



# APPLICATION

## FOR PERCOLATION TESTING AND SITE EVALUATION

TEST DATE(S) \_\_\_\_\_ TEST TIME \_\_\_\_\_

AP 546318

AGENCY REVIEW: \_\_\_\_\_

DATE 4.26.14

DO NOT WRITE ABOVE THIS LINE

I HEREBY APPLY FOR THE NECESSARY TESTING/EVALUATION PRIOR TO ISSUANCE OF SEWAGE DISPOSAL SYSTEM PERMIT(S) TO:

CHECK AS NEEDED:

- CONSTRUCT NEW SEPTIC SYSTEM(S)
- REPAIR/ADD TO AN EXISTING SEPTIC SYSTEM
- REPLACE AN EXISTING SEPTIC SYSTEM

CHECK AS NEEDED:

- NEW STRUCTURE(S)
- ADDITION TO AN EXISTING STRUCTURE
- REPLACE AN EXISTING STRUCTURE

CHECK ONE:

- CREATE NEW LOT(S)
- BUILD ON AN EXISTING LOT IN A SUBDIVISION
- BUILD ON AN EXISTING PARCEL OF RECORD

IS THE PROPERTY WITHIN 2500' OF ANY RESERVOIR?

- YES
- NO

THE TYPE OF STRUCTURE IS:

- RESIDENTIAL WITH UNKNOWN PROPOSED BEDROOMS IN THE COMPLETED STRUCTURE (NOTE UNKNOWN IF APPROPRIATE)
- COMMERCIAL (PROVIDE DETAIL OF NUMBERS AND TYPES OF EMPLOYEES/ CUSTOMERS ON ACCOMPANYING PLAN)
- INSTITUTIONAL/GOVERNMENT (PROVIDE DETAIL OF NUMBERS AND TYPES OF EMPLOYEES/USERS ON ACCOMPANYING PLAN)

PROPERTY OWNER(S) JAY MILLER

DAYTIME PHONE 410.971.5000 CELL \_\_\_\_\_ FAX \_\_\_\_\_

MAILING ADDRESS 775 CUBSIDE DRIVE ROSWELL GA 30076  
STREET CITY/TOWN STATE ZIP

APPLICANT SILL ENGINEERING GROUP, LLC

DAYTIME PHONE 443.325.7682 CELL 443.878.4314 FAX 443.325.7685

MAILING ADDRESS 3300 N. RIDGE ROAD #160 ELICOTT CITY MD 21043  
STREET CITY/TOWN STATE ZIP

APPLICANT'S ROLE: DEVELOPER BUILDER BUYER RELATIVE/FRIEND REALTOR CONSULTANT

PROPERTY LOCATION  
SUBDIVISION/PROPERTY NAME E. HOWARD LODGE DRIVE LOT NO. 7D

PROPERTY ADDRESS 12348 HOWARD LODGE DRIVE SPYKESVILLE  
STREET TOWN/POST OFFICE

TAX MAP PAGE(S) 9 GRID 12 PARCEL(S) 306 PROPOSED LOT SIZE 1.28

AS APPLICANT, I UNDERSTAND THE FOLLOWING: THE SYSTEM INSTALLED SUBSEQUENT TO THIS APPLICATION IS ACCEPTABLE ONLY UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS APPLICATION IS COMPLETE WHEN ALL APPLICABLE FEES AND A SUITABLE SITE PLAN HAVE BEEN RECEIVED. I ACCEPT THE RESPONSIBILITY FOR COMPLIANCE WITH ALL M.O.S.H.A. AND "MISS UTILITY" REQUIREMENTS. APPROVAL IS BASED UPON SATISFACTORY REVIEW OF A PERC CERTIFICATION PLAN.

TEST RESULTS WILL BE MAILED TO APPLICANT. \_\_\_\_\_  
SIGNATURE OF APPLICANT

HOWARD COUNTY HEALTH DEPARTMENT, BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM  
1718 COLUMBIA GATEWAY DRIVE COLUMBIA, MARYLAND 21046 (410) 313-2640 FAX (410) 313-2648  
TDD (410) 313-2323 TOLL FREE 1-877-4MD-DHMH

A/P \_\_\_\_\_

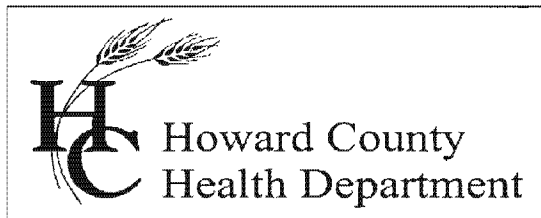
DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H

REMARKS \_\_\_\_\_

SANITARIAN \_\_\_\_\_ BACKHOE \_\_\_\_\_ OTHERS \_\_\_\_\_

TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_

TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE S/W \_\_\_\_\_



Bureau of Environmental Health

8930 Stanford Blvd., Columbia, MD 21045  
Main: 410-313-1771 | Fax: 410-313-2648  
TDD 410-313-2323 | Toll Free 1-866-313-6300  
[www.hchealth.org](http://www.hchealth.org)  
Facebook: [www.facebook.com/hocohealth](http://www.facebook.com/hocohealth)  
Twitter: HowardCoHealthDep

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

May 16, 2014

To: Paul Sill, Applicant  
[paul@sillengineering.com](mailto:paul@sillengineering.com)

RE: Percolation Test Report, A546318; 'Miller Property' (12348 Howard Lodge Drive)

Percolation tests were conducted at the subject property (Tax Map 9, Parcel 306, Lot 7D) on May 15, 2014. Standard percolation tests were conducted at five staked locations, '600' to '604'. Infiltrometer tests were conducted at three locations indicated on the percolation plan as '605', '607', and '608'. Together, these tests were to define a sewage disposal area (SDA) of 10,000 sq.ft. and the types of systems appropriate for use on the recorded lot (Donald Weisensel Property, Lot 7D).

The percolation test Field Worksheet is enclosed with this letter. Only location '601' is a PASS at standard rate for conventional system. Location '602' is a "PASS" at a nonconventional rate. Locations '600', '603', and '604' all FAIL standard percolation testing.

