bedrooms? (Health Departments May Include Offices/Dens if They have Doors.)						
	Outbuildings	Do you have any outbuildings? Approx. Size?	YES ☐	NO ☐	SIZE:			
	Pond	Is there a pond or do you wish to have a pond? How Many Acres? (50' setback applies to ponds for any septic component)	YES ☐	NO ☑	Acres?			
	Sump Pump	Do you have any sump pumps for House Drainage Purposes? Discharge Where? (NO discharge Into Septic is Allowed)	YES ☐	NO ☐	Discharge Location:			
	Electric	Do you have buried or Overhead to the house/structure?	Overhead ☐	Buried ☐	Unsure ☐			
	Phone/Cable	Do you have buried or Overhead or N/A to the house/structure?	Overhead ☐	Buried ☐	N/A ☐			
	Heating	Do you have Natural, Propane, Geothermal (Please list Horizontal or Vertical loops in Comments) or Electric	Natural ☐	Propane ☐	Geothermal ☐	Electric ☐		
	Water Source	Do you have a well, cistern or have access to rural city water? (Check all that Apply)	Well ☐	Cistern ☐	Rural ☐			
	Water Softener	Do you have a water Softener	YES ☐	NO ☐	Unsure ☐			
	Internal Hot Tubs/Large	Do you have any large tubs in the house that would result in more water usage?	YES	NO ☐	Unsure ☐			
Comments:								

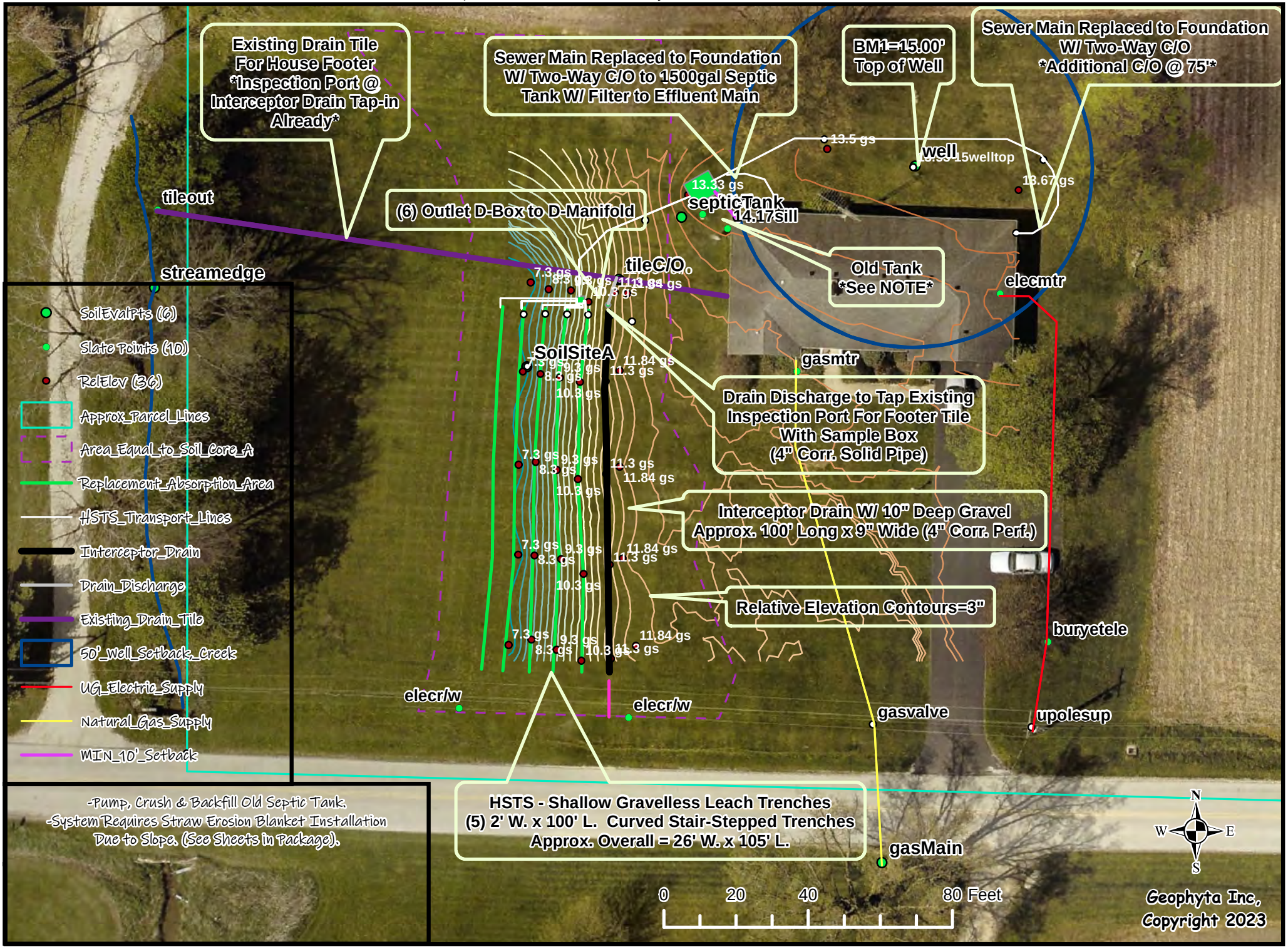
I agree that the above information is accurate and can be used by Geophyta, Inc. to prepare a site/soil evaluation for septic system suitability. The site/soils report is for information purposes to be used by a designer and your local health department. This report does not guarantee build ability of a lot or approval of any septic system design. This is not a property boundary survey.

Customer Signature: Lisa A. Swickard Date: 2-10-2023


PROJECT SOURCE
1st sewer main exits ~32" from sill on north side of house.

2nd sewer main exits ~24” from sill. Exiting east side of house.

HSTS Replacement Layout - 211 W. C.R. 30



Site and Soil Evaluation for Sewage Treatment and Dispersal

County: **Seneca**
Township / Sec.: **Pleasant**
Property Address: **211 W CR 30**
OR Location: **Tiffin, OH 44883**
Applicant Name: **Lisa Swickard**
Address: **211 W CR 30**
Tiffin, OH 44883
Phone #: **567-938-1697**
Lot #:
Test Hole #: **A**
Latitude/Longitude: **83°10'18.978"W 41°12'41.344"N**
Method: ___ Pit ___ Auger **X** Probe; 1 1/4" dia.

Land Use / Vegetation: **Residential Turf**
Landform: **Glacial Till Plain**
Position on Landform: **Hillslope**
Percent Slope: **15-20**
Shape of Slope: **Linear-Linear**
Approximate Soil Type: **Mermill L**

Date: **10-Feb-23**
Evaluator: **Nathan Wright**
Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464
Phone#: **419-547-8538**

Control #: **23 - SEN - 5A - 38**

CPSS Certified Professional Soil Scientist

Certification #: **19395**

Signature: Nathan Wright

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							
		Munsell Color (hue, value, chroma)										
			Redoximorphic Features		Texture			Structure				
Horizon	Depth (inches)	Matrix Color	Concentrations	Depletions	Class	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence	Other Soil Features
A	**0.0 - 10.5**	**10YR 4/3**	**none**	**none**	**L**	**20**	**0**	**3-strong**	**medium**	**gr**	**v.friable**	
Bt1	**10.5 - 19.0**	**10YR 4/3**	**none**	**none**	**CL**	**30**	**0**	**2-mod**	**coarse**	**gr**	**friable**	
Bt2	**19.0 - 26.5**	**10YR 4/4**	**none**	**5% 10YR 5/2**	**SiCL**	**35**	**0**	**1-weak**	**fine**	**sbk**	**firm**	
C	**26.5 - 48.0**	**10YR 4/4**	**none**	**10% 10YR 5/2**	**SiC**	**45**	**0**	**1-weak**	**coarse**	**sbk**	**firm**	

Limiting Conditions	Depth to (in.)	Descriptive Notes	Remarks / Risk Factors: Values For Shallow Leach Trenches
Perched Seasonal Water Table	**19.0**	Restricted in: Bt2 & C	Tyler Table: A - Bt1 horizon (7.0 - 19.0) ILR: CL, HLLR: CL
Apparent Water Table	**>48**		ILR(>30mg/L) = 0.4 gal/day/ft^2, ILR(<30mg/L) = 0.6 gal/day/ft^2
Highly Permeable Material	**>48**		HLLR = 3.0 gal/day/ft
Bedrock	**>60**	By Tile Probe	3 bedroom min. required absorption area = 900 sq.ft.
Other Restrictive Layer	**26.5**	SiC and weak structure	5xW Soil Absorption Box: 38' W x 120' L

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

Landforms
Upland*
Terrace
Flood Plain
Lake Pain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature

Master Horizons	
O	Predominantly organic matter (litter & humus)
A	Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay
E	Mineral, loss of Si, Fe, Al, clay, organic matter
B	Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of $CaCo_3$; subsurface soil structure
C	Little or no pedogenic alteration, unconsoilidated earthy material, soft bedrock
R	Hard bedrock

Horizon Suffixes	
a	Highly decomposed organic matter
b	Buried genetic horizon
d	Densic layer (physically root restrictive)
e	Moderately decomposed organic matter
g	Strong gley
i	Slightly decomposed organic matter
p	Plow layer or artificial disturbance
r	Weathered or soft bedrock
t	Illuvial accumulation of silicate clay
w	Weak color or structure within B
x	Fragipan characteristics

Horizon Modifiers
Numerical Prefixes: Used to denote lithologic discontinuities.
Numerical Suffixes: Used to denote subdivisions within a master horizon.

