Naugle Replacement Septic System Site Plan

3550 N. Co. Rd. 11, Liberty Twp., Seneca Co., Tiffin, Ohio 44883

Septic Tank to Demand-Dosed| Mounded Infiltrator ATL

Septic Design by:

Accurate Onsite SEPTIC PLANNERS

161 Badger Circle, Wooster, OH 44691

1371 Twp. Rd. 956, Ashland, OH 44805

Bill 330-465-0964*Andy 419-651-1490

septicdesignohio.com

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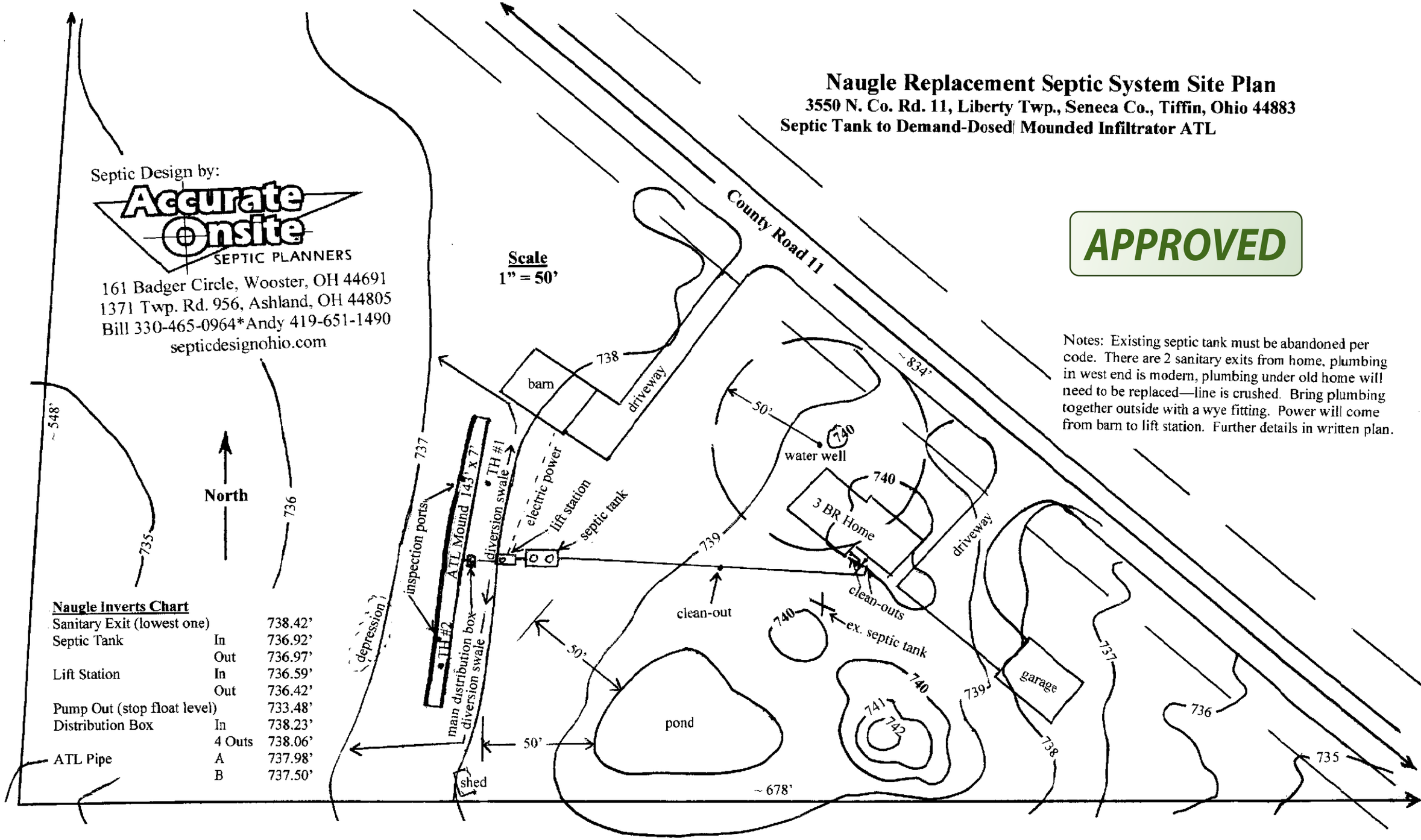
Scale
1" = 50'

Notes: Existing septic tank must be abandoned per code. There are 2 sanitary exits from home, plumbing in west end is modern, plumbing under old home will need to be replaced—line is crushed. Bring plumbing together outside with a wye fitting. Power will come from barn to lift station. Further details in written plan.



Naugle Inverts Chart

Sanitary Exit (lowest one)		738.42'
Septic Tank	In	736.92'
	Out	736.97'
Lift Station	In	736.59'
	Out	736.42'
Pump Out (stop float level)		733.48'
Distribution Box	In	738.23'
	4 Outs	738.06'
ATL Pipe	A	737.98'
	B	737.50'

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Naugle Site Visit

3550 N. Co. Rd. 11, Tiffin, Ohio

Considerations for a Replacement System

Terrain:	Lightly sloped mowed yard, driveways, barn, garage, several trees, pond.
Owner's concerns :	Needs a simple replacement system for a 3 BR home.
Primary Area:	Existing septic tank is behind home, unknown beyond.
Replacement area:	On contour, west of the home & south of barn.
Location concerns:	Must stay at least 10 feet from property lines, road right-of-way and hardscapes, and 50 feet from the water supply with all components.
Drainage concerns:	Diversion swales will be required above Advanced Treatment Leach Field (ATL) to route run-off around the area.
Observation:	Existing septic tank is to rear (south) of home, must be abandoned per code.
Other:	Soils were done on this tract by Steve Ross, CPSSc. System options were discussed with daughter Gena Naugle on soil evaluation day and sons on layout day—we had to call back to explain how our initially proposed system would not work due to the 2 of us who were there on soil evaluation day missing a restrictive layer called out by the soil scientist. We explained that now the most cost-effective—especially over time, was Infiltrator ATL. We did inform her of other options, but in his situation they were overkill—worst case soils used for design parameters. We measured to see if gravity flow was possible—it wasn't. The sanitary line out of newer addition is shallow, but the plumbing out of older section of home is over 18" depth, crushed and will need replaced through the wall and into crawl-space.

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Naugle Replacement System Profile

3550 N. Co. Rd. 11, Tiffin, Ohio

3 bedroom system

The sanitary line exits the home on the south side. The effluent will gravity flow to the septic tank. The septic tank will gravity flow to a 500 gallon lift station. The lift station will pump to a distribution box. The effluent will then gravity flow out to (2) ATL lines of pipe 140 feet long that are center loaded. The field will consist of 2 lines spaced a foot apart on 6" ASTM 33 concrete filter sand placed in a 143' x 7' box dug in 6 inches deep.

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Design Worksheets: Infiltrator ATL (Advanced Treatment Leach Field)

Step 1: Determine the minimum total Infiltrator ATL conduit length

The minimum length of Infiltrator ATL conduit per bedroom is 70 feet. Determine the minimum total length of Infiltrator ATL conduit from Table 1, based on the number of bedrooms.

Number of Bedrooms	Design Flow (gpd)	Minimum Total Infiltrator ATL Length (ft)
2	240	140
3	360	210
4	480	280
5	600	350
Each Additional	120	70

Table 1: Minimum required Infiltrator ATL conduit length

Step 2: Determine the appropriate hydraulic linear loading rate

After performing a site and soil evaluation, use Table 2 to determine the appropriate hydraulic linear loading rate.

Soil Characteristics			Hydraulic Linear Loading Rate (gpd/ft)								
			Slope 0-6%			Slope 6-8%			Slope >=8%		
Texture	Structure		Infiltrative Distance (inches)			Infiltrative Distance (inches)			Infiltrative Distance (inches)		
	Shape	Grade	9-12	13-24	24-48	9-12	13-24	24-48	9-12	13-24	24-48
COS, S, LCOS, LS	--	OSG	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0
FS, VFS, LFS, LVFS	--	OSG	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0
CSL, SL	--	OM	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0
	PL	1	3.0	3.5	4.0	3.6	4.1	4.6	4.0	5.0	6.0
		2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0
		2, 3	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0
PSL, VFSL	--	OM	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7
	PL	1, 2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6
		2, 3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9
L	--	OM	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7
	PL	1, 2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6
		2, 3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9
SIL	--	OM	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4
	PL	1, 2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0
		2, 3	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3
SCL, CL, SICL	--	OM	-	-	-	-	-	-	-	-	-
	PL	1, 2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4
		2, 3	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0
SC, C, SIC	--	OM	-	-	-	-	-	-	-	-	-
	PL	1, 2, 3	-	-	-	-	-	-	-	-	-
	PR/BK/ GR	1	-	-	-	-	-	-	-	-	-
		2, 3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4

Table 2: Hydraulic linear loading rates[1]

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Page 2: Design Worksheets: Infiltrator ATL (Advanced Treatment Leach Field)

Step 3: Determine the minimum bed length

Determine the minimum required bed length using the hydraulic linear loading rate (determined in Step 2) and Table 3.

