

**Home Septic System
Site Evaluation
And
System Design**

For

**Jennifer King
2042 Rhode Island
Holland OH 43528**

419-343-4410

**Property Location:
Same As Above**

Springfield Township, Lucas County

Replacement System

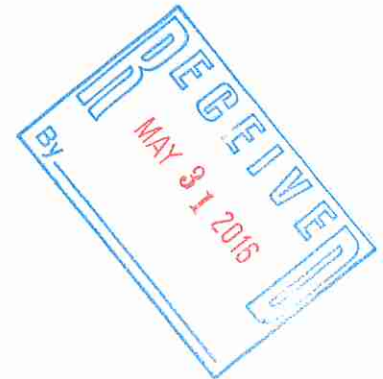
By

Nathan Wright

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

419-547-8538

May 28, 2016

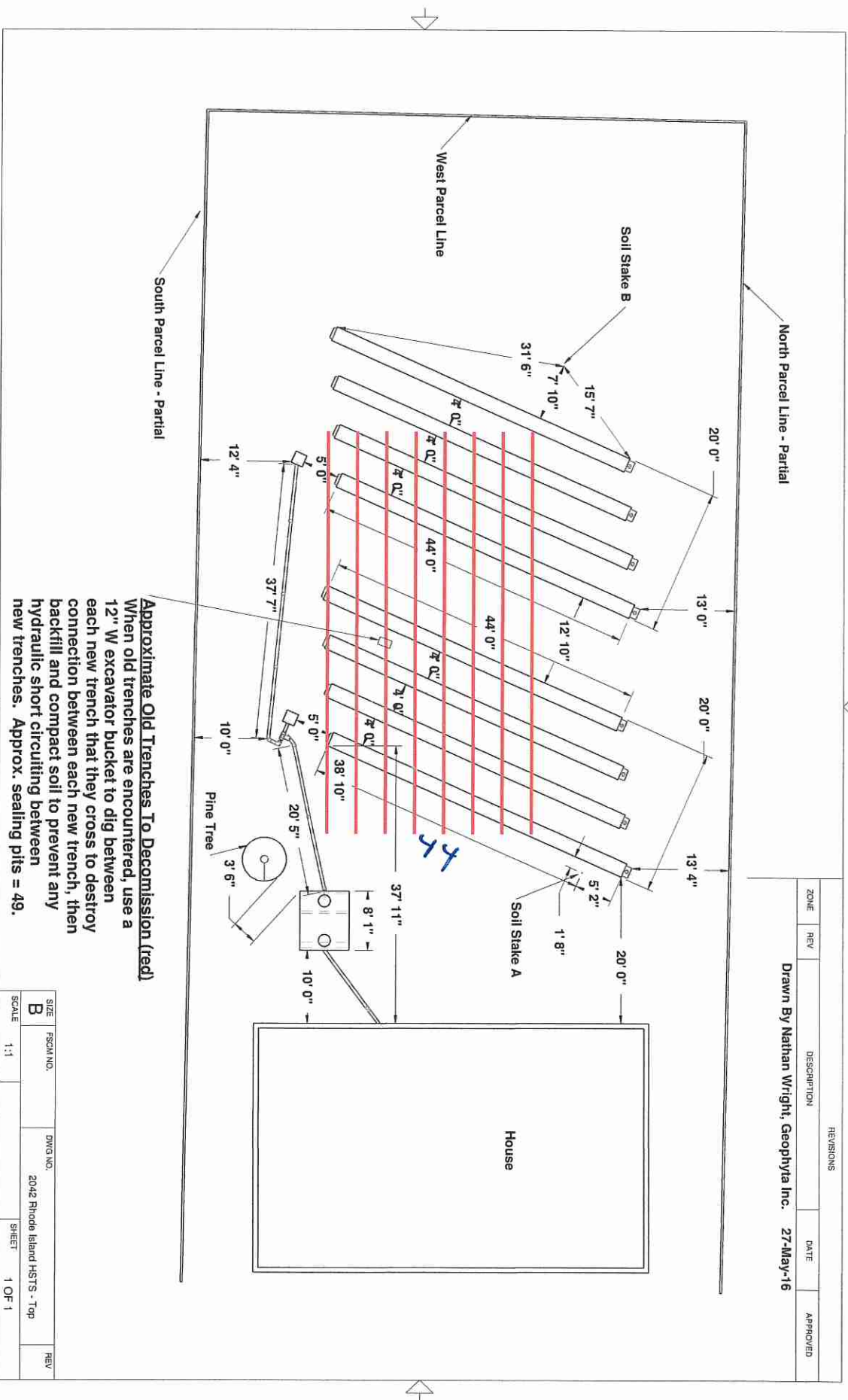


<u>In-Soil Leachfield Calculations - Gravelless Chambers</u>		
<u>50/50 Split Flow Trenches</u>		
<u>2042 Rhode Island</u>	<u>Min. Required</u>	<u>Actual</u>
Home Size (bedrooms)	3	
Water Use (120 gal/day/bedroom)	360	528
Limiting Condition	PSWT	
Depth To Limiting Condition (inches)	36.0	
Depth To Bottom of Leach Trench (in.)	24.0	(Max. Depth)
Infiltration Depth (in.)	12.0	
Most Limiting Soil Texture	S	
<u>Tyler Table Values</u>		
Infiltration Loading Rate (gal/day/sq. ft)	0.8	0.8
Hydraulic Linear Loading Rate (gal/day/ft)	5.0	5.0
Active Trench Bottom Width (ft)(HLLR/ILR)	6.25	
Absorption Line Lengths (ft)(DDF/HLLR)	72	
<u>Leachfield Design Requirements</u>		
	<u>Minimum Required</u>	<u>Actual</u>
Active Absorption Area (DDF/ILR)(sq. ft.)	450	
Active Absorption Area Adjusted (0.75)(sq. ft.)	337.5	528
25% Resting Absorption Area (sq.ft.)	84	176
Total Adjusted Absorption Area (sq.ft.)	422	704
Individual Trench Bottom Width (ft)	2.0	2.0
Total Trench Bottom Width (ft)	5.86	16.0
Total Number of Leach Lines	4	8
Active Leach Lines	3	6
Resting Leach Lines	1	2
Total Lineal Feet of Trench (ft)	288	352
Trench Separation Distance (ft)	6	6
Total Leachfield Width (ft)	20	44
Total Leachfield Length (ft)	72	44

