



Howard County
Health Department

Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 1/13/15

ONSITE SEWAGE DISPOSAL SYSTEM

P 555707

INSTALLATION

APPROVAL DATE: 6/22/15 SEC

PERMIT

CONSTRUCTION

A _____

PROPERTY ADDRESS: 16455 Tinker Hill Road

SUBDIVISION: Chapel Meadows

LOT: 3

TAX ID: _____

CONTRACTOR: Farm and Home Excavating

EMAIL: farmhomeex@verizon.net

CONTRACTOR ADDRESS: 901 Driver Road

PHONE: 410-984-0189

PROPERTY OWNER: Scott and Constance Schum

EMAIL: _____

OWNER ADDRESS: 16455 Tinker Hill Road

PHONE: _____

BAT UNIT MODEL: ECOPOD E60NCA

PUMP SIZE: _____

PUMP TANK CAPACITY: 600GPD

DISTRIBUTION SYSTEM: GRAVITY ☒

LOW PRESSURE DOSED ☐

NUMBER OF BEDROOMS: _____

TRENCHES:	LINEAR FEET REQUIRED:	<u>SEE BAT PLAN 150'</u>	INLET DEPTH:	<u>SEE BAT PLAN 3.5'</u>
	TRENCH WIDTH:	<u>SEE BAT PLAN 2'</u>	MAXIMUM BOTTOM DEPTH:	<u>SEE BAT PLAN 7'</u>
	MINIMUM SPACE BETWEEN TRENCHES:	<u>SEE BAT PLAN 8'</u>	EFFECTIVE AREA BEGINNING DEPTH:	<u>SEE BAT PLAN 3.5'</u>
LOCATION:	PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.			
NOTES:	Install BAT system per plan. <u>Rocky Soil</u>			

ISSUED BY: Jeff Williams

ISSUE DATE: 1/13/15

EXPIRATION DATE: 1/13/16

NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION

NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING

NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.

NOTE: WATERTIGHT SEPTIC TANKS REQUIRED

NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL

NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS

NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM

NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.

NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

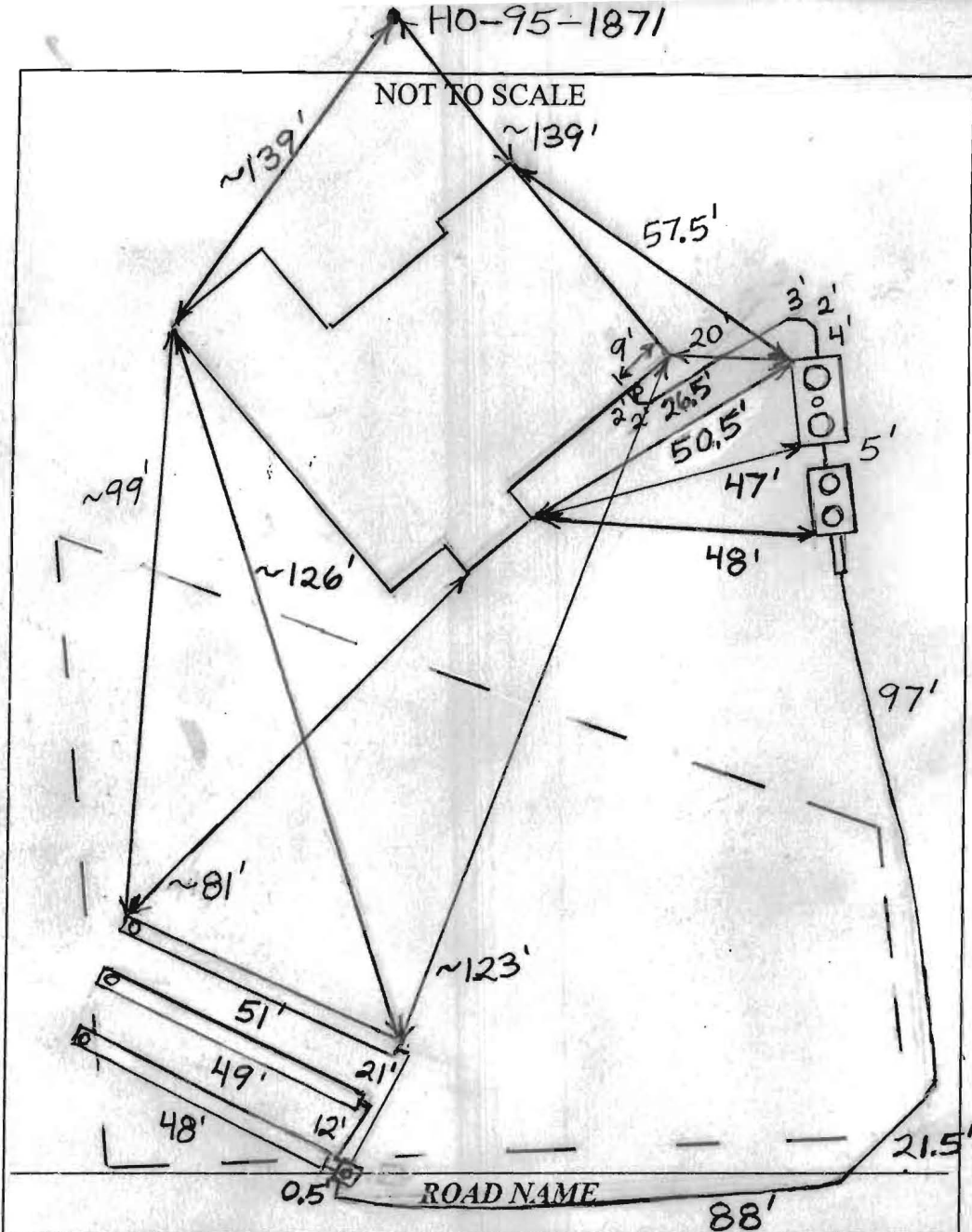
NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.

PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.

CALL 410-313-1771 TO SCHEDULE INSPECTIONS.

HO-95-1871

NOT TO SCALE

**TRENCH/DRAINFIELD DATA**

WIDTH	INLET	BOTTOM
2'	35'-4'	7'-7.5'
NUMBER OF TRENCHES		3
TOTAL LENGTH		148'
ABSORPTION AREA		518
DISTRIBUTION BOX LEVEL		Yes
DISTRIBUTION BOX BAFFLE		Yes
DISTRIBUTION BOX PORT		Yes

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL	Yes
MANUFACTURER	Babylon-Ecopod
CAPACITY	2000 GAL
SEAM LOC	Top
TANK LID DEPTH	0.5'-2'
BAFFLES	Front
BAFFLE FILTER	N/A
MANHOLE LOC	Front+Rear
6" PORT LOC	Middle
WATERTIGHT TEST	No
SLOTTED	N/A
DATE ON LID	2/4/2015

PUMP/SEPTIC TANK LEVEL

MANUFACTURER	Babylon
CAPACITY	1250 GAL
SEAM LOC	Top
TANK LID DEPTH	2'-3'
BAFFLES	Front
BAFFLE FILTER	No
MANHOLE LOC	Front+Rear
6" PORT LOC	None
WATERTIGHT TEST	No
SLOTTED	No
DATE ON LID	Dry

PRE-CONSTRUCTION:

2/24/2015 Install three 50' trenches on contour across the top of the easement toward Pres. Parcel B. Put the dist. box offset of the middle of the easement. Keep the tanks uphill as far as possible due to potential high water issues. Keep the tanks away from the drywell. (BB)

INSTALLATION: 3/10/2015 Tanks set. Need plumbing from house to tank. Pump line installed. Top trench done. (BB)

3/13/2015 System finished except for pump and alarm test and BAT certification. (BB) 6/15/2015 Pump and alarm working. Need system approval documentation from Babylon. (BB) 6/22/15 BAT startup certification received. (SC)

FINAL INSPECTOR Sarah Collins

DATE OF APPROVAL 6/22/15

MEMBER N. C. B. V. A.

MEMBER P. C. B. V. A.

Babylon

V A U L T
S I N C E 1 9 3 0

Burial Vaults - Septic Tanks

PHONE: 410-848-0393
FAX: 410-848-3551

925 WAKEFIELD VALLEY ROAD
NEW WINDSOR, MD 21776

Five Year Initial Service Policy
On Site Wastewater Treatment System

Brand Name: <u>Ecopod</u>	Model Number: <u>Ecopod 60</u>
Purchase Date: <u>3-9-15</u>	Serial Number: <u>ECOND2265CA</u>

INITIAL POLICY:

A five (5) year service policy shall be furnished to the user by the installer.

This policy is included in the original purchase price and shall provide the following:

1. An inspection/service call every six months which includes inspections, adjustment and servicing of the mechanical and electrical component parts as necessary to ensure proper function for the first year. And once a year thereafter.
2. An effluent quality inspection every six months consisting of a visual check for color, turbidity, scum overflow, and an examination for odors for the first year. And then once a year thereafter.
3. A sample shall be pulled from the aeration tank once a year as described in the "Solids Removal" Section to determine if there is an excess of solids in the treatment plant. If the test results determine if there is an excess of solids in the treatment plant. If the test results determine a need for solids removal, the user will bear the cost and responsibility for doing so.
4. If any improper operation is observed which cannot be corrected at that time, the user shall be notified immediately in writing of the conditions and the estimated date of correction.

Violations of Warranty including shutting off the electric current to the system for more than 24 hours, disconnecting the alarm system restricting ventilation to the aerator, overloading the system above its rated capacity, or introducing excessive amounts of harmful matter into the system, or any other form of unusual abuse.

THIS POLICY DOES NOT INCLUDE PUMPING
SLUDGE FROM UNIT IF NECESSARY

PERMITTING AUTHORITY:

SYSTEM OWNER:

INSTALLATION LOCATION:

16455 Tinker Hill Rd.
Woodbine, MD 21797

DISTRIBUTOR:

Babylon Vault Company Inc.
925 Wakefield Valley Rd.
New Windsor, MD 21776

INSTALLER:

Farm Home Excavating
901 Driver Rd.
Marriottsville, MD 21104

SERVICE COMPANY:

Babylon Vault Co. Inc.

Service Operators License Number: _____

I agree to abide by the service policy as stated above: _____

Witness:

e3 Environmental LLC

302-775-0766 www.e3onsite.com

ECOPOD-N Completion Statement

Installation Information

Owners Name	Scott Schum	# of Bedrooms / GPD	600
Street	16455 Tinker Hill Rd	Repair	<input type="checkbox"/>
City	Woodbine	New Construction	<input checked="" type="checkbox"/>
State	MD		
Zip	21797		

Installation Company

Company	Farm Home Excavating	Installed Date	3/9/15
Certified Installer		Startup Date	6/15/15
Street	901 Driver Rd		
City	Marietta		
State	MD		
Zip	21797		

ECOPOD-N

Model #	Serial #
E50 <input type="checkbox"/>	
E60 <input checked="" type="checkbox"/>	ELC0ND2265CA
E75 <input type="checkbox"/>	
E100 <input type="checkbox"/>	
E150 <input type="checkbox"/>	

Blower Voltage	Good
Blower Running Amps	Good
Inches of water over media with blower turned off	2 inches
Vent Installed	yes
Tanks and Risers Water tight	yes
Alarm Functional	yes

I hereby certify that the ECOPOD-N wastewater treatment system has been installed and started up in accordance with the construction permit and is in compliance with the manufacturers recommendations

Company	Babylon Vault Co Inc.	Date	
Signature	Steven R. Koonz		
Printed Name	Steven R. Koonz		

Water Testing Laboratories

P.O. Box 712
Stevensville, MD 21666
410-643-7711

of Maryland, Inc.

Scott Schum
12319 Brookhaven Drive
Silver Spring, Md 20902

Reporting Date: 6/3/2015
Report #: M2831

Submitted Sample Address: 16455 Tinker Hill Road
Woodbine, MD 21797
Submitted Sample Source: Bathroom sink
Date / Time Collected: 5/27/2015 11:25 AM
Sample Type: Drinking Water
Sampler/Company: K. Lee 4827KL, WTL of MD
Field Record: Chlorine residual: Absent Clear when drawn pH: 7.2
Well #: HO-95-1871

Analytical Results

Parameter	Result	Units	Report Limit	MCL	MCL Type
Total Coliform Bacteria	Absent	Coliforms/100 ml	Present/Absent	Present	EPA Primary
<i>E. Coli</i> Bacteria	Absent	Coliforms/100 ml	Present/Absent	Present	EPA Primary
Nitrate as N	4.4	mg/L	0.5	10	EPA Primary
Sand	Absent	P/A	Present/Absent	---	---
Turbidity	0.8	NTU	0.5	10 ^{TT}	EPA Action Level


Notes:

1. Bacteriological analysis of this sample indicates this water is **safe** for human consumption.
2. MCL – Maximum Contaminant Level
3. ND – Not Detected.
4. TT – Treatment Technique: A required process intended to reduce the level of a contamination that is allowed in drinking water. County health departments require that for new wells turbidity must be below 10 NTU for Use and Occupancy permits.
5. MCL Type –
EPA Primary: The maximum contaminant level which is the highest level of contaminant that is allowed in drinking water. Primary MCLs are enforceable standards.
EPA Secondary: Non enforceable guidelines regulating contaminants that cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste or odor) in drinking water.
Action Level: Defined in treatment techniques which are required processes intended to reduce the level of a contaminant in drinking water.
6. We certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the US Environmental Protection Agency or variations of these EPA methods. These test results may not be used for regulatory compliance.

Reported by,



C. Rodgers, Customer Service Representative

Reviewed by: 



LIBER 15744 FOLIO 149

Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21046

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

**OPERATION AND MAINTENANCE AGREEMENT
FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM
HAVING AN ADVANCED PRE-TREATMENT SYSTEM**

THIS AGREEMENT is made this 20th day of August, 2014, among
Scott & Constance Schum, hereinafter collectively referred to as "Owner", and
the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at
16455 Tinker Hill Road, in the 4th Election District of Howard
County, Maryland, and the deed to same is recorded or shall be recorded among the Land
Records of Howard County, Maryland in Liber 15660 Folio 310.