Hydraulic Linear Loading Rate (gpd/lf)	Minimum Bed Length (lf)			
	3 Bedrooms	4 Bedrooms	5 Bedrooms	Each Add'l Bedroom
8.0	45	60	75	15
7.0	51	69	86	17
6.0	60	80	100	20
5.5	65	87	109	22
5.0	72	96	120	24
4.9	73	98	122	24
4.8	78	104	130	26
4.5	80	107	133	27
4.4	82	109	136	27
4.3	84	112	140	28
4.1	88	117	146	29
4.0	90	120	150	30
3.9	92	123	154	31
3.8	95	126	158	32
3.7	97	130	162	32
3.6	100	133	167	33
3.5	103	137	171	34
3.4	106	141	176	35
3.3	109	145	182	36
3.2	113	150	188	38
3.0	120	160	200	40
2.9	124	166	207	41
2.7	133	178	222	44
2.6	138	185	231	46
2.5	144	192	240	48
2.4	150	200	250	50
2.3	157	209	261	52
2.2	164	218	273	55
2.0	180	240	300	60

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will adjust w/ replacement length credit

Step 4: Design the system sand configuration

Use Table 4 to determine the minimum system sand footprint using the minimum total length of Infiltrator ATL conduit as determined from Table 1 and the number of rows into which the total length of conduit will be divided. The system should be designed as long and narrow as site conditions allow; therefore, the number of rows of Infiltrator ATL conduit should be minimized, while ensuring the minimum bed length requirement is met (as calculated in Step 3).

Minimum Length of ATL Conduit (lf)	Minimum System Sand Dimensions and Area							
	1 Conduit Row		2 Conduit Rows		3 Conduit Rows		4 Conduit Rows	
	Dimensions (W x L)	Area (sf)	Dimensions (W x L)	Area (sf)	Dimensions (W x L)	Area (sf)	Dimensions (W x L)	Area (sf)
140	3' x 142'	426	5' x 72'	360	7' x 49'	343	9' x 37'	333
210	3' x 212'	636	5' x 107'	535	7' x 72'	504	9' x 55'	495
280	3' x 282'	846	5' x 142'	710	7' x 96'	672	9' x 72'	648
350	3' x 352'	1,056	5' x 177'	885	7' x 119'	833	9' x 88'	792

Table 4: Minimum system sand dimensions and area

NOTES:

1. *The Infiltrator ATL System conduit rows must be extended to within one foot of each end of the bed. ATL conduits may be cut to meet these minimum requirements or extended to the nearest ten-foot length for ease of installation.*
2. *Minimum width of the system sand footprint, as determined in Step 4, shall not be decreased when making adjustments as detailed in Step 7 (below), even if the minimum width combined with linear loading requirements results in total square footage of sand area greater than the calculated minimum.*

Page 3: Design Worksheets: Infiltrator ATL (Advanced Treatment Leach Field)

Step 5: Determine the appropriate soil infiltration loading rate

Using the soil characteristics determined through the site and soil evaluation, use Table 5 to determine the appropriate soil infiltration loading rate.

Soil Characteristics			Soil Infiltration Loading Rate (gpd/ft²)
Texture	Structure		
	Shape	Grade	
COS, S, LCOS, LS	–	OSG	1.6
FS, VFS, LFS, LVFS	–	OSG	1.0
CSL, SL	–	OM	0.6
	PL	1	0.5
		2, 3	-
	PR/BK/GR	1	0.7
		2, 3	1.0
FSL, VFSL	–	OM	0.5
	PL	1, 2, 3	-
	PR/BK/GR	1	0.6
		2, 3	0.8
L	–	OM	0.5
	PL	1, 2, 3	-
	PR/BK/GR	1	0.6
		2, 3	0.8
SIL	–	OM	0.2
	PL	1, 2, 3	-
	PR/BK/GR	1	0.6
		2, 3	0.8
SCL, CL, SICL	–	OM	-
	PL	1, 2, 3	-
	PR/BK/GR	1	0.3
		2, 3	0.6
SC, C, SIC	–	OM	-
	PL	1, 2, 3	-
	PR/BK/GR	1	-
		2, 3	0.3

Table 5: Soil infiltration loading rates[7]

Step 6: Determine the minimum basal area

Determine the minimum required basal area using the soil infiltration loading rate (determined in Step 5) and Table 6.

Soil Loading Rate (gpd/sf)	Minimum Basal Area (sf)			
	3 Bedrooms	4 Bedrooms	5 Bedrooms	Each Add'l Bedroom
1.6	225	300	375	75
1.0	360	480	600	120
0.8	450	600	750	150
0.7	514	686	857	171
0.6	600	800	1,000	200
0.5	720	960	1,200	240
0.3	1,200	1,600	2,000	400
0.2	1,800	2,400	3,000	600

Table 6: Minimum basal area

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Page 4: Design Worksheets: Infiltrator ATL (Advanced Treatment Leach Field)

Step 7: Make area and length adjustments, as necessary

The minimum areas determined in Steps 4 and 6 cannot be reduced. These areas must be maintained to ensure adequate area for placement of the Infiltrator ATL System conduits and infiltration of treated effluent into the native soil.

Area adjustments are necessary as follows:

- If the minimum basal area determined in Step 6 is smaller than the area of the system sand footprint determined in Step 4, no adjustments are necessary.
- If the minimum basal area determined in Step 6 is larger than the area of the system sand footprint determined in Step 4, the system sand footprint must be increased.

In most instances, the width of the system sand component is extended to increase the system sand footprint. When making adjustments to the width of the system sand footprint:

- In level system applications, additional width shall be evenly divided on each side of the Infiltrator ATL System; or
- In sloped system applications, additional width shall be entirely placed on the downslope side of the Infiltrator ATL System. The minimum sand extension for sites with slopes greater than 5% is 3 feet.

Minimum width of the system sand footprint as determined in Step 4 shall not be decreased when making adjustments as detailed in this step, even if the minimum width combined with linear loading requirements results in total square footage of sand area greater than the calculated minimum.

Make adjustments to the bed length to meet the minimum required bed length as calculated in Step 3.

Design Summary: Infiltrator ATL (Advanced Treatment Leach Field)

1. Minimum amount of ATL Pipe = 210 ft. , Design actual amount is 280 ft.
2. HLLR is 2.4 gal./day per ft. on contour
3. Minimum length on contour is 150 ft.
   Is this a replacement? (YES) NO
   If yes, is design utilizing any replacement lengths credits? (YES) NO
   If yes, reduction 4.67 % (up to 20% is permitted when required to fit available space)
   HLLR length 150 ft. – reduction 7 ft. = 143 ft.
4. Minimum length and width of system sand 143 ft. (on contour) x 5 ft. = 715 sq. ft.
   (Must be 1 ft. of system sand to up & down-slope and off each end of ATL pipe and if slope is 5% or greater there must be a minimum of 3 ft. of system sand extension on down-slope side.
5. SILR is 0.6 gal./day per sq. ft. of system sand area
6. Minimum area of system sand = 600 sq. ft.
7. Is sq. ft. amount in step #6 < or = to amount in step #4? No adjustments necessary, if it is > than amount in step #4, then adjustments are necessary and adjust as described above in Step #7
   Actual length and width on contour will be 143 ft. x 7 ft. = 1,001 sq. ft.
   And system sand will start AT (BELOW) grade by 6 inches