Soil Texture

Texture Class Abbreviations		Textural Class Modifiers	
Course Sand	cos	Gravelly	GR
Sand	s	Fine Gravelly	FGR
Fine Sand	fs	Medium Gravelly	MGR
Very Fine Sand	vfs	Coarse Gravelly	CGR
Loamy Coarse Sand	lcos	Very Gravelly	VGR
Loamy Sand	ls	Extremely Gravelly	XGR
Loamy Fine Sand	lfs	Cobbly	CB
Loamy Very Fine Sand	lvfs	Very Cobbly	VCB
Coarse Sandy Loam	cosl	Extremely Cobbly	XCB
Sandy Loam	sl	Stony	ST
Fine Sandy Loam	fsl	Very Stony	VST
Very Fine Sandy Loam	vfsl	Extremely Stony	XST
Loam	l	Bouldery	BY
Silt Loam	sil	Very Bouldery	VBY
Silt	si	Extremely Bouldery	XBY
Sandy Clay Loam	scl	Channery	CN
Clay Loam	cl	Very Channery	VCN
Silty Clay Loam	sicl	Extremely Channery	XCN
Sandy Clay	sc	Flaggy	FL
Silty Clay	sic	Very Flaggy	VFL
Clay	c	Extremely Flaggy	XFL

*Estimate approximate clay percentage within 5 percent

Soil Structure

Grade		Size		Type (Shape)	
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils"

Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

In-Soil Leachfield Calculations - Gravelless Chambers			
Owner: Swickard: Site A	Min. Required	Actual	Comment
Home Size (bedrooms)	3		
Water Use (120 gal/day/bedroom)	360		
Limiting Condition	PSWT		
Depth To Limiting Condition (inches)	19.0		
Depth To Bottom of Leach Trench (in.)	7.0		AVG. Depth
Infiltration Depth (in.)	12.0		Required PSWT Separation
Most Limiting Soil Texture	CL		
Tyler Table Values			
Infiltration Loading Rate (gal/day/sq. ft)	0.4	0.4	CL > 30 mg/L
Hydraulic Linear Loading Rate (gal/day/ft)	3.0	3.0	(8"-12" Infiltration of CL @ >10%)
Active Trench Bottom Width (ft)(HLLR/ILR)	7.50		
Absorption Line Lengths (ft)(DDF/HLLR)	120		
Leachfield Design Requirements			
Active Absorption Area (DDF/ILR)(sq. ft.)	900		
Active Absorption Area Adjusted (0.75)(sq. ft.)	675	800	
25% Resting Absorption Area (sq.ft.)	169	200	
Total Adjusted Absorption Area (sq.ft.)	844	1000	
Individual Trench Bottom Width (ft)	2.0	2.0	
Total Trench Bottom Width (ft)	7.03	10.0	
Total Number of Leach Lines	4	5	
Active Leach Lines	3	4	
Resting Leach Lines	1	1	
Total Lineal Feet of Trench (ft)	480	500	
Trench Separation Distance (ft)	6	6	
			16.67% Length Reduction Needed to Fit Leachfield Between Road R/W & Existing Drain Tile
Total Leachfield Width (ft)	20	26	
Total Leachfield Length (ft)	120	100	

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

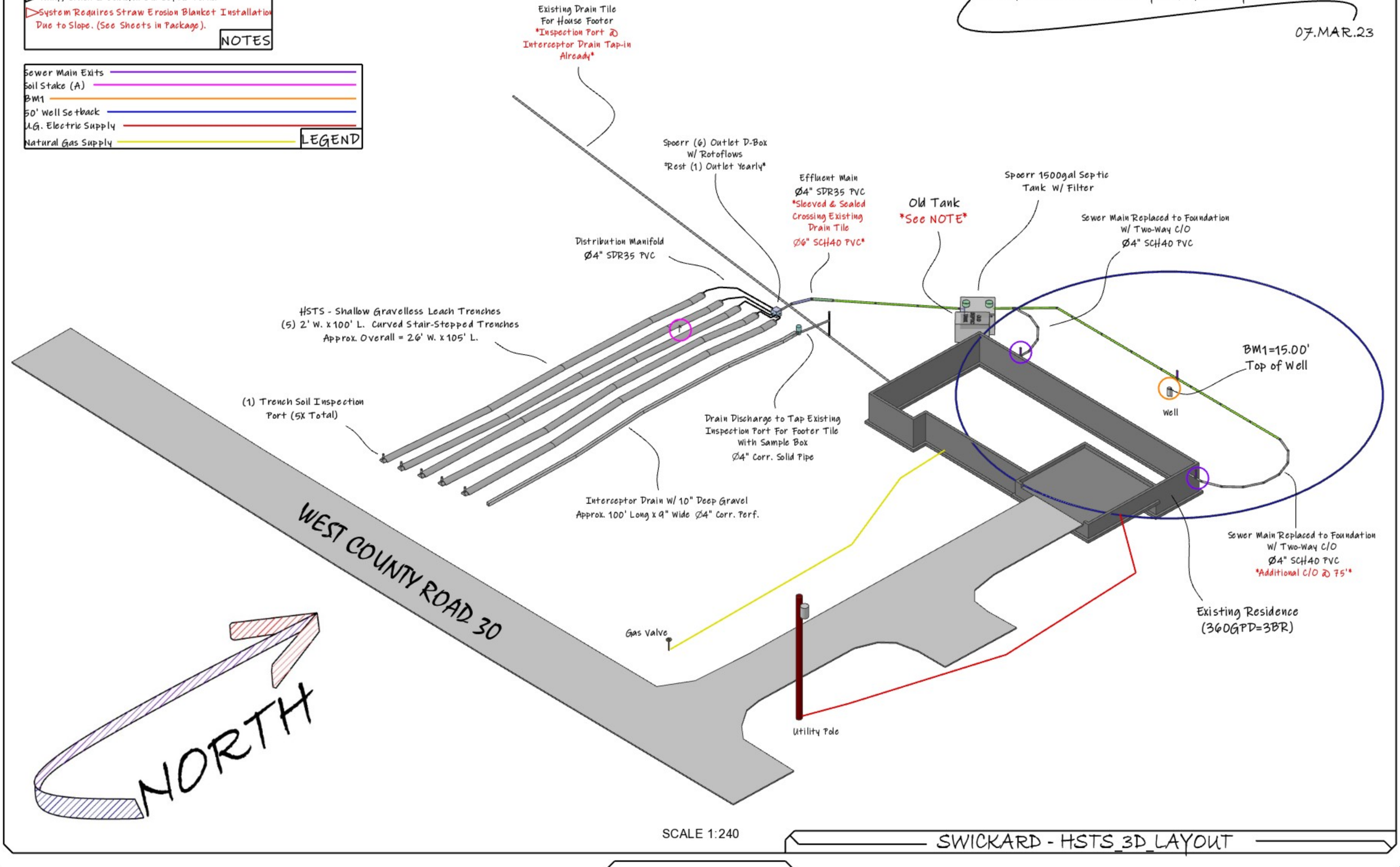
07.MAR.23

NOTES

- Pump, Crush & Backfill Old Septic Tank.
- System Requires Straw Erosion Blanket Installation Due to Slope. (See Sheets in Package).

LEGEND

- Sewer Main Exits
- Soil Stake (A)
- BM1
- 50' Well Setback
- U.G. Electric Supply
- Natural Gas Supply