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal
system with an advanced pre-treatment system, utilizing best available technology to perform
nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective
January 1, 2013.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for
access to the system to make periodic inspections and the Owner agrees to provide any
information and data in Owner's possession reasonably requested and needed by the County to
develop accurate and thorough test results.

B. Owner acknowledges and agrees that neither the County nor any of its agents or employees,
either officially or individually, underwrites the operation of any system approved by them.

C. The Owner will devote reasonable care and effort to the operation and maintenance of the
system in perpetuity or until a public sewer connection is made so that a system malfunction is
not the result of poor maintenance, faulty operation, or neglect.

D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County
with a private entity to operate and maintain on a regularly scheduled basis an approved
advanced pre-treatment system. The owner shall supply a copy of the contract to the County
when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the
Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the
property is in existence and after installation of the system. Owner further agrees that they shall
inform in writing any subsequent purchaser or lessee of the Lot that the system shall require

maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

Scott Schum 8-12-14

Owner Date

SCOTT SCHUM

Constance Schum 8/12/14

Owner Date

CONSTANCE SCHUM

Bert Nufan 8/20/2014

Howard County Health Department

15 - Agreement
Recording Fee 20.00
Grant/Deed/Other Name:
Schum
Reference/Control #: 120
120 - Agreement
Signature 40.00
Total: 60.00
08/21/2014 12:58
#0103040 (08/01)
Issued to
Columbia/DCS, 08.02 -
Register 02

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Thursday, September 25, 2014 3:16 PM
To: 'Stephanie Tuite'
Subject: Chapel Meadows lot 3
Attachments: Chapel Meadows lot 3 memo_2.pdf

Hi Stephanie. The perc cert has been signed. Attached is a memo with some revisions we need on the BAT plan before we can approve it. Thanks

Jeff Williams
Program Supervisor, Well & Septic Program
Bureau of Environmental Health
Howard County Health Dept.
410-313-4261
jewilliams@howardcountymd.gov

CONFIDENTIALITY NOTICE

This message and the accompanying documents are intended only for the use of the individual or entity to which they are addressed and may contain information that is privileged, confidential, or exempt from disclosure under applicable law. If the reader of this email is not the intended recipient, you are hereby notified that you are strictly prohibited from reading, disseminating, distributing, or copying this communication. If you have received this email in error, please notify the sender immediately and destroy the original transmission.



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

MEMORANDUM

TO: Stephanie Tuite
Fisher, Collins, and Carter

FROM: Jeff Williams
Program Supervisor, Well & Septic Program

RE: Chapel Meadows Lot 3 BAT Plan

DATE: September 25, 2014

The Health Department has reviewed the above referenced plan. The following revisions are needed prior to Health Department approval.

- On the septic system design details and on the trench layout in the site plan, the trench spacing must be 12 feet edge to edge.
- Revise the trench locations on the site plan to show the lower trenches (currently labeled as the replacement trenches) as the initial system and move the replacement system over to be located near test hole 2303. Revise all piping and head calculations accordingly.
- The invert elevations for all trenches are listed at 4' depth while the effective area begins at 3.5' depth. Raise the invert elevations for all trenches to 3.5' depth in order to take full sidewall credit.
- Both effluent pump charts are illegible. Show legible charts and clearly indicate which pump is being chosen for the system.
- There is space on page two of the plan to fit the head calculations submitted as a supplemental sheet. Please add them to the main plan page two.
- The pump tank cross section indicates a 3" vertical separation between on and off floats as well as a 2.5' separation between alarm float and inlet invert while the pump details below show float elevations 6" apart for on and off floats and a 3' elevation difference between alarm float and inlet invert. Revise so they agree while still providing for the dose chosen and the appropriate emergency storage.



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

MEMORANDUM

TO: Stephanie Tuite
Fisher, Collins, & Carter

FROM: Jeff Williams
Program Supervisor, Well & Septic Program

RE: Chapel Meadows Lot 3 BAT plan

DATE: September 9, 2014

The Health Department has reviewed the BAT plan for the proposed house at Chapel Meadows Lot 3. The following revisions are needed prior to Health approval:

- The BAT plan shows well locations and a Sewage Disposal Area that differ from the signed perc certification plan for the lot. A revised perc cert must be submitted and signed by the Health Officer in order to revise those locations. Please note that one well location will not be approvable based on proximity to the stormwater culvert. It must be moved so that it is at least 50' from the culvert inlet and discharge point.
- The floorplans for the house indicate 3 bedrooms with a 3 piece rough-in in the unfinished basement for a future bedroom. The Health Dept. strongly recommends designing the septic system to accommodate 4 bedrooms in preparation of the finished basement.
- In the septic system design notes it states cover over BAT tank to be 1 to 7 feet. Revise to indicate the actual final cover proposed for the site. Maximum cover according to the BAT notes is 3'.
- Indicate the ground, invert, and bottom elevations for each trench in the initial and reserve systems.
- The trench spacing for trenches using sidewall credit is 10' according to newly revised COMAR guidelines.
- Revise the trench locations so that both the initial and 1st replacement systems are along the bottom portion of the reserve away from hole 2304. The specs for that area are application rate of 0.8, effective area beginning at 3.5' and trench bottom at 8'.
- On the pump tank cross section, show a weep hole in the discharge line inside the tank for backflow discharge.
- Show the calculations for dynamic head: static head and friction head details.
- Plot the point on the pump curve according to the appropriate head.
- Revise the dose for the system to be closer to around 40-50 gallons entering the d-box (factor in volume in force main)
- The pump tank cross section indicates 3" thick walls. Either show a 4" thick wall or add a note stating that the tank must be watertight tested in the field due to 3" thick walls.

**FISHER, COLLINS
& CARTER, INC.**

**CIVIL ENGINEERING CONSULTANTS
and LAND SURVEYORS**

Terrell A. Fisher, P.E., L.S.
Earl D. Collins, P.E.
Charles J. Crovo, Sr., P.E., L.S.

Paul W. Kriebel, P.E.
Mark L. Robel, P.L.S.
Aldo M. Vitucci, P.E.

September 18, 2014

Mr. Jeff Williams
Bureau of Environmental Health
Howard County Health Dept.
7178 Columbia Gateway Dr.
Columbia, MD 21046-4544

RE: Revised BAT Site Plan
Chapel Meadows Lot 3
Bldg Permit # B14002762

Dear Mr. Williams:

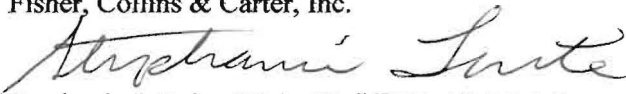
On behalf of our client, Scott Schum, we are submitting the attached three (3) copies of the revised BAT Site Plan and one (1) copy of the computations for your review and approval. The following is a point by point response to your comments dated September 9, 2014.

1. Amended Perc Plan was already submitted under separate cover.
2. Trench lengths have been modified per the potential 4th bedroom as requested.
3. The reference was an unfortunate oversight. The note has been revised to state 3 foot of cover.
4. Elevations added as requested.
5. Trench spacing has been revised as requested.
6. Trenches have been relocated as requested. In order to not have piping through the center of the rear yard or have several feet of additional piping, the distribution box has been shown near the property line with two trenches, one below the other.
7. Weep hole has been added as requested.
8. Calculations have been provided as requested.
9. Head has been plotted on the pump curve.
10. Dose has been revised.
11. Note has been added as requested.

If you should have any additional revisions, please consider release of the building permit and we will work quickly to resolve any additional concerns prior to issuance of the septic permit.

Thank you for your time and consideration of this submission. If you should have any questions or comments or wish for us to meet to discuss, please do not hesitate to call.

Very truly yours,
Fisher, Collins & Carter, Inc.


Stephanie J. Tuite, RLA, PE, LEED AP BD&C

WO #06026-6004

**FISHER, COLLINS
& CARTER, INC.**

**CIVIL ENGINEERING CONSULTANTS
and LAND SURVEYORS**

Terrell A. Fisher, P.E., L.S.
Earl D. Collins, P.E.
Charles J. Crovo, Sr., P.E., L.S.

Paul W. Kriebel, P.E.
Mark L. Robel, P.L.S.
Aldo M. Vitucci, P.E.

October 2, 2014

Mr. Jeff Williams
Howard County Health Department
Bureau of Environmental Health
8930 Stanford Boulevard
Columbia, Maryland 21046

Re: Chapel Meadows, Lot 3
Revised BAT Site Plan

Dear Mr. Williams:

Attached please find three (3) sets of the revised BAT Site Plan for your review and approval. The following is a point by point response to your comments dated September 25, 2014.

1. Spacing has been revised as requested.
2. Trench locations have been revised as requested.
3. Invert elevations of trenches have been revised as requested.
4. Pump charts have been made more legible as requested.
5. Head calculations have been added to sheet 2 as requested.
6. Pump tank detail has been revised as necessary based on changes.

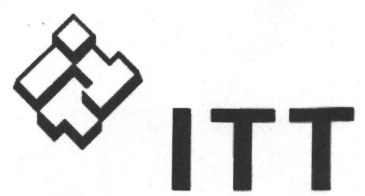
Thank you for your consideration of this request.

Very truly yours,



Stephanie Tuite, RLA, PE, LEED AP BD&C
Fisher, Collins & Carter, Inc.

WO #06026-6004



GOULDS PUMPS
Wastewater

APPLICATIONS

- Specifically designed for the following uses:
- Effluent systems
- Homes
- Farms
- Heavy duty sump
- Water transfer
- Dewatering

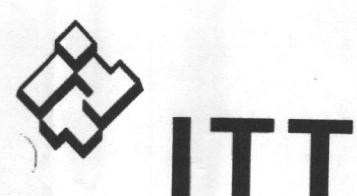
SPECIFICATIONS

- Solids handling capability: 3/4" maximum.
- Capacities: up to 60 GPM.
- Total heads: up to 31 feet.
- Discharge size: 1 1/2" NPT.
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers.
- Temperature:
 - 104° F (40° C) continuous
 - 140° F (60° C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor:

- EP04 Single phase: 0.4 HP 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- EP05 Single phase: 0.5 HP 115 V or 230V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug (standard on EP05).
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation.
Automatic models include Mechanical Float Switch
assembled and preset at the factory.



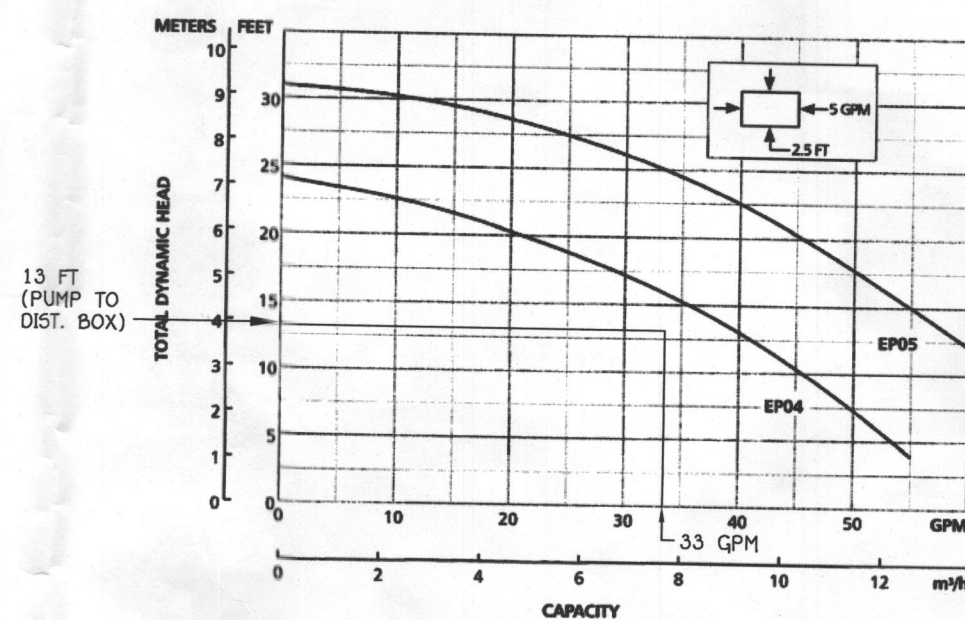
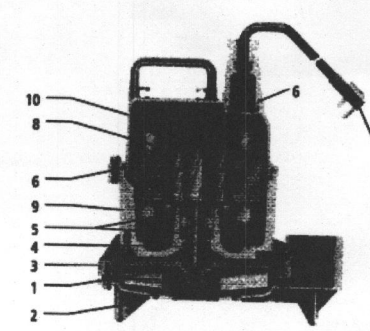
GOULDS PUMPS
Wastewater

PERFORMANCE RATINGS

Total Head (ft. of water)	Gallons Per Minute EP04	EP05
5	53	-
10	46	42
15	39	35
20	31	28
25	23	21
30	-	14