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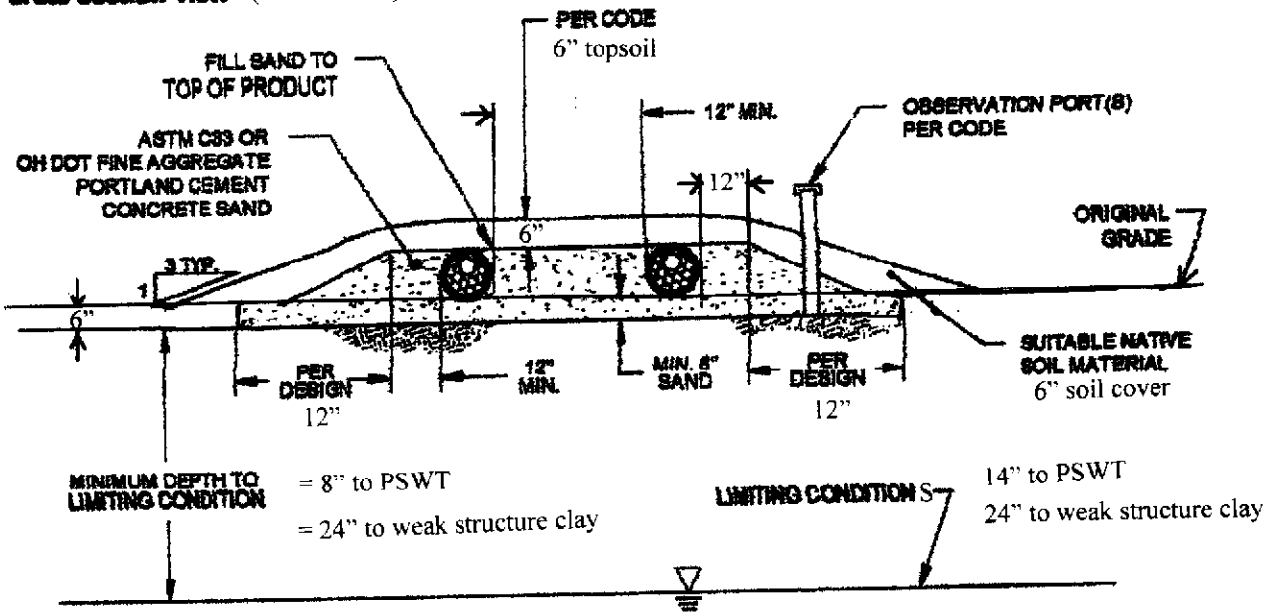
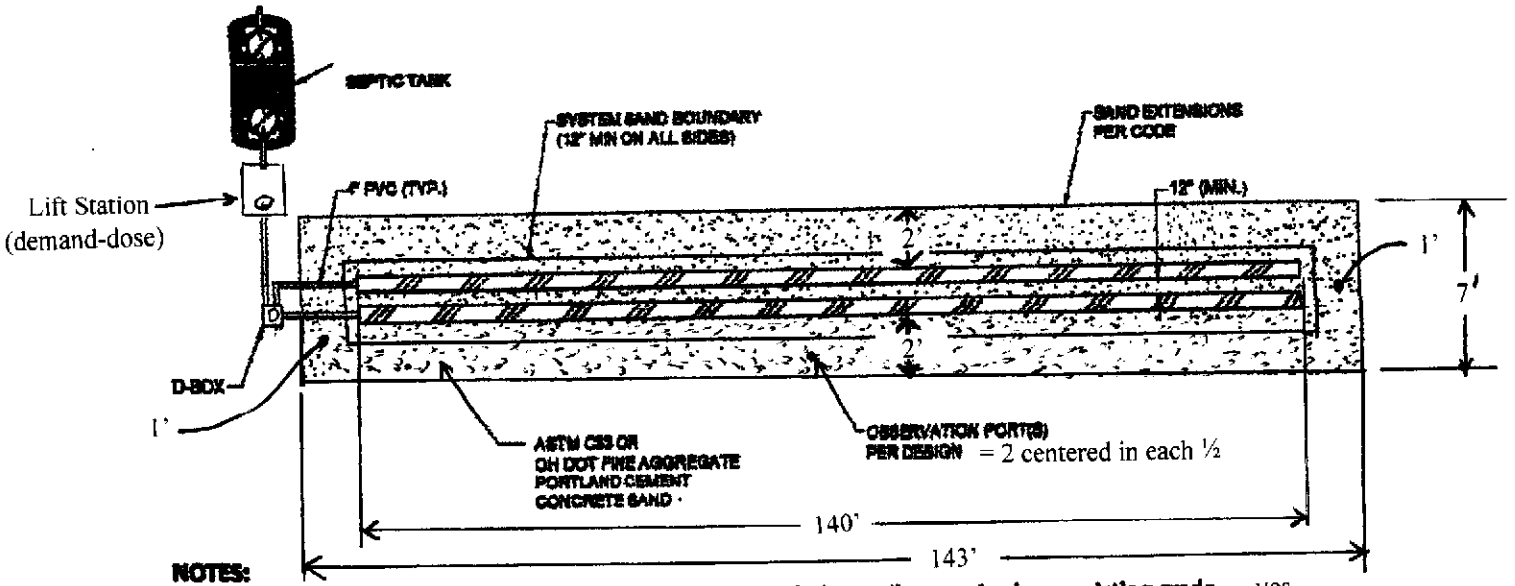
Level Elevated Systems (Level is 4% or less slope)

Cross-Section View (Not to Scale)



Plan View (Not to Scale) System will be center-loaded, not end-loaded as shown



NOTES:

1. **An ATL System is elevated if any part of the system, including soil cover, is above existing grade.** - yes
2. **Number and length of conduits per design.** (2) each 140 ft.
3. **Venting is not required but is optional at the discretion of the designer.** - not req.
4. **Pumping is not required unless gravity flow cannot be achieved.** demand dose pumped
5. **If the infiltrative surface of the Infiltrator ATL System bed must be elevated to achieve minimum vertical separation requirements, the area between the original grade and the Infiltrator ATL system sand shall be comprised of additional system sand.** -not req.
6. **Observation ports are required.** = 2 for design
7. **The ATL System is intended for use in non-traffic applications.** yes

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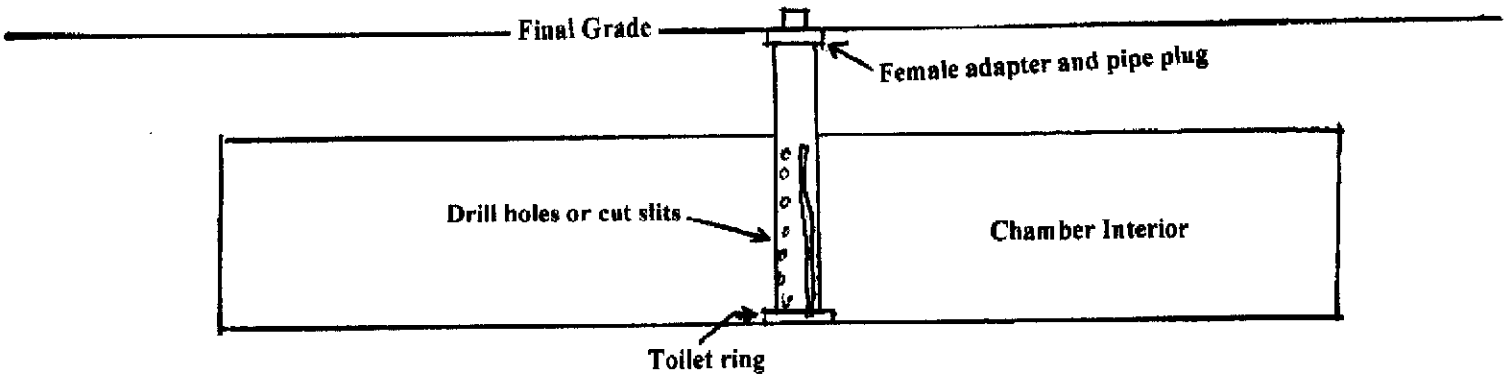
-Naugle-

Chamber Line Inspection Port

(Can also be used in sand-based mounds—Ohio, ATL, Presby, Eljen w/ geotextile fabric wrap)



Each chamber line is required to have an inspection port, code requires a 2" opening to view water levels in the trenches. We recommend a 4" port made of schedule 40 pipe. Knowing that contractors will have cut-offs from the job available and that often inspection ports suffer abuse we recommend something more substantial than the minimum be built. Our recommendation is to glue a PVC toilet flange to the bottom of the port and anchor it to the ground at the bottom of the trench w/ plastic stakes, re-bar, etc., drill holes or cut slits in the side so that any water level in the trench will be at an equivalent level in the port—then at grade install a female adapter and a pipe plug—below the level that it will be damaged by a mower, the most common cause of damage. Ports should be near the distal end of each trench, center-fed trenches will need ports at both ends. There are many different ways & materials that could be used to meet code, this is simply our recommendation. When this type of port is used in a sand-based mound we recommend that a geotextile fabric wrap be put around the pipe and it be zip-tied there, to prevent the port from being filled up with sand and render it worthless.