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

Drawn By Nathan Wright, Geophytia Inc. 27-May-16



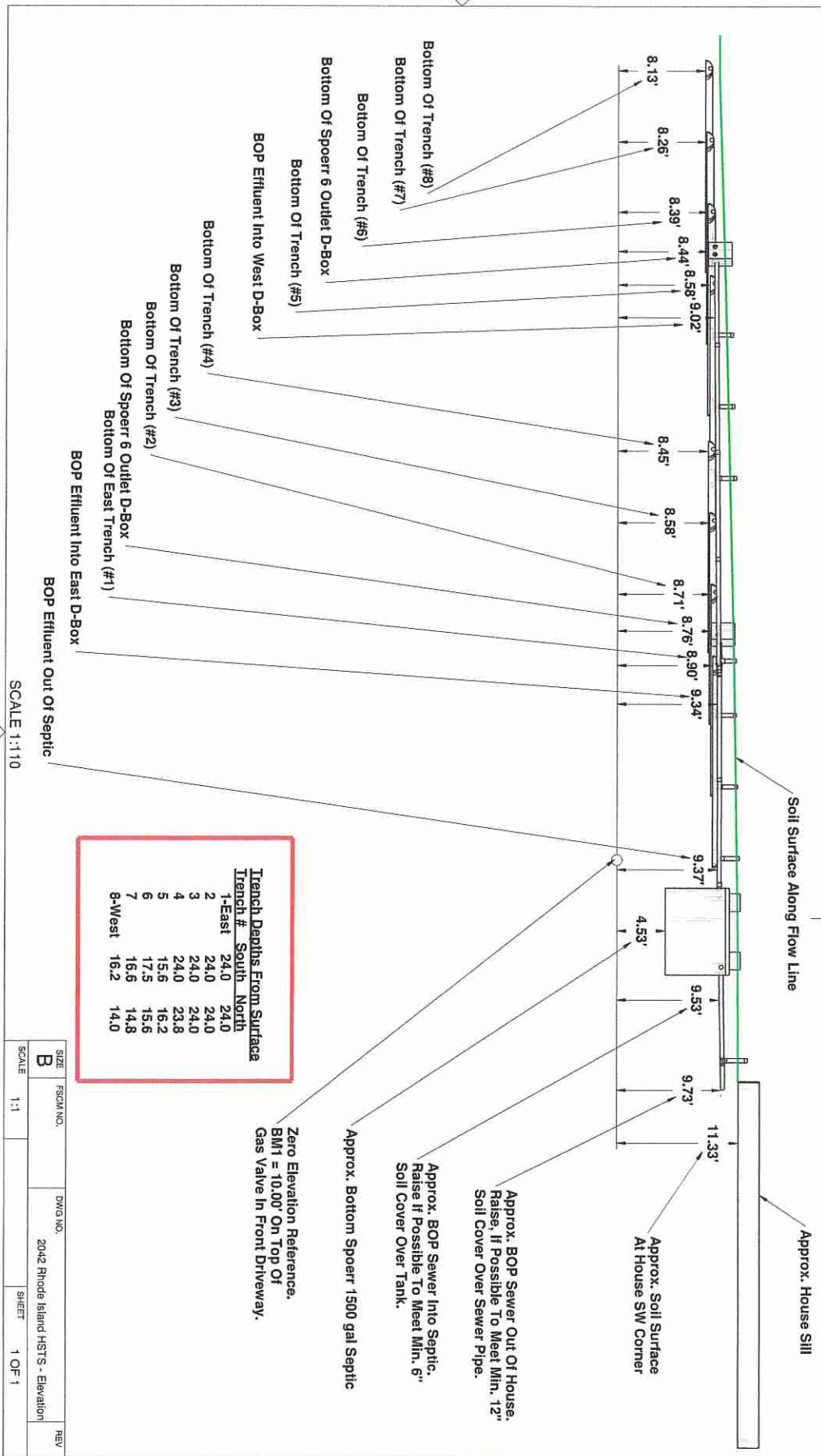
Approximate Old Trenches To Decommission (red)
 When old trenches are encountered, use a 12" W excavator bucket to dig between each new trench that they cross to destroy connection between each new trench, then backfill and compact soil to prevent any hydraulic short circuiting between new trenches. Approx. sealing pits = 49.

SIZE	FSCM NO.	DWG NO.	SHEET	REV
B		2042 Rhode Island HSTS - Top	1 OF 1	

SCALE 1:1

**Elevation View
From South, Looking North
East**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
		Drawn By Nathan Wright, Geophya Inc.	27-May-16	



Trench Depths From Surface		
Trench #	South	North
1-East	24.0	24.0
2	24.0	24.0
3	24.0	24.0
4	24.0	23.8
5	15.6	16.2
6	17.5	15.6
7	16.6	14.8
8-West	16.2	14.0

SCALE 1:110

SIZE	FSCM NO.	DWG NO.	REV
B		2042 Rhode Island HSTS - Elevation	
SCALE	1:1	SHEET	1 OF 1

Site and Soil Evaluation for Sewage Treatment and Dispersal

Control #: 16 - 087 - B

County: Lucas

Township / Sec.: Springfield

Property Address: 2042 Rhode Island

OR Location:

Applicant Name: Jennifer King

Address: 2042 Rhode Island

Holland OH 43528

Phone #: 419-343-4410

Lot #:

Test Hole #: B

Latitude/Longitude: 83°43'19.219"W 41°36'12.413"N

Method: Pit Auger Probe; 1 1/4" dia.

Land Use / Vegetation: Residential Turf

Landform: Glacial Lake Plain

Position on Landform: Hillslope

Percent Slope: 2 - 3

Shape of Slope: Concave - Linear

Approximate Soil Type: Colwood S

Date: 2-May-16

Evaluator: Nathan Wright

Geophyta, Inc.

2685 C.R. 254

Vickery, OH 43464

Phone#: 419-547-8538



Certification #: 19395

Nathan Wright

Signature:

Soil Profile		Estimating Soil Saturation				Estimating Soil Permeability				Other Soil Features																			
		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																		
A	0.0-16.0	10YR2/1	uniform	uniform	S	5	0	2-MOD	fine	gr	v. friable																		
AB	16.0-20.5	10YR3/3	20%10YR4/4	none	S	5	0	0-NONE	-	sg	loose																		
1C	20.5-37.5	10YR4/3	5%10YR4/6	15%10YR4/2	S	5	0	0-NONE	-	sg	loose																		
2Cg	37.5-48.0	10YR5/1	10%10YR4/6	matrix	SIL	10	0	1-WEAK	fine	sbk	firm																		
<table border="1"> <thead> <tr> <th>Limiting Conditions</th> <th>Depth to (in.)</th> <th>Descriptive Notes</th> </tr> </thead> <tbody> <tr> <td>Perched Seasonal Water Table</td> <td>20.5</td> <td>Restricted in 2Cg</td> </tr> <tr> <td>Apparent Water Table</td> <td>>48</td> <td></td> </tr> <tr> <td>Highly Permeable Material</td> <td>>48</td> <td></td> </tr> <tr> <td>Bedrock</td> <td>>60</td> <td>By File Probe</td> </tr> <tr> <td>Other Restrictive Layer</td> <td>>48</td> <td></td> </tr> </tbody> </table>												Limiting Conditions	Depth to (in.)	Descriptive Notes	Perched Seasonal Water Table	20.5	Restricted in 2Cg	Apparent Water Table	>48		Highly Permeable Material	>48		Bedrock	>60	By File Probe	Other Restrictive Layer	>48	
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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.

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Control #: 16 - 087 - A

County: Lucas

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Approximate Soil Type: Bixler S

Date: 2-May-16

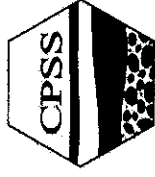
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B	12.0-26.0	10YR4/6	uniform	uniform	S	5	0	0-NONE	-	sg	loose																								
C1	26.0-36.0	10YR3/6	uniform	uniform	S	5	0	0-NONE	-	sg	loose																								
C2	36.0-60.0	10YR5/4	none	10%10YR5/3	S	5	0	0-NONE	-	sg	loose																								
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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.

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

Depression
Flat
Knoll
Crest
Hillslope
Footslope

Convex
Concave
Linear
Complex

Master Horizons		Horizon Suffixes		Horizon Modifiers
O	Predominantly organic matter (litter & humus)	a	Highly decomposed organic matter	Numerical Prefixes: Used to denote lithologic discontinuities.
A	Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b	Buried genetic horizon	
E	Mineral, loss of Si, Fe, Al, clay, organic matter	d	Dense layer (physically root restrictive)	Numerical Suffixes: Used to denote subdivisions within a master horizon.
B	Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO ₃ ; subsurface soil structure	e	Moderately decomposed organic matter	
C	Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g	Strong gley	
R		Hard bedrock	i	
		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	

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	leos	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