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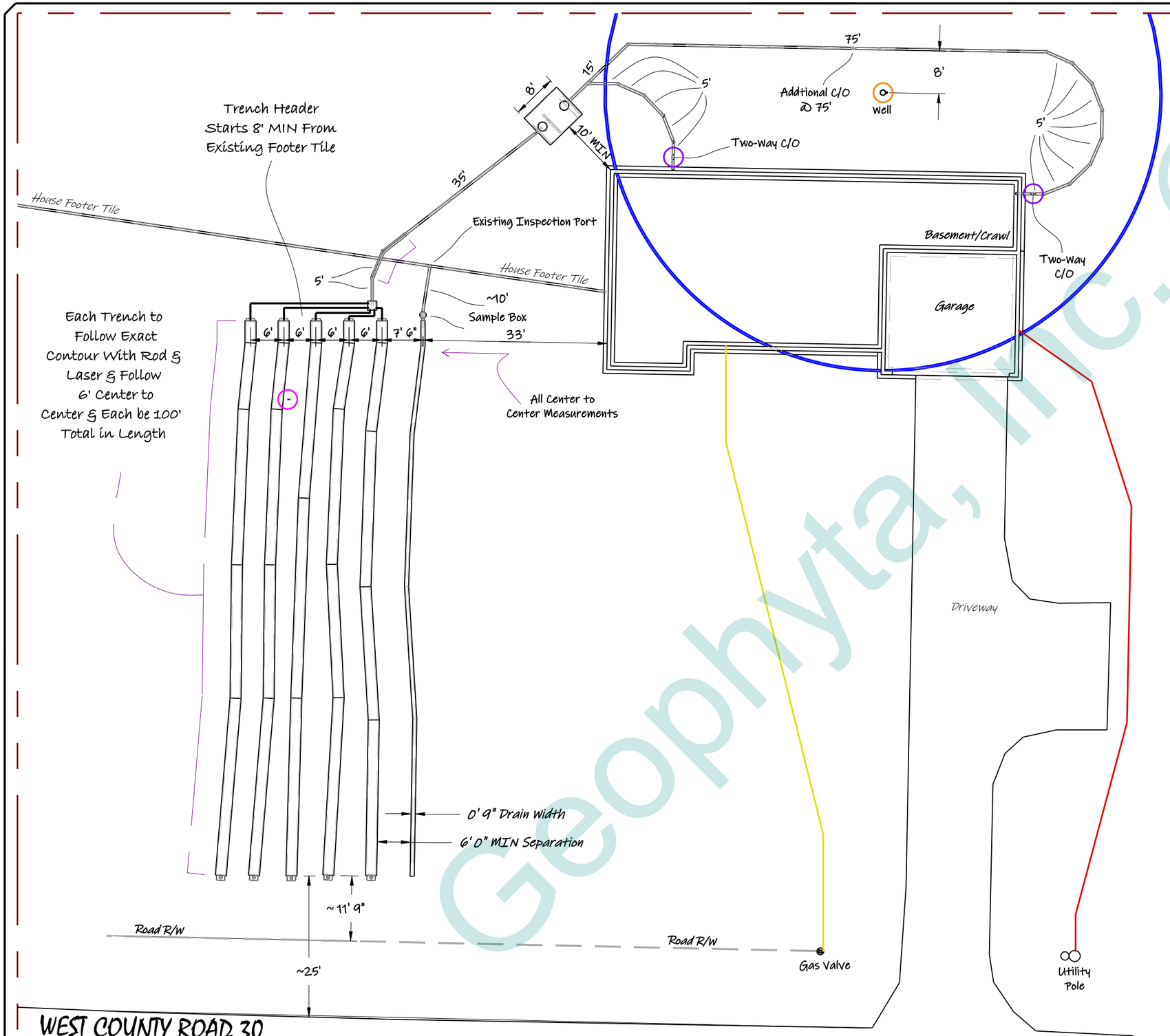
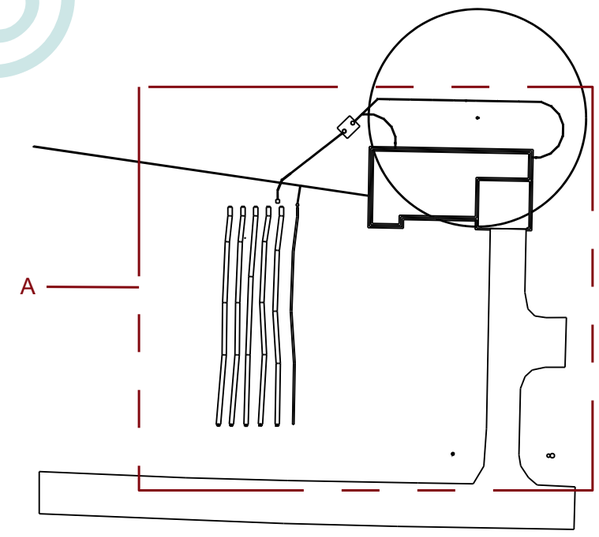
SWICKARD - HSTS_3D_LAYOUT

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

07.MAR.23



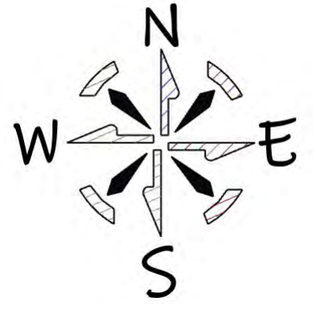


Trench Layout by: West Side of House Dimensions & Existing Drain Tile Setback. Follow Elevation Contours in 3" Tolerance. Subsequent Trenches Flush With Header in 6' Center to Center Separation.

NOTES

- Sewer Main Exits
- Soil Stake (A)
- BM1
- 50' Well Setback
- UG Electric Supply
- Natural Gas Supply

LEGEND



WEST COUNTY ROAD 30

Detail A SCALE 1:225

SWICKARD - HSTS_TOP

NOTES

- Trench Depths Into Native Soil Due To Soil Unevenness:
  Avg. = 7.0" Range = ± 3"
- Infiltration Into Native Soil: (PSWT @ 19.0")
  Avg. = 12.0"
- Additional Cover Over Field (Silt Loam or Better)
  Avg. = 7.0"
- Sewer Main to Have Suggested Fall or .125"/1'
- Tank Will Require 24" Risers.
- Straw Blanket REQUIRED Over Cover & Seed.

LEGEND

- Native Soil Surface
- Cover Soil Over Trenches
- Zero Elevation Reference

ELEVATION VIEW - SOUTH TO NORTH

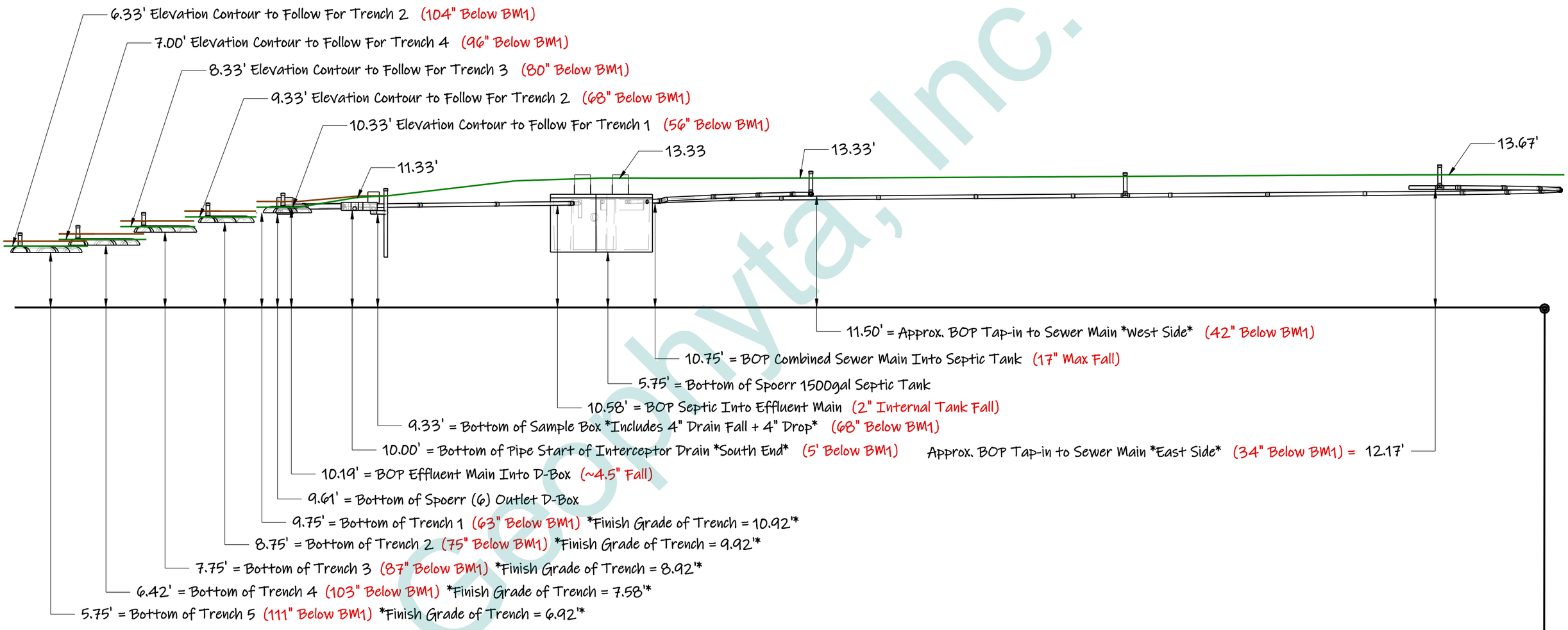
WEST

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

07.MAR.23

ALL ELEVATION VALUES POINTING TO SURFACE ARE OF NATIVE SOIL GRADE UNLESS OTHERWISE STATED

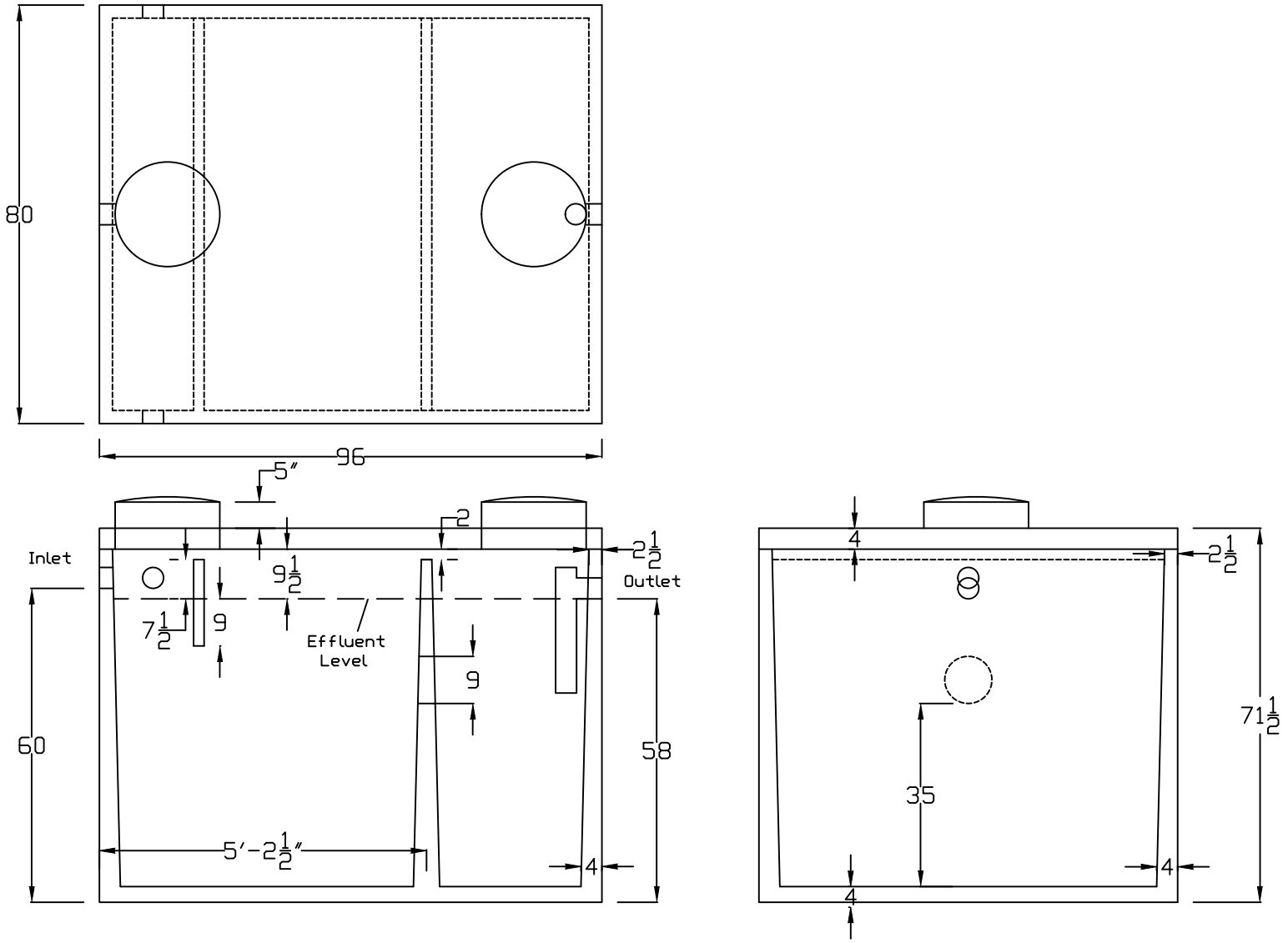
ALL INSPECTION PORTS/ RISERS TO BE ABOVE GRADE