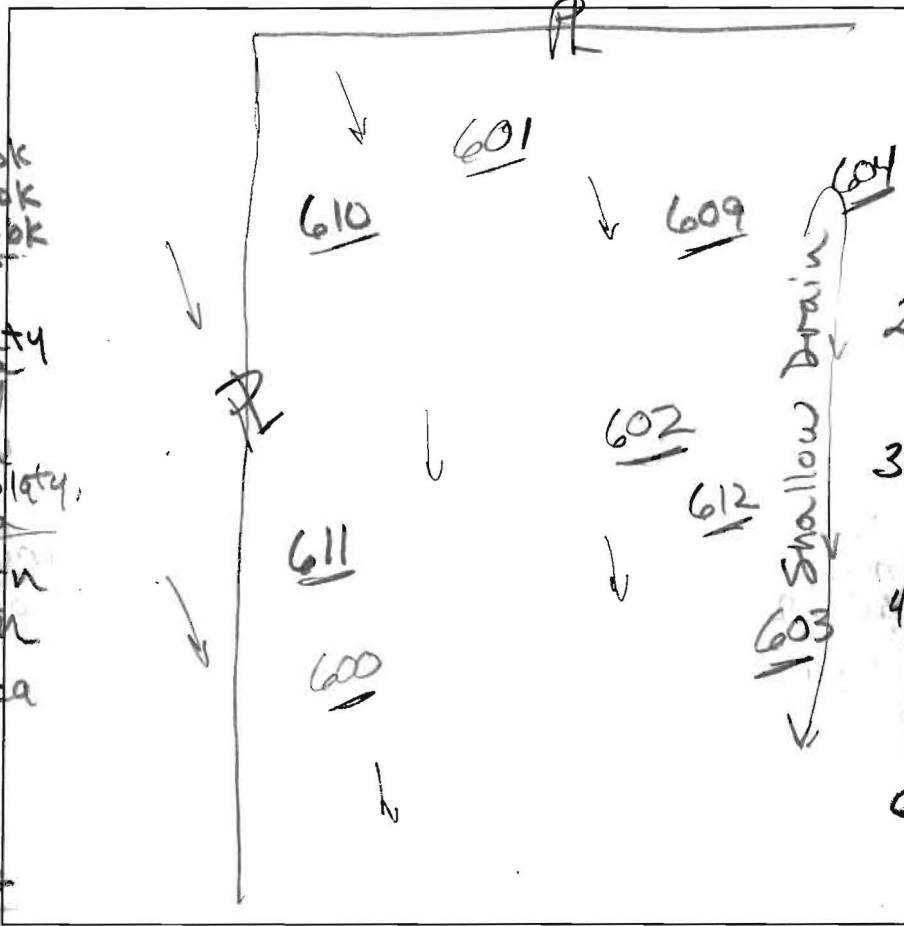
The infiltrometer locations were tested in the layer judged to be the least permable in the top 24 inches of the soils' profiles. Among the infiltrometer tests, location '608' has an infiltration rate of 48 minutes per inch, a conventional PASS. Location '605' has an infiltration rate of 96 minutes per inch, a nonconventional PASS. Together these two locations represent the infiltration rate of a sand mound overlying the area and designed for an infiltration rate of 96 minutes per inch. Location '607' has an infiltration rate exceeding 360 minutes per inch, and is a FAIL.

The percolation test results and suitable area for wastewater discharge are certified by the Approving Authority's signature of the Percolation Certification Plan. The approvable area for the subject property must be at least 10,000 sq.ft. as the lot was created after March 1972. At least two drainfield systems, an initial and one repair must fit into the approvable area.

If you have any questions regarding this evaluation or requirements for a Percolation Certification Plan, please contact me by email or by calling (410) 313-2691.

Respectfully,  
Robert Bricker, CPSS, REHS/RS, L.E.H.S.  
Environmental Sanitarian II  
Well and Septic Program

Copy: file



612  
 2' dk brn L  
 2' sbk to 1' sbk  
 brn L, 2' sbk  
 1' brn L, 2' sbk  
 4.3' few mica  
 4' yel-red &  
 pale brn  
 fs, thin platy  
 many mica  
 5.5' yellow-red  
 pale brown  
 fs, medium platy,  
 many mica  
 9' yel-red, brn  
 & pale, brn  
 fs, fine platy  
 many mica  
 12'

611  
 dk brn L  
 2' sbk to 2' sbk  
 0.8' red-brn L  
 2' msbk, ss  
 10% channers  
 2.8' yel-brn & yel-red  
 L, 1' msbk  
 few channers  
 few mica  
 4.2' yel-red & yel-brn  
 fs, thin platy  
 common mica  
 5' yel-red & yel-brn  
 fs, wk. medium platy  
 few channers  
 many mica  
 13.5' (3d) (blk)

11.3' yel-red, brn  
 & pale brn  
 fs, thin platy  
 many mica  
 13.5'

609  
 dk brn L,  
 3' sbk to 2' sbk  
 0.6' brn L, 1' sbk  
 1.4' red-brn cl  
 2' msbk  
 few mica  
 2.7' red-brn L  
 1' msbk  
 common mica  
 3.3' yel-red  
 & pale brn  
 fs, many mica  
 4.4' yel-red  
 & pale brn fs  
 wk. medium platy  
 many mica  
 9' yel-red, brn  
 & pale brn fs  
 fine platy  
 many mica  
 12'

610  
 dk brn L  
 2' sbk to 1' sbk  
 0.8' red-brn chl  
 2' sbk  
 1.8' red-brn L  
 fine platy, ss  
 10% channers  
 and cobbles  
 2.6' yel-red fs  
 thin platy  
 common mica  
 4.5' yel-red & brn  
 fs, thin platy  
 many mica  
 5.3' yel-red &  
 pale brn fs  
 wk. medium platy  
 many mica  
 10' SO FT/BR  
 11' brn fs  
 thin platy  
 few channers  
 many mica  
 12'

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
11/10/14	612	6.4' / 12'	10:07	10:32	11:12	40	PNC
11/10/14	609	6.2' / 12'	10:24	10:34	10:52	18	P
11/10/14	610	6' / 12'	11:11	11:13	11:20	7	P
11/10/14	611	5.5' / 13.5'	11:39	11:59	12:36	37	PNC
PNC indicates 'Passing' w/ non-conventional rate							

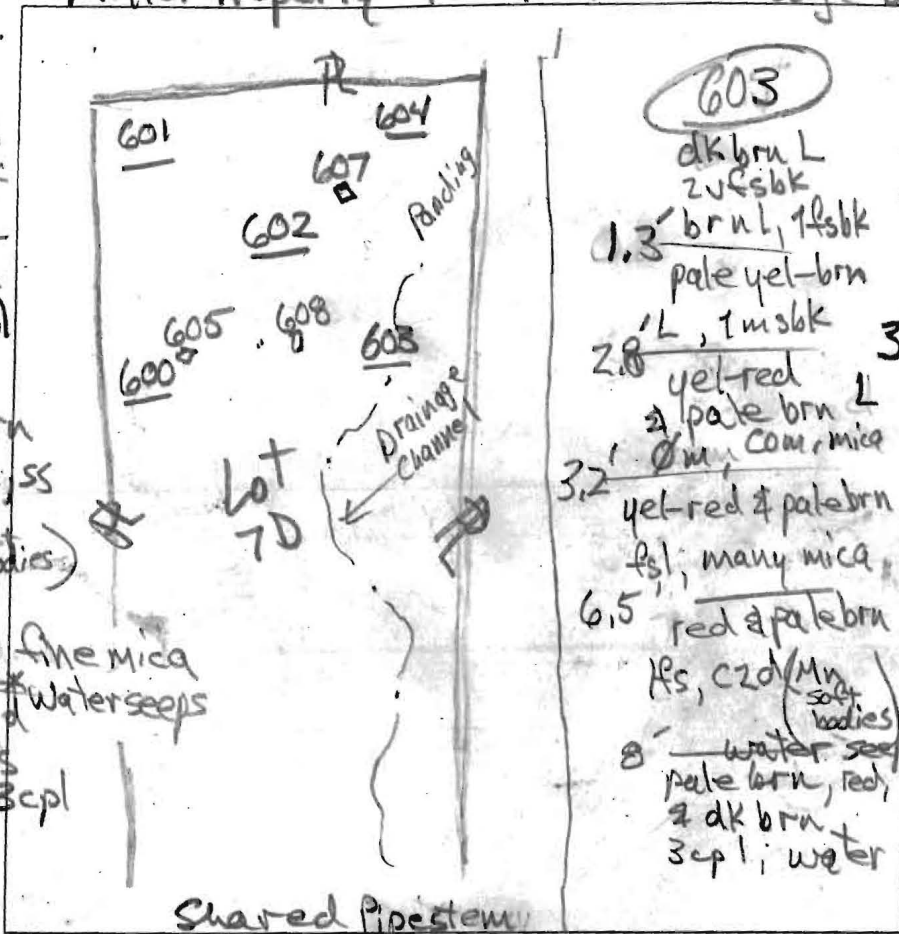
REMARKS All holes dry at 12'; #611 dry at 13.5'  
 SANITARIAN R Bricker BACKHOE Justin Brendel OTHERS  
 TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_  
 TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

SO FT/BR  
 EFFECTIVE SW

Miller Property 12348 Howard Lodge Dr.

