GEOPHYTA

Home Septic System
Site Evaluation
And
Replacement System Design

For

Benae McCoy

5827 Roan Rd.
Sylvania, OH 43560

Property Location:

5827 Roan Rd.
Sylvania, OH 43560

Sylvania Township, Lucas County

NPDES - Jet J500 ATU & Spoerr 1000gal Dose Tank W/
UV Disinfection & Reaeration

By

Nathan Wright
Seth V. Layne

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

419-547-8538

August 29, 2019

Rev.1 on September 16th, 2019

To The Homeowner:

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

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

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

To The Installer:

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

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

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

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

Geophyta, Inc ©

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

Customer:

Name:	Benae McCoy
Address:	5827 Roan Rd
City, State:	Sylvania, Oh
Home Phone:	
Cell Phone:	4193402469
Email:	benaeemery@gmail.com

Property:

Parcel #:	
Current Owner:	Same as above
Address:	
City, State:	
Lot Size:	
Right of Ways?	
Easements?	

Existing or Proposed or Lot Split: (circle one)

House Size: Rooms	4 bedrooms	electric:	(overhead) or buried
House Dim.w/Garage:	ft.xft.	phone:	(overhead); buried; n/a
Garage Size:	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: garage	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.

Benae McCoy — 8/21/19

Customer Signature — Date

Payment received:

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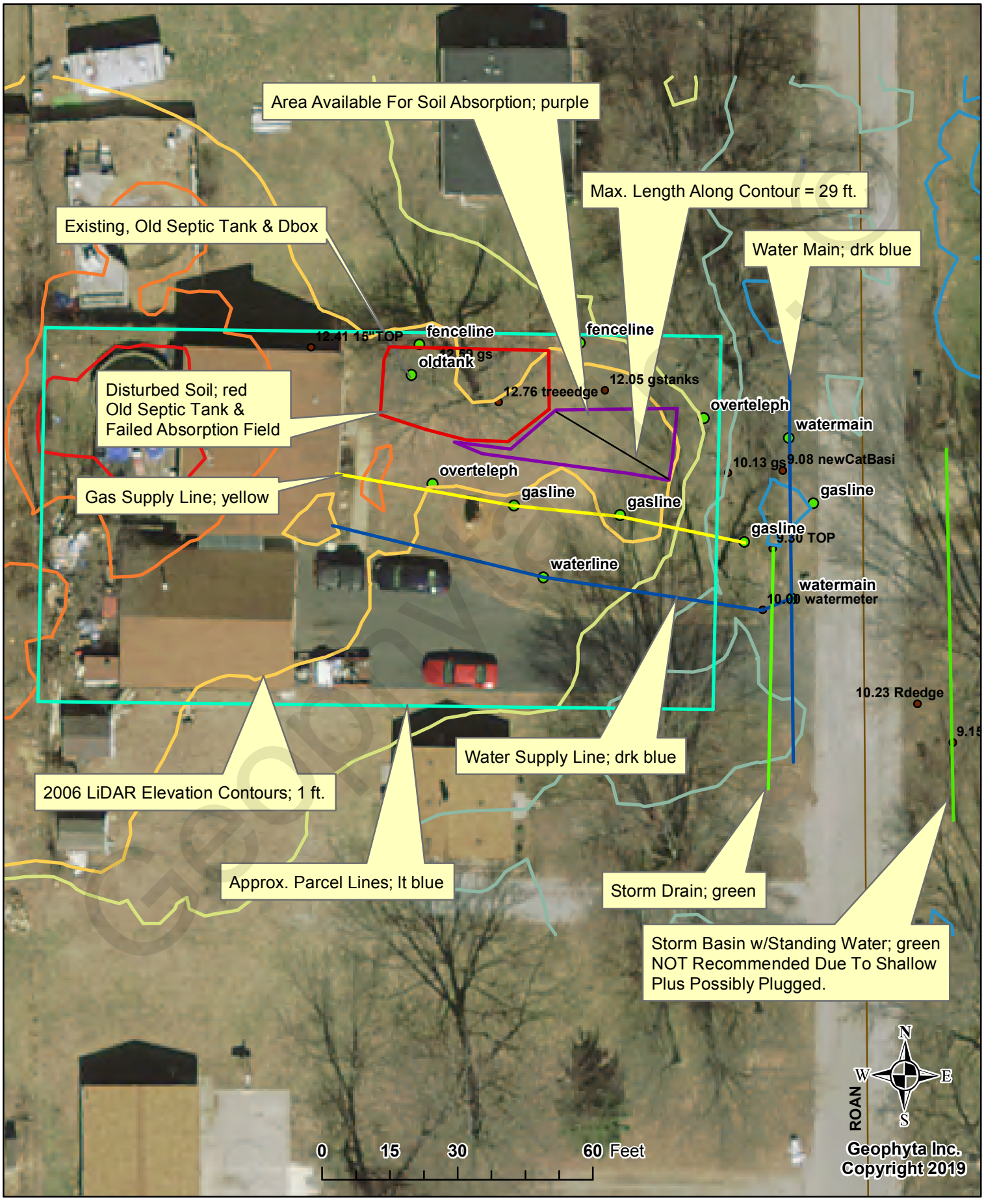
HSTS Site/Soil Evaluation - 5827 Roan Rd.



GEOPHYTA

24-Aug-19

Benae McCoy
5827 Roan Rd.
Sylvania, OH 43560

RE: HSTS Site Evaluation for 5827 Roan Rd., Sylvania, Lucas County

Benae,

This is a follow-up letter to an HSTS Site Evaluation performed on 21-Aug-19 at the above property, with you, me and Nate Fries(Lucas County Health Department), present. Please refer to the attached site evaluation map.

This site evaluation revealed the presence of parcel line setbacks, a gas line setback, and a water line setback required by Lucas County Health Department. They include 10 ft. from all the above. Also, within the remaining area, there were areas of disturbed soil from the existence of an old septic tank and surfacing effluent. The soil area remaining after these considerations will not allow for on-site absorption of septic effluent for a four bedroom home along elevation contours. The maximum length along contour was 29 feet in the acceptable soil area. A typical Ottokee sand soil requires at least 80 feet of length along contour.

Both Nate Fries and I agreed that due to this limited soil area, a detailed soil sampling and description was not required.

The only option that remains is an NPDES treatment system as permitted by the Ohio EPA.