COMPONENTS

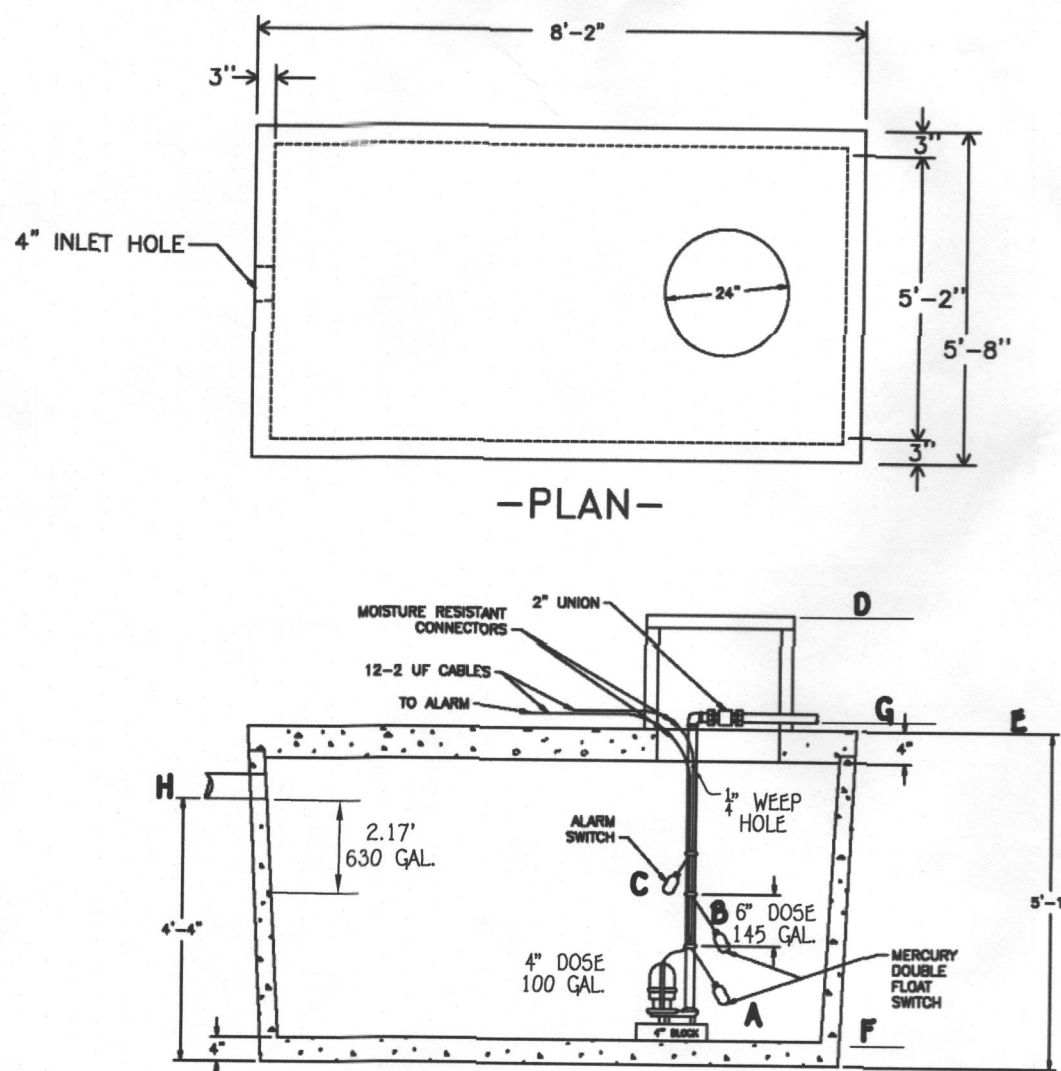
Item No.	Description
1	Impeller
2	Base
3	Pump Casing
4	Mechanical Seal
5	Ball Bearings
6	G-Rings
7	Power Cord
8	Oil Filled Motor
9	Motor Housing/ Stator Assembly
10	Motor Cover



MODEL INFORMATION

Order No.	HP	Volts	Amperes	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum On Level	Minimum Off Level	Minimum Basin Diameter	Maximum Solid Size	Shipping Weight Pkg.
EP0411					Plug / No Switch	10'	1 1/2"	Manual	Manual	15"	3/4"	20 / 9.1
EP0411A					Plugback / Wide-Angle	10'	1 1/2"	Manual	Manual	15"	3/4"	21 / 9.5
EP0411F					Plug / No Switch	20'	1 1/2"	Manual	Manual	15"	3/4"	20 / 9.1
EP0411AC					Plugback / Wide-Angle	20'	1 1/2"	Manual	Manual	15"	3/4"	21 / 9.5
EP0412					Plug / No Switch	10'	1 1/2"	Manual	Manual	15"	3/4"	20 / 9.1
EP0412F					Plug / No Switch	20'	1 1/2"	Manual	Manual	15"	3/4"	20 / 9.1
EP0511F					Plug / No Switch	20'	1 1/2"	Manual	Manual	15"	3/4"	22 / 10
EP0511AC					Plugback / Wide-Angle	20'	1 1/2"	Manual	Manual	15"	3/4"	23 / 10.4
EP0512F					Plug / No Switch	20'	1 1/2"	Manual	Manual	15"	3/4"	22 / 10

MONARCH
MONARCH PRODUCTS COMPANY, INC.
YORK HAVEN, PA.



1000 GALLON
RECTANGULAR PUMP TANK

DWG. ST10-2PTHA

PUMP ALARMS / INFORMATION

- A PUMP OFF: 532.19
- B PUMP ON: 532.52
- C HIGH WATER ALARM: 533.02
- D TOP OF ACCESS COVER: 530.30
- E TOP OF TANK: 535.94
- F BOTTOM OF TANK: 531.19
- G DISCHARGE OUT OF TANK: 537.11
- H INVERT INTO TANK: 535.19

PER HEALTH DEPARTMENT REQUIREMENTS,
THIS PUMP TANK MUST BE WATER-TIGHT
TESTED IN THE FIELD DUE TO 3" THICK
WALLS.

FRICTION LOSS IN 2" PIPE FITTINGS:

$$2 \text{ 1/8 HB} \times 4 \text{ FEET PER FITTING} = 8 \text{ EQUIVALENT FEET OF PIPE}$$
$$\text{TOTAL EQUIVALENT FEET OF PIPE} = 8 \text{ FT}$$

$$\text{TOTAL LINEAR FEET OF 2\" PVC} = 115 \text{ LF} + 8 \text{ LF} = 123 \text{ LF}$$

DYNAMIC HEAD

$$123 \text{ LF} \times 3.38 \text{ FT PER 100 LF OF PIPE} = 4.16 \text{ FT OF FRICTION HEAD}$$
$$\text{VERTICAL FROM TANK TO DISCHARGE} = 7.9 \text{ FT OF FRICTION HEAD}$$
$$\text{TOTAL DYNAMIC HEAD} = 12.0 \text{ FT (USE 13 FT)}$$

LATERAL VOLUME

$$115 \text{ LF (2\" PVC)} \times 17.4 \text{ GALLONS PER 100 LF} = 20.0 \text{ GALLONS}$$
$$\text{TOTAL VOLUME IN PIPES} = 20.0 \text{ GALLONS}$$

MINIMUM DOSE

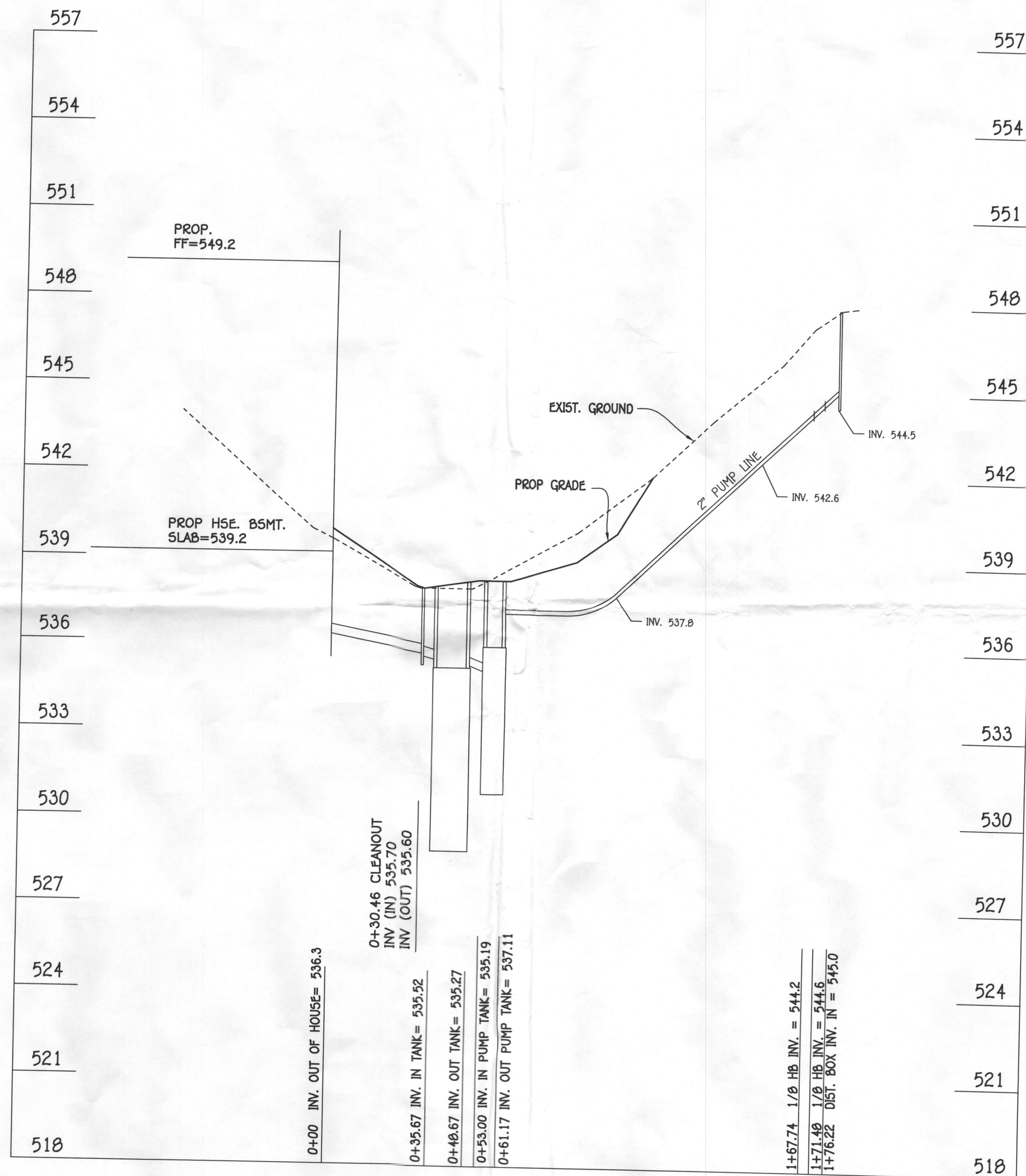
$$\text{MINIMUM DOSE} = (3 \text{ MIN} \times \text{VOLUME IN FORCE MAIN}) + (\text{VOLUME IN FORCE MAIN TO DISTRIBUTION BOX})$$
$$= (3 \times 20) + (20)$$
$$= 80 \text{ GALLONS}$$

80 GALLONS IS LESS THAN 1/6 DESIGN FLOW (600/6=100) = USE 100 GALLONS

$$\text{FLOW RATE OF PUMP} = 100 \text{ GALLONS} / 3 \text{ MIN} = 33.33 \text{ GPM (USE 33 GPM)}$$

USE - 100 GALLON DOSE

PUMP NEEDS TO HANDLE - 33 GPM AT 13 FT OF HEAD
PUMP HORSEPOWER ESTIMATED AT 0.4 HP



SEPTIC SYSTEM PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

Approved Septic System Plan
Howard County Health Department
Signature: [Signature] Date: 10/2/14

BAT SITE PLAN
CHAPEL MEADOWS
LOT 3

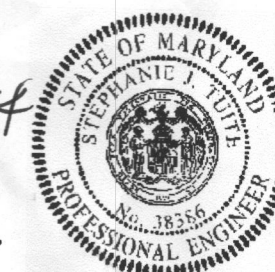
(PLAT #21197)
16455 TINKER HILL ROAD
ZONED: RC-DEO
TAX MAP: 13 PARCEL: 322 GRID: 23
FOURTH ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: SEPTEMBER, 2014
SHEET 2 OF 2

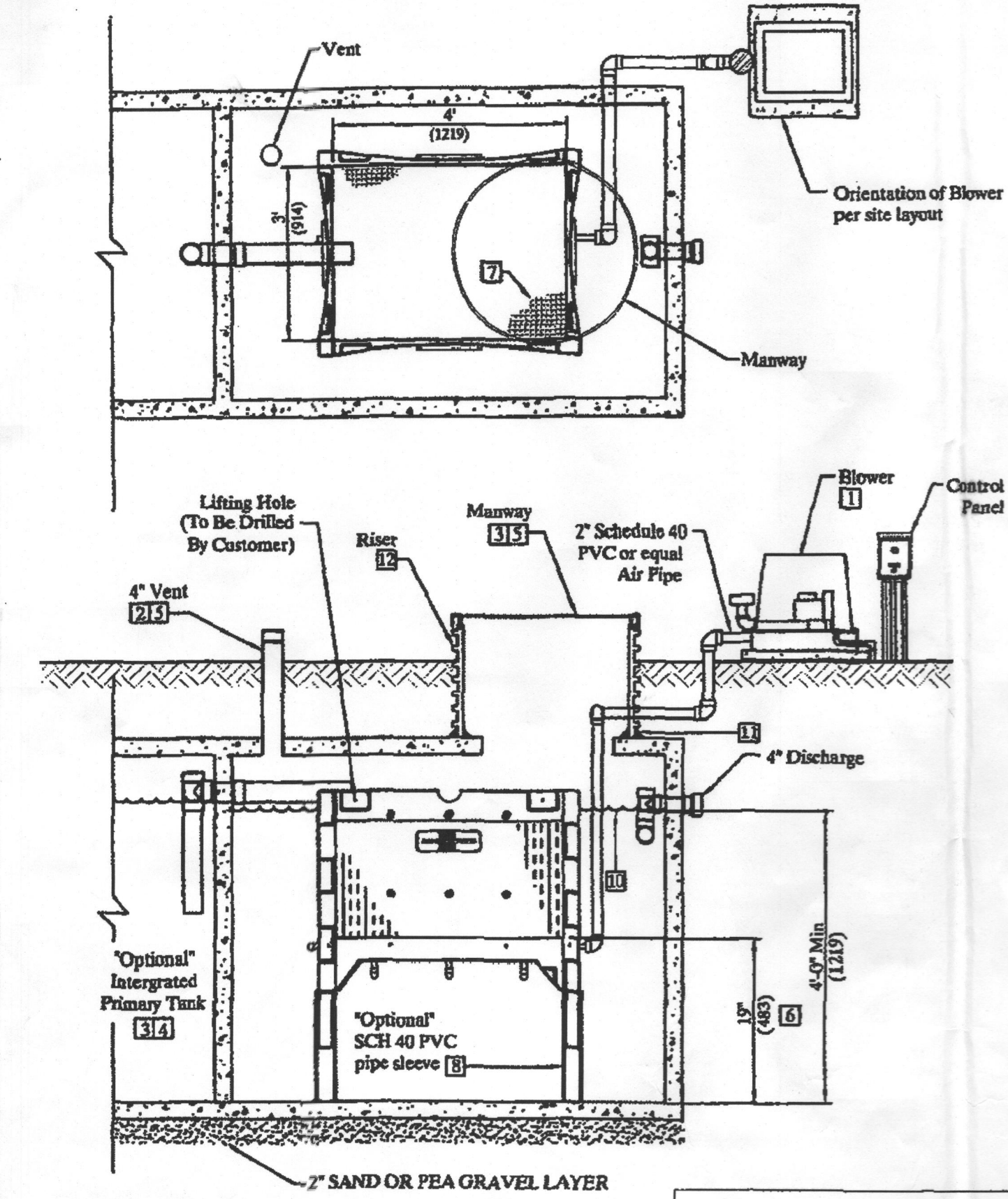
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CONTINENTAL SQUARE OFFICE PARK - 10275 BALDWIN NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
(410) 461-2895