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Specifics of Naugle Infiltrator ATL System

3550 N. Co. Rd. 11., Tiffin, Ohio 44883

Existing Site: South of home, U/K beyond septic tank--existing septic tank must be abandoned per code.
Replacement Site: West of the home, down-slope, lawn area

ALL SPECIFIED COMPONENTS ARE TO BE USED OR REPLACED WITH EQUIVALENTS.

Specs for 3 Bedroom Home
Supplied drawings included/attached indicate required components
1500 Gallon NCI Septic Tank
500 Gallon NCI Dosing Tank (package Champion pump, float, controls)
Champion CPS3 1/3rd HP float controlled effluent pump
28 sections / 280 feet of Infiltrator ATL pipe

Soil Data at Primary Location
Limiting Layer at 14" (perched seasonal water table), 24" (weaky structured clay)
Infiltrator ATL Site Slope is 2 percent
Linear Loading Rate 2.4 gallons a day per foot (taken from Ohio Table)
Infiltration Rate 0.4 / 0.6 gallons per day per square foot (taken from Ohio Table)

Infiltrative Surface
Minimum of 600 sq. ft., design actual is 1001 sq. ft.

Final Grade for Freeze Protection
The sanitary line where it exits the home will need at least 12 inches of soil covering.
The septic & dosing tanks must have at least 12 inches of soil covering.

Pipe Sizes (all schedule 40)
4 inch PVC from home to septic tank & from septic tank to lift station and 1.5" from pump in lift station to distribution box and back to 4" from d-box to the 2 ATL pipe runs

Pipe Lengths	**Distance**	**Drop/+Rise**
From Home to septic tank	160 feet	19.2" (min.)
From septic tank to lift station	5 feet	1" (min.)
From pump in lift station to D-Box	15 feet	+6.5 feet
From distribution box to ATL Line A	2 feet	1" (min.)
Line B	4 feet	1.5"

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Pump, Lift Tank, Dosing and Settings (500 Gallon Tank)
Champion CPS3 1/3rd HP Effluent Pump with a Demand Dose Control Panel & Floats
THE ALARM AND THE PUMP MUST BE WIRED ON TWO SEPARATE CIRCUITS. A 1.5" inch gate valve will need to be installed between the pump and the tank exit. It must be placed within easy access through the riser cover. Pump will meet system flow rate of 20 gallons per minute. The system will dose up to 4 times in a 24 hour period. The pump will dose 90 gallons per cycle to meet the 360 gallon daily design flow. The pump will be required to pump 91.38 gallons per cycle—the 1.38 gallons in the pressure line will drain back after each dose to prevent any freezing damage. **This will require the pump to run for about 4 minutes and 34 seconds on demand**. Septic tank will need to be buried to a depth of 2 feet of cover to allow for gravity flow and adequate cover. The lift station will need to be buried to a depth just over 2 feet to allow for gravity flow from the septic tank . One inch of tank volume is approximately 11.80 gallons. **On/Off Float** to be set to **ON at 19.75 inches above bottom of the tank and OFF at 12" above bottom of tank**. This is to keep the pump cool and always submerged as a dose will draw down about 7.75". **Alarm Float** to be **set at 21 inches above bottom of the tank.** **Reserve Capacity** will be approximately 307 gallons above system high water alarm.

ATL Installation Details
The "ATL Leach Bed" area shown on site plan map is to be dug to 6" depth—the bottom of this box will be parallel to existing grade. 6" of system sand is to be spread in entire bottom of box—it must be ASTM 33 or Ohio DOT fine aggregate Portland cement concrete sand—then 2 lines (A & B) 140' long of ATL pipe are to be placed on top of the sand—first line will have 2 ft. between up-slope side of box and 1st run, then the 2nd run (B) will have a 1 ft. between it and line A. Then leave another 2 ft. between bottom edge of line B and down-slope wall of box. The ends of the lines will be 1 ft. from sides of box and there will be a foot in middle of runs to provide area to hook up pipe in a center-loaded configuration. Then the distribution box and plumbing to lines A & B is hooked up. There will be minimum 2" of fall inside the d-box between the inlet line from the septic tank to the 4 outlet lines—they should have speed levelers and be adjusted to supply an equal amount of effluent to all 4 both lines. Then the same system sand is added to the point that the ATL lines are just barely covered—on the up, down and end-slopes leading away from the pipe the slope will be no more than 3:1 run:rise back to existing grade. After the sand cover is perfected a layer of topsoil a minimum of 6" thick is applied, it is then sown to grass and strawed to help prevent erosion while grass cover is established.

***A DIVERSION / INTERCEPTOR SWALE NEEDS TO BE INSTALLED UP-SLOPE OF THE TRENCHES** TO DIVERT RUNOFF AROUND THE TRENCH FIELD AREA. DRAIN NEEDS TO RUN FROM CENTER OUT AND AROUND ENDS THEN WEST TO OUTLET—SEE DRAWING. SWALES SHOULD BE MINIMUM 8 FEET UPSLOPE OF TRENCHES AND IT MUST BE SOWN TO GRASS TO CONTROL EROSION.

INSTALLER TO PREPARE AND FILE AN "AS BUILT DRAWING" WITH RICHLAND COUNTY HEALTH DEPARTMENT

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Naugle Pump Calculations

3550 N. Co. Rd. 11, Tiffin, Ohio

Flow Rate: set/ calculated at (flow restricted) 20 gallons per minute

Static Lift: 6.5 feet
1.5 inch pressure line length is 15 feet

Fittings	**Qty**		**Length Add**
Gate Vale	1		1.0
90 degree elbow	3		12.0
Couplings	1		1.5
		Total	**14.5**

Pipe 1.5 inch TDH per 100 ft. @ 20 gpm = 2.61 TDH

15' (length) + 14.5' (fittings) = **29.5 feet**

29.5 / 100 x 2.61 = **0.77 loss**

0.77 + 6.5 = **7.27 TDH**

Pump selected is capable of pumping more gallons per minute and overcoming more head. Gate Valve will be used to restrict flow to allow for adjustments as pump degrades. Total pumped volume is controlled by the float(s) – control of time and flow rate by the gate valve.

Total Void Volume is **1.38 gallons** (15 ft. x 0.092 gallons per foot)
Dose is **90 gallons**
Total pumped per dose is **91.38 gallons**
Run Time is approximately 4 minutes and 34 seconds
1 inch of tank volume equals 11.80 gallons
Dose Draw Down **7.75 inches** (this exceeds the minimum recommended by suppliers and manufacturers—trying to tighten down a wide angle float to significantly less than 6" differential shortens its lifespan.)

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Champion Pump CPS3 - Nauple -

1/3HP
SUMP/EFFLUENT

Every pump tested in water to ensure pump meets peformance curve.

SSPMA CERTIFIED

FEATURES/BENEFITS

PERFORMANCE
Heads up to 20' TDH
Flows up to 42 GPM

MOTOR
High efficient, 115v, oil filled, permanent split capacitor motor with upper and lower ball bearings and thermal overload protection
- Constant bearing lubrication
- Maximum motor cooling
- Runs cooler and lasts longer
- Internal overload protection
- Quiet operation
- Fasteners and shaft made from rugged, corrosion resistant stainless steel

SEAL DESIGN
Mechanical with secondary dynamic lip seal
- Provides added leakage protection

IMPELLER DESIGN
Non-clog style vortex impeller
- Designed to help reduce clogging by foreign material

POWER CORD
Sealed entry quick disconnect power cords
- Prevents water from entering the motor housing through a cut cord
- Available in lengths up to 100'

SWITCH
Piggy-back switch design
- Defective switches can be diagnosed over the phone
- Pump can be operated manually or supplied with other piggy-back switches
- Switch can be replaced without having to replace the pump

APPLICATIONS

Basements, dewatering, and septic systems

Wide-Angle Float | Vertical Float

1/3 HP submersible pumps, built for reliability, handle up to 1/4" solids with 1 1/2" discharge