ZERO ELEVATION REFERENCE
BM1 = 15.00' Top of Well (SEE LAYOUT MAP)

SCALE 1:120

SWICKARD - HSTS_ELEVATION



Spoerr Precast
Concrete Inc.
2020 Caldwell St
Sandusky, OH 44870
800-252-5205

Concrete 5000 PSI @ 28 Days
All Dimensions in Inches
Max cover on top of tank 48″
Minimum cover 6″
Inlet/Outlet boots for 4″ pipe
Boots: Meet ASTM C923
Sealant: Meets ASTM C990
Outlet Filter: Meets
ANSI/NSF 46

1500 Gallon Septic

Excavation: 7′9″ x 9′

11/26/15

PL-122 Filter

The PL-122 was the original Polylok filter. It was the first filter on the market with an automatic shut-off ball installed with every filter. When the filter is removed for regular servicing, the ball will float up and prevent any solids from leaving the tank. Our patented design cannot be duplicated.

Features:

- Offers 122 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Has a flow control ball that shuts off the flow of effluent when the filter is removed for cleaning.
- Has its own gas deflector ball which deflects solids away.
- Installs easily in new tanks, or retrofits in existing systems.
- Comes complete with its own housing. No gluing of tees or pipe, no extra parts to buy.
- Has a modular design, allowing for increased filtration.

PL-122 Installation:

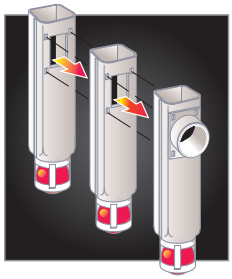
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-122 filter into tee.
5. Replace and secure the septic tank cover.

PL-122 Maintenance:

The PL-122 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-122 cartridge out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.



Polylok offers the only filter on the market where you can get more GPD by simply snapping our filters together!

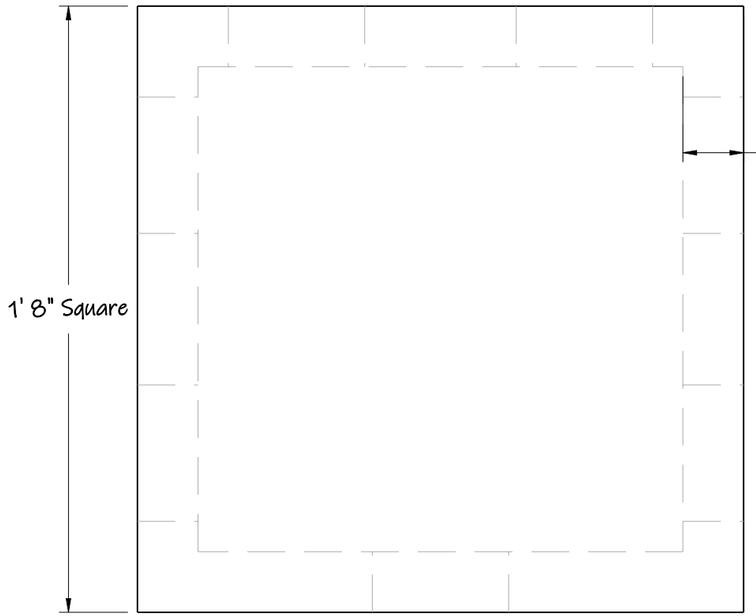
1 Filter = 1500 GPD
2 Filters = 3000 GPD
3 Filters = 4500 GPD

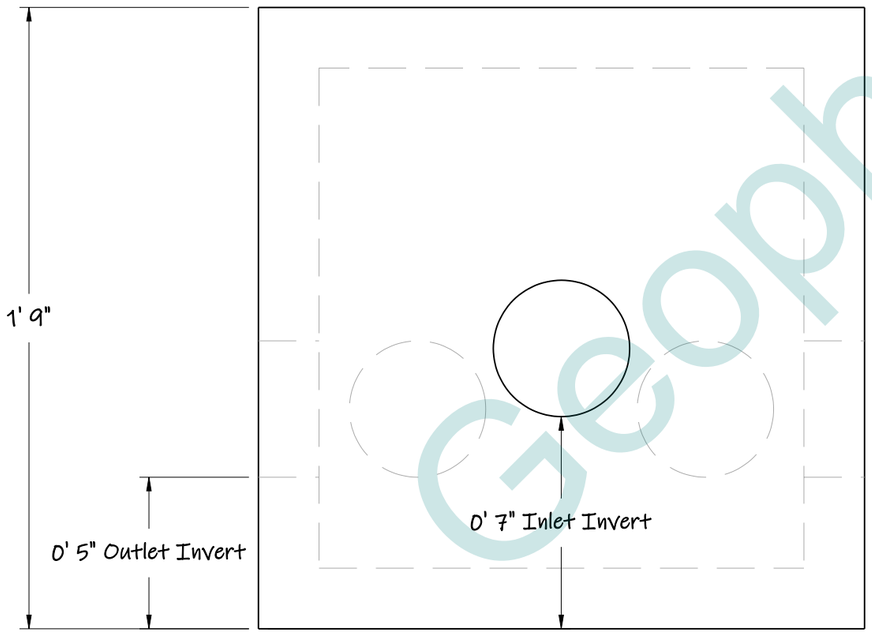
Patent Numbers
6,015,488 & 5,871,640

Filter Ready Adapter
Connects to Septic Tank Wall

Outdoor SmartFilter® Alarm
Polylok, Zabel & Best filters accept the SmartFilter® switch and alarm.

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 22.JUL.22





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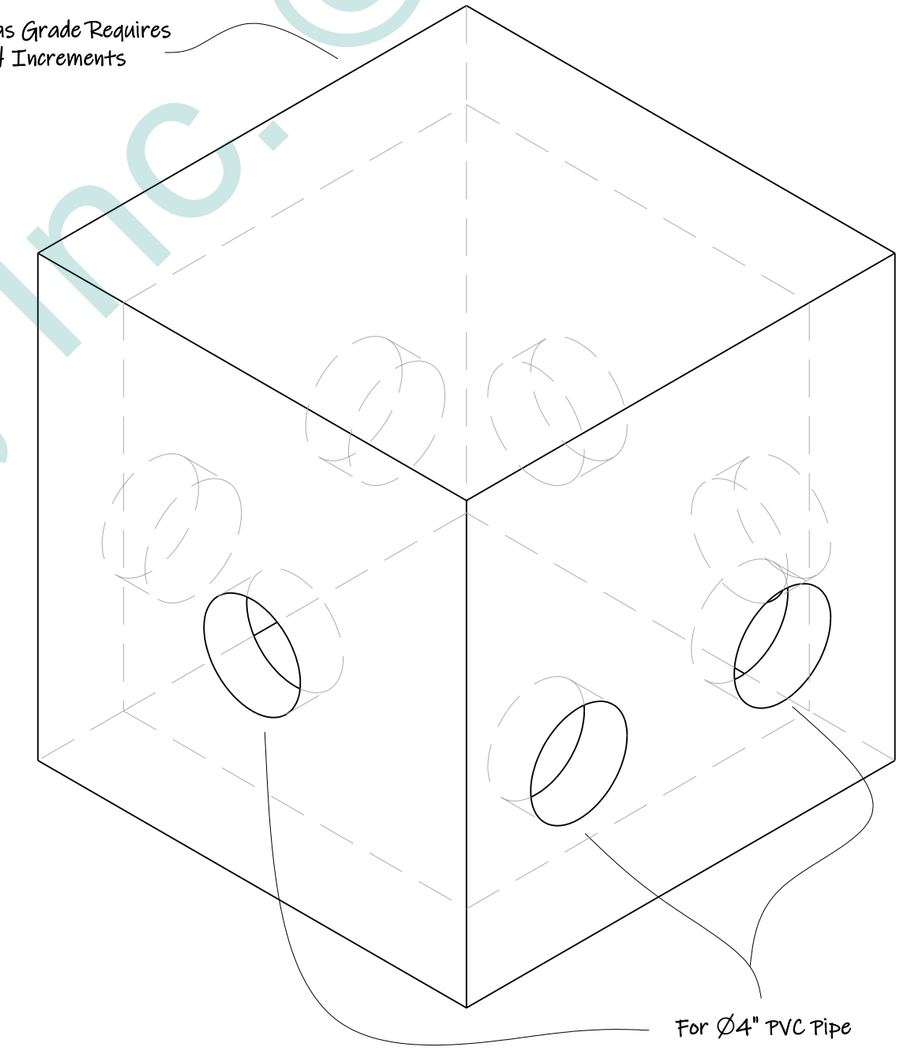


SCALE 1:5

Spoerr (6) Outlet Distribution Box

INFILTRATOR
water technologies

Quick4 PLUS CHAMBER SYSTEMS

The Quick4® Plus Equalizer 36 Low Profile (LP) Chamber

Quick4 Plus™ Series

The Quick4 Plus Equalizer 36 Low Profile (LP) offers maximum strength through its two center structural columns. This chamber can be installed in a 24-inch-wide trench. It is 4 inches shorter in height than other Equalizer 36 model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits turns up to 15°, right or left. The Quick4 Plus All-in-One 8 and Quick4 Plus Endcaps provide increased flexibility in system design and configurations.