A/P

**604**  
 0.3' brn L, 2fsbk  
 1.8' brn L, 2fsbk  
 pale yel-brn L  
 SS, 1fsbk  
 2.1' pale brn cl  
 1msbk, SS  
 red & pale brn  
 ChL, 2msbk, SS  
 few mica  
 4' red (Mn soft bodies)  
 9' red fsL  
 1 fpl, many fine mica  
 pale brn, red water seeps  
 10' dk. brn fs  
 many fine mica, 3cpl  
 water



**603**  
 dk brn L  
 2fsbk  
 1.3' brn L, 1fsbk  
 pale yel-brn  
 2.8' L, 1msbk  
 yel-red  
 2 pale brn L  
 3.2' fm, com mica  
 yel-red & pale brn  
 fsL, many mica  
 6.5' red & pale brn  
 fs, c2d (Mn soft bodies)  
 8' water seeps  
 pale brn, red,  
 2 dk brn  
 3cpl, water

**602**  
 0.2' dk brn L  
 brn L, 1fsbk  
 pale yel-brn L  
 1.2' fsbk  
 2.5' yel-red  
 2 mabk, SS  
 few mica  
 clay skins  
 3.4' red-brn L  
 1msbk, common  
 SS, mica  
 4' red & pale brn  
 fsL, 1 fpl  
 many fine mica  
 7' red & pale brn  
 fsL, c2d (Mn soft bodies)  
 9' pale brn, red  
 & dk brn fs  
 many fine mica  
 3cpl, water  
 to water seeps

**601**  
 dk grey-brn L  
 2fsbk  
 brn L, 2fsbk  
 0.6' red & brn L  
 2cpl, clay skins  
 1.5' brn L clay skins  
 2mabk  
 2' red & brn vchsl  
 many fine mica  
 7fsbk, 40% rock  
 3.3' brn vstsl  
 40-45% rock  
 4.2' red & pale brn  
 sl, many mica  
 few channels  
 of blk coatings  
 7' red, yellow  
 & pale brn fs  
 3cpl many mica  
 0.5' water seeps  
 grey & pale brn fs  
 many mica

**600**  
 dk grey-brn L  
 2fsbk  
 0.2' brn L, 2fsbk  
 1.1' yel-red L  
 2mabk to 1msbk  
 3.8' yellow & brn L  
 few mica  
 4.3' red & pale brn  
 fsL, many mica  
 8' pale brn, red  
 & dk brn fs  
 many fine mica  
 3cpl, water seeps  
 to water

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
5/15/14	604	5' 9"	11:57	12:41			F
5/15/14	602	5' 9"	11:55	12:12	12:43	31	NON P CONV. P
5/15/14	600	4' 8"	12:24	1:24			F
5/15/14	601	5.3'	12:55	1:14	1:33	19	P
5/15/14	603	3 3/8'	2:54	2:34			F

REMARKS: Illustrated #605, #608 & #607 are infiltrimeter tests; #606 was not dug

SANITARIAN: R. Bricker BACKHOE: Justin Brendel

TEST HOLES USED IN SDA: \_\_\_\_\_ AVG. PERC TIME: \_\_\_\_\_ SQ. FT/BR: \_\_\_\_\_

TRENCH WIDTH: \_\_\_\_\_ INLET DEPTH: \_\_\_\_\_ MAX. BOT DEPTH: \_\_\_\_\_ EFFECTIVE S/W: \_\_\_\_\_

# MOUND TEST DATA SHEETS

12348 Howard Lodge Dr.

Property I.D. Miller Property Lot # 7D

Date 5/15/2014

Sanitarian R Bricker

Landscape Position Side slope

% Slope 8

Soil Type \_\_\_\_\_

Contractor Level Land (Justin)

HOLE # 608

DEPTH OF TEST 22"

START TIME 1:54

608  
 3" dk brn L, 2fg  
 7" brn L, 2v f sbk  
 12" brn L, 1f sbk  
 brn L, 2msbk  
 To 1msbk  
 few stones  
 18" brn L, 1f sbk  
 22" Strong brn cl  
 1msbk  
 few mica  
 42" ↓

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate(ET/MD)	% Change
9 16/16	Begin	—	—	—
9 12/16	6	4/16	24	—
9 10/16	6	2/16	48	100
9 8/16	6	2/16	48	0
9 6/16	6	2/16	48	0
9 4/16	6	2/16	48	0
9 2/16	6	2/16	48	0
2:36 9 -	6	2/16	48	0

Begin equilibration at 1:31

48 min/inch, PASS

HOLE # 605

DEPTH OF TEST 19"

START TIME 3:05

605  
 3" drk brn L  
 2v f sbk  
 7" brn L, 2f sbk  
 yel-red L  
 19" 2msbk  
 yel-red cl  
 2msbk, SS  
 40" ↓

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate(ET/MD)	% Change
9 16/16	Begin	—	—	—
9 13/16	15	3/16	80 min/inch	—
9 12/16	10	1/16	160 min/inch	100
9 10/16	10	2/16	80 min/inch	100
9 8/16	12	2/16	96 min/inch	20
(3:58) 9 7/16	6	1/16	96 min/inch	0

18 minutes at constant rate - OK

Begin equilibration at 2:43

96 min/inch, Non conventional Rate

# MOUND TEST DATA SHEETS

12348 Howard Lodge Drive

Property I.D. Miller Property Lot # 70 Date 5/15/2014

Sanitarian R Bricker Landscape Position Side Slope

% Slope 8 Soil Type \_\_\_\_\_ Contractor Level Land (Justin)

HOLE # 607 DEPTH OF TEST 23 START TIME 2:17

607

3"  
12"  
19"  
23"  
40"

dk brn L  
2 v f sbk

---

brn L,  
2 f sbk

---

brn L, 1 msbk

---

brn cl, 1 msbk

---

yel-red cl  
2 mabk, ss

---

few mica

↓

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate(ET/MD)	% Change
9 16/16	Begin	—	—	—
9 16/16	6	2 1/16	—	—
9 15.5/16	12	0.5/16	384	—
9 15/16	12	0.5/16	384	—

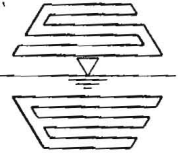
Begin equilibration at 1:49

384 min/inch, Fail

HOLE # \_\_\_\_\_ DEPTH OF TEST \_\_\_\_\_ START TIME \_\_\_\_\_

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate(ET/MD)	% Change

Tax Map 9 Parcel 306 Lot 70



3300 North Ridge Road, Suite 160  
Ellicott City, MD 21043  
Website: www.sillengineering.com

Office: 443-325-7682  
Fax: 443-325-7685  
Email: info@sillengineering.com  
Civil Engineering for Land Development

SILL ENGINEERING GROUP, LLC

# Clime Property

12348 Howard Lodge Road  
Lot 7D

## BAT Plan Low Pressure Dosing System Report

OK  
TSB 1/24/2017

December 1, 2016  
Revised: January 19, 2017

Prepared for:

Earl and Susan Clime  
6519 Barley Corn ROW  
Columbia, Maryland 21044



Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland,  
License No. 32025,  
Expiration Date: June 20, 2017