PERFORMANCE CURVE

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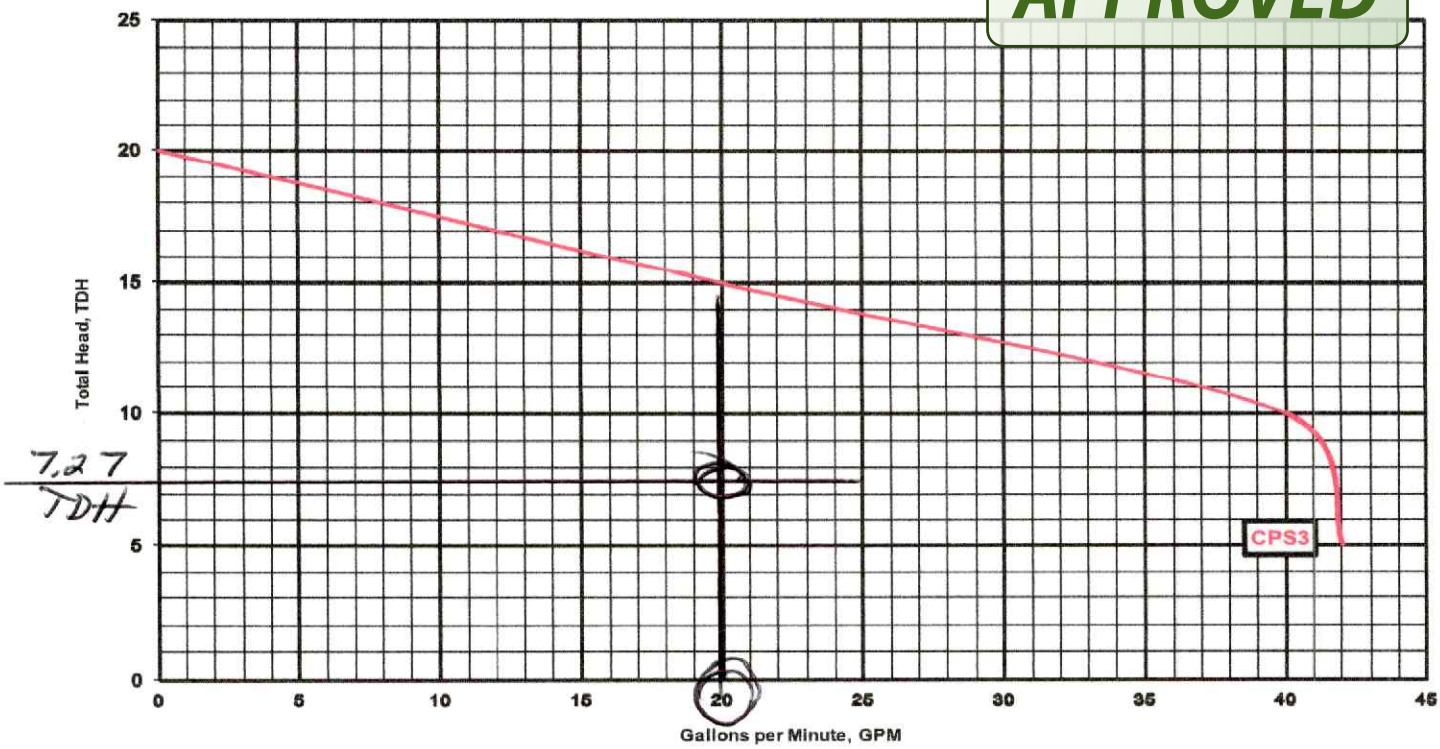
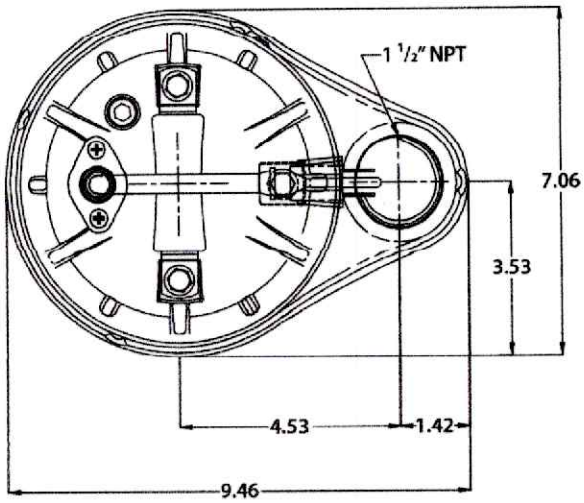


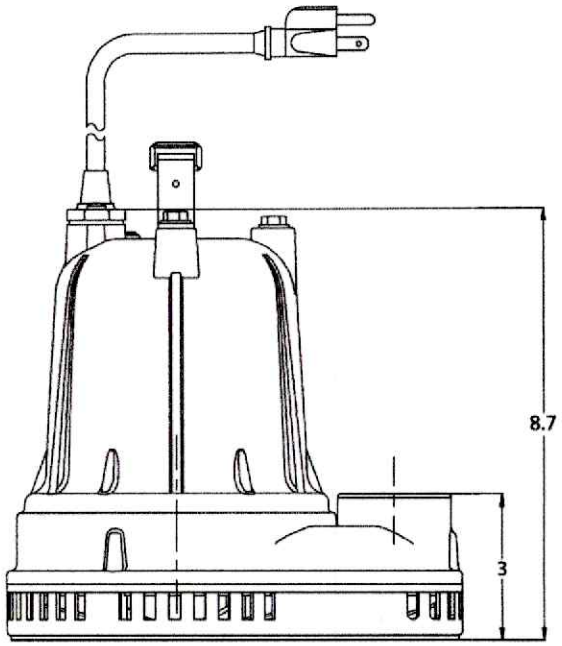
Champion Pump Company, Inc • P.O. Box 528 • Ashland, OH 44805
Phone 419-281-4500 • Fax 419-616-1100 • www.championpump.com

REV 0817

TECHNICAL DATA

DISCHARGE	1-1/2" NPT. vertical standard
SOLIDS HANDLING	1/4"
LIQUID TEMPERATURE	140 Degrees F. (Intermittent)
MOTOR HOUSING	Cast Iron
VOLUTE	Cast Iron
SEAL PLATE	Cast Iron
IMPELLER	Engineered glass filled thermoplastic/ Vortex
SHAFT	Nickel plated steel
SHAFT SEAL (SINGLE SEAL)	Mechanical with secondary dynamic lip seal, carbon rotating face, ceramic stationary face, Buna-N elastomer, 300 series stainless steel hardware
BEARINGS (UPPER & LOWER)	Single row, ball, oil lubricated
HARDWARE	300 Series stainless steel
O-RINGS	Buna-N
CORD	10' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
MOTOR (SINGLE PHASE)	1/3 HP 1750 RPM, 60 Hz, NEMA L Includes overload protection in the motor, oil filled, class B permanent split capacitor
WEIGHT	25 lbs. (Manual)





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MODEL(S) INFORMATION

MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPS3-11	1/3	115	1	4	10'	Manual
CPS3-12	1/3	115	1	4	20'	Manual
CPS3-13	1/3	115	1	4	30'	Manual
CPS3-15	1/3	115	1	4	50'	Manual
CPS3A-11	1/3	115	1	4	10'	Wide-Angle Float
CPS3A-12	1/3	115	1	4	20'	Wide-Angle Float
CPS3A-13	1/3	115	1	4	30'	Wide-Angle Float
CPS3V-11	1/3	115	1	4	10'	Vertical Float
CPS3V-12	1/3	115	1	4	20'	Vertical Float
CPS3V-13	1/3	115	1	4	30'	Vertical Float

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Friction Loss Flow Charts

Feet Of Head Pressure Loss Per 100 Ft. of Plastic Pipe

GPM	Pipe Diameter							
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
1	2.08	0.51						
2	4.16	1.02	0.55	0.14	0.07			
5	23.44	5.73	1.72	0.44	0.22	0.066	0.038	0.015
7	43.06	10.52	3.17	0.81	0.38	0.11	0.051	0.021
10	82.02	20.04	6.02	1.55	0.72	0.21	0.09	0.03
15		42.46	12.77	3.28	1.53	0.45	0.19	0.07
20		72.34	21.75	5.59	2.61	0.76	0.32	0.11
25			32.88	8.45	3.95	1.15	0.49	0.17
30			46.08	11.85	5.53	1.62	0.68	0.23
35				15.76	7.36	2.15	0.91	0.31
40				20.18	9.43	2.75	1.16	0.40
45				25.10	11.73	3.43	1.44	0.50
50				30.51	14.25	4.16	1.75	0.60

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Friction Loss In PVC Fittings = EQUIVALENT FEET OF STRAIGHT PIPE

PVC Type	Pipe Size							
	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
90° elbow	1.5	2.0	2.25	4.0	4.0	6.0	8.0	8.0
45° elbow	0.75	1.0	1.4	1.75	2.0	2.5	3.0	4.0
insert coupling	0.5	0.75	1.0	1.25	1.5	2.0	3.0	3.0
gate valve	0.3	0.4	0.6	0.8	1.0	1.5	1.6	2.0
male/female adapter	1.0	1.5	2.0	2.75	3.5	4.5	5.5	6.5
tee-flow (run)	1.0	1.4	1.7	2.3	2.7	4.3	5.1	6.3
tee-flow (branch)	4.0	5.0	6.0	7.0	8.0	12.0	15.0	16.0

Accurate Onsite
SEPTIC PLANNERS

Septic Installation and Maintenance Concerns
Naugle, 3550 N. Co. Rd. 11, Tiffin, Ohio

This system works by gravity flow to the septic tank and on to dosing chamber. Special care is needed to make sure all lines are pitched to run from the home's sanitary exit to the Septic Tank and on to the Dosing Chamber. The pressure line from the dosing chamber to distribution box will drain back to the dosing chamber between doses—this is so effluent in the line won't freeze.