Maximum Strength

Quick4 Plus Equalizer 36 LP Chamber Specifications

Size 22”W x 53”L x 8”H (559 mm x 1346 mm x 203 mm)
Effective Length 48” (1219 mm)
Louver Height 6.3” (160 mm)
Storage Capacity 20 gal (76 L)
Invert Height 3.3” (84 mm), 9.6” (244 mm)

Quick4 Plus Equalizer 36 Low Profile (LP) Chamber Benefits:

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Two center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install
- Supports wheel loads of 16,000 lbs/axle with 12” of cover

Quick4 Plus All-in-One Periscope Benefits:

- Allows for raised invert installations
- 180° directional inletting
- 12” raised invert is ideal for serial applications

Quick4 Plus All-in-One 8 Endcap Benefits:

- May be used at the end of chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center-feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

Quick4 Plus Endcap Benefits:

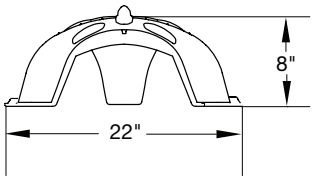
- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe

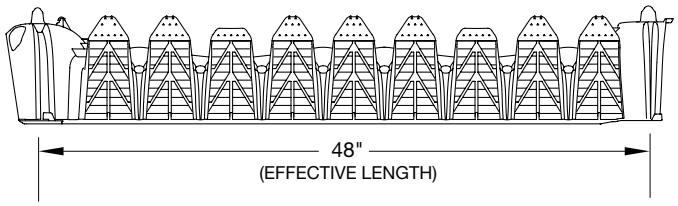
Certified by the International Association of Plumbing and Mechanical Officials (IAPMO)

IAPMO R&T

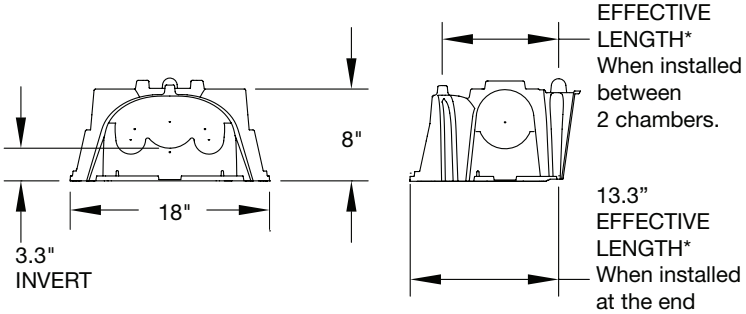
APPROVED in _____

Quick4 Plus Equalizer 36 Low Profile Chamber

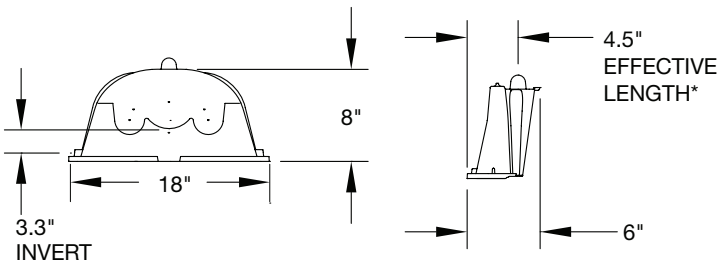




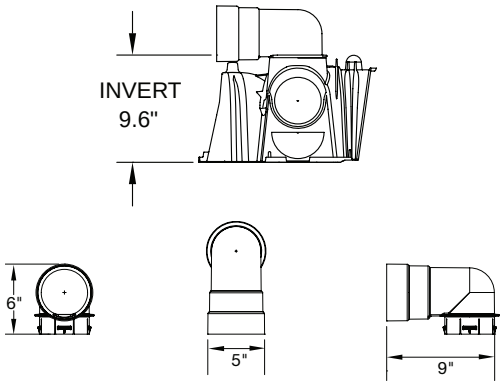
Quick4 Plus All-in-One 8 Endcap



Quick4 Plus Endcap



Quick4 Plus All-in-One Periscope



INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY

(a) The structural integrity of each chamber, endcap and other accessory manufactured 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 Infiltrator to be covered by this Limited Warranty. 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 chamber system is manufactured by anyone other than 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.

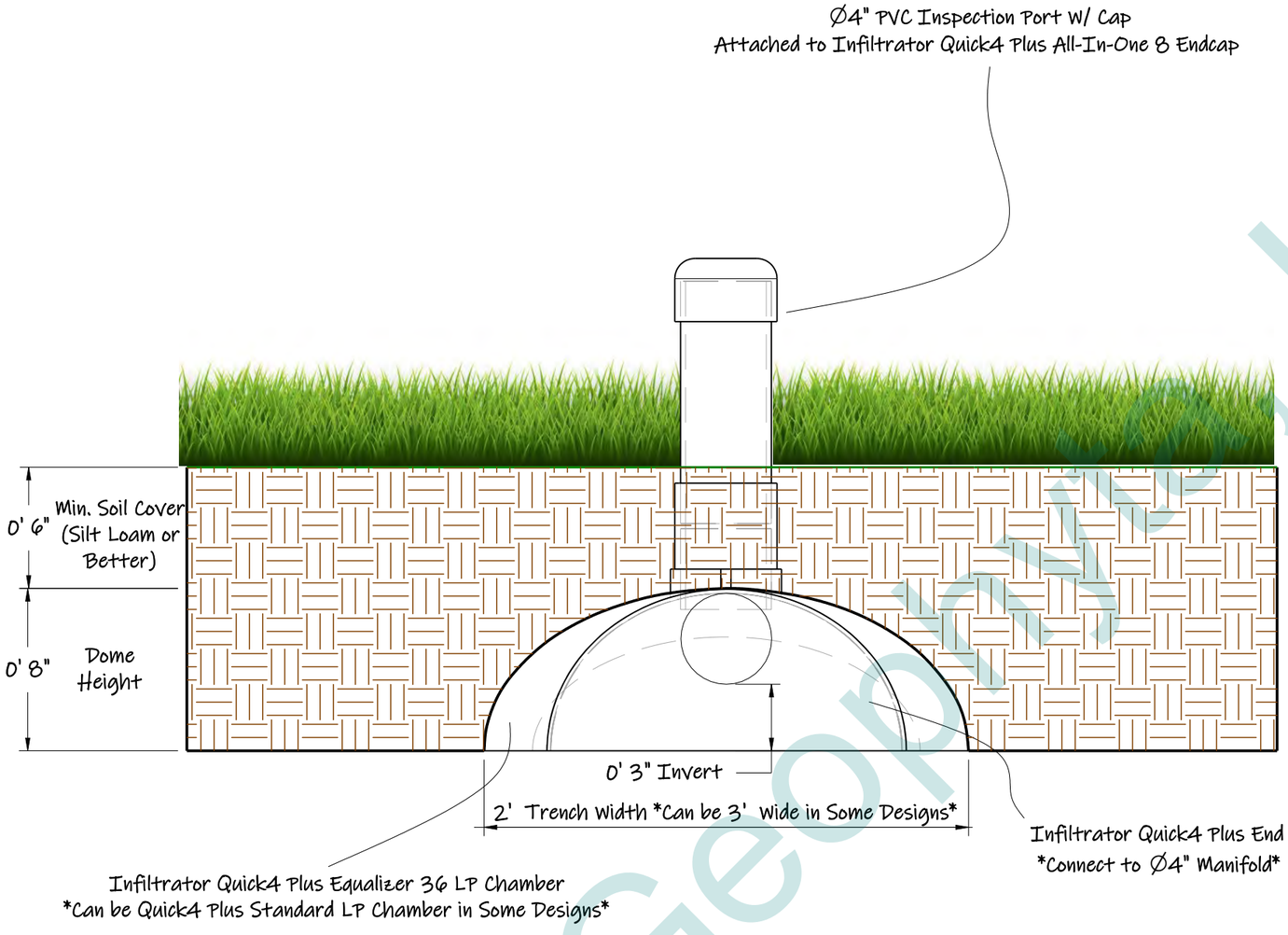
The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of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

INFILTRATOR
water technologies

4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com
info@infiltratorwater.com

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 22.JUL.22

DO NOT DIG TRENCHES IF SOIL SMEARS.
IF TRENCH SIDEWALL & BOTTOM SMEARING OCCURS DURING INSTALLATION, THEN RAKE SIDEWALLS & BOTTOMS TO BREAK SMEAR LAYER.