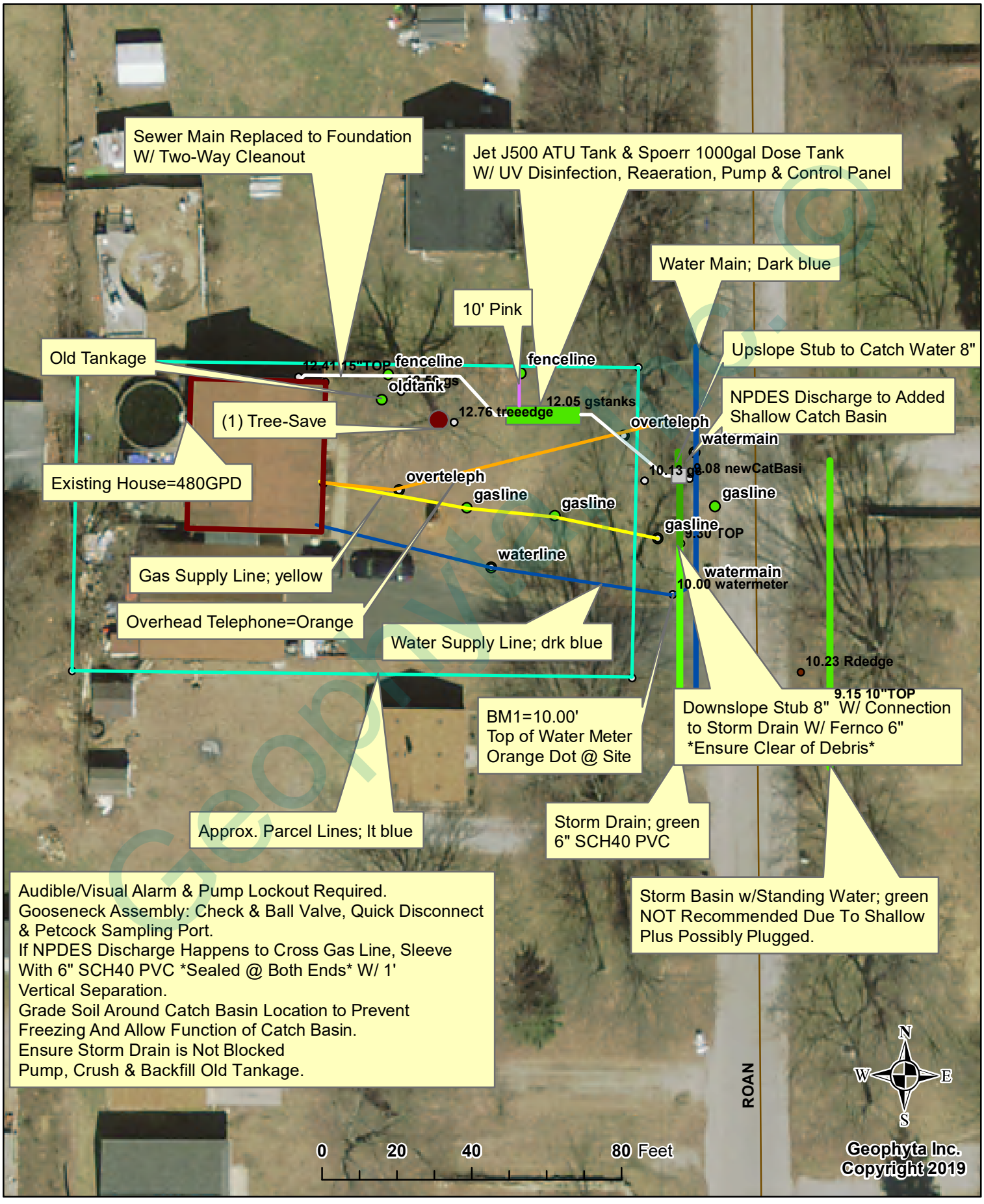
Sincerely,

Nathan Wright

Certified Soil Scientist, CPSS-19395
Registered Septic Designer

2685 C.R. 254 ■ Vickery, Ohio 43464-9775
Phone/Fax: (419) 547-8538 ■ Email: nathan@geophyta.com

HSTS Replacement Layout - 5827 Roan Rd.
Rev. 1 on September 16th, 2019



Demand Dosing Calculations to Sample Port			
Owner: McCoy	**Design**		
Main Design:	**Target**	**Comment**	
Flow Rate Total (gpm)	**56.0**		
Diameter (in)	2.00	**Sch40 PVC**	
Length (ft)	4.17		
Gal. per Foot of Pipe (Clemons, 1991)	0.174		
Total Main Volume (gal)	0.73		
# Std 90deg Elbows	6		
Std 90deg Elbow Pipe Length Equivalent (ft)	9.0		
# Std 45deg Elbows	0		
Std 45deg Elbow Pipe Length Equivalent (ft)	4.0		
# Std Tees	0		
Std Tee Pipe Length Eqivalent (ft)	11.0		
# Quick Disconnects	1		
Quick Disconnect Pipe Length Equivalent (ft)	2.0		
# Full Flow Ball Valves	1	Adjust GPM Down to Free-Falling Sample Port	
Ball Valves Pipe Length Equivalent (ft)	0.9		
Total Length Equivalent (pipe&fittings) (ft)	61.1		
Head Loss per 100 ft.(ft.)(Otis et al, 1978)(Zoeller)	**5.59**		
Total Main Head Loss (ft)	3.41		
Dose Volume:			
Drainback Volume: Main (gal)	0.0	No Drainback	
Dose Volume (gal)	120.0		
TOTAL dose (gal)	120.0		
Daily Design Flow (DFR)(120gal/day/bedroom)	480.0		
Is Dose <=1/4 of Daily Design Flow?	yes		
Is Dose <1/8 of Daily Design Flow?	no		
Total Dynamic Head:			
Static Lift - Main Ht. Above Surface (ft)	0.00	-	
Static Lift - Depth to Pump Off Below Surface (ft)	5.57	6.4 - .83	
Static Lift - Topo Difference (ft.)	-1.3	-	
Total Pipe & Fittings Headloss (ft)	3.4	-	
Network Loss (5ft head x 1.3) (ft)(includes laterals)	0.0	-	
Total Head Loss (ft)	**7.7**		
Dose Tank Parameters			
Volume (gal)	1000	48.5	inches effluent
Gallons Per Inch in Tank	20.80		
Demand Dose Settings:			
Total Gallons Per Pump Cycle	120.0	5.77	inches
Avg. Pump Cycles Per 24 Hrs.	4.0		
Avg. Pump On Time - seconds	129		
Avg. Pump Off Time - hours	6.0		
Pump Off Effluent Ht. from bottom (in)	10.0	(to prevent tank flotation)	
Pump On Effluent Ht. from Bottom (in)	15.8		
High Level Alarm Ht. from bottom (in.)	19.8	1.2	= days reserve after alarm

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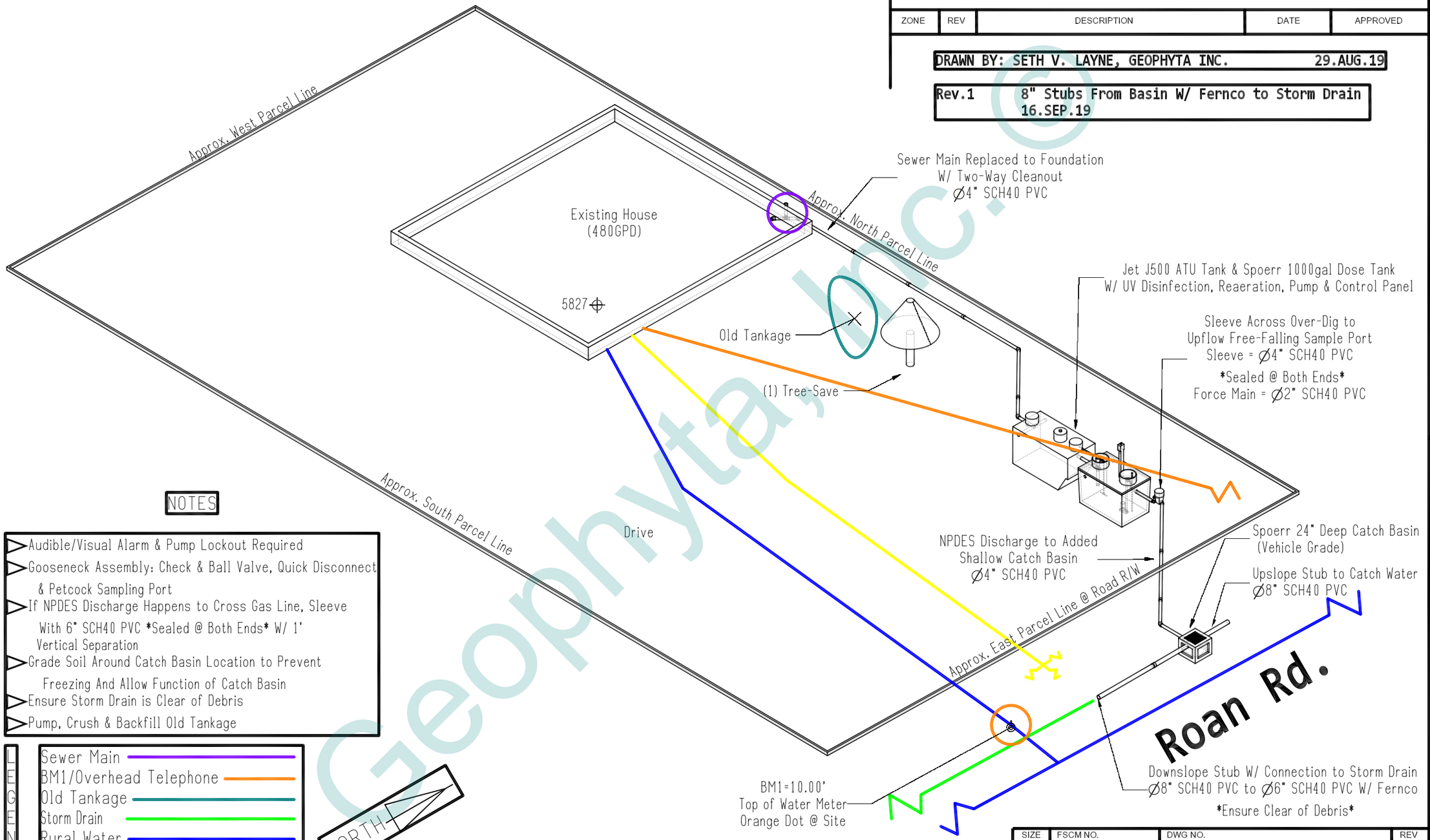
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: SETH V. LAYNE, GEOPHYTA INC. 29.AUG.19

Rev.1 8" Stubs From Basin W/ Fernco to Storm Drain 16.SEP.19



NOTES

- Audible/Visual Alarm & Pump Lockout Required
- Gooseneck Assembly: Check & Ball Valve, Quick Disconnect & Petcock Sampling Port
- If NPDES Discharge Happens to Cross Gas Line, Sleeve With 6" SCH40 PVC *Sealed @ Both Ends* W/ 1' Vertical Separation
- Grade Soil Around Catch Basin Location to Prevent Freezing And Allow Function of Catch Basin
- Ensure Storm Drain is Clear of Debris
- Pump, Crush & Backfill Old Tankage

LEGEND

- Sewer Main
- BM1/Overhead Telephone
- Old Tankage
- Storm Drain
- Rural Water
- Gas Line

NORTH

SCALE 1:150

SIZE	FSCM NO.	DWG NO.	REV
B		McCoy - HSTS_3D_Layout	
SCALE 1:1		SHEET 1 OF 1	

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REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: SETH V. LAYNE, GEOPHYTA INC. 29.AUG.19

Rev.1 8" Stubs From Basin W/ Fernco to Storm Drain 16.SEP.19

Approx. North Parcel Line @ Fence Line

3'

40'

14'

Two-Way Cleanout

10' 0" ← Min. Separation

3'

16' 3"

47' 0"

20' 0"

Old Tankage

(1) Tree-Save

Existing House
(480GPD)

5827 Roan Rd.

Approx. Soil Fill Area Required

25'

5'

5'

17'

Approx. West Parcel Line

Approx. East Parcel Line @ Road R/W

Make Connection Here W/ Fernco

BM1=10.00'
Top of Water Meter
Orange Dot @ Site

LEGEND

- Sewer Main
- BM1/Overhead Telephone
- Old Tankage
- Storm Drain
- Rural Water
- Gas Line
- Soil Fill Area