OWNER

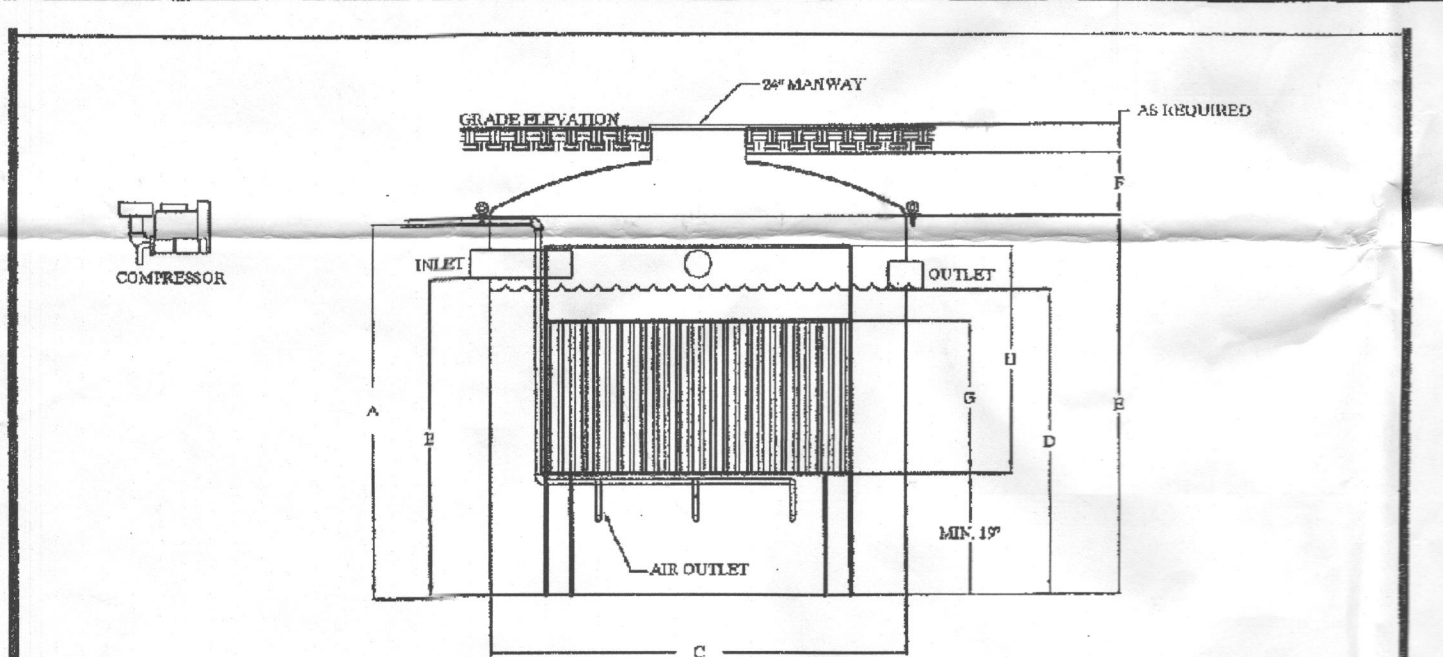
SCOTT & CONSTANCE SCHUM
7001 GARDNER LANE
HIGHLAND, MARYLAND 20777

Stephanie J. White, P.E. 38306
DATE: 10/2/14
Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 38306, Expiration Date 1-12-16.





THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DELTA ENVIRONMENTAL. ANY REPRODUCTION OR PARTIAL REPRODUCTION WITHOUT THE WRITTEN PERMISSION OF DELTA ENVIRONMENTAL IS PROHIBITED. DESIGN AND INVENTION RIGHTS ARE RESERVED IN THE FUTURE OF TECHNOLOGICAL ADVANCEMENT. ALL PRODUCTS ARE SUBJECT OF DESIGN AND OR MATERIAL CHANGE WITHOUT NOTICE.



PENTAIR
DELTA ENVIRONMENTAL

WASTEWATER TREATMENT UNITS
MODEL EXX-F ECOPOD

DESIGNED BY: B. LANDRY DATE: 12/10/04 SCALE: N.T.S. DWG. NO.: EXX-F

- BAT NOTES**
1. ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 2. FOR THE MAXIMUM COVER OVER THE BAT SHALL BE 3 FEET.
 3. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 4. WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
 5. ANY ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 6. AN AGREEMENT AND EASEMENT HAS BEEN COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, LIBER 15744, FOLIO 149.
 7. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
 8. SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.
 9. AT HIGH WATER ALARM PROBE, PUMP WILL HAVE CONTINUOUS OPERATION UNTIL LEVEL GOES BENEATH PROBE.
 10. IF WATER LEVEL RISES ABOVE THE ALARM PROBE, AN AUDIBLE AND VISUAL ALARM WILL SOUND. SEE MANUFACTURER SPECS FOR ADDITIONAL INFORMATION.
 11. ALARM TO BE WIRED TO A CIRCUIT SEPARATE FROM THE PUMP CIRCUIT.

TRENCH DESIGN

TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	INSET INTO TRENCH	DEPTH OF STONE AT	DEPTH OF TRENCH (FT)	DEPTH OF BOTTOM OF TRENCH	EFFECTIVE DEPTH AT	EFFECTIVE DEPTH (FT)	WIDTH OF TRENCHES (IN)	TRENCH SPACING
T1	546.0	545.0	544.5	3"	5	540.0	3.5"	4.5	3.0	12
T2	546.0	545.0	544.5	3"	5	540.0	3.5"	4.5	3.0	12
RT1	550.0	547.0	546.5	3"	5	546.0	3.5"	4.5	3.0	12
RT2	546.0	545.0	544.5	3"	5	540.0	3.5"	4.5	3.0	12

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CONTINENTAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLSWORTH CITY, MARYLAND 21042
(410) 461-2295

OWNER
SCOTT & CONSTANCE SCHUM
7001 GARDNER LANE
HIGHLAND, MARYLAND 20777

- NOTES:**
1. Blower piping to ECOPOD not to exceed 100 FT total length in the piping system. For distances greater than 100 FT, consult factory. Blower must be located above flood levels on a solid base.
 2. Vent to be located above finish grade or higher to avoid infiltration. Cap on vent must be secured with a stainless steel screw.
 3. All other tanks to/from ECOPOD must conform to applicable country, state, province, and local plumbing and electrical codes.
 4. The primary tank compartment volume must be 1 to 2 times the rated ECOPOD GPD. Primary and Reactor tank volumes are listed in the ECOPOD Design Manual. The primary tank may be integrated with the reactor tank or stand alone in a separate tank.
 5. All manways, pump out ports, and vents must be secured to prevent accidental or unauthorized access.
 6. ECOPOD media is recommended to be at least 19" from bottom of tank. Distances not 19" need factory approval.
 7. ECOPOD media EV19PVC224
 8. Tanks with tighter inlets, install SCH 40 PVC pipe over legs to elevate reactor to correct height.
 9. Air supply line should be secured with non-corrosive clamps where required to prevent vibration damage.
 10. Effluent discharge level must be at a height no more, or no less than 2" above vertical tube PVC media.
 11. Use epoxy, or use another approved method or substance, to create strong connection & watertight seal (TYP.)
 12. Risers must conform to country, state, province, and local acceptable codes. Fiberglass riser shown.

TREATMENT UNIT

Discharge From Tank	4"
Reactor Volume	840 Gallons
Recommended Distance Under Reactor Box	19"

REACTOR IN CONCRETE TANK

DWG. NO.: EXX-F REACTOR IN CONCRETE TANK REV: 2 PAGE: 1 OF 3

ECOPOD® FIXED FILM WASTEWATER TREATMENT SYSTEM UNIT SPECIFICATIONS

TREATMENT PLANT	TREATMENT CAPACITY (GPD)	PRIMARY TANK TOTAL VOLUME (GAL)	REACTOR TANK TOTAL VOLUME (GAL)	REACTOR TANK DILUTION VOLUME (GAL)	MEDIA SIZE	AIR REQUIREMENTS
E50	500	500	700	580	2X2X4"	12 CFM
E60	600	600	840	736	3X2X4"	14.4 CFM
E75	750	750	1050	870	3X2X4"	18 CFM
E100	1000	1000	1400	1160	4X2X4"	24 CFM
E150	1500	1500	2100	1740	6X2X4"	36 CFM

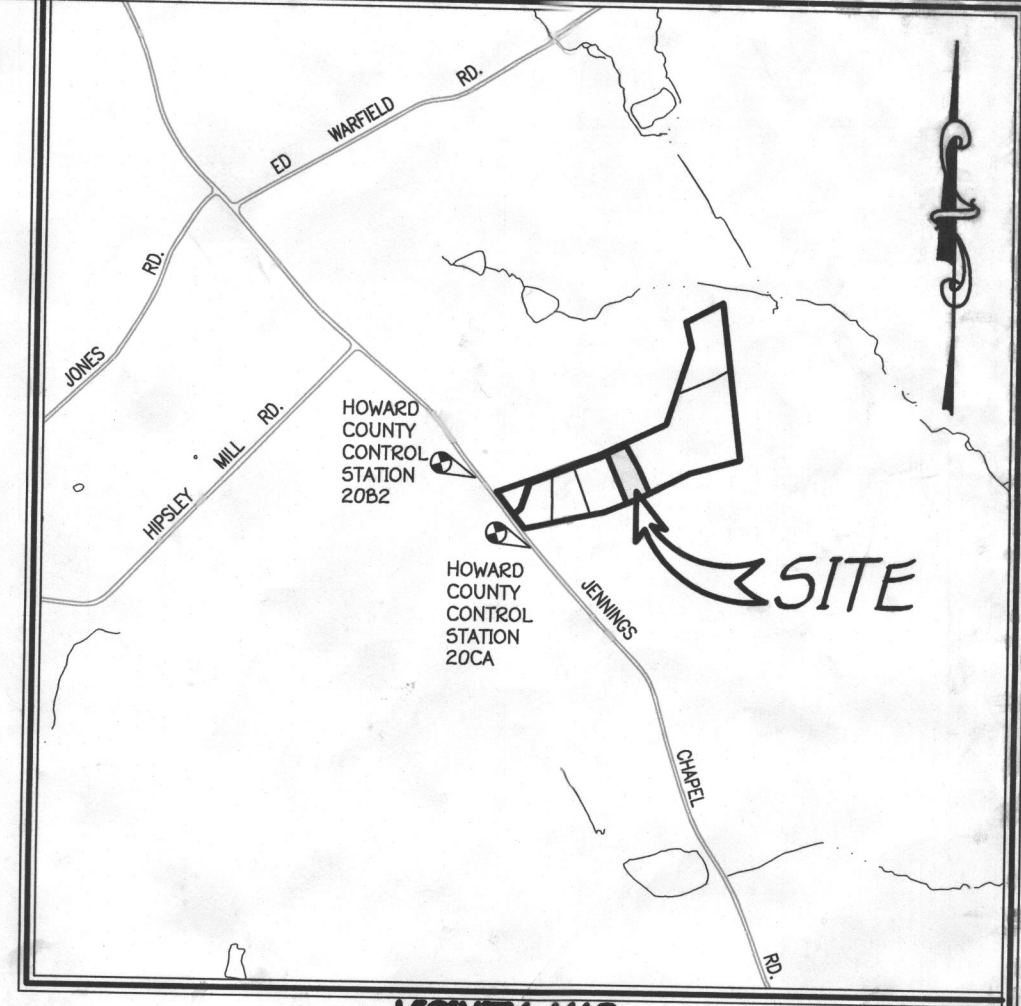
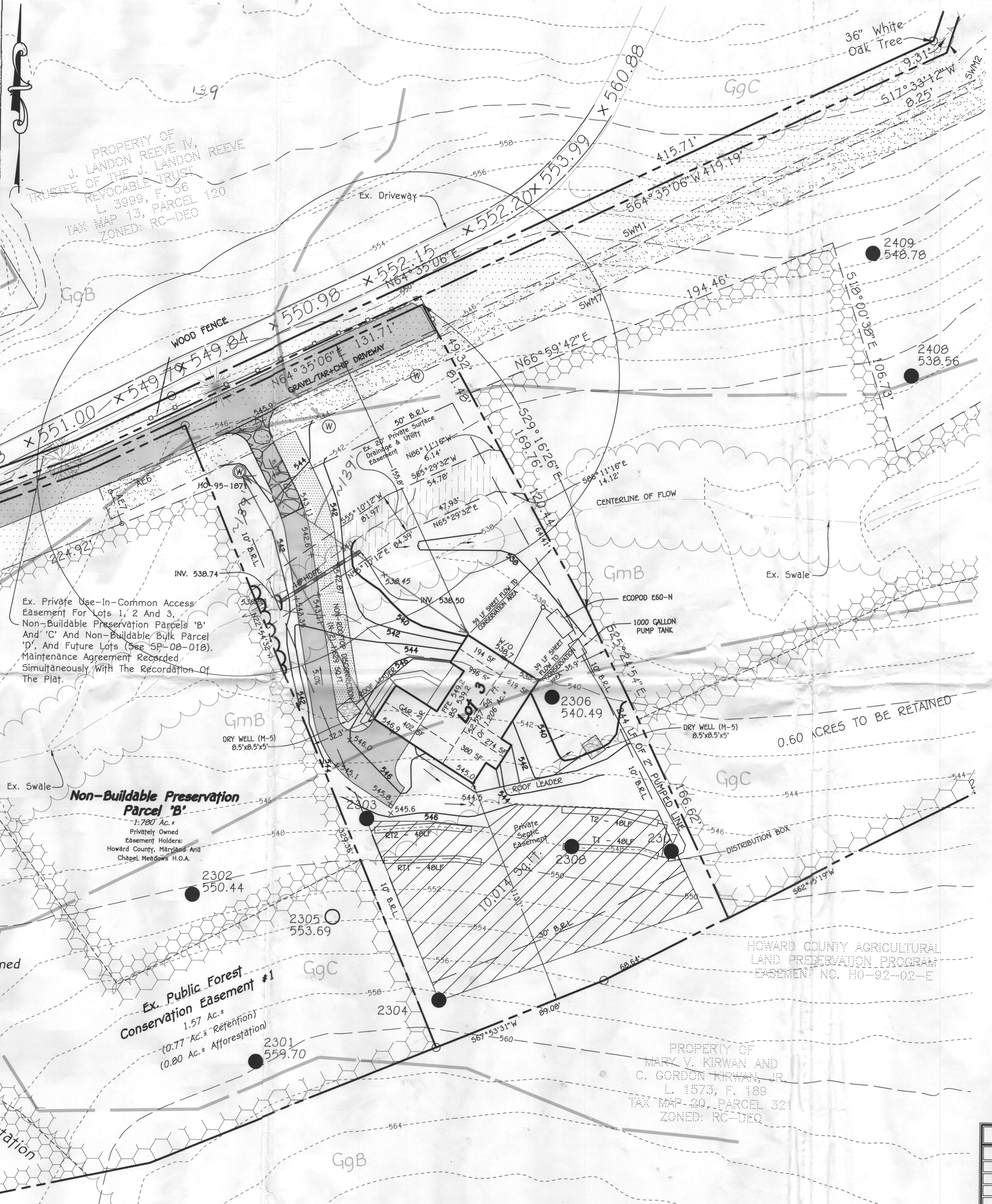
MATERIALS OF CONSTRUCTION