Project #15-006

## Pressure Network Design

- Design Flow: 600 gpd
- The absorption beds in the Initial System total 114' and are divided into three 38' beds. The distribution network is an End Feed Network.
- For Perforation Size, Number, and Spacing see Pressure Distribution table.
- Diameter of lateral = 1.5"
- Spacing between laterals = 13'
- Number of laterals = 3
- Diameter of force main = 3.0"
- Diameter of manifold = 2.0"
- Diameter of laterals = 1.5"
- Material: Schedule 40 PVC

## Septic System Trench Design Specifications

### Initial System:

- Application Rate: 0.8
- Effective Area Beginning Depth: 3'
- Bottom Maximum Depth: 6.5'
- Design Flow:
  - 4 Bedrooms at 150 gpd
  - $4 \times 150 \text{ gpd} = 600 \text{ gpd}$
- Square Footage of Drain Field Required:
  - Design Flow (600 gpd) / Application Rate (0.8) = 750 sf
- Sidewall Reduction Credit:
  - Trench Width (W) = 3'
  - Trench Effective Depth (D) = 3.5'
  - $(W+2) / (W+1+2D) \times 100 = 0.455\%$
- Linear Length of Trench Required: nu
  - Drain Field Square Footage (750) x Sidewall Reduction Credit (0.455%) / Trench Width (3') = 113.75' USE 114
- Linear Length of Trench Provided = 114'  
Three Trenches at 38'

OK  
RB  
1/24/2017

Cline Property  
12348 Howard Lodge Road  
January 19, 2017

## Pumping System Design

- Dose Calculations:
  - Design Flow: 600 gpd
  - Length of force main and manifold.
    - 3.0" force main = 249.72'
    - 2.0" manifold = 8.00'
    - 1.5" leaders to laterals = 53.59'
  - Volume of force main:
    - $249.72 \times 38.4$  gallons per 100' = 95.9 gallons
  - Volume of manifold:
    - $8 \times 17.4$  gallons per 100' = 1.39 gallons
  - Volume of leaders:
    - $53.56 \times 10.6$  gallons per 100' = 5.7 gallons
  - Length of 1.5" laterals: 104.62'
  - Volume of laterals:
    - $104.62 \times 10.6$  gallons per 100' = 11.1 gallons
  - Minimum dose is the greater of:
    - Volume of force main and manifold + (5 x Volume of the laterals):  
 $95.9 + 1.39$  gallons +  $5.7 + (5 \times 11.1$  gallons) = 158.49 gallons USE 159
  - Or
    - 1/6<sup>th</sup> the design flow:
    - $1/6 \times 600$  gallons = 100.0 gallons

Minimum Dose = 159 gallons

- Pump Design:
  - Pump flow required: 35 gpm (see Pressure Distribution table for initial system)
  - Dose amount: 159 gallons
  - Pump run time: 4.5 minutes
  - Static head (see profile for detail): 23.61

OK  
1/24/2017

- Friction head calculation (Table 4.3):

Pipe	3.0" Force Main	2" Manifold	1.5" Leader to Lateral
1/4 Bend (90°)	1 @ 10' = 10'	4 @ 7' = 28'	
1/8 Bend (45°)	-	-	6 @ 3' = 18'
1/16 Bend (22.5°)	7 @ 3.0' = 21.0'	-	2 @ 1.5' = 3'
1/32 Bend (11.25°)	2 @ 1.5' = 3.0'	-	2 @ 0.75' = 1.5'
Gate Valve	-	2 @ 1.3' = 2.6'	2 @ 1.0' = 2.0'
Standard Tee	-	2 @ 2' = 4'	-
Run Tee	-	-	-
Cross	-	-	-
Reducer	-	3 @ 3' = 9'	-
Couplings	11 @ 3.0' = 33.0'	-	-
Quick Connect/Disconnect	1 @ 6.5' = 6.5'	-	-
Total Equivalent Length of pipe	73.8'	43.6'	24.5'

- Flow at 3.0" pipe = 35 gpm

- Friction loss per 100' (Table 4.4) of 3.0" schedule 40 plastic pipe: 0.30
- Total equivalent length of 3.0" FM and appurtenances =  
 $249.72' + 73.8' = 323.52' / 100 = 3.2352 * 0.30 = \mathbf{0.97'}$

- Flow at 2.0" pipe = 18 gpm

- Friction loss per 100' (Table 4.4) of 2.0" schedule 40 plastic pipe: 0.62
- Total equivalent length of 2.0" manifold and appurtenances =  
 $8' + 43.6' = 51.6' / 100 = 0.516 * 0.62 = \mathbf{0.32'}$

- Flow at 1.5" pipe = 12 gpm

- Friction loss per 100' (Table 4.4) of 1.5" schedule 40 plastic pipe: 1.01
- Total equivalent length of 1.5" leader and appurtenances =  
 $28.36 + 24.5 = 52.86 / 100 = 0.5286 * 1.01 = \mathbf{0.53'}$

- Total Dynamic Head = Static head + Distal Head + Friction head + Lateral friction head

$- 23.61 + 3.0 + 0.97 + 0.32' + 0.53' + 1.5 = 29.93'$  use **30'**

• Pump Chamber Design:

- For pump tank dimensions and detail, see plans.
- Pump chamber elevations:

Proposed grade at top of tank (at inlet): 536.76'  
 Top of pump tank: 534.26'

OK  
 RB  
 1/24/2017

Clime Property  
12348 Howard Lodge Road  
January 19, 2017

- Pump chamber invert in: 533.18'
- High Water Alarm: 531.13'
- Pump On: 530.63'
- Pump Off: 530.17'
- Bottom inside slab of tank: 528.09'
- Pump Chamber volumes:
  - Invert In to Pump On: 116.37 cf or 870.51 gallons
  - Pump On to Pump Off: 21.53 cf or 161.07 gallons
- Design based on:
  - Norweco TNT-500 GPD or equivalent
  - Goulds WS series 07BHF pump or equivalent

OK RES 1/24/2017

Replacement System:

### **Pressure Network Design**

- The absorption beds in the Initial System are 90' and total 270' distribution network is a Center Feed Network.
- For Perforation Size, Number, and Spacing see Pressure Distribution table.
- Diameter of lateral = 1.5"
- Spacing between laterals = 13'
- Number of laterals = 3
- Linear Length of Trench Provided = 270  
Three Trenches:
  - Trench R1 = 90 LF
  - Trench R2 = 90 LF
  - Trench R3 = 90 LF
- Diameter of force main = 3.0"
- Diameter of manifold = 2.0"
- Material: Schedule 40 PVC

### **Pumping System Design**

- Dose Calculations:
  - Design Flow: 600 gpd
  - Length of force main and manifold.
    - 3.0" force main = 243.52'
    - 2.0" manifold = 39.53'

Clime Property  
 12348 Howard Lodge Road  
 January 19, 2017

- Volume of force main:
  - $243.52 \times 38.4$  gallons per 100' = 93.5 gallons
- Volume of manifold:
  - $39.53 \times 17.4$  gallons per 100' = 6.9 gallons
- Length of 1.5" laterals: 270'
- Volume of laterals:
  - $270 \times 10.6$  gallons per 100' = 28.6 gallons
- Minimum dose is the greater of:
  - Volume of force main and manifold + (5 x Volume of the laterals):  
 $93.5 + 6.9$  gallons + (5 x 28.6 gallons) = 243.4 gallons
  - Or
  - 1/6<sup>th</sup> the design flow:
  - $1/6 \times 600$  gallons = 100.0 gallons

Use 243 gallons for dose

*OK MB 1/21/2017*

- Pump Design:
  - Pump flow required: 49 gpm (see Pressure Distribution table for initial system)
  - Dose amount: 243 gallons
  - Pump run time: 5.2 minutes
  - Static head (see profile for detail): 16.53 use 16.5'
  - Friction head calculation (Table 4.3):