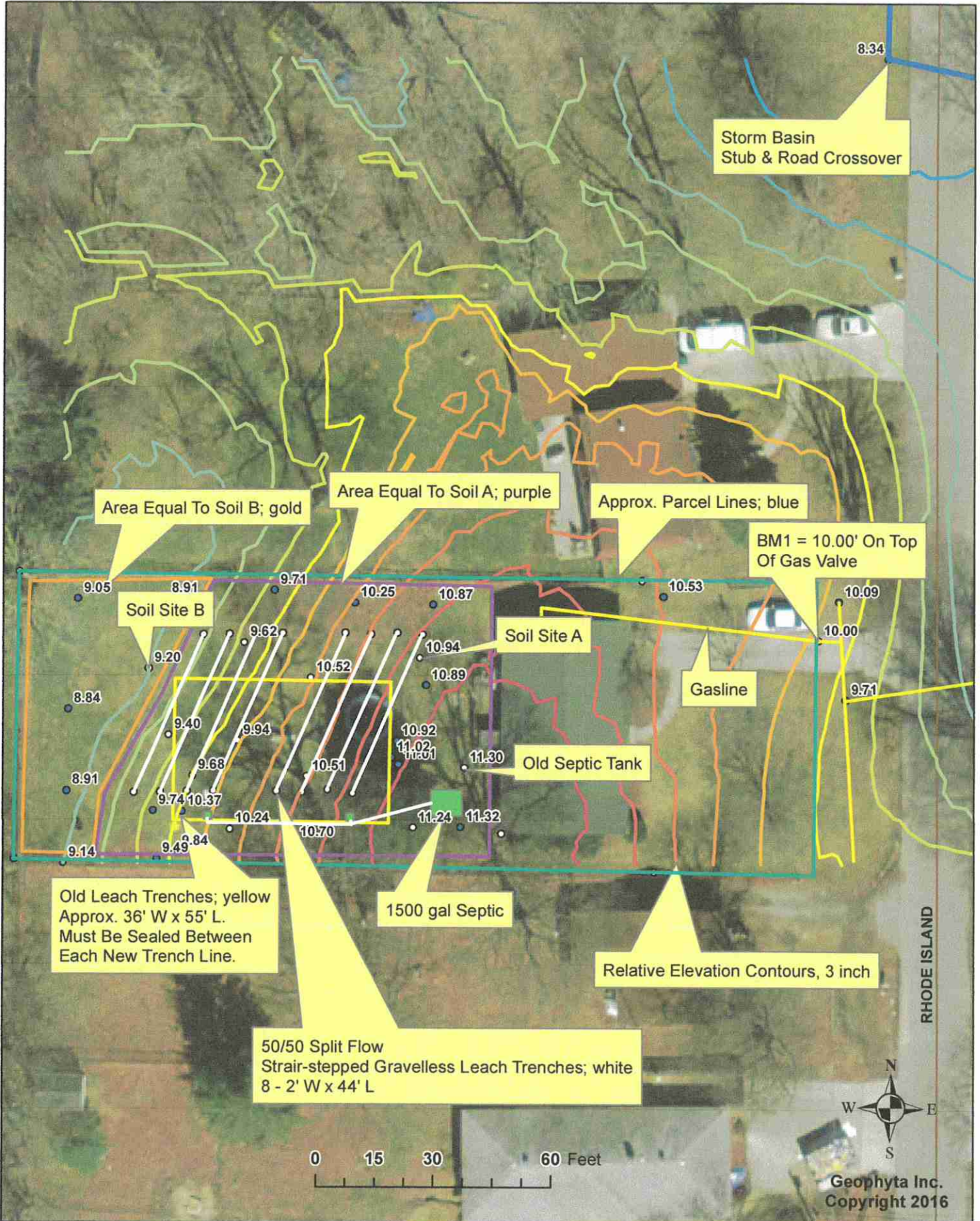
Grade		Size		Type (Shape)	
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy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

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.

HSTS Layout - 2042 Rhode Island



HSTS Site/Soil Evaluation Information Sheet, Geophyta, Inc.

Customer:

Name:	Jennifer King
Address:	2042 Rhode Island
City, State:	Holland, OH 43528
Home Phone:	419-868-3834
Cell Phone:	419-343-4410
Email:	JenKing331@gmail.com

Property:

Parcel #:	
Current Owner:	Jennifer King
Address:	2042 Rhode Island
City, State:	Holland, OH 43528
Lot Size:	75 x 220
Right of Ways?	
Easements?	

Existing or Proposed or Lot Split: (circle one)

House Size: Rooms	3 bedrooms	electric:	overhead or buried
House Dim.w/Garage:	ft.xft.	phone:	overhead, buried; n/a
Garage Size:	1 cars, ft.xft.	gas:	natural propane n/a
Water Source:	well, public, cistern	hot tub:	yes no
Water Softener:	no yes		
Outbuildings:	no yes, size:	geothermal system:	no; yes: (horizontal or vertical)
Pond:	no yes, size:		
System Type:	new or replacement		
Replacement Reason:	failed, addition; n/a		

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.

Jennifer King
Customer Signature

5-2-16
Date

Payment received:

Copyright, 2015
Geophyta, Inc.

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. V(p.93) of above referenced rules.

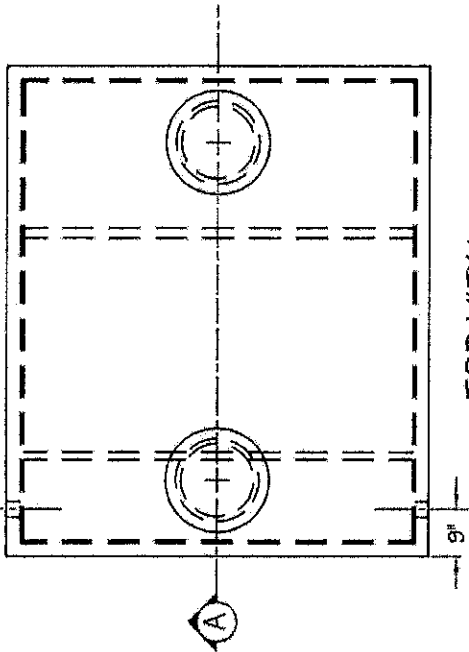
If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

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.

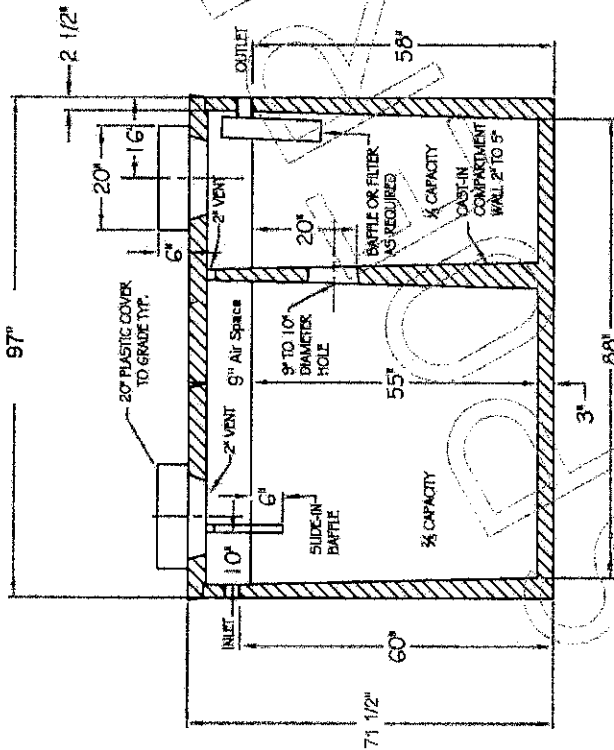
Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.