EAST

Approx. South Parcel Line

SCALE 1:140

SIZE	FSCM NO.	DWG NO.	REV
B		McCoy - HSTS_Top	
SCALE 1:1		SHEET 1 OF 1	

Geophyta, Inc.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: SETH V. LAYNE, GEOPHYTA INC. 29.AUG.19

Rev.1 8" Stubs From Basin W/ Fernco to Storm Drain 16.SEP.19

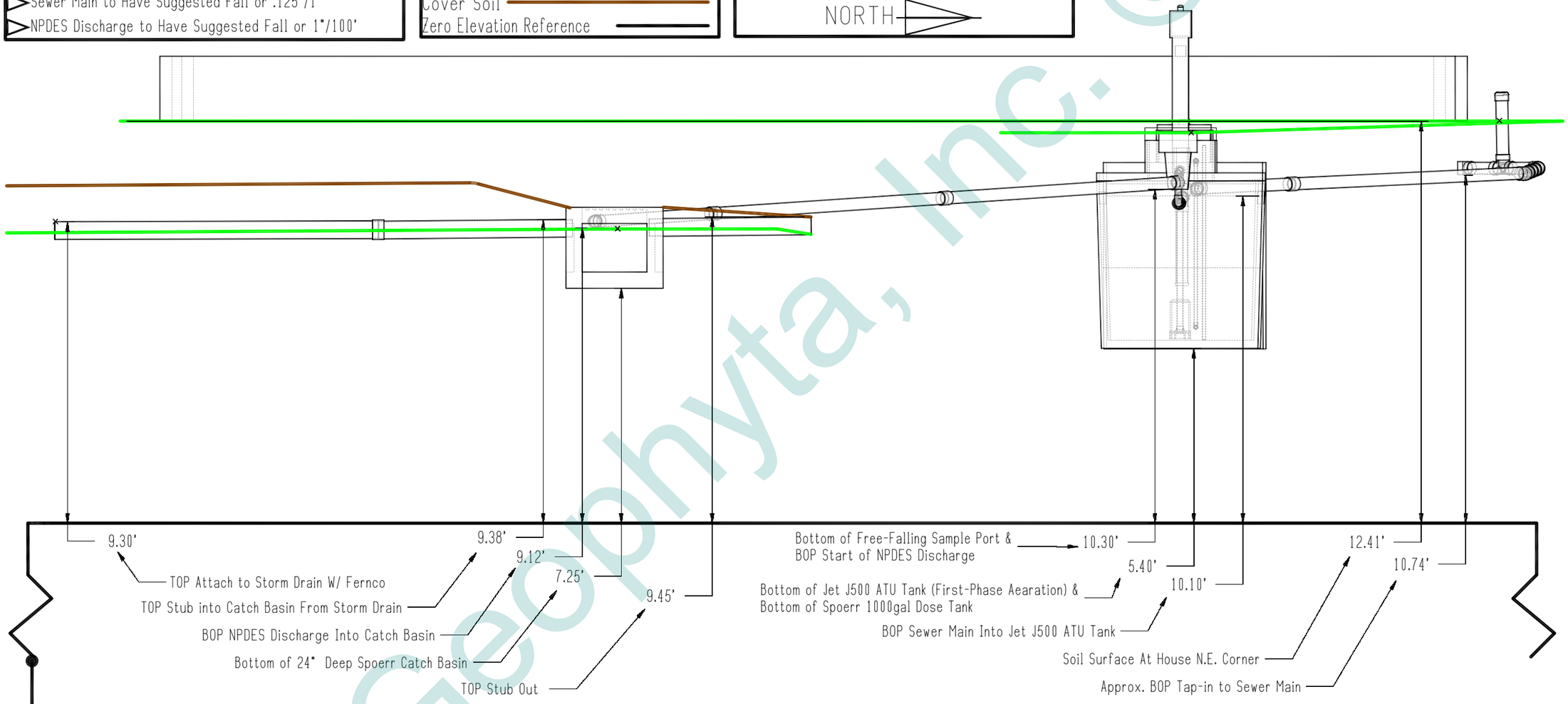
NOTES

- Grade Soil Around Catch Basin And Storm Drain to Ensure Flow to Basin And For Freeze Protection
- Sewer Main to Have Suggested Fall or .125"/1'
- NPDES Discharge to Have Suggested Fall or 1"/100'

LEGEND

- Soil Surface
- Cover Soil
- Zero Elevation Reference

ELEVATION VIEW - EAST TO WEST
NORTH



ZERO ELEVATION REFERENCE
BM1=10.00' TOP OF WATER METER
ORANGE DOT @ SITE

SCALE 1:40

SIZE	FSCM NO.	DWG NO.	REV
B		McCoy - HSTS_Elevation	
SCALE 1:1		SHEET 1 OF 1	

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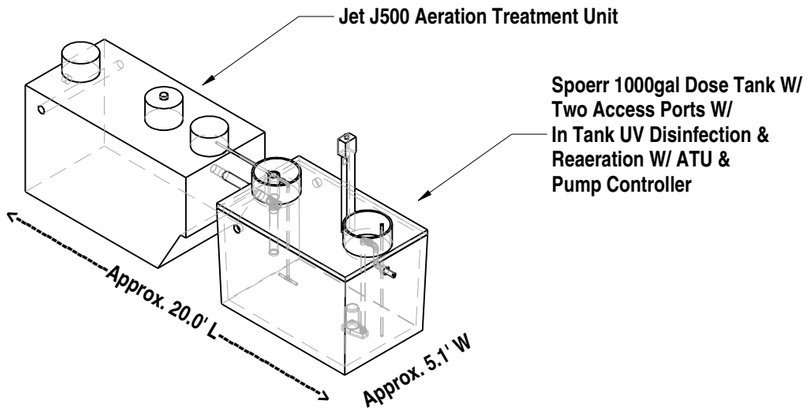
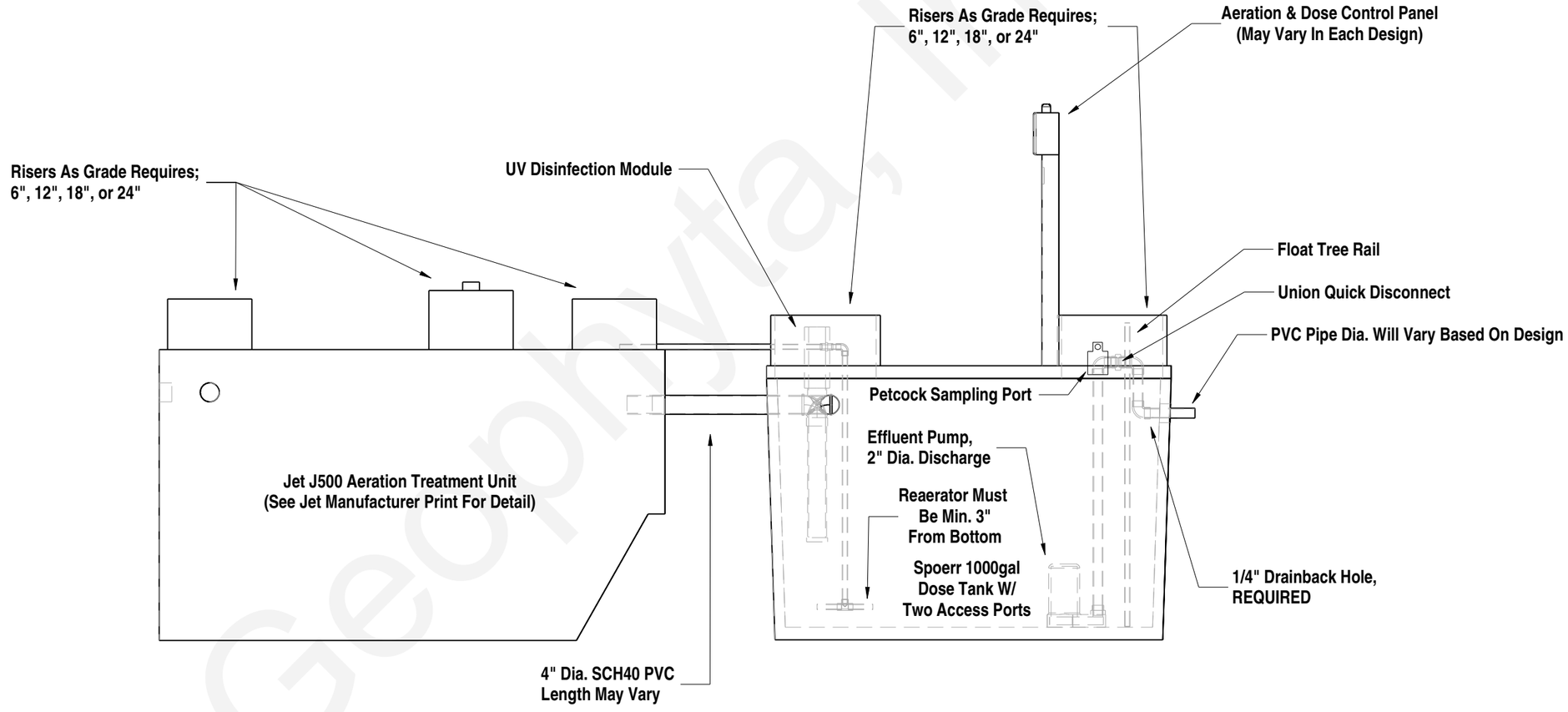
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: SETH V. LAYNE, GEOPHYTA INC. 19SEP18