Pipe	2" Manifold	3.0" Force Main
1/4 Bend (90°)	-	1 @ 10' = 10'
1/8 Bend (45°)	1 @ 4' = 4'	-
1/16 Bend (22.5°)	2 @ 2' = 4'	3 @ 3.0' = 9.0'
1/32 Bend (11.25°)	1 @ 1' = 1'	1 @ 1.5' = 1.5'
Gate Valve	2 @ 1.3' = 2.6'	-
Standard Tee	-	1 @ 16.3' = 16.3'
Run Tee	-	-
Cross	-	-
Reducer	2 @ 1.2' = 2.4'	-
Couplings	-	12 @ 3.0' = 36.0'
Quick Connect/Disconnect	-	1 @ 6.5' = 6.5'
Total Equivalent Length of pipe	14'	79.3'

- Flow at 3.0" pipe = 47 gpm
  - Friction loss per 100' (Table 4.4) of 3.0" schedule 40 plastic pipe: 0.52
  - Total equivalent length of 3.0" FM and appurtenances =  
 $243.52' + 79.3' = 322.82/100 = 3.2 * 0.52 = 1.7'$
- Flow at 2.0" pipe = 24 gpm
  - Friction loss per 100' (Table 4.4) of 2.0" schedule 40 plastic pipe: 1.03
  - Total equivalent length of 2.0" leaders and appurtenances =  
 $39.53' + 14 = 53.53'$

- Volume of force main:
    - $243.52 \times 38.4$  gallons per 100' = 93.5 gallons
  - Volume of manifold:
    - $39.53 \times 17.4$  gallons per 100' = 6.9 gallons
  - Length of 1.5" laterals: 270'
  - Volume of laterals:
    - $270 \times 10.6$  gallons per 100' = 28.6 gallons
  - Minimum dose is the greater of:
    - Volume of force main and manifold + (5 x Volume of the laterals):  
 $93.5 + 6.9$  gallons + (5 x 28.6 gallons) = 243.4 gallons
- Or
- 1/6<sup>th</sup> the design flow:
  - $1/6 \times 600$  gallons = 100.0 gallons

Use 243 gallons for dose

*OK MB 1/21/2017*

- Pump Design:
  - Pump flow required: 49 gpm (see Pressure Distribution table for initial system)
  - Dose amount: 243 gallons
  - Pump run time: 5.2 minutes
  - Static head (see profile for detail): 16.53 use 16.5'
  - Friction head calculation (Table 4.3):

Pipe	2" Manifold	3.0" Force Main
1/4 Bend (90°)	-	1 @ 10' = 10'
1/8 Bend (45°)	1 @ 4' = 4'	-
1/16 Bend (22.5°)	2 @ 2' = 4'	3 @ 3.0' = 9.0'
1/32 Bend (11.25°)	1 @ 1' = 1'	1 @ 1.5' = 1.5'
Gate Valve	2 @ 1.3' = 2.6'	-
Standard Tee	-	1 @ 16.3' = 16.3'
Run Tee	-	-
Cross	-	-
Reducer	2 @ 1.2' = 2.4'	-
Couplings	-	12 @ 3.0' = 36.0'
Quick Connect/Disconnect	-	1 @ 6.5' = 6.5'
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- Flow at 2.0" pipe = 24 gpm
  - Friction loss per 100' (Table 4.4) of 2.0" schedule 40 plastic pipe: 1.03
  - Total equivalent length of 2.0" leaders and appurtenances =  
 $39.53' + 14 = 53.53'$

Clime Property  
12348 Howard Lodge Road  
January 19, 2017

- Friction loss in 2.0" pipe =  $53.53/100=0.54* 1.03 = 0.56'$

- Total Dynamic Head = Static head + Distal Head + Friction head + Lateral Friction head  
-  $16.5 + 3.0' + 1.7 + 0.56 + 1.5' = 23.26$  USE 23

Pump Chamber Design:

- For pump tank dimensions and detail, see plans.

- Pump chamber elevations:

Proposed grade at top of tank (at inlet): 536.76'

Top of pump tank: 534.26'

Pump chamber invert in: 533.18'

High Water Alarm: 531.88'

Pump On: 530.88'

Pump Off: 530.17

Bottom inside slab of tank: 528.09'

- Pump Chamber volumes:

Invert In to Pump On: 105.37 cf or 788.25 gallons

Pump On to Pump Off: 32.53 cf or 243.33 gallons

- Design based on:

- Norweco TNT-500 GPD or equivalent

- Goulds WS series 07BHF pump or equivalent

OK  
RB  
1/24/2017

**PRESSURE DISTRIBUTION**  
 Clime Property - Initial System  
 12348 Howard Lodge Road

Lateral No.	Ex. Grd Elev. (ft)	Invert Elev. (ft)	Trench Bottom Elev. (ft)	Lateral Length (ft)	Head (ft)	Orifice Diameter (in)	Orifice Flow Rate (gpm)	Orifice Spacing (ft)	Number of Orifices	Trench Flow Rate (gpm)	Zone
I1	551.7	548.7	545.2	35.9	3.0	1/4	1.28	4.2	9	11.52	1
I2	550.5	546.5	544.0	34.36	4.2	1/4	1.68	5.44	7	11.76	
I3	550.5	546.5	543.0	34.36	4.2	1/4	1.68	5.44	7	11.76	

TOTALS:

104.62

35.04  
 Use 35 gpm

Invert depth = 3  
 Trench depth = 6.5

*Bottom*  
*RB*

*OK*  
*RB*  
*1/24/2017*

**PRESSURE DISTRIBUTION ON SLOPING SITES**

**Clime Property - Replacement System**

Trench No.	Ex. Grd Elev. (ft)	Invert Elev. (ft)	Trench Bottom Elev. (ft)	Trench Length (ft)	Head (ft)	Orifice Diameter (in)	Orifice Flow Rate (gpm)	Orifice Spacing (ft)	Number of Orifices	Trench Flow Rate (gpm)
R1	549.7	545.7	543.2	87.6	3.0	1/4	1.28	4.6	19	24.32
R2	548.5	544.5	543.5	86.4	3.0	1/4	1.28	7.2	12	15.36
R3	547.5	543.5	542.5	82.5	4.0	1/4	1.47	13.8	6	8.82

ZONE 1

ZONE 2

256.5

48.50  
Use 49

TOTAL

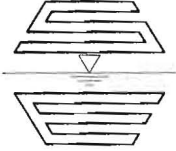
Trenches R1

Effective depth = 4  
Trench depth = 2.5

Trenches R2-R3

Effective depth = 4  
Trench depth = 1

*OK*  
*MB 1/24/2017*



3300 North Ridge Road, Suite 160  
Ellicott City, MD 21043  
Website: [www.sillengineering.com](http://www.sillengineering.com)

Office: 443-325-7682  
Fax: 443-325-7685  
Email: [info@sillengineering.com](mailto:info@sillengineering.com)  
Civil Engineering for Land Development

## SILL ENGINEERING GROUP, LLC

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July 15, 2014

**Howard County Health Department**  
**Bureau of Environmental Health**  
8390 Stanford Boulevard  
Columbia, Maryland 21045

Attn: Mr. Robert Bricker

Re: Miller Property  
Percolation Certification Plan and Variance  
request

Dear Mr. Bricker:

Please accept this Percolation Certification Plan for review and approval. We are also requesting two variances be approved: to reduce the setback required between the septic easement and property line from ten feet (10') to two and one half feet (2.5'); to reduce the setback required between the well box and property line from ten feet (10') to five feet (5').