Suffix	Reactor Tank	Cover	Media Container	Fiberglass
Suffix F	Fiberglass	Fiberglass	Fiberglass	Fiberglass
Suffix C	Concrete	Concrete	Concrete	Fiberglass

These are standard production units. Other configurations are available upon request.

SEPTIC SYSTEM DESIGN
3 BEDROOM HOUSE (PLUS 1 FUTURE BEDROOM)
LOADING RATE = 600 GPD
APPROXIMATE 2" = 0.8
EFFECTIVE SIDEWALL BEGINS AT 3.5 FEET
TRENCH DEPTH = 8 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 4.5 FEET
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = 0.38
W+2 / (W+1+2D) = (3+2) / (3+1+(2x4.5))
SF OF DRAINFIELD = 600 GPD / 0.8 = 750 SF
TRENCH LENGTH = 750 SF x 0.38 / 2 = 95 FEET (USE 96 FEET)

SEPTIC SYSTEM ELEVATIONS
FTE 549.2
BSE 539.2
INV. OF HOUSE = 536.3
TOP OF BAT TANK = 538.2
CON OVER BAT TANK = 3 FT
INV. INTO BAT TANK = 535.52
INV. OUT OF BAT TANK = 535.27
EX GRADE AT DIST BOX = 548.0
INV. INTO DISTRIBUTION BOX = 544.0
INV. OUT OF DISTRIBUTION BOX = 543.5



BENCH MARKS

HO CO # 2082 ELEV. 577.21
N. 568.346.2943
E. 1.287.505.6056
LOC. SW SIDE OF JENNINGS CHAPEL ROAD
APPROX. 163.0' SOUTH OF P.E. #32259 &
APPROX. 92.3' WEST OF P.E. #32260

HO CO # 20CA ELEV. 576.49
N. 567916.0761
E. 1.287.059.5568
LOC. SW SIDE OF JENNINGS CHAPEL ROAD
APPROX. 99' SE OF STONE ENTRANCE
WALL TO COMMON DRIVEWAY FOR #3366,
#3370, #3376, AND 3384 & APPROX. 6'
FROM EDGE OF JENNINGS CHAPEL ROAD

- GENERAL NOTES**
1. SUBJECT PROPERTY ZONED: RC-DEO
 2. TOTAL AREA OF PROPERTY: 1.206 AC.
 3. LIMIT OF DISTURBANCE: 27,737 SQ. FT. OR 0.64 ACRES.
 4. SITE WILL UTILIZE PRIVATE WELL AND SEPTIC. WELL, #95-1871, HAS BEEN FIELD LOCATED BY FISHER, COLLINS & CARTER, INC. IN MAY 2014.
 5. LENGTH OF TRENCH TO BE DETERMINED AT TIME OF SEPTIC PERMIT ISSUANCE.
 6. CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.
 7. LOT / BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. DATED AUGUST, 2006.
 8. FIELD RUN TOPOGRAPHIC SURVEY CONDUCTED BY FISHER, COLLINS & CARTER, INC. IN AUGUST, 2006 AND MAY, 2014 AND SUPPLEMENTED WITH HOWARD COUNTY GIS TOPOGRAPHIC INFORMATION.
 9. NO WETLANDS, STREAMS, OR STEEP SLOPES EXIST ON THIS LOT.
 10. SOILS SHOWN HEREON ARE BASED ON NRCS WEB SOIL SURVEY.
 11. PREVIOUS DPZ FILE NOS.: SP-08-018, WP-09-103, F-10-036.

LEGEND

SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
X362.5	SPOT ELEVATION
—SF—SF—	SILT FENCE
—SSF—SSF—	SUPER SILT FENCE
—DF—DF—	DIVERSION FENCE
---	LIMITS OF DISTURBANCE
---	EROSION CONTROL MATING
●	PERC HOLES
⊙	EX. & PROP. ALTERNATE WELLS
---	EX. NON-ROOFTOP DISCONNECTION
---	PROP. NON-ROOFTOP DISCONNECTION
---	EX. 20" PRIVATE SURFACE DRAINAGE & UTILITY EASEMENT
---	EX. PUBLIC FOREST CONSERVATION EASEMENT
---	STABILIZED CONSTRUCTION ENTRANCE

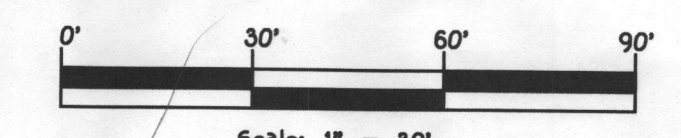
SOILS LEGEND

SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
GgC	Glenelg loam, 8 to 15 percent slopes	B
GmB	Glenelg silt loam, 3 to 8 percent slopes	C
UaB	Urban land-Udorthents complex, 0 to 8 percent slopes	D

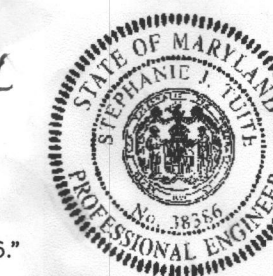
BAT SITE PLAN
CHAPEL MEADOWS
LOT 3

(PLAT #21197)
16455 TINKER HILL ROAD
ZONED: RC-DEO

TAX MAP: 13 PARCEL: 322 GRID: 23
FOURTH ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
SCALE: 1"=30' DATE: SEPTEMBER, 2014
SHEET 1 OF 2



Stephanie J. Tuite 10/2/14
Stephanie J. Tuite, P.E. 38386
"Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 38386, Expiration Date 1-12-16."





GOULDS PUMPS
Wastewater



GOULDS PUMPS
Wastewater

APPLICATIONS

Specifically designed for the following uses:

- Effluent systems
- Homes
- Heavy duty sump
- Water transfer
- Dewatering

SPECIFICATIONS

- Solids handling capability: 1/2" maximum.
- Capacities: up to 60 GPM.
- Total heads: up to 31 feet.
- Discharge size: 1 1/2" NPT.
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers.
- Temperature: 104° F (40° C) continuous, 140° F (60° C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor:

- EP04 Single phase: 0.4 HP, 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- EP05 Single phase: 0.5 HP, 115 V or 230V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug (standard on EP05).
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

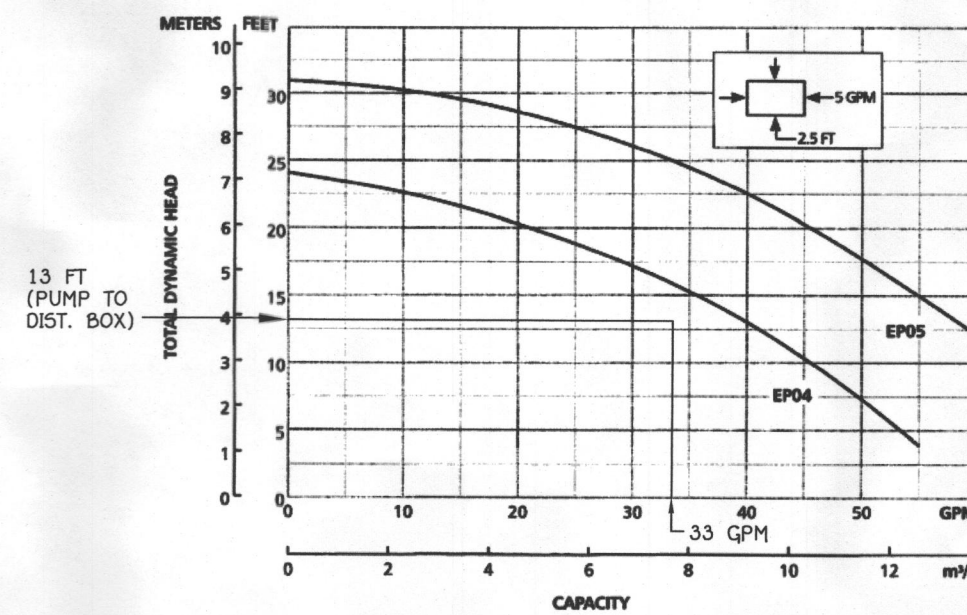
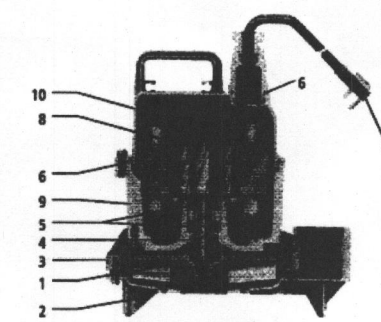
Available for automatic and manual operation.
Automatic models include Mechanical Float Switch
assembled and preset at the factory.

PERFORMANCE RATINGS

Total Head (ft. of water)	Gallons Per Minute	EP04	EP05
5	53	-	-
10	46	62	-
15	36	55	-
20	21	46	-
25	0	33	-
30	-	11	-

COMPONENTS

Item No.	Description
1	Impeller
2	Base
3	Pump Casing
4	Mechanical Seal
5	Ball Bearings
6	O-Rings
7	Power Cord
8	Oil Filled Motor
9	Motor Housing/ Stator Assembly
10	Motor Cover



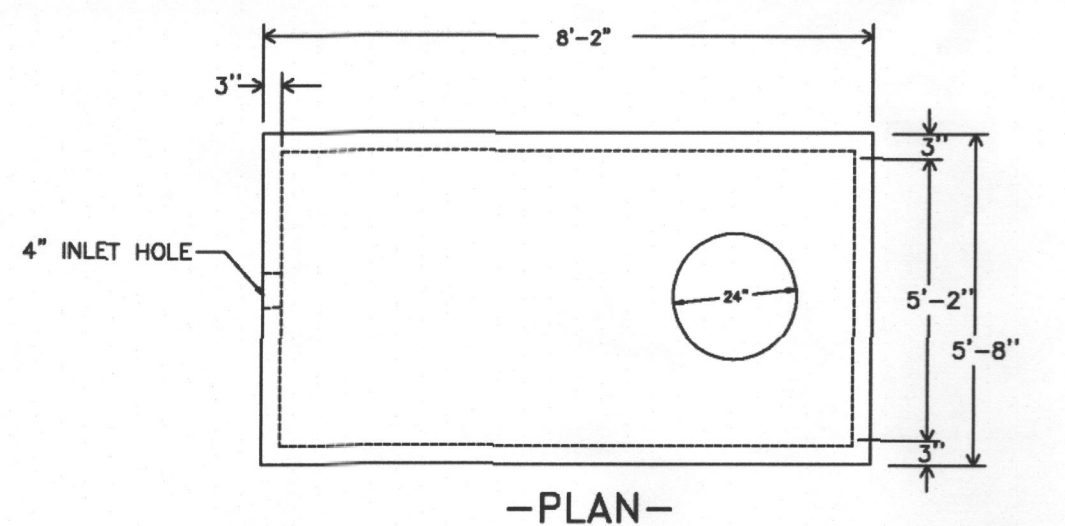
MODEL INFORMATION

Order No.	HP	Volts	Amperes	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum On Level	Minimum Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight Lbs.
EP0411						Plug / No Switch	10'	1 1/2"	Manual	Manual	15"		20 / 8.1
EP0411A						Plugback / Wide-Angle	10'	1 1/2"	Manual	Manual	15"		21 / 8.5
EP0411F						Plug / No Switch	20'	1 1/2"	Manual	Manual	15"		20 / 8.1
EP0411AC						Plugback / Wide-Angle	20'	1 1/2"	Manual	Manual	15"		21 / 8.5
EP0412						Plug / No Switch	10'	1 1/2"	Manual	Manual	15"	1/2"	20 / 8.1
EP0412F						Plug / No Switch	20'	1 1/2"	Manual	Manual	15"		20 / 8.1
EP0511F						Plug / No Switch	20'	1 1/2"	Manual	Manual	15"		22 / 10
EP0511AC						Plugback / Wide-Angle	20'	1 1/2"	Manual	Manual	15"		23 / 10.4
EP0512F						Plug / No Switch	20'	1 1/2"	Manual	Manual	15"		22 / 10