SCALE 1:80

SEE BILL OF MATERIALS FOR ALL COMPONENT DETAILS



SCALE 1:30

SIZE	FSCM NO.	DWG NO.	REV
B		Jet J500/UV/1000 gal Dose Tank W/ Reaerator & Pump & Controller	
SCALE 1:1			SHEET 1 OF 1

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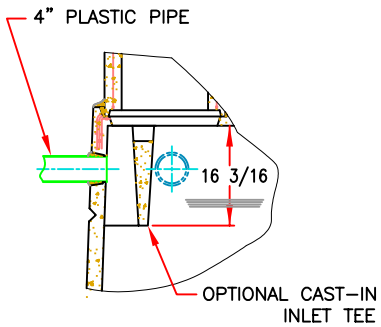
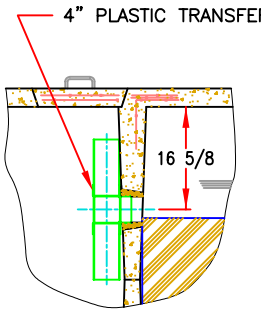
DETAIL 1



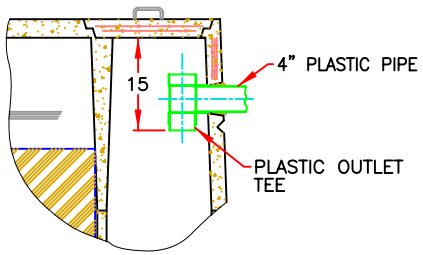
OPTIONAL INLET TEE

DETAIL 2

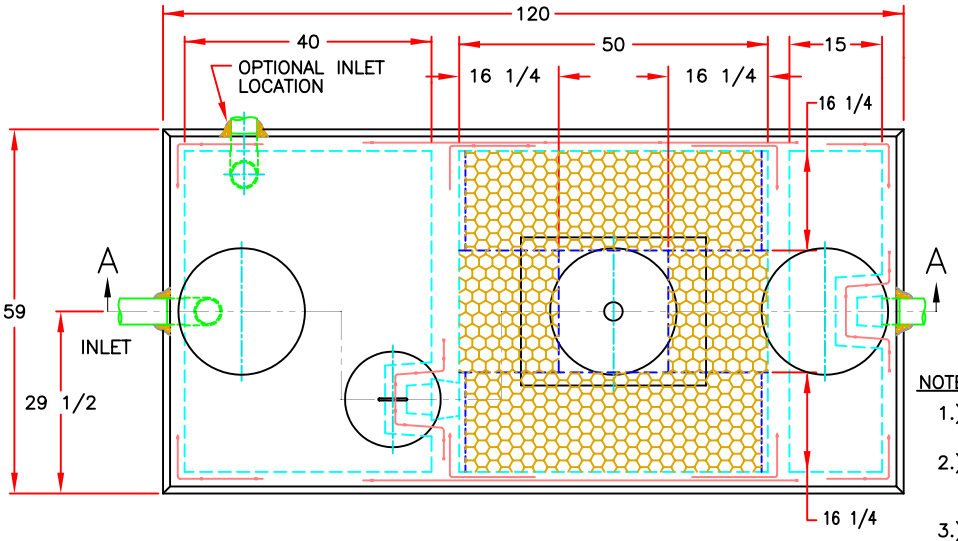


OPTIONAL TRANSFER TEE

DETAIL 3



OPTIONAL OUTLET TEE



NOTES:

1.) AERATOR MODEL 700LL IN CYCLED OR CONTINUOUS OPERATION MUST BE USED.

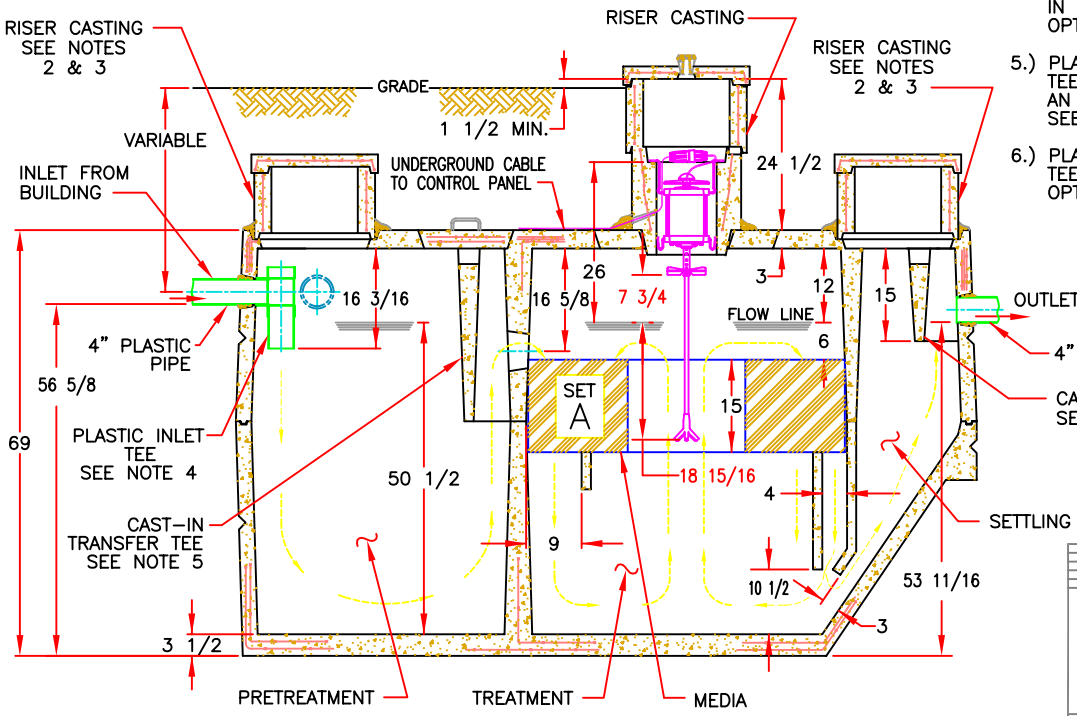
2.) IF AERATOR MOUNTING CASTING HAS NO RISER, RISERS ARE NOT REQUIRED HERE. REMOVABLE CONCRETE COVERS ARE REQUIRED.

3.) IF AERATOR MOUNTING CASTING HAS A RISER(S), COVERED RISERS ARE REQUIRED HERE. RISERS SHOULD BE DEVELOPED TO GRADE OR TO 6"–12" BELOW GRADE.

4.) PLANTS WHICH DO NOT USE A PLASTIC INLET TEE IN THE PRETREATMENT COMPARTMENT MAY USE AN OPTIONAL CAST–IN INLET TEE. SEE DETAIL 1.

5.) PLANTS WHICH DO NOT HAVE A CAST–IN TRANSFER TEE IN THE PRETREATMENT COMPARTMENT MAY USE AN OPTIONAL PLASTIC TRANSFER TEE. SEE DETAIL 2.

6.) PLANTS WHICH DO NOT HAVE A CAST–IN OUTLET TEE IN THE SETTLING COMPARTMENT MAY USE AN OPTIONAL PLASTIC OUTLET TEE. SEE DETAIL 3.



SECTION A–A

Figure 1
NSF Test Plant (500 GPD)

PATENTED

JET INC.

500 GPD PLANT
COMPONENT PARTS & INSTALLATION

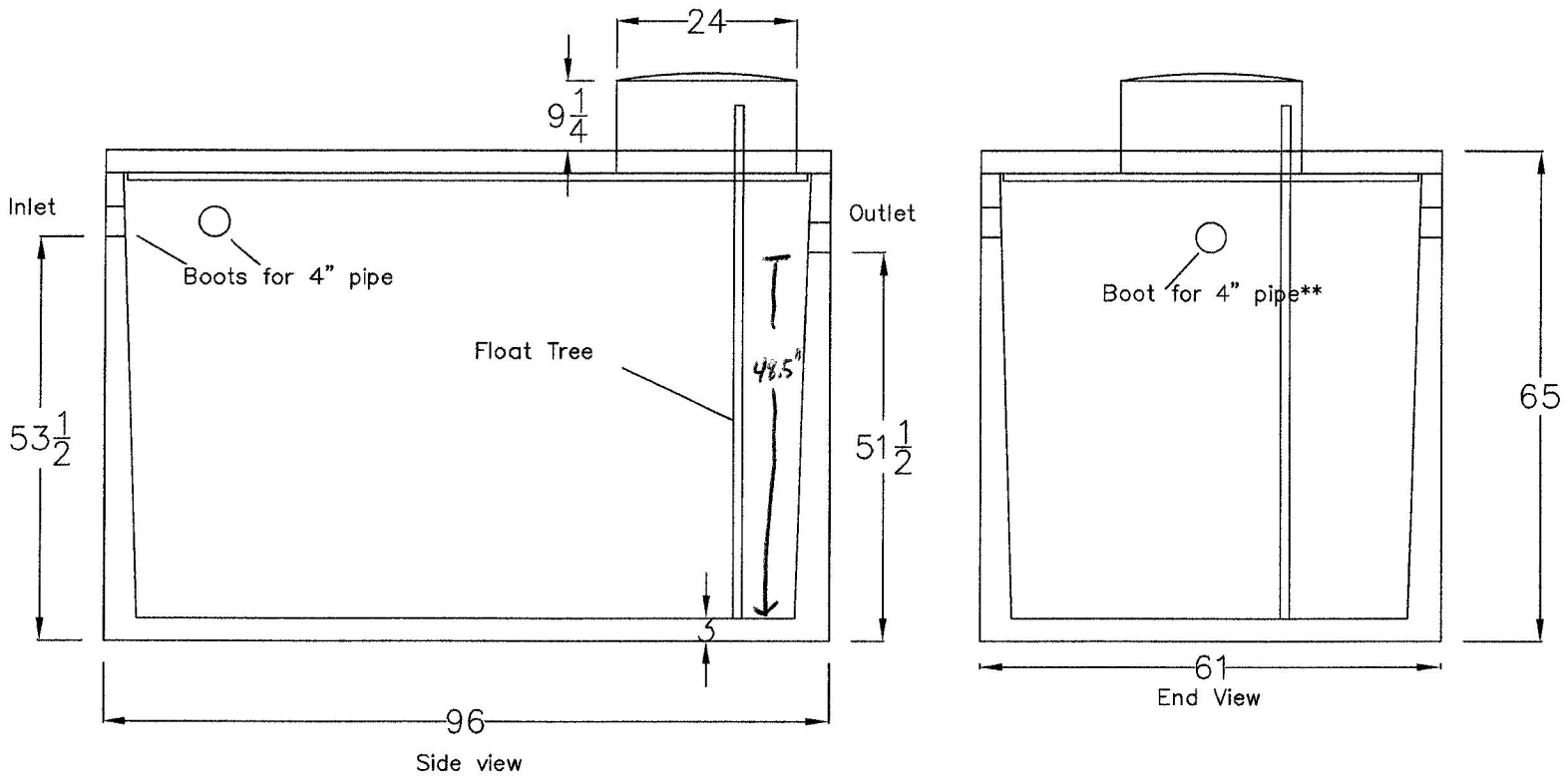
©MMI
JET INC.