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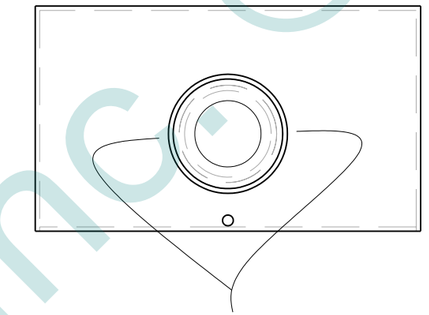
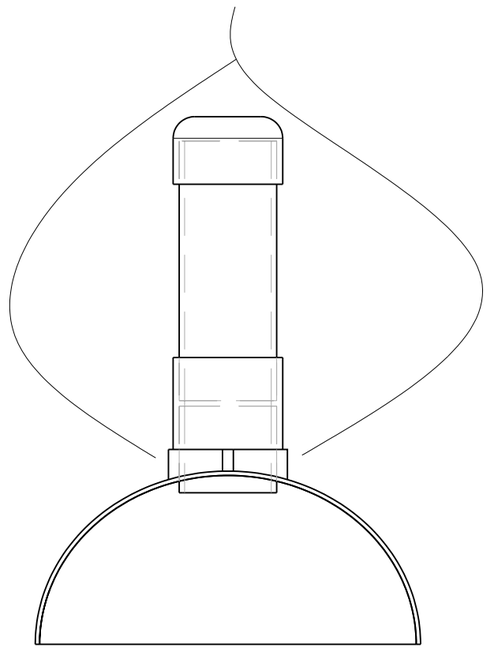
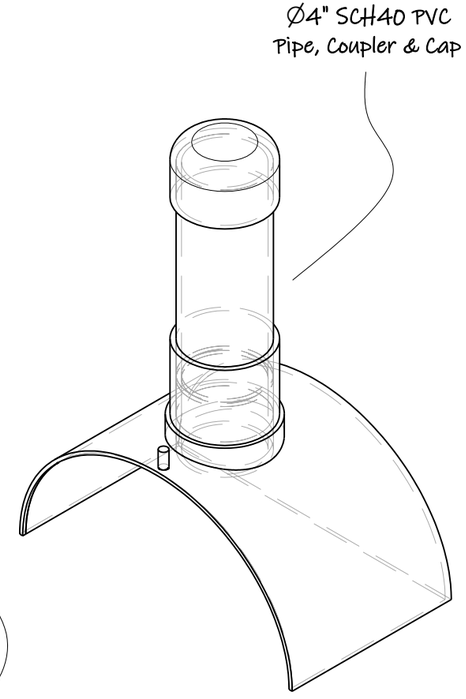


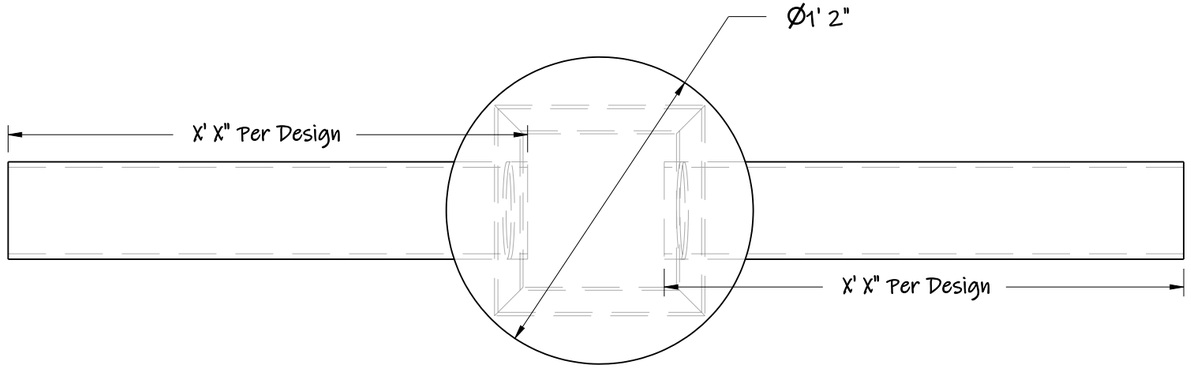
(2) Minimum Stainless Steel Wood Screws Required to Attached PVC Pipe to EndCap