SPECIFICATIONS:

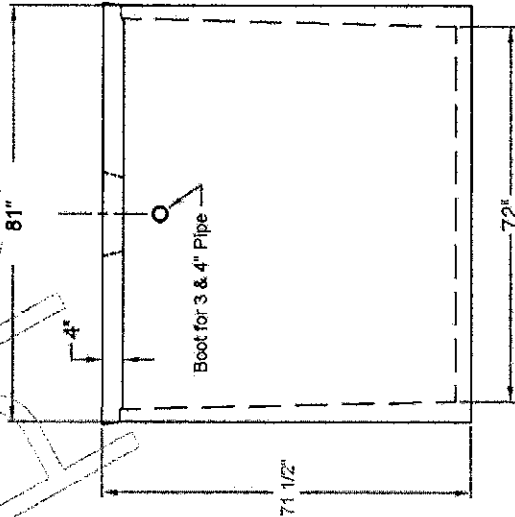
1. PIPE PENETRATIONS - MEET OR EXCEED ATMC C-1644-06
2. JOINT SEALANT - BUTYL RUBBER BLEND - MEETS OR EXCEEDS ASTM C990
3. CONCRETE - 4500 psi @ 28 DAYS
4. RISERS - CAST INTO LID AT TIME OF PRODUCTION - INLET AND OUTLET
5. WEIGHT - 12,000 lbs



TOP VIEW



A SECTION VIEW (SIDE)



END VIEW



2020 CALDWELL ST.
SANDUSKY, OH 44870
PHONE 1-800-252-5205

NOTES:

Excavation 7'9" x 9'

1500 Gallon
Septic Tank

DESIGNER	J/P	SCALE	VARIES
ENGINEER	G/W	SCALE	VARIES
REVISION		DRAWING #	1 OF 1

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:

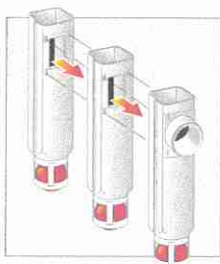
Ideal for residential waste flows up to 1,500 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

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!

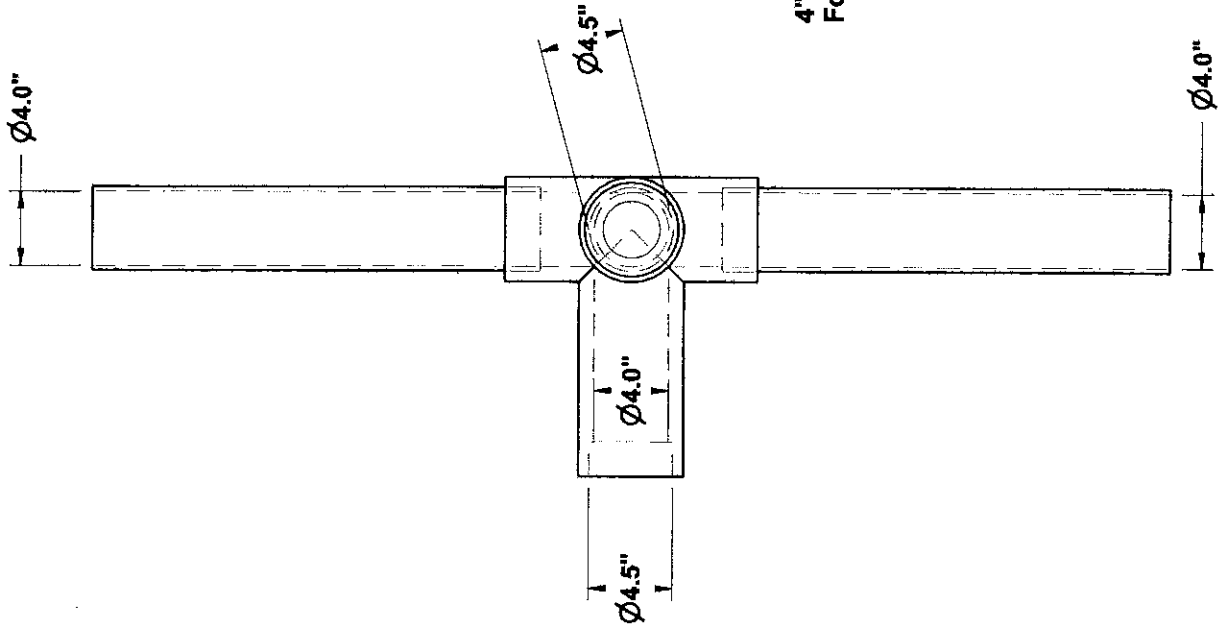
1 Filter = 1500 GPD
 2 Filters = 3000 GPD
 3 Filters = 4500 GPD
 Patent Numbers
 6,015,488 & 5,871,640



REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
			26-Aug-14	

Drawn By Nathan Wright, Geophyta Inc. 26-Aug-14



To D-Box #1.
Length Will Vary By Design.

Socket Attachment For 4" Dia.
Effluent Inlet Pipe

4" Dia. Cap & Pipe Extension To Final Grade
For Valve/Shutoff Access.

PolyLok 50/50 Flow Divider

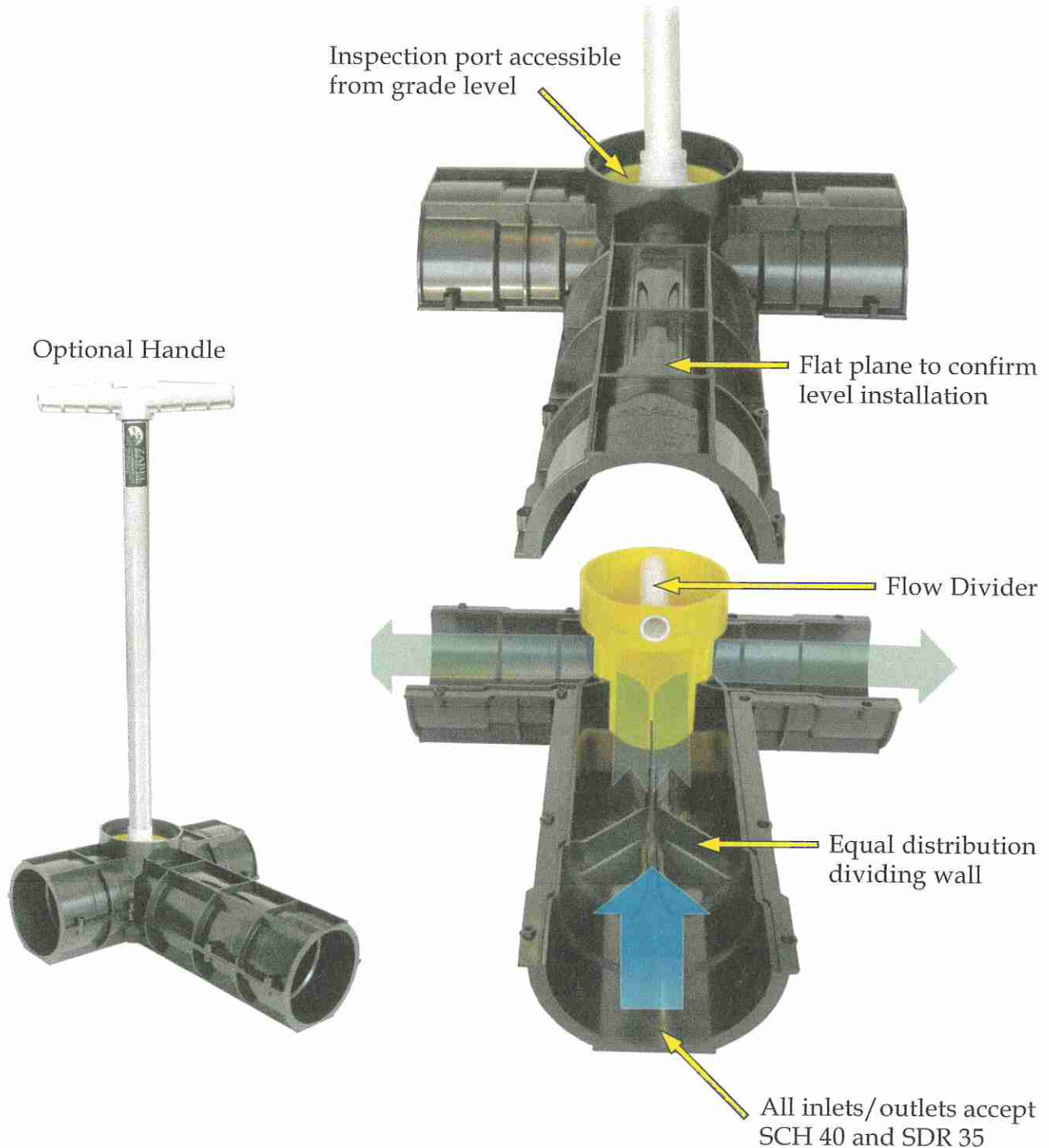
To D-Box #2.
Length Will Vary By Design.