D
12

PROPRIETARY PROPERTY: THIS DRAWING IS THE PROPERTY OF JET INC. AND MAY NOT BE REPRODUCED, COPIED OR USED WITHOUT WRITTEN PERMISSION.

REVISED:	05–18–01f
DRAWN BY:	R. P. T.
APPROVED BY:	D.S.M.
DATE:	1–18–95
SCALE:	NONE
DRAWING NUMBER:	J–500

FILE REF. No. ART–476–7



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

Concrete 4500 PSI @ 28 Days
Max cover on top of tank 48"
Inlet/Outlet boots for 4" pipe
Boots meet ASTM C923
Sealant: Meets ASTM C990
**Optional 4x2 slip reducer available
20.8 Gallon/inch

1000 Gallon Pump Tank
Excavation 6' x 9'

09/22/09

UV Disinfection Lamp

Item	Part Number
UV Disinfection Lamp Assembly	9520034
Replacement UV lamp	9990115
UV Control Panel Assembly	9520038

Specifically designed to disinfect the effluent from small aerobic treatment plants, the Ultraviolet Disinfection Unit can reduce fecal coliform bacteria levels to well below the most stringent U.S. treatment standards, even when the upstream treatment plant is operating in a mild upset condition. Designed to disinfect residential wastewater, UV disinfection units are safe and harmless. There are no adverse effects from overexposing the effluent to germicidal ultraviolet light because UV disinfection does not form by-products.

The disinfection chamber couples directly to the aerobic plant 4'' discharge pipe and is permanently installed below grade. When fully inserted, the sub-assembly is properly positioned by pins mounted near the top of the disinfection chamber. This well-defined flow path gives the proper fluid exposure time.

The light source is mounted in the center of an anodized aluminum frame that divides the disinfection chamber in half. The frame seals against the inner surface of the disinfection chamber and prevents flow by-pass. To control the lamp's surface temperature, the ultraviolet light is surrounded by a clear fused quartz tube. When the disinfection chamber is filled with water, the ultraviolet light can operate continuously, whether or not water is flowing. Continuous operation within a lamp surface temperature range of 105-120° F provides optimum ultraviolet light output and long lamp life.

The disinfection sub-assembly, which extends approximately one foot above grade, is watertight. This protects the electrical connections against a fluid backup that could cause the wastewater effluent level to rise to the maximum height of the upstream treatment plant.

The UV system operates on 120vAC and consumes less than 25 Watts. A green LED indicator on the junction box confirms the operating status of the UV system.

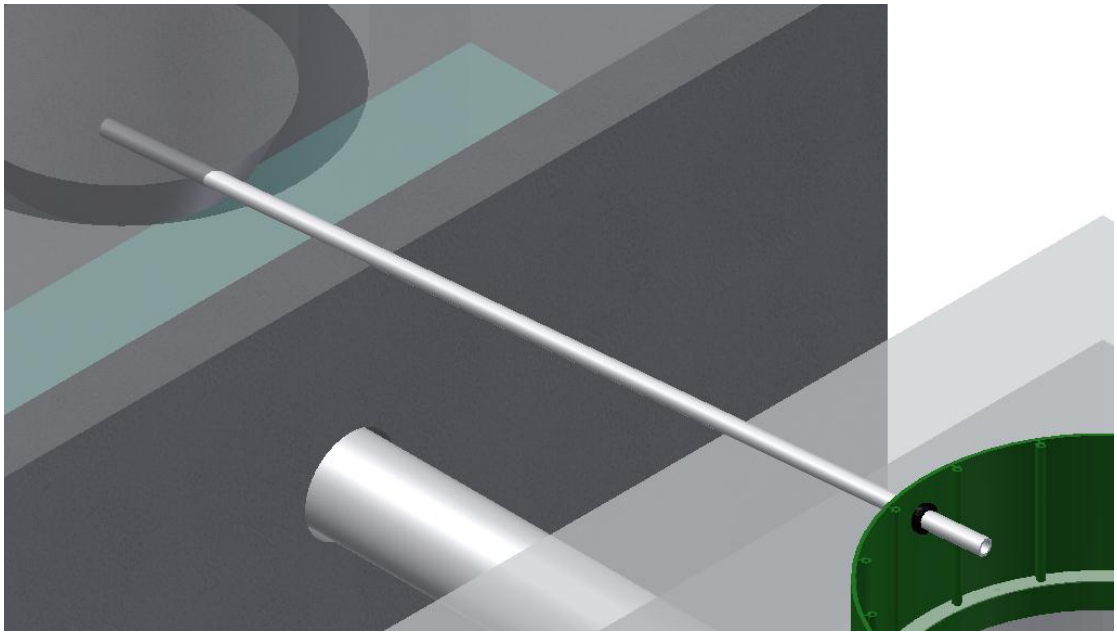
Maximum flow through the unit is rated at 3 gallons per minute (gpm), or 4,320 gallons per day (gpd), with the following effluent conditions:

Suspended Solids < 30 mg/liter - 5-day BOD < 30 mg/liter

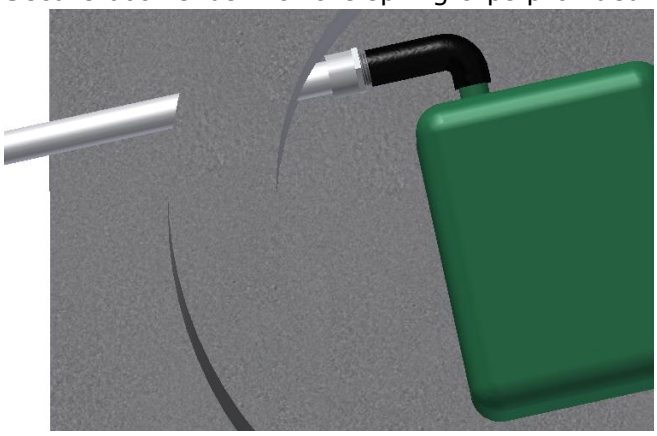
Under the above conditions, fecal coliform reduction exceeds 3-logs, or 99.9%, at the end of the UV lamp life (one year of continuous operation).

Fecal coliform counts in the home aerobic treatment effluent typically range from 800 - 20,000 colony-forming units (CFU) per 100ml. CFUs measure viable fungal and bacterial cells.

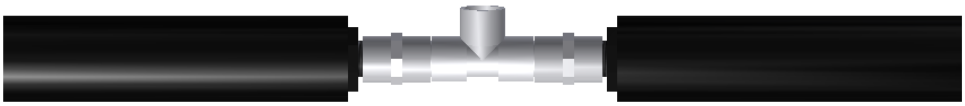
1. Install the treatment system and pump tank to be aerated.
2. Install the compressor in a dry, vented enclosure. The clarifier access riser may be used as the enclosure if a removable baseplate and vents are placed in the riser.
3. Use the provided ½" pipe to run between the compressor enclosure and the access riser for the pump tank. If necessary, use the black grommets to seal around the pipe where it leaves the compressor enclosure or enters the pump tank.