Distribution area is not to be driven on or compacted in any way.

Distribution area trench is to be dug to a depth of **6 inches** in its' entirety.

ATL Lines must be a foot apart (actual distance--not centerline to centerline--Minimum 2 feet center to center)

On the area over the ATL lines, care must be taken to stop erosion. The area is to be sown to grass. Straw and/or other measures to prevent erosion should be taken until grass cover is established.

There is not a lot of watershed above the ATL lines—the home is on the high spot of the property which the drains north to road ditch and runs-off to east, west and south, so diversion swales beginning at the middle of ATL field and going both directions to divert run-off around the system will be adequate to move run-off to the ends and around and beyond to down-slope of the ATL field.

On an annual basis the filter in the exit pipe of the septic tank is to be cleaned, on a sequential basis the resting trench line is to be changed, and the septic tank is to be pumped on an as needed basis—use chart in Ohio State University Extension publication AEX-740-01 as a guideline at which time we recommend inspection of dosing chamber along with floats and pump.

Installer must prepare and file an "as built drawing" with the Seneca County Health Department.

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Demand-Dosed Lift Station Homeowner Instructions: High Water Alarms

What to do if your Septic System high water alarm goes off?

1. **Don't panic,** alarms go off indicating some type of service is needed. The high water alarm can indicate several different potential issues (a) the pump is not functioning due to failure of it, a float, the controls or no electrical power to it, (b) other, more rare issues. Note: Alarms do not go off because the septic tank needs pumped.

2. **Go to were the alarm is sounding from,** you should see the red alarm illuminated, this light is situated on top of the gray control electrical panel box, put the toggle switch to the mute position or press the silence /mute button, this will silence your audible alarm but the red light will remain lit until serviced by your service provider.

3. **Check your breaker box** to see if the circuit supplying your pump has a tripped breaker and if so, reset the breaker—some problem/issue caused that to happen so you must still have it looked at by your service provider. Until the underlying issue is resolved it would likely happen again.

4. **Call your contracted / a service provider** and report your alarm, if closed leave a message indicating your name, address and phone number so someone can get back to you.

5. **Your alarm light will remain lit until serviced**; you can still use water however *be very conservative with your water use*—you should have some reserve capacity from the high water level to the tank filling up completely, if it does that could lead to a back-up—so you will want your service provider to visit in a timely fashion.

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Naugle Materials List

3550 N. Co. Rd. 11, Tiffin, Ohio

Tank

1	1500 Gallon NCI Septic Tank
1	500 Gallon NCI Dosing Tank Package
1	Distribution box

Pump

1	Champion CPS3 (Pump, Floats, Controls, Tank supplied as package from NCI)

ATL Components

12 inch	ATL Pipe	28 sections (280 feet)

Pipe

1.5 inch	PVC Schedule 40	20 ft.
1.5 inch	PVC Schedule 40	couplings/fittings
4 inch	PVC Schedule 40	220 ft.
4 inch	PVC Schedule 40	couplings/fittings
4 inch	PVC Toilet Ring	2
4 inch	PVC Female threaded end cap	2
4 inch	PVC male threaded plug	2

Other

Straw	as needed
Topsoil	28 cu. yds.
Grass seed	as needed
ASTM 33 Concrete Sand	45 cu. yds.

Diversion Swales

Accurate Onsite does not intend this to be a complete list. Installers are encouraged to look over the job and make their own list prior to bidding the job. Equivalent products are acceptable.

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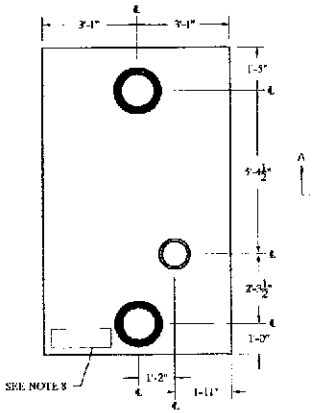
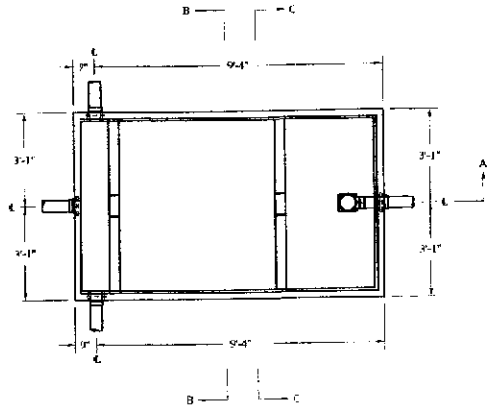
BUILD SHEET

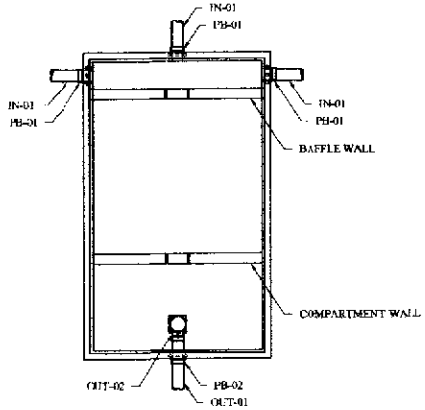
ITEM	QUANTITY	DESCRIPTION
IN-01	3	04" INLET PIPE BY OTHERS
OUT-01	1	04" OUTLET PIPE BY OTHERS
OUT-02	1	04" TUF-TITE EF-6 COMBO EFFLUENT FILTER (SHIPPED LOOSE FOR INSTALLATION BY OTHERS)
PB-01	3	PRESS-SEAL 4" CAST-A-SEAL 402F CAPPED BOOT (CONTRACTOR TO CUT INLET REQUIRED)
PB-02	1	PRESS-SEAL 4" CAST-A-SEAL 402 BOOT
TT-01	2	15"Ø TUF-TITE SAFETY PAN CAST-IN TOP
TT-02	2	14"Ø CONCRETE SAFETY CAP
TT-03	2	16"Ø X 6" TALL I.D. TUF-TITE RISER
TT-04	2	16"Ø TUF-TITE LID
	1	CON-SEAL CS-50 PRIMER APPLIED TO TANK JOINT (APPLIED BEFORE USING CON-SEAL CS-102)
	3	CON-SEAL CS-102 JOINT SEALANT (ROLLS) FOR TANK JOINT (INSTALLED BEFORE SHIPPING)
	1	TUF-TITE RISER SEALANT (ROLLS) FOR RISER JOINTS (INSTALLED BEFORE SHIPPING)



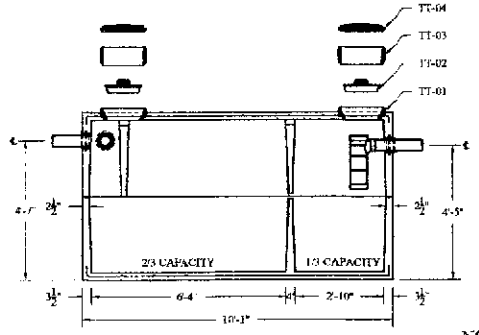
TOP LAYOUT



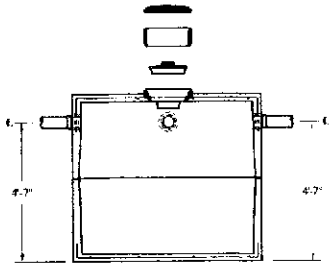
PLAN VIEW
TOP REMOVED FOR CLARITY



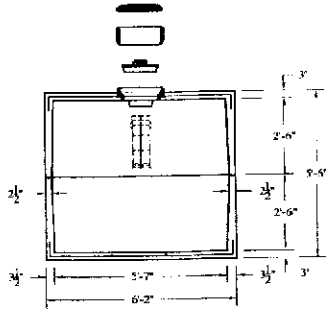
PIPING LAYOUT



SECTION VIEW A-A



SECTION VIEW B-B



SECTION VIEW C-C

1,500 GALLON SEPTIC TANK DETAILS

DESCRIPTION	UOM	QUANTITY	WEIGHT (lbs)
5'-7" X 9'-6" X 2'-6" I.D. BASE WITH BAFFLE	EA.	1	5,775
5'-7" X 9'-6" X 2'-6" I.D. TOP WITH (2 EA.) BAFFLES	EA.	1	6,175
16"Ø I.D. TUF-TITE SAFETY PAN CAST-IN TOP	EA.	2	2.5 (EA.)
14"Ø CONCRETE SAFETY CAP	EA.	2	33 (EA.)
16"Ø X 0'-6" TALL I.D. TUF-TITE RISER	EA.	2	2.5 (EA.)
16"Ø I.D. TUF-TITE LID	EA.	2	2.5 (EA.)
TOTAL STRUCTURE			12,031