SIZE	FSCM NO.	DWG NO.	REV
A			
SCALE	1:10		SHEET

PolyLok 50/50 Flow Divider Assembly

Flow Controller

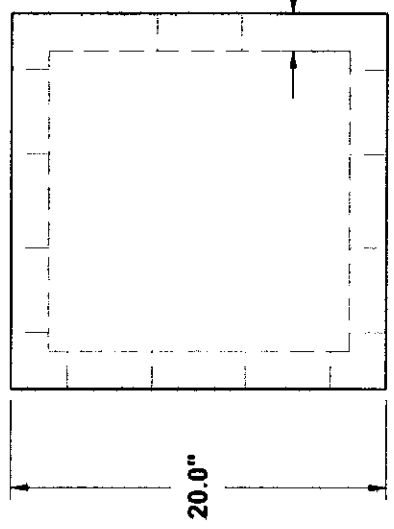
Ideal for alternating or dividing flows between two separate fields. Easily installs by attaching directly to SCH 40 or SDR 35 pipe. Our unique channel split design enables an equal split of the waste stream. Additionally, the valve can be set for equal distribution (factory setting) or all distribution to the right or left.



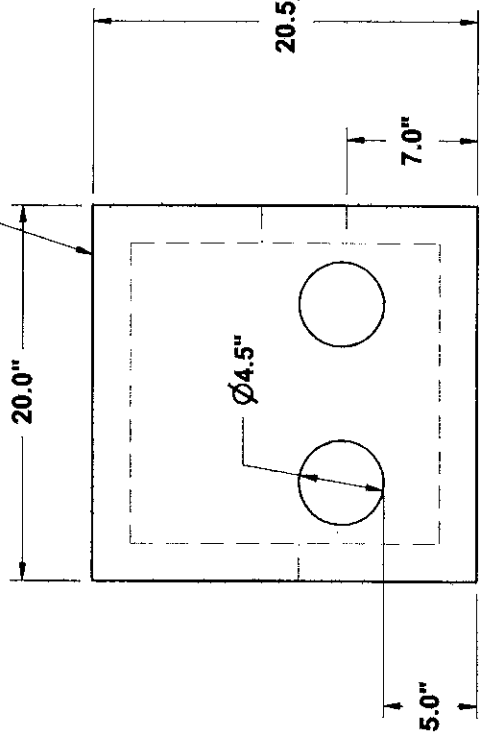
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ZONE	REV	DESCRIPTION

Drawn By Nathan Wright, Geophyta Inc. 13-Aug-13

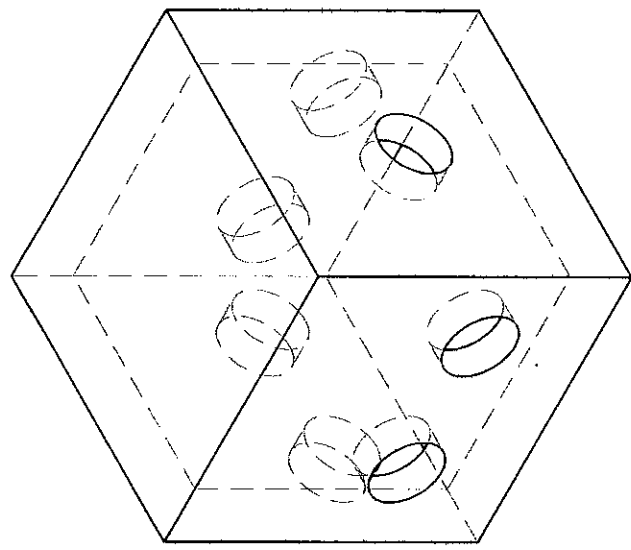
DATE	APPROVED



Concrete Lid



Add on risers in 6 inch increments as needed. Min. Ht = 20.5"



SIZE	FSCM NO.	DWG NO.	REV
A		Spoerr 6-Outlet D-Box	
SCALE	1:10		SHEET

Roto-Flow



Roto-Flow enables equal distribution to your leaching fields. Available in 3" and 4" sizes.

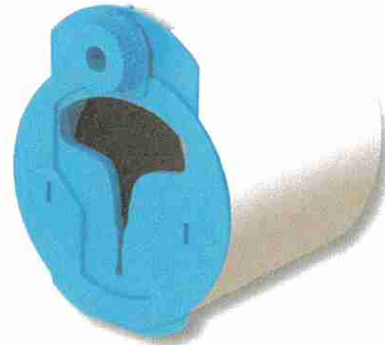
The Roto-Flow is the low cost solution to your D-Box flow regulating problems. The simple Roto-Flow for D-Box outlet pipes gives you the easiest "set & forget" flow regulator available.

The Roto-Flow fits Schedule 40, SDR 35 and thin wall pipe sizes. Both 3 inch and 4 inch sizes are available. Simply place the Roto-Flow into the D-Box outlet pipe then adjust to equalize flow.

The Roto-Flow is made from HDPE; it is designed to stand up in the septic environment without failing. Our Roto-Flow design ensures a good fit in all pipe sizes.

The Roto-Flow is made to fit pipes without collapsing or creating a loose fit. This will guarantee equal flow performance.

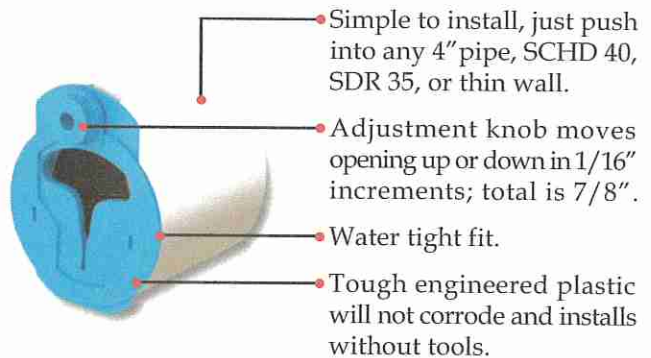
Equalizer



The Equalizer's patented weir opening maintains equal flow, even in unlevel D-Boxes that continue to move their entire lives.

Equalizer Features:

- Maintains equal flow from distribution box.
- Automatically compensates for box movement.
- Engineered plastic is non-corrosive.
- Extends septic system life.
- Inserts without tools.
- Resets equal flow when D-Box has moved.



PATENTS: U.S.A. - 5,680,989 - 5,154,353 - 5,107,892



Custom Distribution Boxes with Equalizers installed

REVISIONS

ZONE

REV

DESCRIPTION

DATE

APPROVED

Drawn By Nathan Wright, Geophyta Inc. 4-Apr-15

Infiltrator All-In-One Endcap

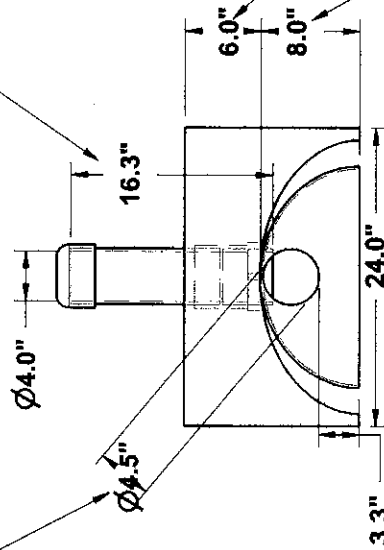
Infiltrator Standard Endcap

Trench Bottom Inspection Port

Soil Surface

O.D. Distribution
Manifold Pipe Entry

Length Will Vary By Design



Minimum Soil Cover.
Silt Loam Or Better Texture
With Moderate Or Strong
Structure When Soil Is Added
More Than 2" Above Original Grade