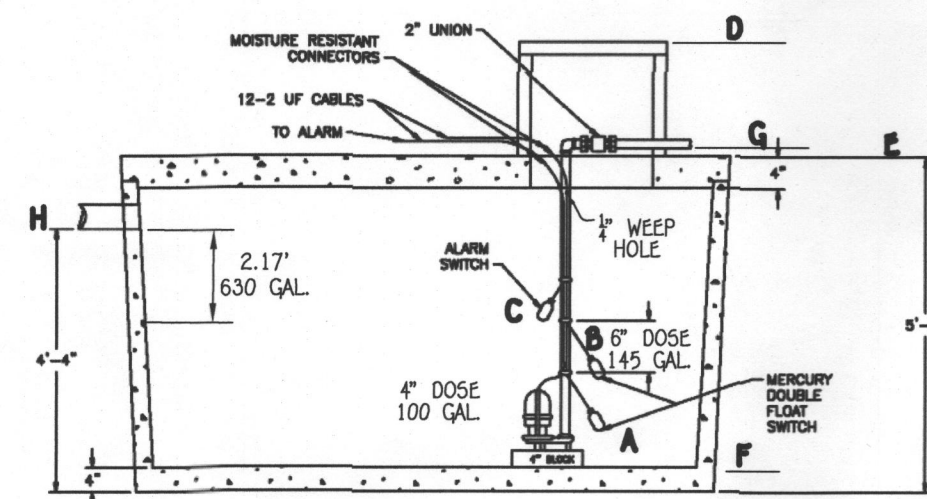
2

3

MONARCH PRODUCTS COMPANY, INC.
YORK HAVEN, PA.



-PLAN-



1000 GALLON
RECTANGULAR PUMP TANK

DWG. ST10-2PTH-A

PUMP ALARMS / INFORMATION

- A PUMP OFF: 532.19
- B PUMP ON: 532.52
- C HIGH WATER ALARM: 533.02
- D TOP OF ACCESS COVER: 530.30
- E TOP OF TANK: 535.94
- F BOTTOM OF TANK: 531.19
- G DISCHARGE OUT OF TANK: 537.11
- H INVERT INTO TANK: 535.19

PER HEALTH DEPARTMENT REQUIREMENTS,
THIS PUMP TANK MUST BE WATERTIGHT
TESTED IN THE FIELD DUE TO 3" THICK
WALLS.

FRICTION LOSS IN 2" PIPE FITTINGS:
2 1/8 HB x 4 FEET PER FITTING = 8 EQUIVALENT FEET OF PIPE
TOTAL EQUIVALENT FEET OF PIPE = 8 FT

TOTAL LINEAR FEET OF 2" PVC = 115 LF + 8 LF = 123 LF

DYNAMIC HEAD
123 LF X 3.90 FT PER 100 LF OF PIPE = 4.9 FT OF FRICTION HEAD
VERTICAL FROM TANK TO DISCHARGE = 7.9 FT OF FRICTION HEAD
TOTAL DYNAMIC HEAD = 12.8 FT (USE 13 FT)

LATERAL VOLUME
115 LF (2" PIPE) X 17.4 GALLONS PER 100 LF = 20.0 GALLONS
TOTAL VOLUME IN PIPES = 20.0 GALLONS

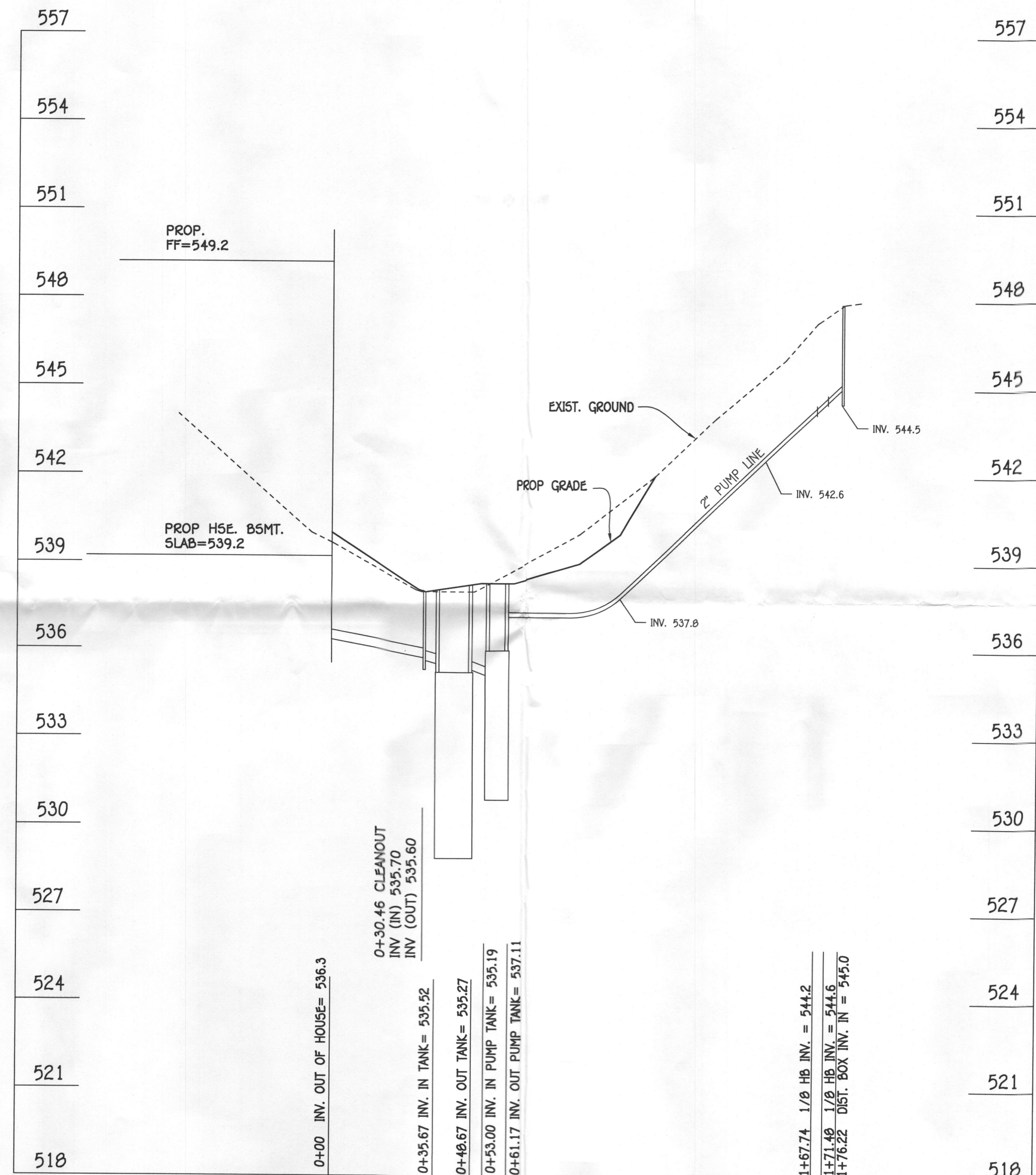
MINIMUM DOSE
MINIMUM DOSE = (3 MIN X VOLUME IN FORCE MAIN) + (VOLUME IN FORCE MAIN TO DISTRIBUTION BOX)
= (3 X 20) + (20)
= 80 GALLONS

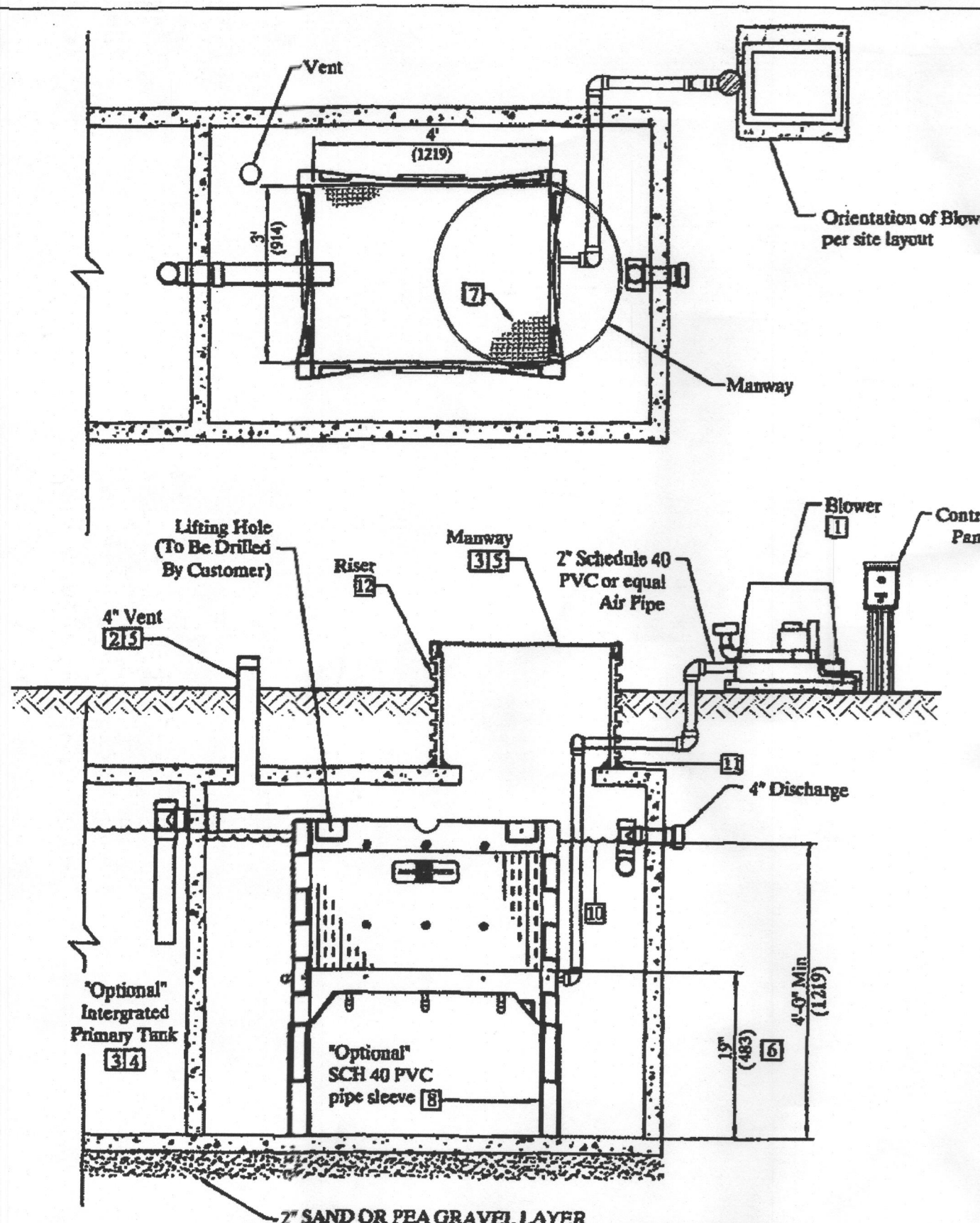
80 GALLONS IS LESS THAN 1/6 DESIGN FLOW (600/6=100) = USE 100 GALLONS

FLOW RATE OF PUMP = 100 GALLONS / 3 MIN = 33.33 GPM (USE 33 GPM)