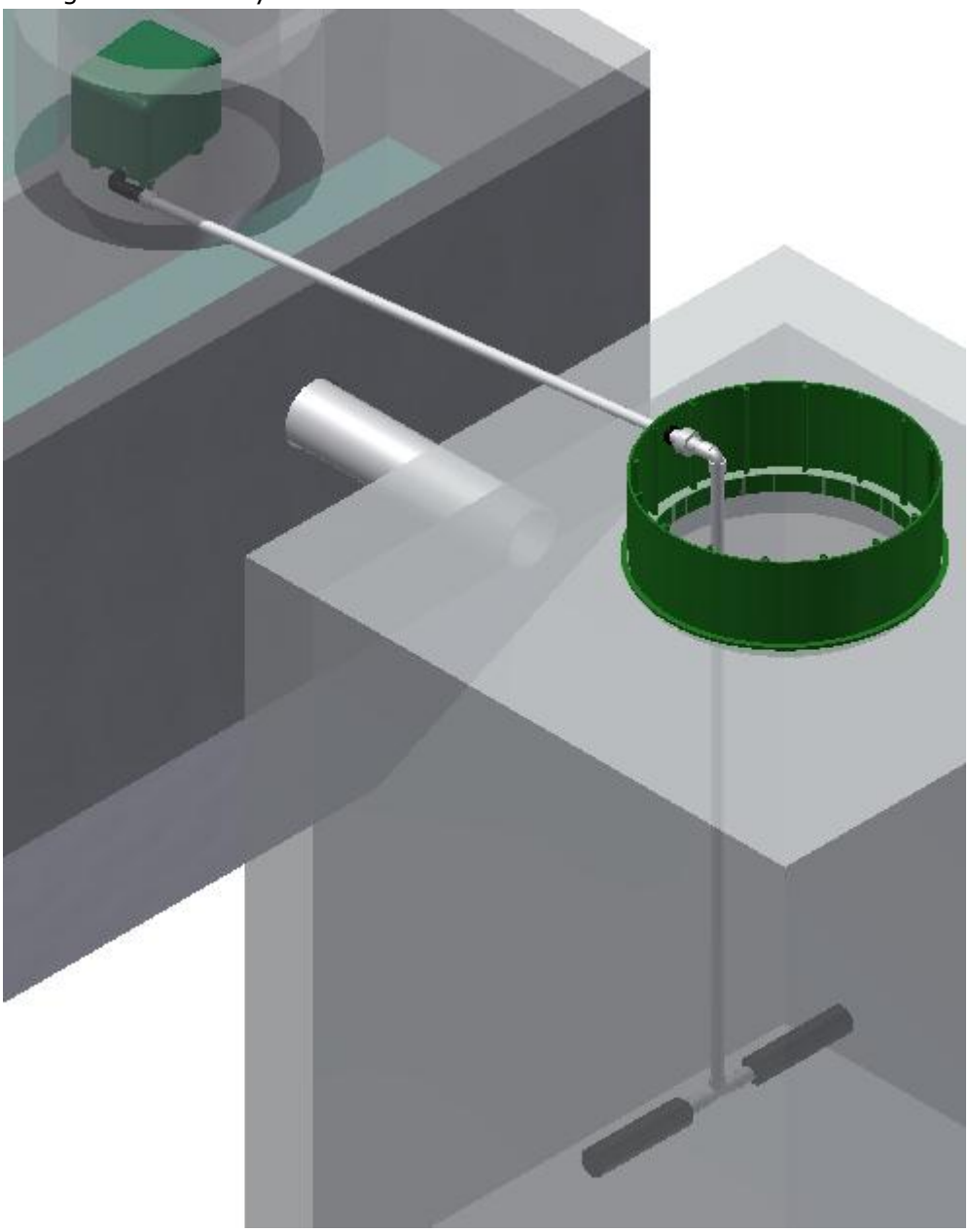
4. Glue the threaded adapter to the end of the ½" pipe in the enclosure. Connect one end of the black hose provided with the compressor to the compressor and the other end to the threaded adapter. Secure both ends with the spring clips provided with the compressor.



5. Glue the union to the compressor pipe in the pump tank.
6. Using a short piece of ½" pipe connect the ½" elbow to the union on the compressor pipe.
7. Using thread seal tape, thread the diffusers to each end of the tee assembly.



8. Glue one of the two long pipes to the sidearm of the tee.
9. Place the diffuser assembly in the pump tank and glue the top of the long pipe to the elbow on the air supply line. The diffusers should be about 3” off the bottom of the tank, cut drop pipe to length if necessary.



10. Run power conduit to the compressor enclosure. The compressor will require a single phase 120 volt power source. The provided cord grip may be used to run the compressor power cord into a watertight junction box to make connections.

Jet® Wastewater Treatment Solutions
Founded on Innovation. Anchored by Service.®

Jet Inc. Model 197 Control Panel Installation and Users Manual

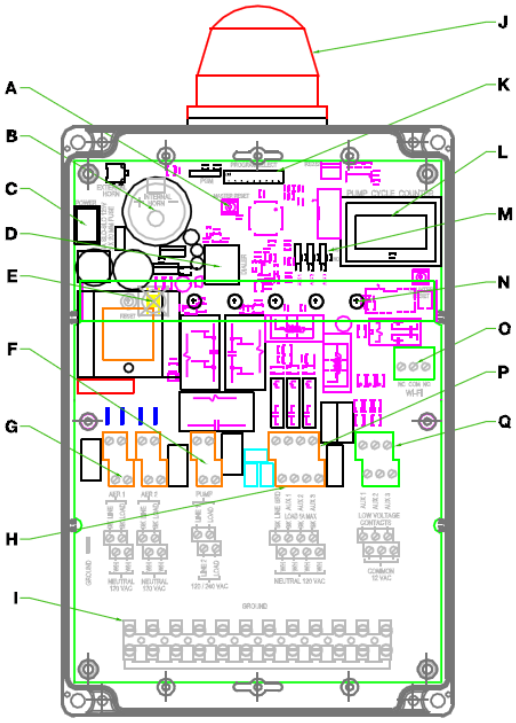
The Jet Incorporated Aerator control panel monitors and controls the operation of Jet system aerators and additional components. The panel can be configured to control single or dual aeration systems. A single aerator system controls the operation of one aerator. A dual aerator system can control two aerators, or one aerator and one re-aeration compressor.

In addition to the aerator control circuits, the control panel also contains the following circuits or features:

- Two aerator/compressor control circuits
- Two auxiliary available output circuits
- Three auxiliary input circuits with normally open or normally closed selection
- One power indicator LED, and four additional error indicator LED's
- An alarm buzzer with circuit board provision for an alternate or externally mounted buzzer
- A 9-position DIP switch for selection of configuration options
- User accessible reset switch and circuit board master reset switch
- Alarm mode Auto-Dialer power and control interface
- Circuit board mounted power switch and fuse
- Dry contact for Jet Wi-Fi messenger or cellular.

Control Panel Features

A. Master Reset Button
B. Internal Horn
C. On/Off Switch
D. Optional Dialer Interface
E. External Reset Button
F. Pump Power Supply Contacts
G. Aerator Power Supply Contacts
H. Alarm Power Supply Contacts
I. Ground Buss
J. Central Alarm Beacon
K. DIP Switch Array
L. Event Counter (Optional)
M. Auxiliary Alarm Settings (NC/NO)
N. Indicator Light Array
O. Optional Wi-Fi Alarm Contacts
P. Auxiliary Output Contacts
Q. Auxiliary Input Contacts



Champion Pump

CPE

4/10 - 1/2HP
EFFLUENT

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

SSPMA CERTIFIED

FEATURES/BENEFITS

PERFORMANCE
Heads up to 65' TDH
Flows up to 86 GPM

MOTOR
High efficient, 115v or 230v, 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
Type 21 inboard seal design with secondary exclusion seal
- Rotating components of seal are in the motor housing, being lubricated by the motor oil preventing foreign matter from wrapping around the seal components
- Seal will last longer if the pump runs dry
- Secondary exclusion seal keeps debris from entering the seal cavity

IMPELLER DESIGN
Non-clog style, cast-iron vortex impeller (CPEH Thermoplastic Vortex)
- 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
- Easy to replace in the field
- 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

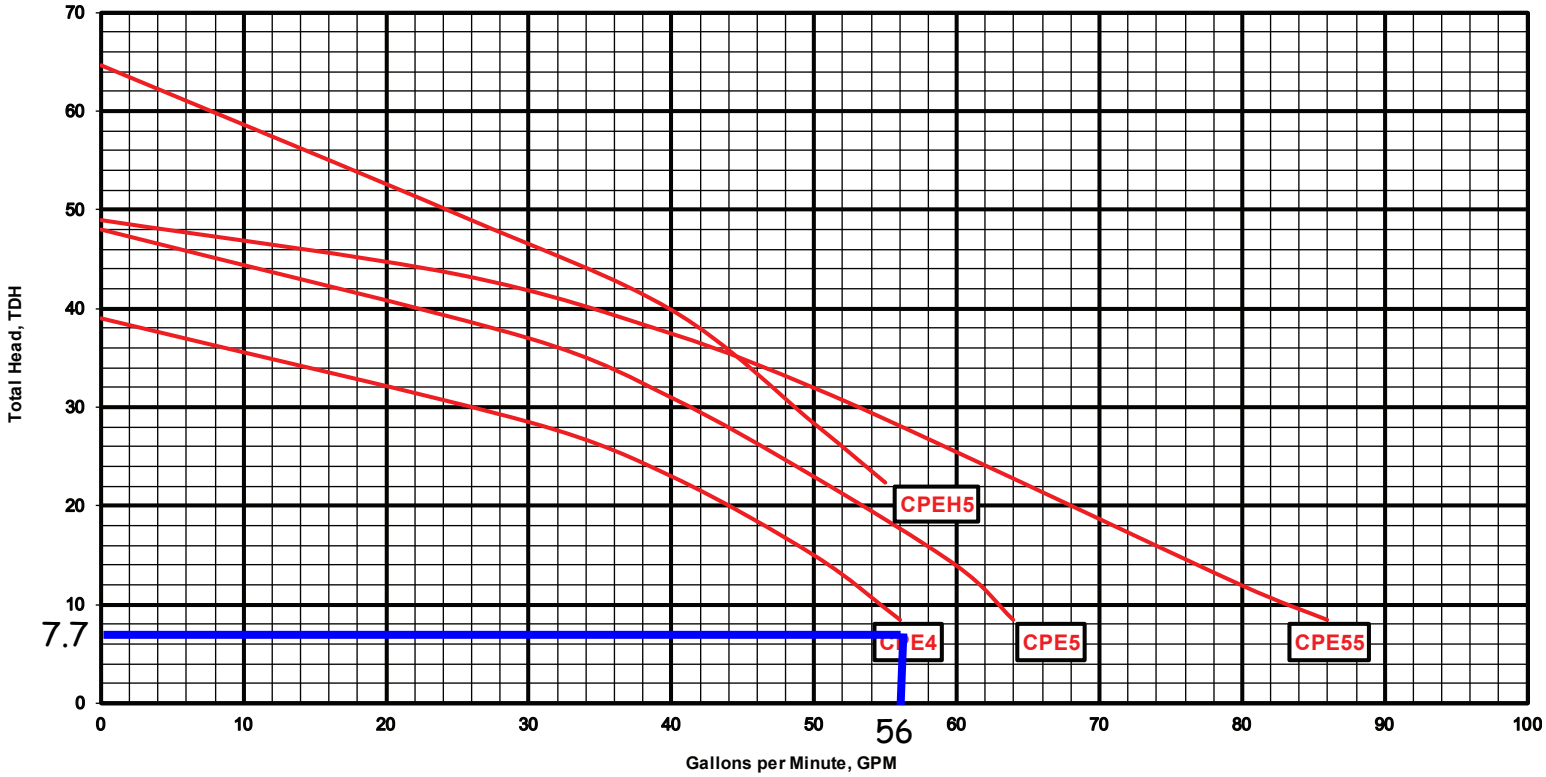
APPLICATIONS
Dewatering, septic systems, residential and commercial developments, elevator pits and STEP systems