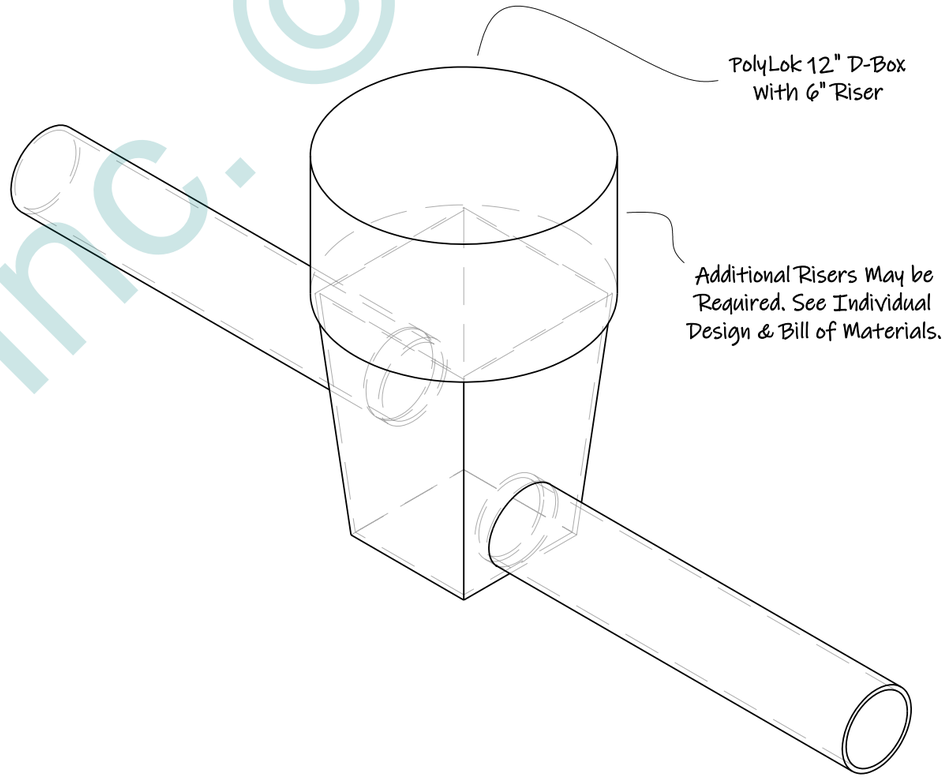




Gravelless Leach Trench Detail Print

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 18.MAY.22





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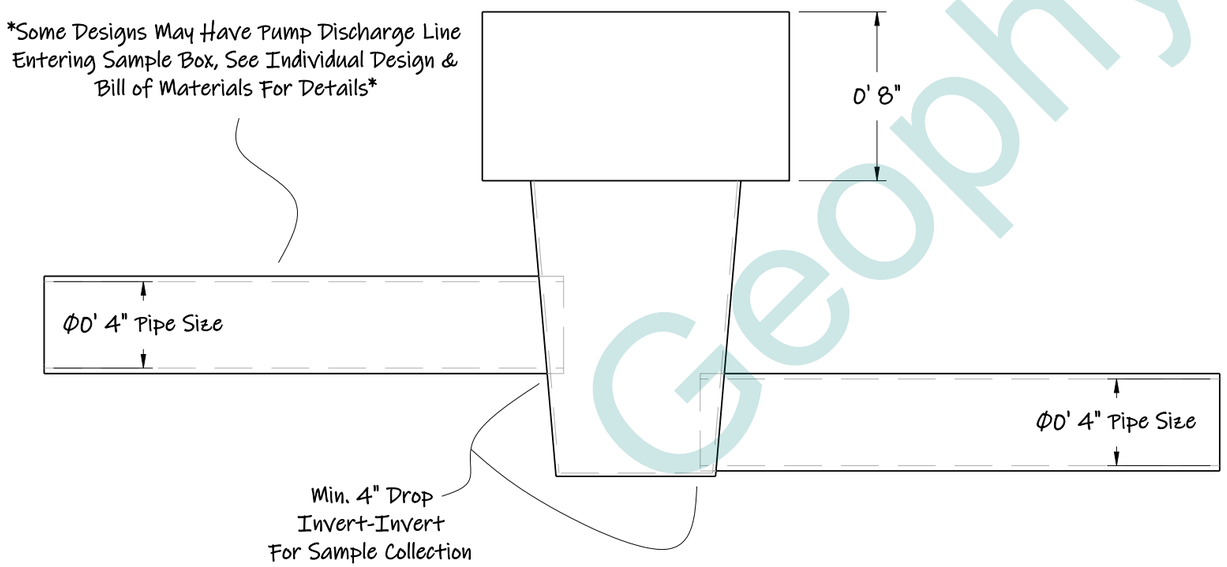
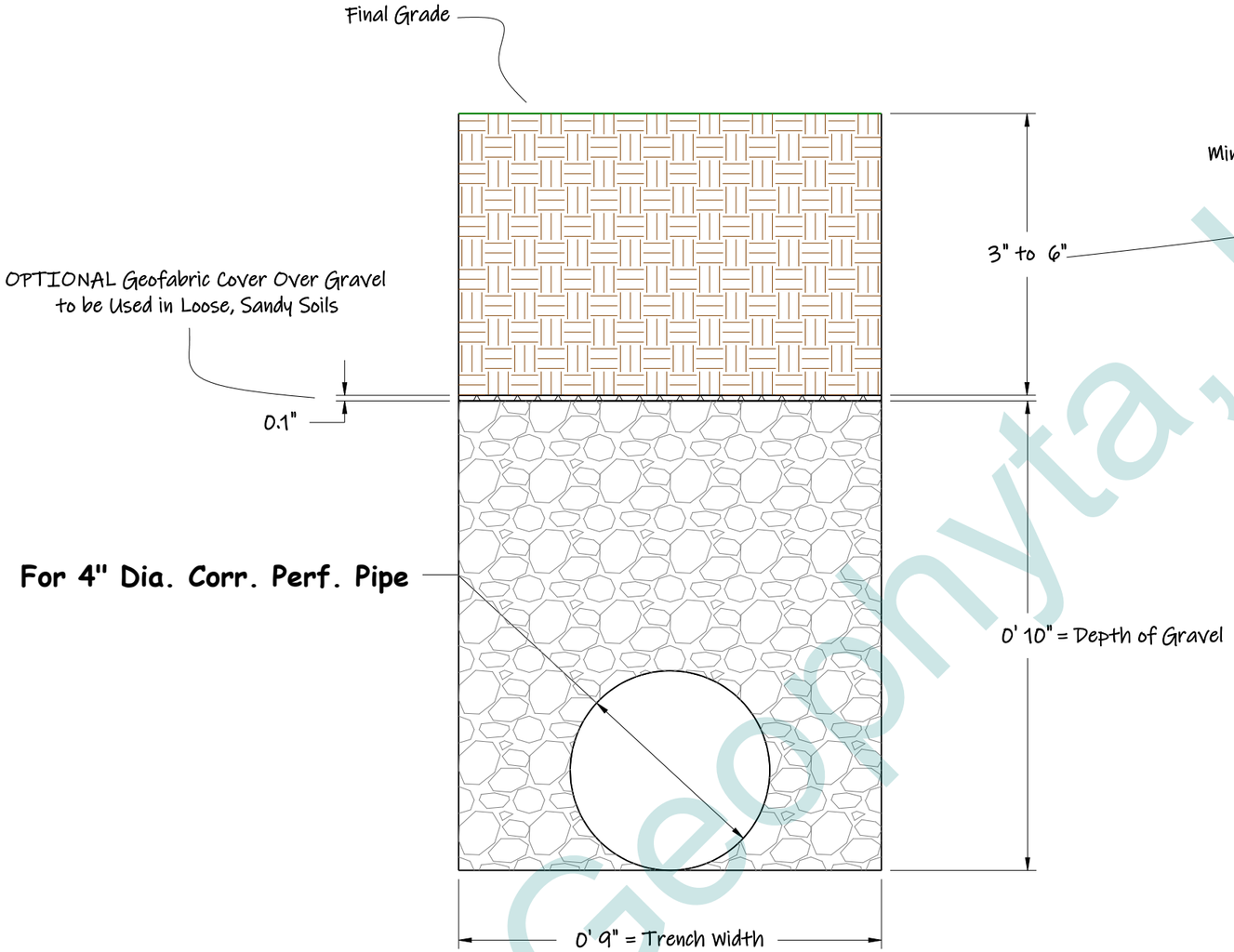
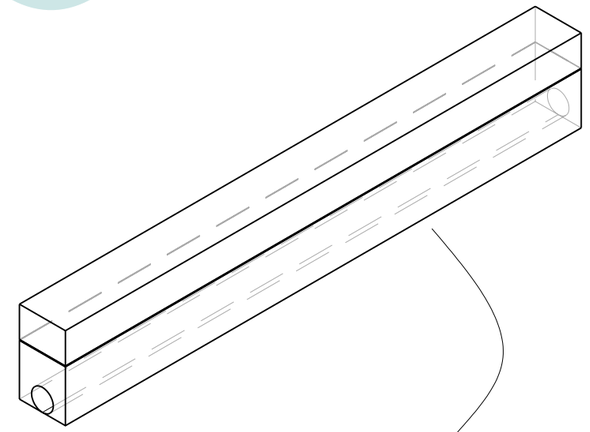


Free-Falling Sample Port/Box

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 23.MAY.22



SCALE 1:3



Trench Bottom Minimum Slope =
1.2" Per 100' or 0.1%

INSTALLER MUST RECORD ACTUAL TRENCH DIMENSIONS & COMPONENTS ON AS-BUILT DRAWINGS SUBMITTED TO HEALTH DEPARTMENT

Trencher Dug Interceptor, Perimeter &
Engineered Drain With 10 Inch Deep Gravel

Straw Blankets
Effective Erosion Control

Straw Blankets are a biodegradable erosion control product designed for use on medium-low slopes and channels. Constructed with a base fabric of agricultural wheat straw, these blankets provide short-term protection along banks, hills, channels, and streams. Standard options for these blankets include single or double netting made from biodegradable, photodegradable or rapid degrade thread.

Perfect For Use In:

- Bank and shoreline stabilization
- Soil erosion control
- Restoration projects
- Low-medium slopes 3:1 or 2:1
- Low-medium channels

Straw Blanket Options	
Single Net Straw Blankets	Standard Blankets: Photodegradable Polypropylene Netting Rapid Degrade Blankets (60-90 days) Biodegradable Blankets: Jute Netting
Double Net Straw Blankets	Standard Blankets: Photodegradable Polypropylene Netting Rapid Degrade Blankets (90 days) Biodegradable Blankets: Jute Netting

Straw Erosion Blankets are constructed with either a single or double net that creates a barrier around sections of wheat straw fabric. Nets are made from biodegradable jute, photodegradable polypropylene, or a rapid degrade material to meet the requirements of different locations.

All straw blankets are built from biodegradable wheat straw that naturally degrades into the surrounding areas over time.

GEI WORKS
932-2019-02-26

Phone: (+1) 772-646-0597 | www.geiworks.com | info@geiworks.com

Straw Blankets
Effective Erosion Control

Straw Blankets Typical Specifications						
Mat Type	**Description**	**Netting**	**Slopes**	**Flows**	**Lifespan**	**Sizes (Feet)***
Single Net	Standard Single Net Straw Blankets	Polypropylene	3:1 or less	Low Flow Channels	Up to 12 months	8' x 112.5' 8' x 562.5' 16' x 112.5'
Single Net	Biodegradable Single Straw Net Blanket	Jute	3:1 or less	Low Flow Channels	Up to 12 months	8' x 112.5'
Single Net	Rapid Degrade (60-90 day) Single Net Straw Blanket	Rapid Degrade	3:1 or less	Low Flow Channels	Up to 3 months	8' x 112.5'
Double Net	Standard Double Net Straw Blankets	Polypropylene	2:1 or less	Low—Medium Flow Channels	Up to 12 months	8' x 112.5' 8' x 562.5' 16' x 112.5'
Double Net	Biodegradable Double Net Straw Blanket	Jute	2:1—3:1	Low—Medium Flow Channels	Up to 12 months	8' x 112.5'
Double Net	Rapid Degrade (90 day) Double Net Straw Blanket	Rapid Degrade	2:1 or less	Low—Medium Flow Channels	Up to 3 months	8' x 112.5'

*Some straw blankets are available in additional dimensions.
Contact GEI Works for more information and unique size availability.

Interior Fabric

Typical fabric used for the straw blankets is made from biodegradable wheat straw. This fabric is designed to be natural and provide no additional harm to the environment during their use. As they biodegrade over time, they will enrich the surrounding areas.

Outside Netting

Netting used for the blankets will be made from biodegradable jute, photodegradable polypropylene or rapid degrade fabrics. Each net comes in a single or double netting design for added strength and stability.

Installation

Installation for the straw blankets will vary depending on the steepness of your slope and area where you will be placing the fabric. Standard installation begins with preparing the install areas. This includes removing debris, leveling the soil and/or adding any vegetation or seeding. Once the area is prepared, blankets can then be laid in place. Tops of each mat should be installed into a 6 in. trench which is then filled for added stability. Depending on the slope in your area, blankets should be stapled periodically throughout the mat.

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Straw Blanket Installation

Below you will find typical installation guidelines for our temporary straw erosion blankets. Specific requirements may vary depending on the conditions and requirements of your site.

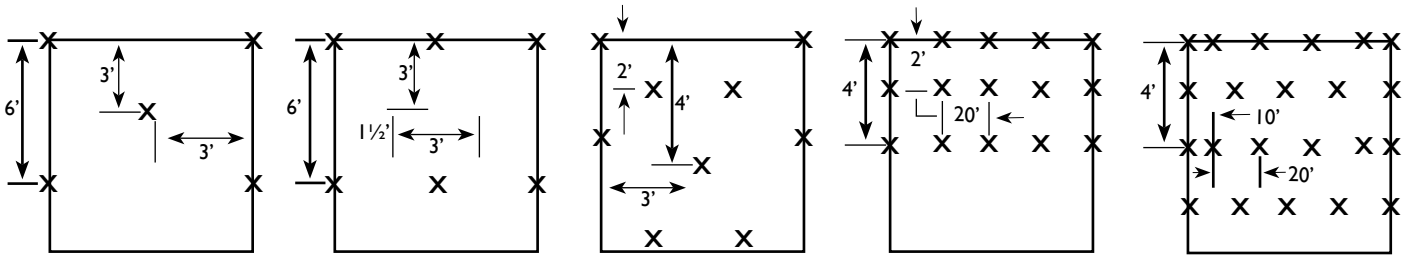
Slope Installation

STEP 1: Prepare the installation area by leveling the area, removing debris, and/or seeding.

STEP 2: Dig a 6" x 6" trench at the top of slope and place the blanket in the slope. Blankets are typically pulled about 12" past the trench.

STEP 3: Staple/anchor the blanket to the bottom of the trench. Staples should be placed every 1 ft. Once the blanket is stapled and in place, fill in the trench.