USE - 100 GALLON DOSE

PUMP NEEDS TO HANDLE - 33 GPM AT 13 FT OF HEAD
PUMP HORSEPOWER ESTIMATED AT 0.4 HP



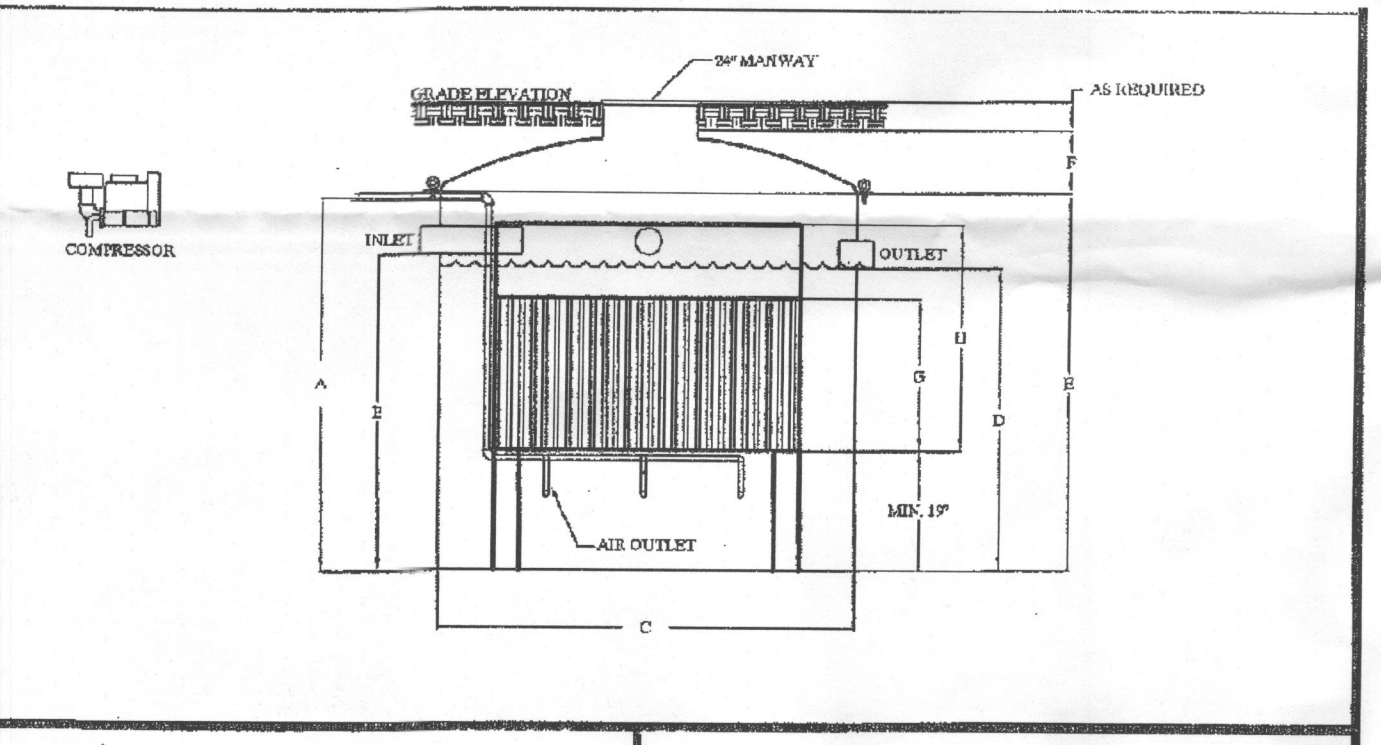


- NOTES:**
- Blower piping to ECOPOD not to exceed 100 FT total length in the piping system. For distances greater than 100 FT, consult factory. Blower must be located above flood levels on a solid base.
 - Vent to be located above finish grade or higher to avoid infiltration. Cap on vent must be secured with a stainless steel screw.
 - All other tanks to/from ECOPOD must conform to applicable country, state, province, and local plumbing and electrical codes.
 - The primary tank compartment volume must be 1 to 2 times the rated ECOPOD GPD. Primary and Reactor tank volumes are listed in the ECOPOD Design Manual. The primary tank may be integrated with the reactor tank or stand alone in a separate tank.
 - All mainways, pump out ports, and vents must be secured to prevent accidental or unauthorized access.
 - ECOPOD media is recommended to be at least 19\"/>
 - ECOPOD media EV19PVC224
 - Tanks with higher inlets, install SCH 40 PVC pipe over legs to elevate reactor to correct height.
 - Air supply line should be secured with non-corrosive clamps where required to prevent vibration damage.
 - Effluent discharge level must be at a height no more, or no less than 2\"/>
 - Use epoxy, or use another approved method or substance, to create strong connection & watertight seal (TYP.)
 - Risers must conform to country, state, province, and local acceptable codes. Fiberglass riser shown.

TREATMENT UNIT	
Discharge From Tank	4\"/>
Reactor Volume	840 Gallons
Recommended Distance Under Reactor Box	19\"/>

REACTOR IN CONCRETE TANK

DWG. BY:	DATE:	SCALE:	DWG. NO.:	REV.:	PAGE:
D. WRIGHT	12/10/04	N.T.S.	EXX-F ECOPOD	2	1 OF 3



TREATMENT PLANT	TREATMENT CAPACITY (GPD)	PRIMARY TANK TOTAL VOLUME (GAL)	REACTOR TANK TOTAL VOLUME (GAL)	REACTOR TANK DILUTION VOLUME (GAL)	MEDIA SIZE	AIR REQUIREMENTS
240	500	500	700	980	2\"/>	12 CFM
260	600	600	840	1160	3\"/>	14.4 CFM
275	750	750	1050	1420	3\"/>	18 CFM
290	900	900	1260	1680	4\"/>	24 CFM
310	1100	1100	1540	2050	4\"/>	36 CFM

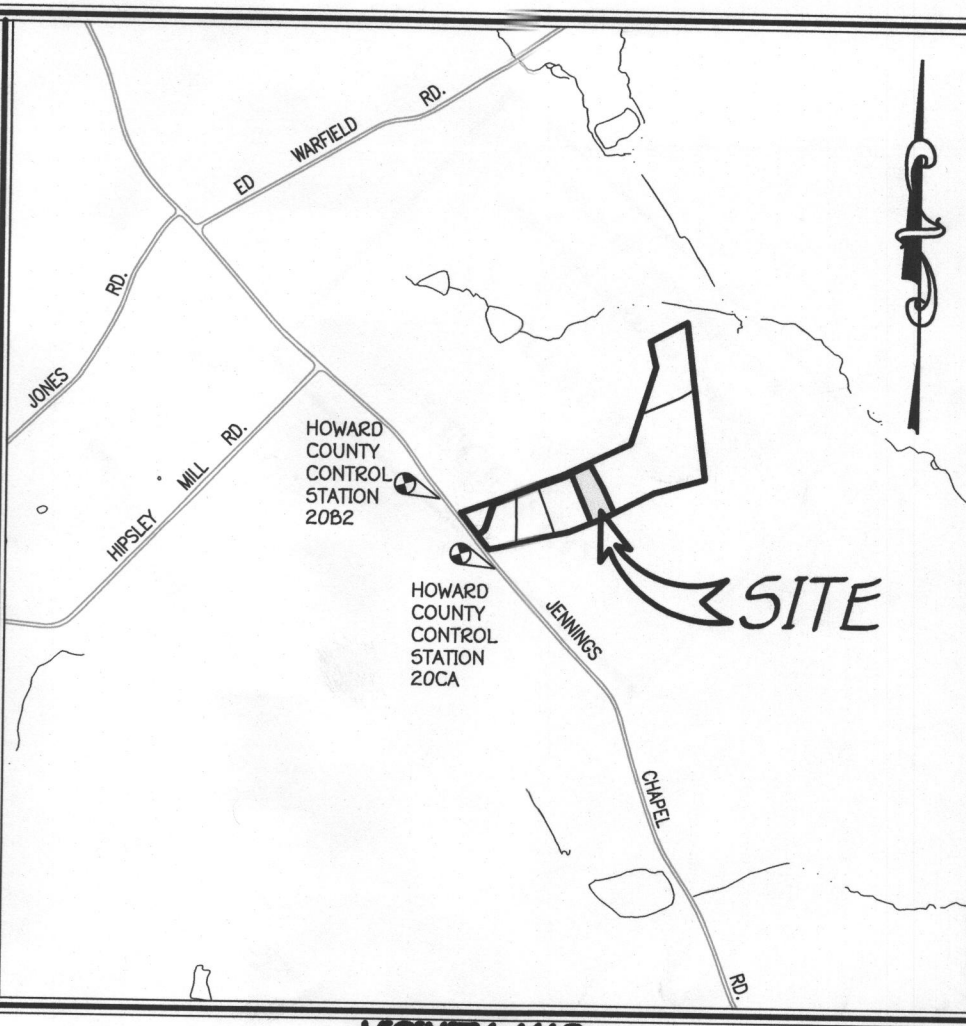
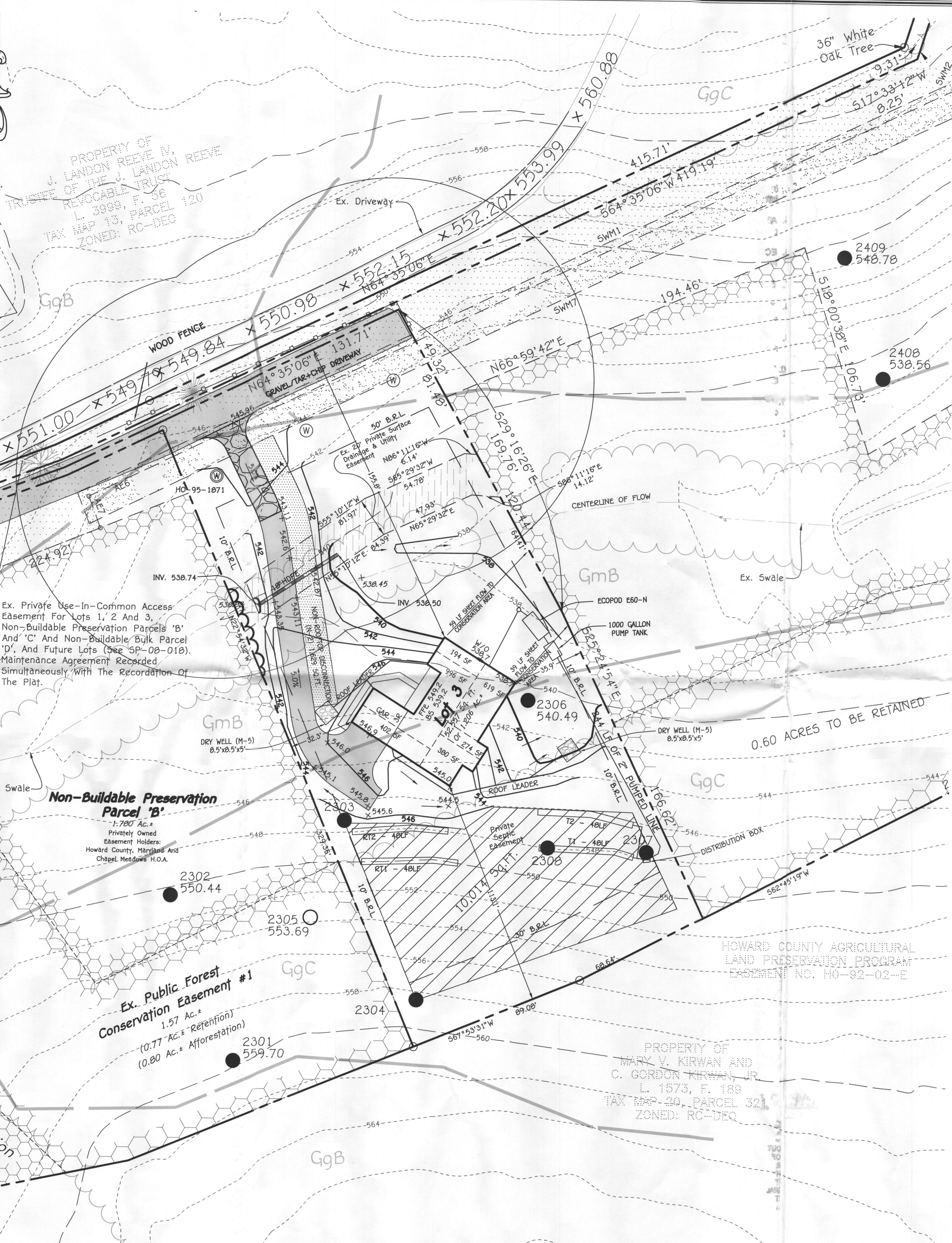
MATERIALS OF CONSTRUCTION	
Suffix F	Reactor Tank: Fiberglass Cover: Fiberglass Media Container: Fiberglass
Suffix C	Reactor Tank: Concrete Cover: Concrete Media Container: Fiberglass

- BAT NOTES**
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 - FOR THE MAXIMUM COVER OVER THE BAT SHALL BE 3 FEET.
 - THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 - WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLATION.
 - ANY ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 - AN AGREEMENT AND EASEMENT HAS BEEN COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, LIBER 15744, FOLIO 149.
 - THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
 - SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.
 - AT HIGH WATER ALARM PROBE, PUMP WILL HAVE CONTINUOUS OPERATION UNTIL LEVEL GOES BENEATH PROBE.
 - IF WATER LEVEL RISES ABOVE THE ALARM PROBE, AN AUDIBLE AND VISUAL ALARM WILL SOUND. SEE MANUFACTURER SPECS FOR ADDITIONAL INFORMATION.
 - ALARM TO BE WIRED TO A CIRCUIT SEPARATE FROM THE PUMP CIRCUIT.

TRENCH DESIGN									
TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	INVERT INTO TRENCH STONE AT STONE (FT)	DEPTH OF TRENCH (FT)	EFFECTIVE DEPTH (FT)	EFFECTIVE DEPTH (FT)	WIDTH OF TRENCH (IN)	LENGTH OF TRENCH (FT)	TRENCH SPACING (FT)
T1	548.0	545.0	544.5	3'	5	540.0	3.9'	4.5	3.0
T2	548.0	545.0	544.5	3'	5	540.0	3.9'	4.5	3.0
T3	548.0	545.0	544.5	3'	5	540.0	3.9'	4.5	3.0
T4	548.0	545.0	544.5	3'	5	540.0	3.9'	4.5	3.0
T5	548.0	545.0	544.5	3'	5	540.0	3.9'	4.5	3.0

SEPTIC SYSTEM ELEVATIONS

FFE = 549.2
BSE = 539.2
INV. OUT OF HOUSE = 536.3
TOP OF BAT TANK = 538.2
COVER OVER BAT TANK = 3 FT
INVERT INTO BAT TANK = 535.52
INVERT OUT OF BAT TANK = 535.27
EX. GRADE AT DIST BOX = 548.0
INVERT INTO DISTRIBUTION BOX = 545.0
INVERT OUT OF DISTRIBUTION BOX = 544.5



GENERAL NOTES	
1. SUBJECT PROPERTY ZONED: RC-DEO	
2. TOTAL AREA OF PROPERTY: 1.206 AC.	
3. LIMIT OF DISTURBANCE: 27,737 SQ. FT. OR 0.64 ACRES.	
4. SITE WILL UTILIZE PRIVATE WELL AND SEPTIC. WELL, TAG #95-1871, HAS BEEN FIELD LOCATED BY FISHER, COLLINS & CARTER, INC. IN MAY 2014.	
5. LENGTH OF TRENCH TO BE DETERMINED AT TIME OF SEPTIC PERMIT ISSUANCE.	
6. CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.	
7. LOT / BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. DATED AUGUST, 2006.	
8. FIELD RUN TOPOGRAPHIC SURVEY CONDUCTED BY FISHER, COLLINS & CARTER, INC. IN AUGUST, 2006 AND MAY, 2014 AND SUPPLEMENTED WITH HOWARD COUNTY GIS TOPOGRAPHIC INFORMATION.	
9. NO WETLANDS, STREAMS, OR STEEP SLOPES EXIST ON THIS LOT.	
10. SOILS SHOWN HEREON ARE BASED ON NRCS WEB SOIL SURVEY.	
11. PREVIOUS DPZ FILE NOS.: SP-08-018, WP-09-103, F-10-036.	