Vertical Float

Wide-Angle Float

4/10-1/2 HP submersible pumps that handle up to 3/4" solids with 2" discharge

PERFORMANCE CURVE

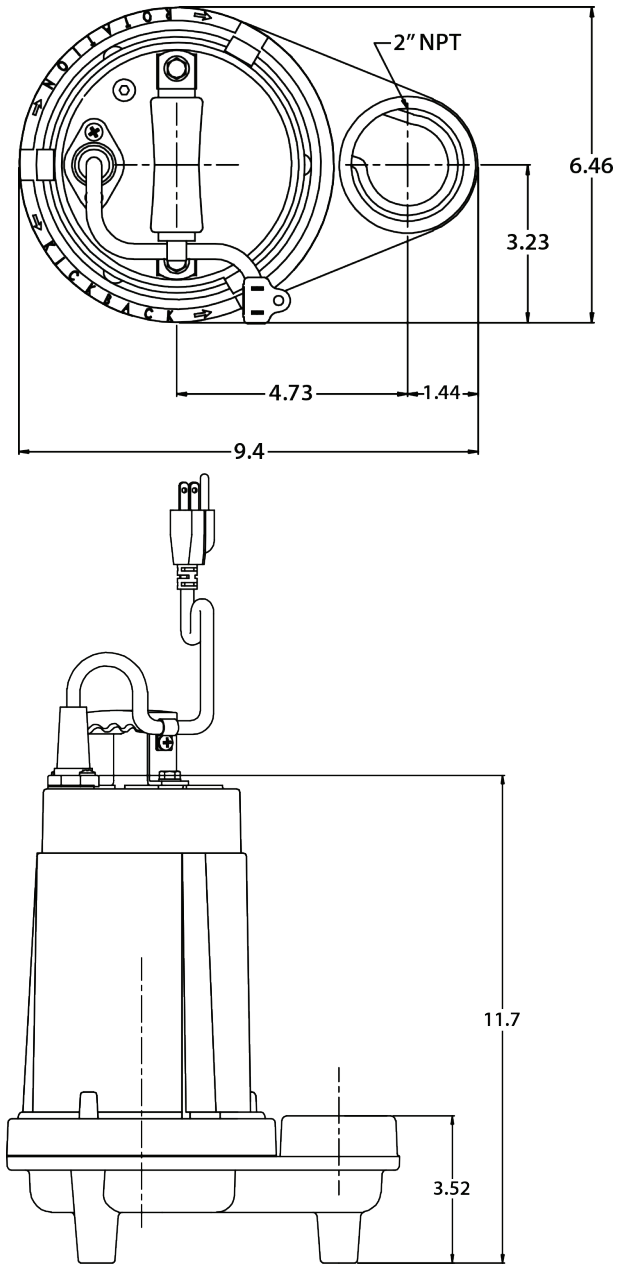


Champion Pump Company, Inc • P.O. Box 528 • Ashland, OH 44805
Phone 419-281-4500 • Fax 419-616-1100 • www.championpump.com

REV 1017

TECHNICAL DATA

DISCHARGE	2" NPT. vertical standard
LIQUID TEMPERATURE	140 Degrees F. (Intermittent)
MOTOR HOUSING	Cast Iron
VOLUTE	Cast Iron
SEAL PLATE	Cast Iron
IMPELLER	Cast Iron / Vortex (CPEH thermoplastic vortex)
SOLIDS HANDLING	3/4"
SHAFT	Stainless Steel
SHAFT SEAL (SINGLE SEAL)	Inboard mechanical with secondary exclusion V-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	20' Length standard. Up to 100' available. (UL/CUL) Listed 16 AWG, Type SJTW
MOTOR (SINGLE PHASE)	4/10-1/2 HP 3450 RPM, 60 Hz, NEMA L Includes Overload Protection in the motor, oil filled, class B permanent split capacitor
WEIGHT	37 lbs. (Manual)



MODEL(S) INFORMATION

MODEL	HP	VOLTS	PHASE	AMPS	CORD LENGTH	SWITCH
CPE4-12 / CPE5-12 / CPE55-12 /CPEH5-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Manual
CPE4-13 / CPE5-13 / CPE55-13 / CPEH5-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Manual
CPE4-15 / CPE5-15 / CPE55-15 / CPEH5-15	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	50'	Manual
CPE4A-12 / CPE5A-12 / CPE55A-12 / CPEH5A-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Wide-Angle Float
CPE4A-13 / CPE5A-13 / CPE55A-13 / CPEH5A-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Wide-Angle Float
CPE4V-12 / CPE5V-12 / CPE55V-12 / CPEH5V-12	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	20'	Vertical Float
CPE4V-13 / CPE5V-13 / CPE55V-13 / CPEH5V-13	4/10 - 1/2	115	1	6.6 / 8.5 / 10.5 / 11.5	30'	Vertical Float
CPE4-22 / CPE5-22 / CPE55-22 / CPEH5-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Manual
CPE4A-22 / CPE5A-22 / CPE55A-22 / CPEH5A-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Wide-Angle Float
CPE4V-22 / CPE5V-22 / CPE55V-22 / CPEH5V-22	4/10 - 1/2	230	1	3.3 / 4.3 / 5.75 / 5.75	20'	Vertical Float

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Re-Aeration Tank Interior Sampling Petcock for NPDES Systems

This photo is of a sampling petcock located inside the re-aeration tank riser. For convenience, it is mounted on the “gooseneck” pipe riser, just before the union quick disconnect.

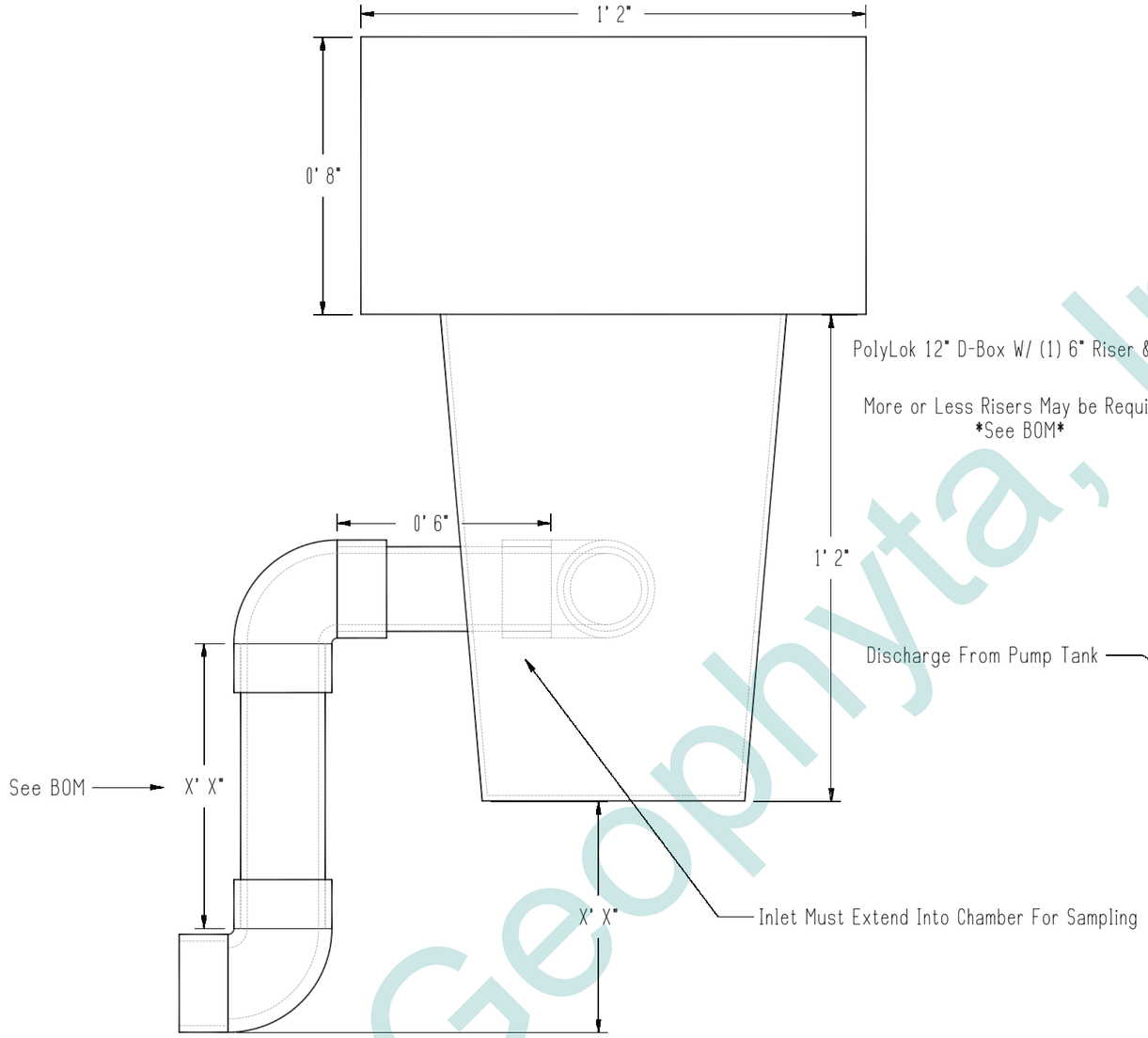
This unit is an approved substitute for a free falling sample port where effluent discharge cannot be accomplished with a gravity discharge line.