Dome Height

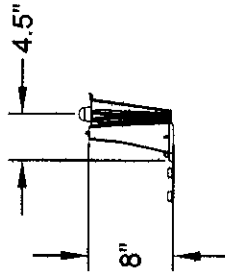
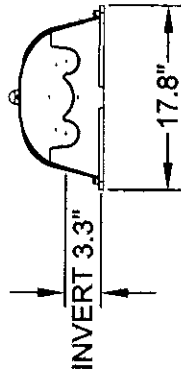
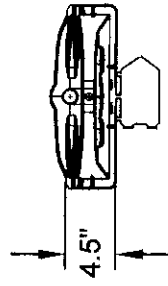
Trench Width,
May Be 36" In Some Designs

Height Of Distribution Pipe Entry

DO NOT DIG TRENCHES IF SOIL WILL SMEAR

If Trench Sidewall & Bottom Smearing Occurs
During Excavation, Then Rake Sidewalls &
Bottoms To Break This Smear Layer

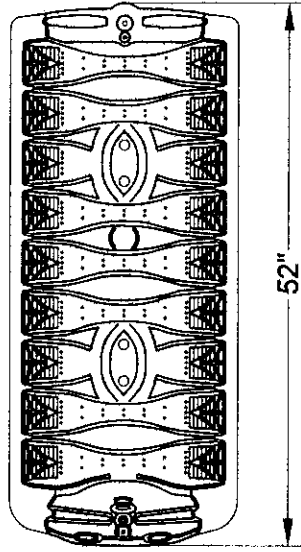
SIZE	FSCM NO.	DWG NO.	REV
A		Standard Gravelless Leach Trench	
SCALE	1:15		SHEET



INFILTRATOR SYSTEMS, INC. 6 BUSINESS PARK ROAD P.O. BOX 768 OLD SAYBROOK, CT 06475 PH. (800) 221-4436 FX. (860) 577-7001 WWW.INFILTRATORSYSTEMS.COM	INFILTRATOR SYSTEMS QUICK4 PLUS ENDCAP
Scale NOT TO SCALE	Checked DFH
Date 12/18/2009	ACAD No.
Drawn By: RWD	Sheet 1 of 1

QUICK4 PLUS EQUALIZER 36 LOW PROFILE (LP) CHAMBERS

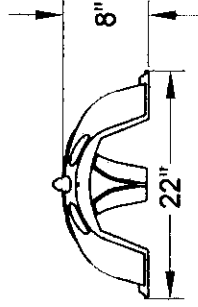
TOP VIEW



FRONT VIEW



SIDE VIEW



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INFILTRATOR SYSTEMS
 QUICK4 PLUS EQUALIZER
 36 LOW PROFILE

Scale NOT TO SCALE Checked DFH

Date 12/18/2009 ACAD No.

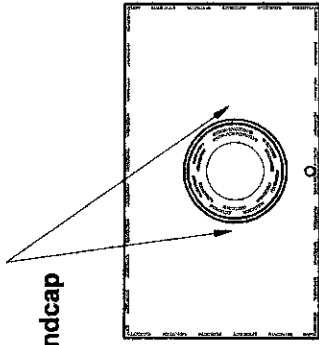
Drawn By: RWD Sheet 1 Of 1

REVISIONS			
ZONE	REV	DESCRIPTION	DATE

Drawn By Nathan Wright, Geophyta Inc. 9-Oct-13

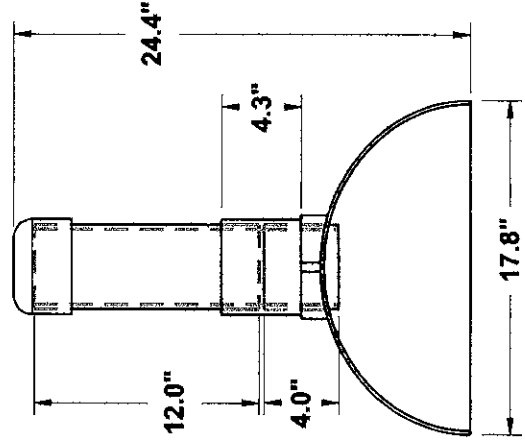
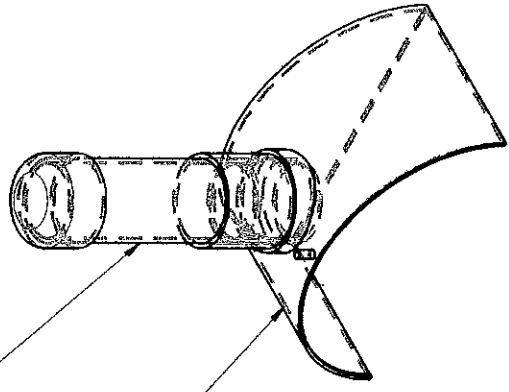
APPROVED

**A Minimum Of Two
Stainless Steel Wood
Screws Required To
Attach PVC Pipe To Endcap**

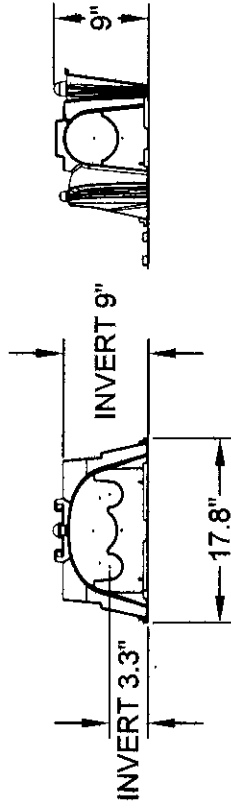
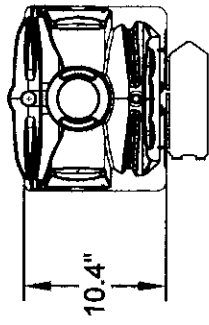


4" Sch40 PVC Pipe, Coupler, & Cap

**Infiltrator All-In-One Endcap.
See B.O.M. For Actual Part Number**



SIZE A	FSCM NO.	DWG NO.	REV
SCALE 1:10			Trench End Soil Inspection Port
			SHEET



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 WWW.INFILTRATORSYSTEMS.COM

INFILTRATOR SYSTEMS
 QUICK4 PLUS ALL-IN-ONE
 ENDCAP

Scale NOT TO SCALE

Checked DFH

Date 12/18/2009

ACAD No.