The subject property is one of the last properties to be built on among its adjacent neighbors. The locations of the adjacent property's well and septic areas present a practical difficulty in complying with the standard setbacks. Due to the adjacent property's well and septic areas, the subject property is very restricted as to the locations of its own well and septic areas. A reduction in the setback allows the subject property to comply with the standard sizes required for septic and well areas and to maintain all other required setback distances. The approval of these variances does not have a negative impact on the adjacent parcels. All setbacks will still be in place from the adjacent property's features.

Thank you for your consideration of this Percolation Certification Plan and the variance request. Should you have any questions or comments regarding this matter, please do not hesitate to contact this office.

Sincerely,  
**Sill Engineering Group, LLC**

Paul M. Sill, PE, LEED AP

## Williams, Jeffrey

---

**From:** Williams, Jeffrey  
**Sent:** Friday, June 05, 2015 11:50 AM  
**To:** Paul Sill (paul@sillengineering.com)  
**Subject:** Miller Prop 12348 Howard Lodge Rd  
**Attachments:** 20150605114032703.pdf; Miller Prop\_12348 Howard Lodge\_PC memo.pdf

Hi Paul. Hopefully this is the last turnaround for the Miller Property perc cert. Robert sent it up for signature and there were some additional comments when Mike and I reviewed it. See the attached memo. To start, there are some additional requirements because the replacement system is an alternative system under the state regs. This means some additional notes as the memo states

Also, the MDE guidelines for an alternative system with 30-60 mpi perc rates and a low pressure dosed drainfield are that the application rate is 0.4 and there is no sidewall credit available. You'll see that on the spec sheet I attached. I would also like to stay away from using trench 4 down where the standard perc test was pulled and we had just the infiltrometer tests. I think we can do that with the spec sheet I attached. If the first 3 replacement trenches stay where they are but get a bit longer (to around 90' each), you can use a 0.8 rate and 3.5' sidewall for trench 1, which is good for 480 gpd. The bottom two will use a 0.4 rate and no sidewall, which at 180 total linear feet are good for 216 gpd. Added together, that makes 696 gpd for the replacement system, good enough for 4 bedrooms. The design on the BAT plan for this will also be easier because the lower two trenches combined are twice as long as the upper, but have an application rate half as good. Therefore, the system can be designed to make the upper trench receive the same dose as the lower two. You can do this by making two zones with duel alternating pumps or maybe just manipulating hole spacing if they are within the minimum and maximum spacing requirements.

Let me know if you have any questions on all this. Thanks

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

### CONFIDENTIALITY NOTICE

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**Bricker, Robert**

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**From:** Steven Krieg -MDE- <steven.krieg@maryland.gov>  
**Sent:** Tuesday, March 24, 2015 5:51 PM  
**To:** Bricker, Robert  
**Cc:** Williams, Jeffrey  
**Subject:** Re: Miller Property Lot 7D\_well variance rec

Approved and like the last one, with your conditions.

On Fri, Mar 20, 2015 at 4:45 PM, Bricker, Robert <[RBricker@howardcountymd.gov](mailto:RBricker@howardcountymd.gov)> wrote:

Steve,

Attached graphic is only the lot for which we are requesting the variance. Using Howard County GIS, I estimate that about 17.12 acres drain to the proposed well zone on Miller Property (John D Weisensel Property) Lot 7D. The proposed SDA is one of about 10 or 11 potential SDA or sewage system drainfields that are within that 17+ acres in the Howard Lodge Road area.

The Bureau's recommendation is that the well on Lot 7D be installed with steel casing to a minimum depth of 50 feet or 10 feet into competent bedrock whichever is deeper. Also, the Bureau recommends that all drainfield systems installed in the SDA for Lot 7D be LPD design or equivalent.

ROBERT BRICKER, REHS/R.S., L.E.H.S.

ENVIRONMENTAL SANITARIAN II

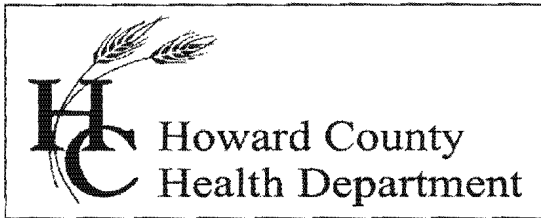
BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM

8930 STANFORD BLVD., COLUMBIA, MD 21045

Phone: Desk, [410-313-2691](tel:410-313-2691); Program, 4120-313-1771; Bureau, [410-313-1774](tel:410-313-1774)

Fax: [410-313-2648](tel:410-313-2648)

E-mail: [rbricker@howardcountymd.gov](mailto:rbricker@howardcountymd.gov)



**Bureau of Environmental Health**

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-1774 | Fax: 410-313-2648

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

[www.hchealth.org](http://www.hchealth.org)

Facebook: [www.facebook.com/hocohealth](https://www.facebook.com/hocohealth)

Twitter: [HowardCoHealthDep](https://twitter.com/HowardCoHealthDep)

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

June 2, 2015

Jay and Helen Miller  
755 Clubside Drive  
Roswell, GA 30076

Paul Sill  
Sill Engineering Group, LLC  
3300 North Ridge Road, Suite 160  
Ellicott City, MD 21043

RE: Variance request, 12348 Howard Lodge Road; to allow the well on the property to be downgrade from the sewage disposal area.

Dear Mr. and Mrs. Miller,

The Health Department has recommended your variance request to the Maryland Department of the Environment (MDE) to allow the proposed well on Map 9, Grid 12, Parcel 306, lot 7D, 12348 Howard Lodge Road to be located downgrade from the proposed sewage disposal area on the same lot as well as multiple sewage disposal areas on neighboring upgradient properties. COMAR 26.04.02.05(B)(2) states that an onsite sewage disposal system must be located downgrade from a private water supply. However, a variance to that requirement may be granted by MDE after consideration of hydrogeologic conditions and recommendation of the Approving Authority.

Reviewing information relevant to your request, consideration of the soil conditions and percolation test results, number of sewage disposal areas in the recharge areas, assumed groundwater flow patterns and recharge areas, and landscape positions were some of the factors used in making our recommendation for approval.

MDE has granted the variance subject to the following conditions and relative to the Percolation Certification Plan signed in June 2015:

- 1) The septic system serving the residence on Lot 7D must include a BAT unit.
- 2) All drainfields installed on Lot 7D must have a low-pressure distribution design or equivalent.
- 3) Wells installed on Lot 7D must be at least 200 feet distance from any sewage disposal areas that are upgrade.
- 4) The well to be installed on Lot 7D must have steel casing.
- 5) The well casing for Lot 7D must extend to 50 feet depth, or 10 feet into competent rock, whichever is deeper.

If you have any questions regarding this letter, you may contact me at the above address or by calling (410) 313-1771.