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
X362.5	SPOT ELEVATION
-SF - SF	SILT FENCE
-SSF - SSF	SUPER SILT FENCE
-DF - DF	DIVERSION FENCE
-LOO	LIMITS OF DISTURBANCE
---	EROSION CONTROL MATTING
●	PERC HOLES
⊙	EX & PROP ALTERNATE WELLS
---	EX. NON-ROOFTOP DISCONNECTION
---	PROP. NON-ROOFTOP DISCONNECTION
---	EX. 20' PRIVATE SURFACE DRAINAGE & UTILITY EASEMENT
---	EX. PUBLIC FOREST CONSERVATION EASEMENT
---	STABILIZED CONSTRUCTION ENTRANCE

SOILS LEGEND		
SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
GgC	Glenelg loam, 8 to 15 percent slopes	B
GmB	Glenelg silt loam, 3 to 8 percent slopes	C
UuB	Urban land-udorthents complex, 0 to 8 percent slopes	D

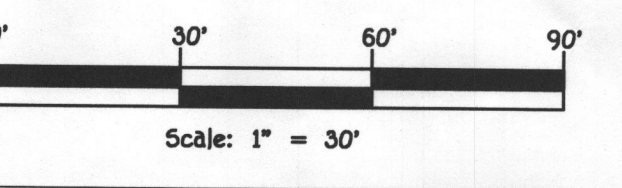
BAT SITE PLAN
CHAPEL MEADOWS
LOT 3

(PLAT #21197)
16455 TINKER HILL ROAD
ZONED: RC-DEO
TAX MAP: 13 PARCEL: 322 GRID: 23
FOURTH ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
SCALE: 1"=30' DATE: SEPTEMBER, 2014
SHEET 1 OF 2

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING, CONSULTANTS & LAND SURVEYORS
CENTENAL SQUARE OFFICE PARK, 10272 BATHURST NATIONAL PIKE
ELICOTT CITY, MARYLAND 21043
(410) 461-2295

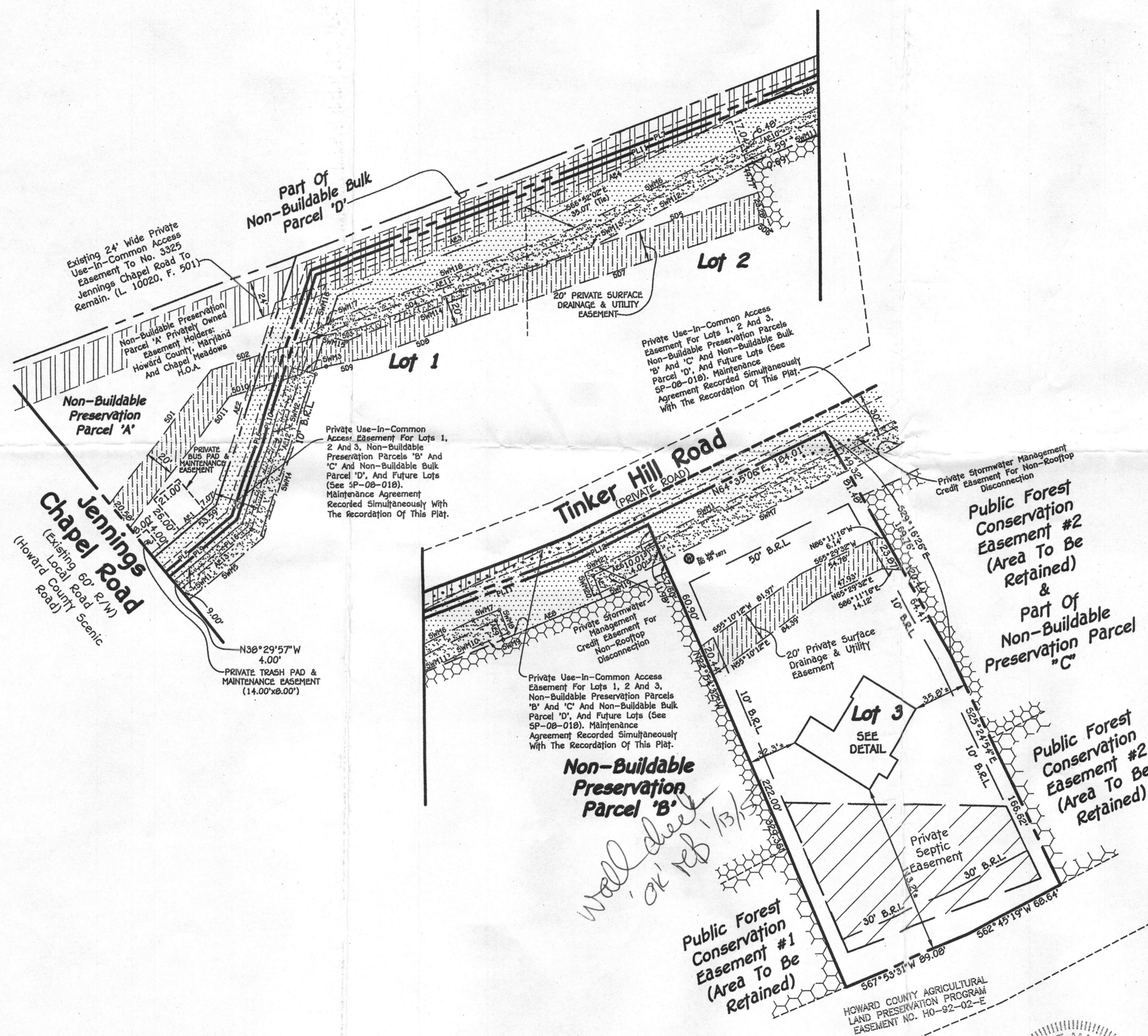
OWNER
SCOTT & CONSTANCE SCHUM
7001 GARDNER LANE
HIGHLAND, MARYLAND 20777

Stephanie A. Tuite 10/2/14
Stephanie A. Tuite, P.E. 38386
"Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 38386, Expiration Date 1-12-16."



GENERAL NOTES:

- 1) THIS LOCATION DRAWING IS PREPARED FOR THE BENEFIT OF THE CLIENT SIGNING THE HOUSE LOCATION SURVEY APPROVAL FORM INsofar AS IT IS REQUIRED BY A LENDER OR TITLE INSURANCE COMPANY OR ITS AGENTS IN CONNECTION WITH THE CONTEMPLATED TRANSFER, FINANCING OR REFINANCING OF THE PROPERTY SHOWN HEREON. UNLESS INDICATED AS BEING A BOUNDARY SURVEY, THIS LOCATION DRAWING IS NOT INTENDED FOR USE IN THE ESTABLISHMENT OF PROPERTY LINES AND IS NOT TO BE RELIED UPON FOR THE ESTABLISHMENT OR LOCATIONS OF FENCES, GARAGES, BUILDINGS OR OTHER EXISTING OR FUTURE IMPROVEMENTS. AS A RESULT, THIS LOCATION DRAWING DOES NOT PROVIDE FOR ACCURATE IDENTIFICATION OF PROPERTY LINES, BUT SUCH IDENTIFICATION MAY NOT BE REQUIRED FOR THE TRANSFER OF TITLE OR SECURING FINANCING FOR RE-FINANCING.
- 2) SUBJECT PROPERTY IS SHOWN IN ZONE C ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP OF HOWARD COUNTY, MARYLAND, COMMUNITY PANEL No. 2400440013-B EFFECTIVE DEC. 4, 1986.
- 3) THE OFFSETS FROM BUILDING LINE TO PROPERTY LINE AS SHOWN ON THE PLAT HEREON ARE TO AN ACCURACY OF PLUS OR MINUS 1' (*)
- 4) NO TITLE REPORT FURNISHED. SUBJECT TO ALL EASEMENTS, RIGHTS OF WAY AND CONDITIONS OF RECORD.
- 5) THE EXISTING WELL(S) SHOWN ON THIS PLAN (IDENTIFIED WITH THE ATTACHED WELL TAG NUMBER HO-95-1871 HAS BEEN FIELD LOCATED BY FISHER, COLLINS AND CARTER, INC. PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.
- 6) PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 339, EXPIRATION DATE 10/04/2016.
- 7) BUILDING PERMIT NUMBER: B-14002762

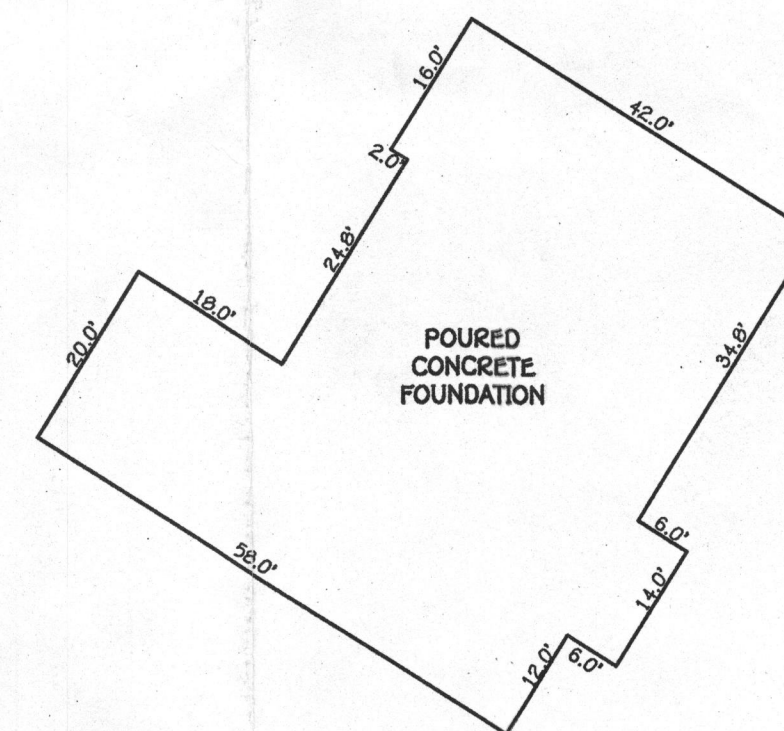


Line	Bearing	Length
501	N 37°49'12" E	110.10'
502	N 72°41'48" E	74.15'
503	N 79°13'06" E	29.33'
504	N 70°00'36" E	71.06'
505	N 72°41'48" E	205.73'
506	N 75°21'54" W	6.15'
507	S 72°41'48" W	201.16'
508	S 70°00'36" W	72.20'
509	S 79°13'06" W	29.80'
5010	S 72°41'48" W	66.73'
5011	S 37°49'12" W	106.69'

Line	Bearing	Length
SWM1	N 50°35'31" E	59.94'
SWM2	N 18°22'46" E	107.80'
SWM3	S 74°09'14" E	16.02'
SWM4	S 18°22'46" W	113.13'
SWM5	S 50°35'31" W	64.56'
SWM6	N 64°34'34" E	215.75'
SWM7	N 69°51'13" E	10.47'
SWM8	N 21°20'51" W	16.24'
SWM9	S 68°41'36" W	10.88'
SWM10	S 65°19'27" W	19.92'
SWM11	S 66°35'19" W	76.67'
SWM12	S 63°13'35" W	107.07'
SWM13	S 67°13'34" W	20.29'
SWM14	S 69°55'36" W	159.81'
SWM15	N 75°41'18" W	23.16'
SWM16	N 55°10'45" E	7.56'
SWM17	N 62°44'38" E	7.68'
SWM18	N 69°54'39" E	172.19'
SWM19	S 64°12'28" W	51.52'
SWM20	N 21°30'18" E	16.34'
SWM21	N 64°35'06" E	51.10'

Line	Bearing	Length
AE1	N 50°35'31" E	52.6
AE2	N 18°22'48" E	137.9
AE3	N 69°46'47" E	177.2
AE4	N 67°54'37" E	122.6
AE5	N 63°54'18" E	195.3
AE6	S 64°35'06" W	46.5
AE7	S 20°42'02" E	16.4
AE8	S 68°25'49" W	70.0
AE9	N 20°42'02" W	13.4
AE10	S 64°46'52" W	229.9
AE11	S 69°55'42" W	188.1
AE12	S 18°22'48" W	132.2
AE13	S 50°35'31" W	61.8

Sym.	Bearing & Distance		
PL5	N 50°35'31"	E	57.25
PL6	N 18°22'46"	E	169.56
PL7	N 69°46'47"	E	465.08
PL9	N 50°35'31"	E	58.47
PL10	N 18°22'46"	E	168.81
PL11	N 69°46'47"	E	464.15
PL12	N 64°35'06"	E	52.48



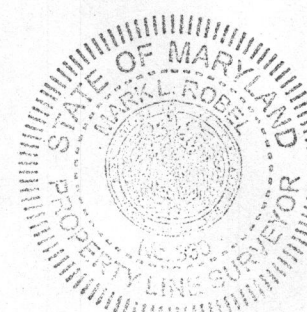
FOUNDATION LOCATION: 11/18/14
FINAL LOCATION: _____
BOUNDARY SURVEY: _____

SCALE: 1"=60'
DATE: 11/20/14
DRAWN BY: GAD
CHECKED BY: MLR
PROJECT No.: 06026-6002

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461 - 2855

#16455 TINKER HILL ROAD
B.R.L.= BUILDING RESTRICTION LINE
TOP OF FOUNDATION ELEVATION= 547.9'

Mark J. Bobel 11/20/14
PROPERTY LINE SURVEYOR DATE
REG. #339



LOT 3
CHAPEL MEADOWS
(PHASE I)
LOTS 1 THRU 3, NON-BUILDABLE
PRESERVATION PARCELS "A", "B" AND "C" &
NON-BUILDABLE BULK PARCEL "D"
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MD
PLATS #21195 THRU #21198