NOTES:
1. CONCRETE: 5000 PSI @ 28 DAYS, AIR 6% ± 2%.
2. REINFORCING: #3 @ 15" O.C. TOP AND BOTTOM, POLYPROPYLENE FIBER 1.5 LB. PER CUYD.
3. CAST-IN BOOT SEALS PER SITE REQUIREMENTS CONFORMING TO ASTM C-1227, ASTM C-1644, ASTM C-923.
4. PLANT VACUUM TESTED PER ASTM C-1227 OR ON SITE PER ASTM C-1719 WHERE REQUIRED.
5. MAXIMUM BURIAL DEPTH WITHOUT ADDITIONAL REINFORCING IS 36".
6. TOTAL CAPACITY 1,023 GAL OR 21.3 GAL PER INCH. WITH NO BACKFILL IN PLACE TANK REQUIRES 39" INTERNAL WATER DEPTH TO PREVENT FLOTATION.
7. EFFLUENT FILTER MEETING ANSI/NSF STANDARD $\frac{1}{16}$" FILTRATION.
8. TANK MARKED AS:
   - NORWALK CONCRETE INDUSTRIES
   - 1,000 GALLON. 2-COMPARTMENT SEPTIC TANK
   - VAC CHECK CERTIFICATION
9. ADDITIONAL 6" (2.5 LBS. EACH) OR 12" (4.1 LBS. EACH) TALL RISERS AVAILABLE UPON REQUEST. EACH ADDITIONAL RISER WILL REQUIRE SEALANT. ONE ROLL OF SEALANT WILL SEAL (4 EA.) 16"Ø JOINTS.

NCI
Norwalk Concrete Industries
80 Commerce Drive
Norwalk, Ohio 44857
www.ncipreast.com
Toll Free 800.733.3624
Phone 419.668.8167
Fax 419.663.0627

1,500 GALLON PRECAST CONCRETE SEPTIC TANK/TRASH TRAP

REVISIONS:	DWG:	DATE:	SHT. - OF -
01-30-19	W-0036-07	05-28-09	JDH

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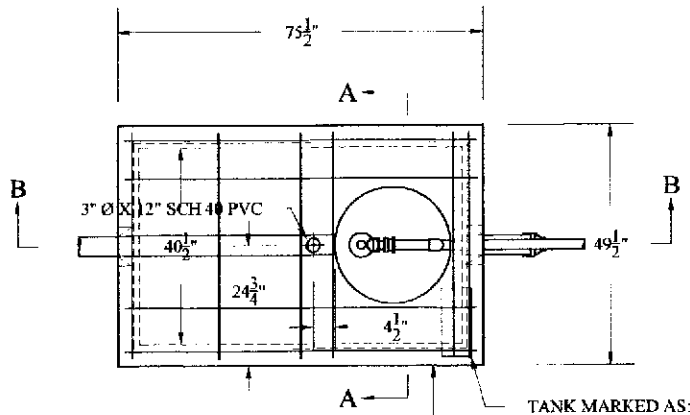
NOTES:
1. CONCRETE = 5000 PSI @ 28 DAYS, AIR 6% ± 2%.
2. REINFORCING #3 @ 15" O.C. TOP AND BOTTOM, POLYPROPYLENE FIBER 1.5# PER CY.
3. CAST IN BOOT SEALS PER SITE REQUIREMENTS CONFORMING TO ASTM C-1227, ASTM C-1644, ASTM C-923.
4. TANK WEIGHT 5,900 LBS
5. PLANT VACUUM TESTED PER ASTM C-1227 OR ON SITE PER ASTM C-1719 WHERE REQUIRED.
6. MAXIMUM BURIAL DEPTH WITHOUT ADDITIONAL REINFORCING IS 36".
7. TOTAL CAPACITY BELOW INLET 568 GAL OR 11.8 GAL PER INCH. WITH NO BACKFILL IN PLACE TANK REQUIRES 36" INTERNAL WATER DEPTH TO PREVENT FLOTATION
8. PUMP AND CONTROLS PER SITE REQUIREMENTS.
9. CONSEAL CS-102 JOINT SEALANT.



PLAN VIEW

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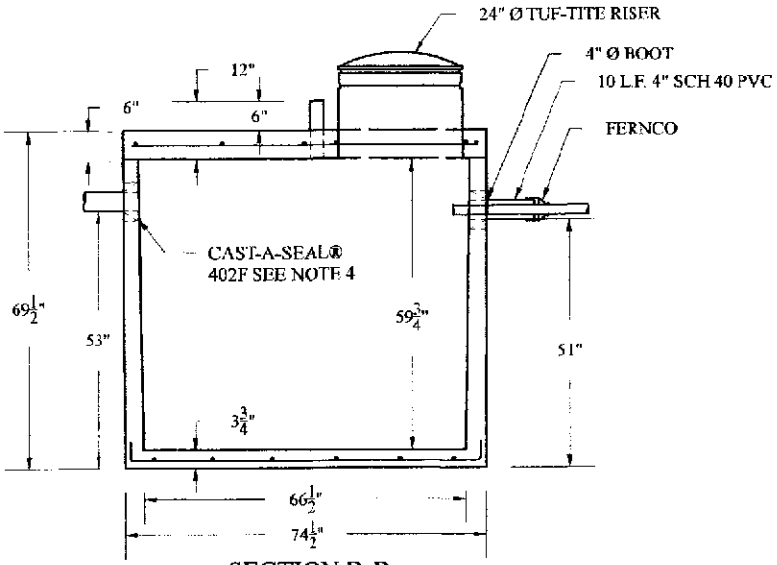
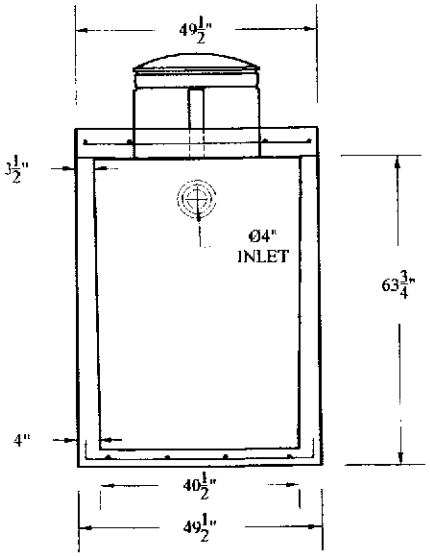


SECTION B-B



SECTION A-A

NCI
Norwalk Concrete Industries
80 Commerce Drive
Norwalk, Ohio 44857
www.nciprecast.com
Toll Free 800.733.3624
Phone 419.668.8167
Fax 419.663.0627

DOSE TANK
500 GAL RESIDENTIAL

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ATL™
by INFILTRATOR

ADVANCED TREATMENT LEACHFIELD

INFILTRATOR
water technologies

Sand-Lined Wastewater Treatment and Dispersal

BENEFITS

- **Produces Class 1 (EPA Secondary) Treated Effluent**
- **A Passive Advanced Treatment Leachfield – No Moving Parts or Power Required**
- **Modules are Quick and Easy to Install**
- **Shallow System Maximizes Site Suitability and Reduces Amount of Sand Fill Requirements**

Proprietary Geotextile/Media
Multi-Layer Treatment System

Protecting the Environment with **Innovative Wastewater Treatment Solutions**

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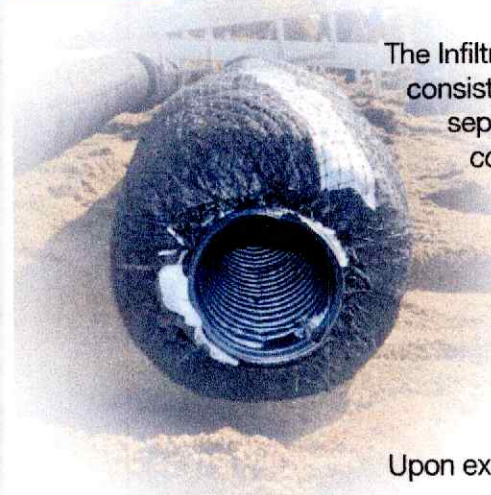
ATL™ by INFILTRATOR