---

Jeff Williams  
Supervisor, Well and Septic Program

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Steven Krieg  
Regional Consultant  
Onsite Systems Division  
Maryland Dept. of the Environment

**PERCOLATION TEST ELEVATIONS**

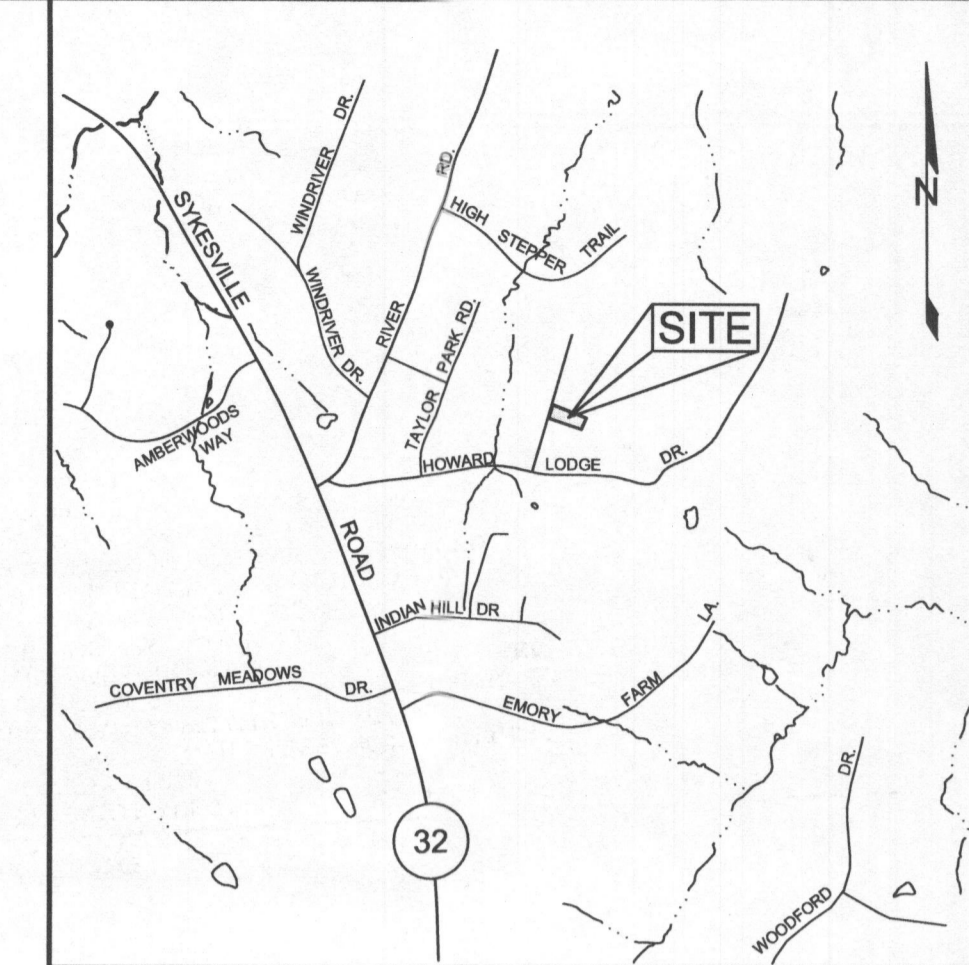
TEST NUMBER	ELEVATION
600	545.9
601	551.9
602	548.1
603	545.3
604	548.6
605	545.9
607	548.5
608	545.9
609	548.8
610	550.1
611	547.1
612	547.5

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.20
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	0.37

NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE; NATURAL RESOURCES CONSERVATION SERVICE; WEB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

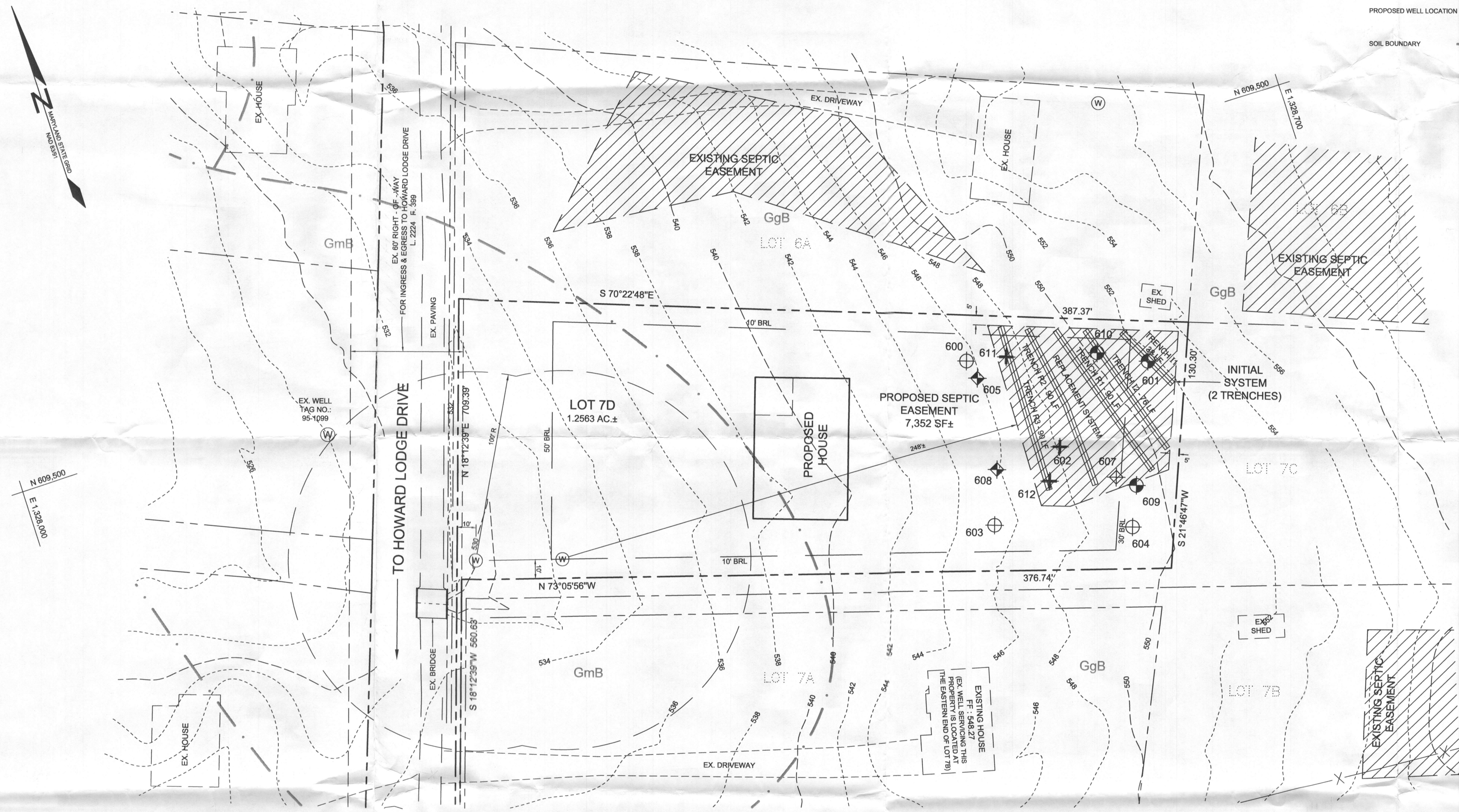
**LEGEND**

- EXISTING CONTOUR
- EXISTING TREELINE
- PROPOSED SPOT ELEVATION
- PERCOLATION TEST HOLE STANDARD, PASSED
- PERCOLATION TEST HOLE STANDARD, FAILED
- PERCOLATION TEST HOLE NON-CONVENTIONAL, PASSED
- PERCOLATION TEST HOLE INFILTROMETER, PASSED
- PERCOLATION TEST HOLE INFILTROMETER, FAILED
- PROPOSED WELL LOCATION
- SOIL BOUNDARY