Strict adherence to sampling techniques and protocols are required.

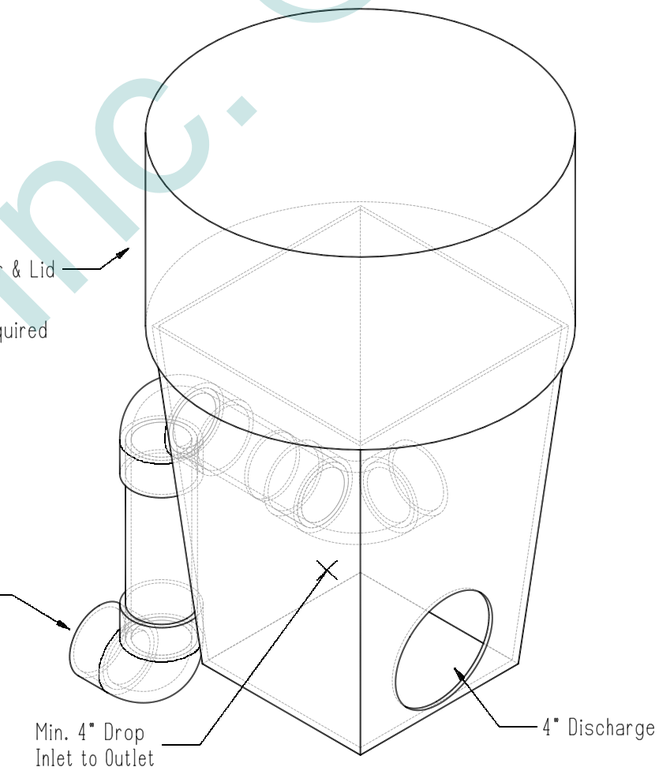
Install, operate, maintain, and sample in accordance with applicable statutes, regulations, practices, requirements, restrictions, and prohibitions.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

DRAWN BY: SETH V. LAYNE, GEOPHYTA INC. 29.AUG.19



SCALE 1:4



SCALE 1:5

SIZE	FSCM NO.	DWG NO.	REV
B		Upflow Force Main to Free-Falling Sample Port	
SCALE 1:1			SHEET 1 OF 1

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Bill of Materials - 5827 Roan Rd., HSTS Replacement - NPDES Jet-J500 ATU & Spoerr 1000gal Dose Tank W/ UV Disinfection & Reaeration Rev.1			
Quantity	**Part Name**	**Section**	**Comment**
1	SCH40PVC**4inch**Two-Way Cleanout Tee SxSxS	Replaced Sewer Main	Two-Way Cleanout (Tee)
1	SCH40PVC**4inch**pipe2ft.		Two-Way Cleanout (Tee to Cap)
1	SCH40PVC**4inch**Cap		Two-Way Cleanout (Cap)
4	SCH40PVC**4inch**Coupler		
4	SCH40PVC**4inch**45DegreeEll		Config. By Installer
2	SCH40PVC**4inch**pipe3ft.		
1	SCH40PVC**4inch**pipe4ft.		
5	SCH40PVC**4inch**pipe10ft.		
1	*ATU Tank*	ATU Tank	**Jet J500 ATU Tank W/ 18" Risers**
1	SCH40PVC**4inch**pipe3ft.	ATU to Dose	
1	*Dose Tank*	Dose Tank	**Spoerr 1000gal Dose Tank W/ 18" Risers**
1	*UV Disinfection Lamp*	UV Disinfection Lamp	**Jet Model No. 9520034 UV Lamp**
1	SCH40PVC**1inch**UnionSxS	Reaeration Assembly	Quick Disconnect
1	SCH40PVC**1inch**TeeSxSxS		See Detail Print
1	SCH40PVC**1inch**90DegreeEll		
1	SCH40PVC**1inch**pipe60inch		
1	SCH40PVC**1inch**pipe4.0ft.		
1	SCH40PVC**1inch**pipe2.25inch		
2	SCH40PVC**1inch**pipe5.8inch		
1	*Jet Model 197 Panel (Pump Lockout, Visual/Audible Alarm)*	ATU, Reaeration & Pump Controller	**Jet Model No. 197 Control Panel W/ Event Counter**
~65 ft.	*2 conductor w/ground, 14 gauge UG wire*	Dose Pump Assembly	Pump Circuit; Standalone Breaker
~65 ft.	*2 conductor w/ground, 14 gauge UG wire*		Alarm Circuit, Added To House Lighting Breaker
~65 ft.	*Plastic conduit, to contain 6-14ga*		Pump & Alarm Circuit
1	SCH40PVC**2inch**Quick Disconnect		(Allow Pump Removal/Replacement)
1	SCH40PVC**2inch**Check Valve		Air-Lock Hole Between Check Valve & Pump
1	SCH40PVC**2inch**Ball Valve		Adjust Output GPM
1	*Petcock Sampling Port*		Before Quick Disconnect
1	SCH40PVC**1inch**pipe6ft. L. Float Tree		Float Tree
1	*Effluent Pump **2inch** NPT 0.4HP*		**Champion CPE4-12 Effluent Pump or Equiv.**
1	SCH40PVC**2inch**Adapter MNPT to Soc		Pipe Adapter to Pump
1	SCH40PVC**2inch**pipe12inch W/ 0.25" Weephole		1/4" Weep Hole
3	SCH40PVC**2inch**90DegreeEll		See Detail Print
2	SCH40PVC**2inch**pipe3inch		
1	SCH40PVC**2inch**pipe6.5inch		
1	SCH40PVC**2inch**pipe57.3inch		

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1	SCH40PVC**2inch**pipe3ft.	Force Main to Upflow Assembly	Config. By Installer & Add 90 in D-Box Facing Down
3	SCH40PVC**2inch**90DegreeEll		
1	SCH40PVC**2inch**pipe6inch		
1	SCH40PVC**2inch**pipe8inch		
1	SCH40PVC**4inch**pipe3ft.	Force Main Sleeve	Sealed @ Both Ends
1	PolyLok 12" D-Box W/ (2) 6" Risers W/ Insulated Lid	Free-Falling Sample Port	See Detail Print
2	SCH40PVC**4inch**Coupler	NPDES Discharge	Config. By Installer
2	SCH40PVC**4inch**45DegreeEll		
2	SCH40PVC**4inch**pipe5ft.		
2	SCH40PVC**4inch**pipe10ft.		
1	Catch Basin 24" Deep Vehicle Grade W/ Grate Lid	Catch Basin W/ Stubs	Spoerr 24" Deep Catch Basin
1	SCH40PVC**8inch**Coupler		Stub to Storm Drain
1	SCH40PVC**8inch**pipe7ft.		
1	SCH40PVC**8inch**pipe10ft.		
1	SCH40PVC**8inch**pipe5ft.		Stub Upslope Side
1	Fernco Fitting 8" Dia. to 6" Dia.		Attach to Storm Drain
Additional Notes			
Pump, Crush & Backfill Old Tankage			
Ensure Storm Drain is Clear of Debris			
Fill Soil Area Required Around Catch Basin/Ditch Area to Top of New Catch Basin (See Elevation Print)			
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	Tankage & Piping
-	Straw Mulch For Grass Establishment	Homeowner's Choice	
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	
******Call OUPS before you dig.******			
Installer substitution of materials not specfied 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.			
Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.			

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Operation and Maintenance Procedures

Home Septic Treatment Systems With Processing Through An Aeration Treatment Unit, Disinfection, And Effluent Discharge

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems may utilize processing, storage, and pumping tanks. Also, the processed effluent may be disinfected before discharge to a storm drain, ditch, or stream. In some cases, a soil absorption component, the leachfield, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

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

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

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

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iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and leachfield areas.
v) Do not add additional soil fill on or near the leachfield. This will limit air movement into the soil needed for effluent treatment and may cause system failure.
vi) Limit lawnmower traffic on the leachfield when soil is excessively wet.
vii) Do not plant any deep rooted plants on top of or near your leachfield soil absorption area.

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

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

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

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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 Aeration Treatment 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 any 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.

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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.

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