GENERAL INFORMATION



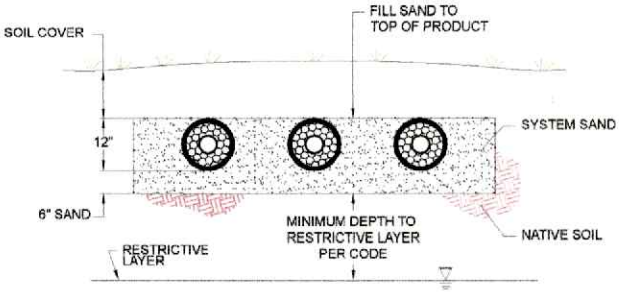
The Infiltrator ATL is a patent-pending, proprietary system consisting of six components. Upon entering the Infiltrator ATL, septic tank effluent progresses through each component as follows:

- 4-inch-diameter pipe
- Large-diameter synthetic aggregate;
- Coarse geotextile;
- Small-diameter synthetic aggregate;
- Fine geotextile; and
- 6-inch depth of specified system sand.

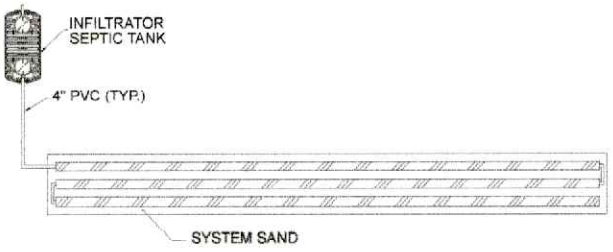
Upon exiting the specified system sand, effluent is dispersed in the native soil.

Level Subsurface Systems

Cross-Section View (not to scale)



Plan View (not to scale)



NOTES:

1. Number and length of conduit rows per design.
2. Serial distribution shown, but system may be served by distribution box or manifold to provide parallel distribution.
3. Pumping is not required unless gravity flow cannot be achieved.

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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

ATL01 0315

3701-29-15 — Nausle —

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Table 3. Soil Infiltration Loading Rates

Soil Characteristics			Soil Infiltration Loading Rate (gpd/ft²)		
Texture	Structure		CBODs		
	Shape	Grade	>25mg/L (septic tank effluent)	≤25mg/L (Pretreated effluent)	Row
COS, S, LCOS, LS	–	0SG	0.8	1.6	1
FS, VFS, LFS, LVFS	–	0SG	0.4	1	2
CSL, SL	–	0M	0.2	0.6	3
	PL	1	0.2	0.5	4
		2, 3	0	0	5
	PR/BK/GR	1	0.4	0.7	6
		2, 3	0.6	1	7
FSL, VFSL	–	0M	0.2	0.5	8
	PL	1, 2, 3	0	0	9
	PR/BK/GR	1	0.2	0.6	10
		2, 3	0.4	0.8	11
L	–	0M	0.2	0.5	12
	PL	1, 2, 3	0	0	13
	PR/BK/GR	1	0.4	0.6	14
		2, 3	0.6	0.8	15
SIL	–	0M	0	0.2	16
	PL	1, 2, 3	0	0	17
	PR/BK/GR	1	0.4	0.6	18
		2, 3	0.6	0.8	19
SCL, CL, SICL	–	0M	0	0	20
	PL	1, 2, 3	0	0	21
	PR/BK/GR	1	0.2	0.3	22
		2, 3	0.4	0.6	23
SC, C, SIC	–	0M	0	0	24
	PL	1, 2, 3	0	0	25
	PR/BK/GR	1	0	0	26
		2, 3	0.2	0.3	27

Accurate Onsite SEPTIC PLANNERS

3 bedroom home, 3 x 120 = 360 gal/day

360 ÷ 0.4 = 900 sq ft.

-25% fines free product credit = 675 sq. ft.

3701-29-15 — Naugle —

Table 4: Hydraulic Linear Loading Rate Table

Soil Characteristics			Hydraulic Linear Loading Rate (gpd/ft)									
			Slope 0-4%			Slope 5-9%			Slope >10%			
Texture	Structure		Infiltrative Distance (inches)			Infiltrative Distance (inches)			Infiltrative Distance (inches)			
	Shape	Grade	8-12	12-24	24-48	8-12	12-24	24-48	8-12	12-24	24-48	Row
COS, S, LCOS, LS	–	0SG	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0	1
FS, VFS, LFS, LVFS	–	0SG	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	2
CSL, SL	–	0M	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	3
	PL	1	3.0	3.5	4.0	3.6	4.1	4.6	4.0	5.0	6.0	4
		2, 3										5
	PR/BK/GR	1	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	6
		2, 3	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	7
FSL, VFSL	–	0M	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	8
	PL	1, 2, 3										9
	PR/BK/GR	1	3.0	3.5	4.0	3.3	3.8	4.3	3.8	4.1	4.6	10
		2, 3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	11
L	–	0M	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	12
	PL	1, 2, 3										13
	PR/BK/GR	1	3.0	3.5	4.0	3.3	3.8	4.3	3.8	4.1	4.6	14
		2, 3	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	15
SiL	–	0M	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	16
	PL	1, 2, 3										17
	PR/BK/GR	1	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0	18
		2, 3	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3	19
SCL, CL, SICL	–	0M										20
	PL	1, 2, 3										21
	PR/BK/GR	1	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	22
		2, 3	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0	23
SC, C, SIC	–	0M										24
	PL	1, 2, 3										25
	PR/BK/GR	1										26
		2, 3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	27

Accurate Onsite SEPTIC PLANNERS

360 ÷ 2.4 = 150 Ft.

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County: Seneca
Township / Sec.: Liberty
Property Address/Location: 3550 N. County Road 11, Tiffin, OH 44883

Applicant Name: Mary Jean Naugle
Address: 3550 N. County Road 11, Tiffin, OH 44883

Phone #: Contact: Gena Naugle, 567-207-1235
Lot #: ---
Test Hole #: 1&2
Latitude/Longitude: 41.174484°, -83.229662°/ 41.174240°, -83.229773°
Method: ___ Pit X Auger X Probe

Land Use / Vegetation: Lawn/Grass
Landform: Ground Moraine
Position on Landform: Backslope
Percent Slope: 2-4
Shape of Slope: Linear-Linear
Bedrooms or GPD: 3 bedrooms existing

Date: 01/24/2024
Evaluator: Steve Ross, CPSS
Soil & Site LLC
3344 Township Road 26
Cardington, OH 43315
Job Number: ----
Soil Series: ----

ARCPACS #: 03477

Signature:

Phone#: 1-419-718-4301
Email: steve.s.ross@gmail.com

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	
Ap	0-10	10YR 4/3			sicl	30	2-3	2	f	sbk	fi	
Bt1	10-14	10YR 4/4			sicl	35	2-3	2	m	sbk	fi	
Bt2	14-24	10YR 4/4		10% 10YR 5/2	c	40	2-3	2	m	sbk	fi	
BC	24-38	10YR 5/4		10% 10YR 6/2	c	40	2-3	1	m	sbk	fi	Slight Effervescence
C	38-60	10YR 5/4		15% 10YR 6/2	sicl	35	2-3	0	---	m	vfi	Strong Effervescence

Limiting Conditions	Depth to (in.)	Descriptive Notes	Remarks / Risk Factors:
Perched Seasonal Water Table	14	Perched on C	NOTE: surface water must be diverted away from STS.
Apparent Water Table	>60		
Highly Permeable Material	>60		
Bedrock	>60		
Restrictive Layer	24	Weak-structured clay texture: all loading rates=0	

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Abbreviations:

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, unconsolidated 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

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Mary Jean Naugle
Page 4 of 4
Area Represented by Test Holes (Approx.)
: Slope Direction
N
NOT TO SCALE
STS area evaluated. Test Holes marked with wire flags.
Test Holes 1&2 represent an approximate area of 150 feet by 30 feet.
Existing Garage
Existing Well (>50 feet from STS area evaluated)
Test Hole 1
Existing House
3550
Test Hole 2
Existing Septic Tank (approx.)
Approx. 50 feet
Existing Pond
Approx. Lot Line
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