STEP 4: Roll the blanket down the channel in the direction of the water flow. Blankets should first be placed along the center, and up along the sides. Adjacent blankets should be overlapped approximately 3"- 6" and stapled according to the pattern below:



.7 staples/yd^2
4:1 SLOPES

1.2 staples/yd^2
3:1 SLOPES

1.75 staples/yd^2
2:1 SLOPES

3.5 staples/yd^2
MED. to HIGH
FLOW CHANNEL

3.8 staples/yd^2
HIGH FLOW
CHANNEL

STEP 5: If more than one blanket is being used, edges of the blanket should overlap approximately 6". Over lapped edges should be anchored every 12".

STEP 6: For high flow channels, staple check slots should be done periodically along the blanket. Check slots will feature two rows of staples placed 4" apart.

Flows: Less than 2 lbs/sq. ft.— 2 to 3 staples per sq. yd.
Flows: Greater than 2 lbs/sq. ft.– 3 to 4 staples per sq. yd.

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Bill of Materials - 211 W. C.R. 30, HSTS Replacement - Shallow Gravelless Leach Trenches With Interceptor Drain			
Quantity	Part Name	Section	Comment
2	SCH40 PVC Ø4 inch Two-Way Cleanout Tee	Sewer Main Replaced to Foundation (East Side) *TOTAL LENGTH OF PIPE = ~ 130' MUST BE SCH40 PVC*	Two-Way Cleanout (Tee)
2	SCH40 PVC Ø4 inch pipe 2 ft. Long		Two-Way Cleanout (Tee to Cap)
2	SCH40 PVC Ø4 inch Cap		Two-Way Cleanout (Cap)
7	SCH40 PVC Ø4 inch Coupler		See Design
8	SCH40 PVC Ø4 inch 22.5 Degree Elbow		
1	SCH40 PVC Ø4 inch 45 Degree Elbow		
10	SCH40 PVC Ø4 inch pipe 5 ft. Long		
8	SCH40 PVC Ø4 inch pipe 10 ft. Long		
1	SCH40 PVC Ø4 inch Two-Way Cleanout Tee	Sewer Main Replaced to Foundation (West Side) *TOTAL LENGTH OF PIPE = ~ 25' MUST BE SCH40 PVC*	Two-Way Cleanout (Tee)
1	SCH40 PVC Ø4 inch pipe 2 ft. Long		Two-Way Cleanout (Tee to Cap)
1	SCH40 PVC Ø4 inch Cap		Two-Way Cleanout (Cap)
4	SCH40 PVC Ø4 inch 22.5 Degree Elbow		See Design
1	SCH40 PVC Ø4 inch Wye		
5	SCH40 PVC Ø4 inch pipe 5 ft. Long		
1	*Septic Tank*	Septic Tank	Spoerr 1500gal Septic Tank or Equiv. W/ 24" Risers
1	*Septic Tank Filter*		Polylok PL-122 Effluent Filter
4	SDR35 PVC Ø4 inch Coupler	Effluent Main TOTAL LENGTH OF PIPE = ~ 45'	See Design
2	SDR35 PVC Ø4 inch 22.5 Degree Elbow		
3	SDR35 PVC Ø4 inch pipe 5 ft. Long		
3	SDR35 PVC Ø4 inch pipe 10 ft. Long		
1	SCH40 PVC Ø6 inch 22.5 Degree Elbow		Sleeved & Sealed Crossing Existing House Footer Tile
2	SCH40 PVC Ø6 inch pipe 5 ft. Long		
1	*6 Outlet D-Box*	(6) Outlet D-Box W/ Rotoflows	Spoerr (6) Outlet D-Box or Equiv.
5	*Rotoflows*		Polylok Rotoflows *Rest 1 Outlet Yearly*
7	SDR35 PVC Ø4 inch 90 Degree Elbow	Distribution Manifold	Config. By Installer
~	SDR35 PVC Ø4 inch pipe 70 ft. Total		
5	*Infiltrator Quick4 Plus End Cap*	Leach Trenches	See Detail Print
5	*Trench 2' W. x 4' L. x 8" H. Q4PlusEQ36LP 100' L. Total*		(125) - 2 ft. W. Infiltrator Quick4 Plus Equalizer 36 LP
-	*Additional Soil Cover Over Trenches (Silt Loam or Better)*		~56.0 yd.^{3} @ 98.0 Tons (Silt Loam or Better Quality)
5	*Infiltrator Quick4 Plus All-In-One End Cap*	Trench Soil Inspection Port	See Detail Print
5	SCH40 PVC Ø4 inch pipe 4 inch Long		
5	SCH40 PVC Ø4 inch pipe 1 ft. Long		
5	SCH40 PVC Ø4 inch Cap		
5	SCH40 PVC Ø4 inch Coupler		
1	*Polylok 12" Dia. D-Box W/ (1) 6" Riser W/ Lid*	Free-Falling Sample Box	See Detail Print
-	*Corrugated Perforated Ø4" Pipe 100 ft. L.*	Interceptor Drain	See Detail Print
-	*Drain 100' L. x 9" W. x 10" Deep Gravel*		~1.9 yd.^3 @ 2.5 Tons #57 Washed Stone
-	*Corrugated Solid Ø4" Pipe 10 ft. L.*	Interceptor Drain Discharge	Length May Vary
~	*Fernco Adapter & Wye Fittings*		Choice by Installer
~	*Single or Double Net*	Erosion Control	3000 ft.^{2} Single or Double Net Straw Blanket
Additional Notes			
Pump, Crush & Backfill Old Septic Tank.			
System Requires Straw Erosion Blanket Installation Due to Slope. (See Sheets in Package).			
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	~2750 ft.^2 @ 5.5 lbs.
-	Straw Mulch For Grass Establishment	Homeowner's Choice	~2750 ft.^2
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	~2750 ft.^2 @ 27.5 lbs.
Call OUPS before you dig.			
Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.			
D+A1:D3Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.			

Operation and Maintenance Procedures

Home Septic Treatment Systems With Effluent Distribution Through In-Soil Leach Trenches

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems may utilize processing, storage, and pumping tanks. A soil absorption component, the leachfield, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

Improper operation and/or maintenance of your home septic treatment system will result in its failure.

Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has septic tank and leachfield maintenance experience.

1) **Homeowner Responsibility:**
   a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
   b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
   c) Home Interior Design & Appliance Selection:
      i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
      ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
      iii) Repair all water leaking fixtures.
      iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
      v) DO NOT pipe sump pump output into your sewer line.
   d) Home Landscaping Limitations:
      i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
      ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
      iii) Divert all downspouts or other rainwater drainage away from the leachfield area.
      iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and leachfield areas.

v) Do not add additional soil fill on or near the leachfield. This will limit air movement into the soil needed for effluent treatment and may cause system failure.
vi) Limit lawnmower traffic on the leachfield when soil is excessively wet.
vii) Do not plant any deep rooted plants on top of or near your leachfield soil absorption area.

e) Home Resident Responsibilities:
   i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
   ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
   iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
   iv) Do not flush any non-biodegradable items. For example, plastic items.
   v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
   vi) Do not flush cat litter.
   vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
   viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
   ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
   x) Don't use septic tank additives, unless health department approved.
   xi) Don't drain a hot tub or large amounts of water into your septic system.

f) Home Improvement/Expansion:
   i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
   ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.

g) Homeowner Cautions:
   i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
   ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
   iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
   iv) Always replace and secure septic and dose tank lids after completing any inspection.
   v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
   vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

2) Inspection & Maintenance Requirements:

a) Perform inspection & maintenance **every six months**.

b) Review Baseline Operation and Maintenance Data:
   i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
   ii) Review all previous six month inspection data.

c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.

d) Inspect the house sewer main two-way cleanout tee bottom:
   i) Check for clogging.
   ii) Check for continuous clear water flows from the home.

e) Evaluate Septic Tank & Pump Tank:
   i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
   ii) Look for signs of clogging and tank damage.
   iii) Look for signs of tank and riser leakage.
   iv) Clean & inspect septic tank outlet filter.
   v) Make sure lids are securely attached to risers.

f) Evaluate Pump/Dose Tank & Pumping Equipment:
   i) Measure sludge and scum depths; pump tank when septic tank is pumped.
   ii) Look for signs of clogging and tank damage.
   iii) Look for signs of tank and riser leakage.
   iv) Inspect and assure proper functioning of floats or other liquid level controls.
   v) Clean and inspect dose pump outlet filter. May not be present in some designs.
   vi) Inspect and assure proper condition and functioning of the effluent pump.
   vii) Make sure lids are securely attached to risers.

g) Evaluate Drain Fields:
   i) Inspect all leachfield soil inspection tubes for surface condition, surface color, and depth of ponded effluent, if present.
   ii) Look for surfacing effluent.
   iii) Look for excessively moist soil around leachfield area.
   iv) Identify appropriate vegetative cover.
   v) Look for surface disturbances, compaction, abnormal settling, and erosion.
   vi) Identify any deep rooted vegetation recently planted near the leachfield area.

h) Switch leachfield resting trench in D-box:
   i) Determine a rotation sequence for closing off flow to the resting trench/trenches.
   ii) Open the previously rested leach trench.
   iii) Close the next trench in sequence for resting.

i) Measure Pump Run Time and/or Drawdown:
   i) For demand dosed systems, verify original design effluent drawdown depth.

ii) For time dosed systems, verify original design pump run time.
iii) For systems with a cycle counter or run time meter, record the current values.

j) Test Alarms:
i) Evaluate proper function of low liquid level alarm.
ii) Evaluate proper function of high liquid level alarm and warning light.

3) Findings & Repairs:

a) All findings during inspection and maintenance must be recorded.
b) Any system adjustments must be recorded.
c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
d) All repairs must be recorded.