Drawn By: RWD

Sheet 1 of 1

Bill Of Materials - 2042 Rhode Island HSTS Leach Trench System			
Quantity	Part Name	Section	Comment
1	SCH40PVC4inchpipe36in	Sewer Main	
1	Sch40PVC4.0inchTwoWayCleanoutTeeSxSxS	Sewer Main	
1	Sch40PVC4inchCap	Sewer Main	
1	Spoerr1500galSepticW12InRisers	Septic Tank	Spoerr 1500 gal
1	PolyLockPL122FilterHousingW11ext	Septic Tank	PolyLok or equiv.
1	SCH40PVC4inchpipe14.0in	Flow Divider Assembly	
1	PolyLokFlowController30514.0x4.0x4.0inchTeeSxSxS	Flow Divider Assembly	50/50 Splitter
1	Sch40PVC4inchCap	Flow Divider Assembly	
1	Sch40PVC4.0inch45ElI	Effluent Main	
1	SCH40PVC4inchpipe6.0in	Effluent Main	
1	SCH40PVC4inchpipe8ft	Effluent Main	
2	SCH40PVC4inchpipe2ft	Effluent Main	
4	Sch40PVC4.0inchCoupler	Effluent Main	
6	SCH40PVC4inchpipe10ft	Effluent Main	
2	Sch40PVC4.0inch15ElI	Effluent Main	
1	Sch40PVC4.0inch90Sweep	Effluent Main	
2	DistributionBox6outletW6inRiser	Distribution Manifold	Spoerr 6 outlet concrete
8	PolyLokRotoFlowInsert4.0inch	Distribution Manifold	PolyLok or equiv.
2	SDsolid4inchpipe61.75inchWbell	Distribution Manifold	
2	SDsolid4inchpipe96.56inchWbell	Distribution Manifold	
4	SDsolid4inchpipe24.36inchWbell	Distribution Manifold	
4	SD4inch90Elbow	Distribution Manifold	
4	SD4inch90ElI	Distribution Manifold	
2	SDsolid4inchpipe71.28inchWbellv2	Distribution Manifold	
4	SDsolid4inchpipe8inchWbell	Distribution Manifold	
4	SD4inch90StreetElbow	Distribution Manifold	
2	SDsolid4inchpipe120inchWbell	Distribution Manifold	
2	SDsolid4inchpipe52.80inchWbell	Distribution Manifold	
4	SDsolid4inchpipe47.04inchWbell	Distribution Manifold	
8	InfiltratorQ4PlusEQ36LPEndCap	Leach Trenches	
8	DomeStraightTrench2ftWx4ftLx8inH11SectQ4PlusEQ36LP44ftTotal	Leach Trenches	88 - Infiltrator Q4PlusEQ36LP
8	SCH40PVC4inchpipe4.0in	Trench Soil Inspection Port	
8	Sch40PVC4.0inchCoupler	Trench Soil Inspection Port	
10	SCH40PVC4inchpipe1.5ft	Trench Soil Inspection Port	
8	InfiltratorQ4PlusAllInOneEndCap	Trench Soil Inspection Port	
8	Sch40PVC4inchCap	Trench Soil Inspection Port	
16	Wood Screw	Trench Soil Inspection Port	Stainless Steel Preferred
1	Pump, Crush, & Backfill Old Septic Tank	-	
1	Grass Seed	2lbs./1,000 sq.ft.K.Bluegrass	~3000 sq. ft.; 6.0 lbs.
1	Straw Mulch For Grass Establishment	Homeowner's Choice	~3000 sq. ft.
1	Grass Establishment Fertilizer	10 lbs. 20-10-10/1,000 sq. ft.	~3000 sq. ft.; 30 lbs.
1	Call OUPS before you dig.		
<p>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.</p>			

- 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.

Variance Request for:

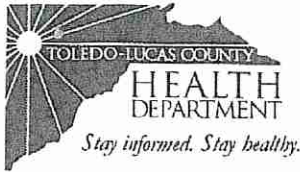
Jennifer King

2042 Rhode Island

Holland, OH 43528

Springfield Township

- **Current HSTS is failing**
- **Approved for a replacement system under the HSTS replacement program.**
- **The lot size is too small**
- **Sanitary sewer is not available.**
- **NPDES is not feasible due to elevation of outlet drain is too high.**
- **The replacement system as designed by Geophyta Inc. uses the best design possible for this lot but due to small lot size, cannot obtain the minimum length required by the hydraulic linear loading rate in accordance to OAC 3701-29-15.**
- **The absorption area is adequate.**
- **Variance from OAC 3701-29-15(N)(2) is recommended for this site.**



Sewage Treatment System Design Review Leaching Trench

Name: King

Location: 2042 Rhode Island

Soil Report:

Site Drawing (if separate from design drawing)

- Scaled/ Sufficient dimensions
- North orientation arrow
- Identification of all soil borings and/or excavations
- Existing and or proposed dwellings and/or structures
- Site disturbances such as excavated or fill areas, existing driveways, and other hardscapes and proposed hardscapes or related site disturbances if known.
- Location of all private water systems, abandoned wells, or geothermal systems if known
- Surface Water features on the lot within 50 feet of the areas identified for possible system installation
- Identification and dimensions of spatial areas for which the soil profile description is representative and where the soil has capacity for the treatment and/or dispersal of effluent. The soil evaluation shall include the entire lot or sufficient area to support a primary system and replacement area on the site.
- Identification of areas with conditions that would prohibit or impact the siting of a STS (Sinkholes, wetlands, vegetation, bedrock outcrops, areas with slope greater than 25%, existing or abandoned drainage tiles, etc.)
- Identification of known or observed easements and right of ways

Records of the site and soil characteristics

- ODH approved form
- Nomenclatures from NCS fieldbook for describing and sampling soils
- Site descriptions, including but not limited to landscape position, slope, vegetation, drainage features, rock outcrops, erosions, and other natural features.
- Detailed soil profile descriptions including but not limited to color, texture, grade, shape, structure consistence, and the depth of each soil horizon or layer including fill or mine spoils where present.
- Identification of limiting conditions such as seasonal water table, apparent water table, bedrock, etc.

STS Designs

Design information:

- Description of the dwelling and/or structure(s) to be served by the STS (# of bedrooms)
- Details on daily design flow, soil loading rates based on soil evaluation, length along contour, absorption area dimensions, and if needed, pump selection/sizing, and pressure distribution network.
- Rationale if varying from standards for items such as design flow, waste strength, or length along contour.
- Identification and description of all materials and system devices and components including septic tanks, dosing tanks, distribution piping, diversion mechanisms, and distribution material
- Identification of applicable sizing requirements for all STS devices and components
- If applicable, identification of the approved system manufacturer and model to be used, manufacturer O&M instructions, and means of access for O&M equipment to service the STS
- Construction and installation notes for the system installer including any manufacturer installation instructions if applicable.
- Copies or electronic access to O&M requirements, manuals, and instructions for the owner and service provider.
- If applicable, pump selection information including the pump curve and system performance curve;
- If applicable, pressure distribution network description and calculations

Design drawing:

- Legible scaled site drawing on 8 ½ X 11 inch or larger paper
- North orientation arrow
- Approximate location of soil borings and/or soil test pits
- Proposed location of STS devices and components including location of the soil absorption component as staked or flagged on site
- Designated area for complete relocation and replacement of the STS as staked on site
- Location of all private water systems, abandoned wells, or geothermal systems if known
- Locations of all surface features that may affect the operation or installation of the STS including but not limited to, disturbed areas, drainage features, wooded areas, and hardscapes.
- Location of all items designated in paragraph (G) of rule 3701-29-06 of OAC and demonstrates that required isolation distances are met to both the proposed STS and Replacement area (utility service line, roadway, driveway, surface water, etc)
- Plan view drawing of STS that illustrates:
 - Ground surface elevations and component elevations as necessary;
 - Location of benchmark

Design Calculations:

- What is most limiting condition? (Seasonal water table, apparent water table, bedrock)

To find this information, review the bottom of the soil report and find the limiting condition and include that information here:

Limiting condition: perch Depth (in.): 20-36

- Does the limiting condition meet the following VSD:

Limiting condition	Minimum VSD	Minimum unsaturated in-situ soil
Perched Seasonal water Table	6 - 18 inches	6 - 18 inches
	0 - 6 inches if effluent is pretreated	0 - 6 inches
Apparent Water Table	36 inches	12 inches
Bedrock	36 inches	12 inches

- Is Soil depth credit being used?

- Infiltrative surface elevation: 1 to 1 equivalency soil depth credit with approved sand.
 Pretreatment pathogen reduction: Must meet requirements in OAC 3701-29-14
 Low Pressure distribution: 6 inches
 Timed micro-dosed distribution; 12 inches

Soil Depth Credit (in.): _____

- Calculate Soil Absorption area:

Required Infiltrative surface/ Basal area:

- Determine Daily design flow based on # of bedrooms: 120 gpd per bedroom. (Minimum of 240 gpd)

Daily Design Flow: # of bedrooms: 3 x 120 gpd = 360

- Using the detailed information of the soil profile, refer to Table 3 "Soil Infiltration Loading Rates" and find the Soil Infiltration Loading Rate (gpd/ft²). Please note that must use the column based on no pretreatment or pretreatment of effluent.

Is Pretreatment being used? Yes No

Soil Infiltration Loading Rate (gpd/ft²): .8 ft²

Total infiltrative surface/ basal area:

Daily Design Flow ÷ Soil Infiltration Loading Rate = 450 ft²

- Additional leaching trenches for purpose of resting shall be no less than 25% of minimum surface/basal area.

Total infiltrative surface/ basal area X .25 = _____ ft²

$$450 - 25\% = \underline{\underline{338}} \times 1.25 = \underline{\underline{422}}$$

Additional resting area + Total infiltrative surface/ basal area = 422 ft²

Minimum required length

- Using the detailed information of the soil profile, refer to Table 4 "Hydraulic Linear Loading Rate Table" and find the Hydraulic Linear Loading Rate (gpd/ft). Please note that you must know the slope to use proper column.

Slope: 2-3 %

Hydraulic Linear Loading Rate (gpd/ft): 5 ft

Minimum required length:

$$\text{Daily Design Flow} \div \text{Hydraulic Linear Loading Rate} = \underline{72} \text{ ft} *$$

Can't meet HLLR due to site conditions, Variance granted

Number of trenches

- How many trenches needed for total infiltrative/basal area at the minimum length required:

Total infiltrative surface/ basal area (including resting area) \div Minimum required length = _____ trenches

8 trenches at 4 ft

Sizing Reduction of absorption area (Chambers): 25% reduction in required soil absorption

25% Reduction = Total infiltrative surface/ basal area x .25 _____ ft

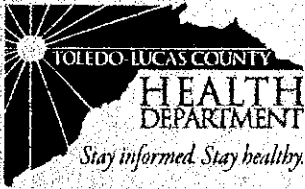
Subtract reduction _____ from total infiltrative surface/basal area = Total infiltrative surface/ basal area required for trenches using chambers _____ ft²

Design Specifications:

- Trenches shall be parallel to the contours and avoid natural drainage and depressions.
- Plans shall address surface water diversions as needed. Interceptor drains may be upslope of soil absorption area.
- Special safety considerations and installation criteria as needed are required for installing trenches on a slope greater than 15%.
- Trench length > 150 ft. shall require a manifold in center.
- Trench width maximum of 2 ft.
- Trenches depth is determined by limiting condition and must have a minimum depth of 2 inches into the in-situ soil across the entire bottom width of trench.
- Trench bottom shall be level as practicable along its length.
- Space between trench walls shall be no less than 4 feet for gravity distributed trenches.
- Plans shall address surface water diversions as needed. Interceptor drains may be upslope of soil absorption area.
- Trench distribution media shall have either coarse aggregate having minimum thickness of 8 inches with 2 inches above and below distribution pipe or approved chamber or bundled polystyrene having a minimum 8 inch height.
- Geotextile fabric, straw covering, or other barrier.
- Soil cover shall have a depth of at least 6 inches after settling.
- Observation ports shall be provided.

Registered Sanitarian 7 AS

Date: 7/18/16



Main Office
635 North Erie Street
Toledo, Ohio 43604-5317
419.213.4100
419.213.4017 Fax
boardofhealth@co.lucas.oh.us

Western Clinic Site
330 Oak Terrace Boulevard
Holland, Ohio 43528-8993
419.213.6255
419.213.6266 Fax

Eric Zgodzinski, MPH, RS, CPH
Health Commissioner

LUCAS COUNTY
REGIONAL HEALTH DISTRICT
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accordance with Title VI of the
Civil Rights Act of 1964

Visit us on the web at:
www.lucascountyhealth.com

July 18, 2016

Jennifer King
2042 Rhode Island
Holland OH 43528

Re: Household Sewage Treatment System for 2042 Rhode Island;
(Springfield Twp.)

This letter is to inform you that the Household Sewage Treatment System (HSTS) site design and visit has been completed and approved. At this time, the HSTS design as submitted and reviewed demonstrates that the minimum provisions of Ohio Administrative Code 3701-29 have been met. Please be advised that if any changes are made with the approved plans including changing the size or location of the proposed dwelling, any site conditions, or changes to the HSTS design, you must contact our department prior to any construction.

[Note 1: The approved site review is valid for 5 years from the date of this approval].

[Note 2: The septic system and septic system replacement areas must be marked off to prevent disturbance. These areas should not be driven over, have fill placed on them or otherwise disturbed].

Prior to the expiration date of this approval and prior to any construction of the HSTS, you must make application and submit applicable fees for the HSTS installation and Operation & Maintenance permit (As a participant in the Sewage System Replacement Grant, the permit fees have been waived. Please, fill out and return the permit application but send no money).

Please do not hesitate to contact our department with any questions or concerns.

Sincerely,

Nathan Fries
Registered Sanitarian
(419)-213-4165



July 27, 2016

Main Office
635 North Erie Street
Toledo, Ohio 43604-5317
419.213.4100
419.213.4017 Fax
boardofhealth@co.lucas.oh.us

Western Clinic Site
330 Oak Terrace Boulevard
Holland, Ohio 43528-8993
419.213.6255
419.213.6266 Fax

Jennifer King
2042 Rhode Island
Holland, Ohio 43528

Re: Variance request for 2042 Rhode Island, Holland, Ohio.

Dear Ms. King,

This letter is to inform you that a variance from the Ohio Administrative Code, specifically chapter 3701-29-15(N)(2) has been approved by the board of health at the regularly scheduled board meeting on June 23, 2016.

The variance is approved due to your narrow lot size at the above mentioned address and no other way to install a household sewage treatment system without such variance.

If you have any questions, please contact our department at 419-213-4100.

Eric J. Zgodzinski, MPH, RS, CPH
Health Commissioner

**LUCAS COUNTY
REGIONAL HEALTH DISTRICT
BOARD MEMBERS**

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Sincerely,

Jerry Bingham, R.S.
Supervisor

Permit #

ADMINISTRATIVE SUMMARY

Health Department Use Only

I. **Soil Evaluation** *2042 Rhode Island Springfield Twp*

Date of Evaluation <i>5/2/16</i>	Soil Evaluator <i>N. Wright</i>
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II. **Design** Worksheet Attached Yes No

Designed by <i>N. Wright</i>	Reviewed by <i>N. Fries</i>	Date Reviewed <i>7/18/16</i>
Comments:		

III. **On-site Evaluation**

Date of Evaluation <i>5/2/16</i>	Performed by <i>N. Fries</i>
Comments:	

IV. **Site Review Application**

<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	Date of Approval/Disapproval <i>7/18/16</i>	Date Site Review Approval Expires <i>7/18/21</i>
Comments (if disapproved) <i>Variance required for HLLR</i>		

V. **Inspection(s)**

1	<input type="checkbox"/> Rough <input type="checkbox"/> Final	Date of Inspection	Performed by	Worksheet Attached <input type="checkbox"/> Yes <input type="checkbox"/> No
2	<input type="checkbox"/> Rough <input type="checkbox"/> Final	Date of Inspection	Performed by	Worksheet Attached <input type="checkbox"/> Yes <input type="checkbox"/> No
Comments				

VI. **Variance(s)** *Attach the variance request and the Board of Health decision letter. All variances must comply with the requirements in rule 3701-29-22 of the Administrative Code.*

1	<input type="checkbox"/> Pre-installation <input type="checkbox"/> Post installation	OAC Rule(s):	BOH Review Date	Decision <input type="checkbox"/> Approved <input type="checkbox"/> Denied
2	<input type="checkbox"/> Pre-installation <input type="checkbox"/> Post installation	OAC Rule(s):	BOH Review Date	Decision <input type="checkbox"/> Approved <input type="checkbox"/> Denied
Comments				

VII. **Approval/Disapproval of Installation, Replacement, Alteration, or Abandonment**

<input type="checkbox"/> Approved	Date of Approval	Sanitarian Signature
<input type="checkbox"/> Disapproved	Date of Disapproval	Sanitarian Signature
Reason for Disapproval		
Enforcement action taken		

VIII. **12 Month Inspection**

Date of assessment	Performed by	<input type="checkbox"/> Operating properly <input type="checkbox"/> Not operating properly <input type="checkbox"/> Creating a Public Health Nuisance
List the conditions and actions taken for systems not operating properly or creating a public health nuisance.		