**GENERAL NOTES**

1. SUBJECT PROPERTY ZONED RR-DEO PER 02/02/04 COMPREHENSIVE ZONING PLAN.
2. TOTAL AREA OF PROPERTY = 1.25 AC.
3. PRIVATE WATER AND PRIVATE SEWER WILL BE USED WITHIN THIS SITE.
4. THIS AREA DESIGNATES A PRIVATE SEWAGE EASEMENT, ACCORDING TO AN INSTRUMENT OF EASEMENT AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL (COMAR 26.04.03). IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A MODIFIED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
5. THE BOUNDARY SHOWN HEREON IS BASED ON HOWARD COUNTY A FIELD RUN BOUNDARY SURVEY PREPARED BY ADCOCK & ASSOCIATES, LLC IN MAY 2015.
6. THE TOPOGRAPHY SHOWN HEREON WAS FIELD RUN BY ADCOCK & ASSOCIATES, IN MAY 2015.
7. PROPERTY ADDRESS: 12548 HOWARD LODGE DRIVE
8. REFERENCES: LIBER 2224, FOLIO 399
9. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP, WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
10. ALL EXISTING WELLS, SEPTIC SYSTEMS AND SEWAGE DISPOSAL EASEMENTS WITHIN 100 FEET OF THE PROPERTY BOUNDARIES AND ALL EXISTING AND PROPOSED WELLS THAT ARE LOCATED WITHIN 200 FEET DOWN-GRADE OF EXISTING OR PROPOSED SEPTIC SYSTEMS AND SEWAGE DISPOSAL EASEMENTS HAVE BEEN FIELD LOCATED.
11. THE LOWER AREA OF THE SEPTIC DISPOSAL AREA (SDA) WAS TESTED AND ANALYZED FOR A SAND MOUND SYSTEM. THE SAND MOUND DESIGN WAS BASED ON A SIX PERCENT (6%) GRADE AND FOUR BEDROOMS, UTILIZING A 9'X56' ABSORPTION BED AND 35'X84' FINAL DIMENSIONS PER TABLE 2.2, MARYLAND DEPARTMENT OF THE ENVIRONMENT, DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS, JUNE 2003, FOURTH EDITION. HOWEVER, A SAND MOUND SYSTEM HAS NOT BEEN APPROVED FOR THE LOWER PORTION OF THE SDA AT THIS TIME AS THE CHARACTERISTICS OF DRAINAGE ON THE PROPERTY CAUSES THE LENGTH OF THE MOUND TO BE TRUNCATED, THEREFORE THE LINEAR LOADING RATE FOR THE SAND MOUND WOULD BE GREATER THAN IS ADVISABLE AT THIS TIME.
12. THE REPLACEMENT SYSTEM WILL REQUIRE A PRESSURIZED SYSTEM WHEREAS THE COMBINED DISCHARGE OF TRENCHES 2 AND 3 NEARLY EQUAL THE DISCHARGE OF TRENCH 1.
13. THE MARYLAND DEPARTMENT OF THE ENVIRONMENT HAS APPROVED A VARIANCE TO ALLOW THE WELL ON THE SUBJECT PROPERTY, (TAX MAP 9) PARCEL 306, LOT 7D, TO BE DOWNGRADIENT FROM THE SEWAGE DISPOSAL AREAS ON PARCEL 306, LOTS 7D, 8A, AND 8B, AND SEVERAL OTHER LOTS WITHIN A 17.21-ACRE AREA, PURSUANT TO THE FOLLOWING CONDITIONS:  
 A. A BEST AVAILABLE TECHNOLOGY UNIT FOR REDUCTION OF NITRATE RELEASED FROM THE WASTEWATER EFFLUENT MUST BE INCLUDED IN THE SEPTIC SYSTEM INSTALLATION ON LOT 7D.  
 B. THE WELL TO BE INSTALLED ON PARCEL 306, LOT 7D MUST HAVE A STEEL CASING THAT EXTENDS TO A 50 FEET DEPTH OR TEN FEET INTO COMPETENT BEDROCK, WHICHEVER IS DEEPER.  
 C. ALL WASTEWATER DISTRIBUTION SYSTEMS TO BE INSTALLED ON PARCEL 306, LOT 7D MUST BE DESIGNED FOR PRESSURIZED DISTRIBUTION AND INSTALLED AS LOW-PRESSURE DISTRIBUTION OR EQUIVALENT.
14. THE LIMITATIONS OF SOIL PROPERTIES ARE SUCH THAT A HOUSE WITH NO MORE THAN FOUR BEDROOMS COULD BE SUPPORTED BY THE SEWAGE DISPOSAL AREA ILLUSTRATED ON THIS PLAN.
15. THE PROPERTY LINE MUST BE MARKED BY A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER PRIOR TO THE LAYOUT INSPECTION FOR SEPTIC SYSTEM INSTALLATION.
16. THE REPLACEMENT SYSTEM IS AN ALTERNATIVE SYSTEM UNDER THE CURRENT REGULATIONS DUE TO PERCOLATION RATES. A DESIGN FOR BOTH SYSTEMS MUST BE SHOWN ON THE BAT DESIGN PLAN PRIOR TO BUILDING PERMIT APPROVAL.
17. AN INNOVATIVE AND ALTERNATIVE SEWAGE DISPOSAL SYSTEM AGREEMENT MUST BE SIGNED BY THE OWNER AND THE HEALTH DEPARTMENT AND RECORDED IN LAND RECORDS FOR THE PROPERTY PRIOR TO BUILDING PERMIT APPROVAL.



**SEPTIC SYSTEM TRENCH DESIGN SPECIFICATIONS**

INITIAL SYSTEM:	REPLACEMENT SYSTEM (TRENCH R1):	REPLACEMENT SYSTEM (TRENCH R2 & R3):
- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)	- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)	- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)
- APPLICATION RATE: 0.8	- APPLICATION RATE: 0.4	- APPLICATION RATE: 0.4
- EFFECTIVE AREA BEGINNING DEPTH: 3.0'	- EFFECTIVE AREA BEGINNING DEPTH: 3.0'	- EFFECTIVE AREA BEGINNING DEPTH: 5.0'
- BOTTOM MAXIMUM DEPTH: 6.5'	- BOTTOM MAXIMUM DEPTH: 6.5'	- BOTTOM MAXIMUM DEPTH: 5.0'
- SIDEWALL REDUCTION CREDIT: 45.5%	- SIDEWALL REDUCTION CREDIT: 45.5%	- SIDEWALL REDUCTION CREDIT: 0.0%
- TRENCH REQUIRED: 114 LF	- TRENCH REQUIRED: 90 LF	- TRENCH REQUIRED: 180 LF
- TRENCH PROVIDED: 114 LF	- TRENCH PROVIDED: 90 LF	- TRENCH PROVIDED: 180 LF
- TRENCH 11 = 38 LF (END FEED)	- TRENCH R2 = 90 LF	- TRENCH R3 = 90 LF
- TRENCH 12 = 76 LF (CENTER FEED)		

**PLAN VIEW**  
SCALE: 1"=30'

**OWNER/DEVELOPER**  
 JAY & HELEN MILLER  
 755 CLUBSIDE DRIVE  
 ROSWELL, GA 30076

**PERCOLATION CERTIFICATION PLAN**  
**MILLER PROPERTY**  
 LOT 7D  
 TAX MAP 9 GRID 12  
 3RD ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 PARCEL 306

DESIGN BY: PS  
 DRAWN BY: ZS  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: JUNE 25, 2015  
 PROJECT #: 14-003  
 SHEET #: 1 of 1

**SILL ENGINEERING GROUP, LLC**  
 3300 North Ridge Road, Suite 160  
 Ellicott City, Maryland 21043  
 Phone: 443.325.7682  
 Fax: 443.325.7685  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWAGE SYSTEMS IN ACCORDANCE WITH THE MASTER PLAN OF HOWARD COUNTY

COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT

I CERTIFY THAT THE INFORMATION SHOWN HEREON IS BASED ON FIELD WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, AND IS CORRECT, TO THE BEST OF MY KNOWLEDGE AND BELIEF.

PAUL M. SILL, PE, LEED AP  
 LICENSED PROFESSIONAL ENGINEER #32025

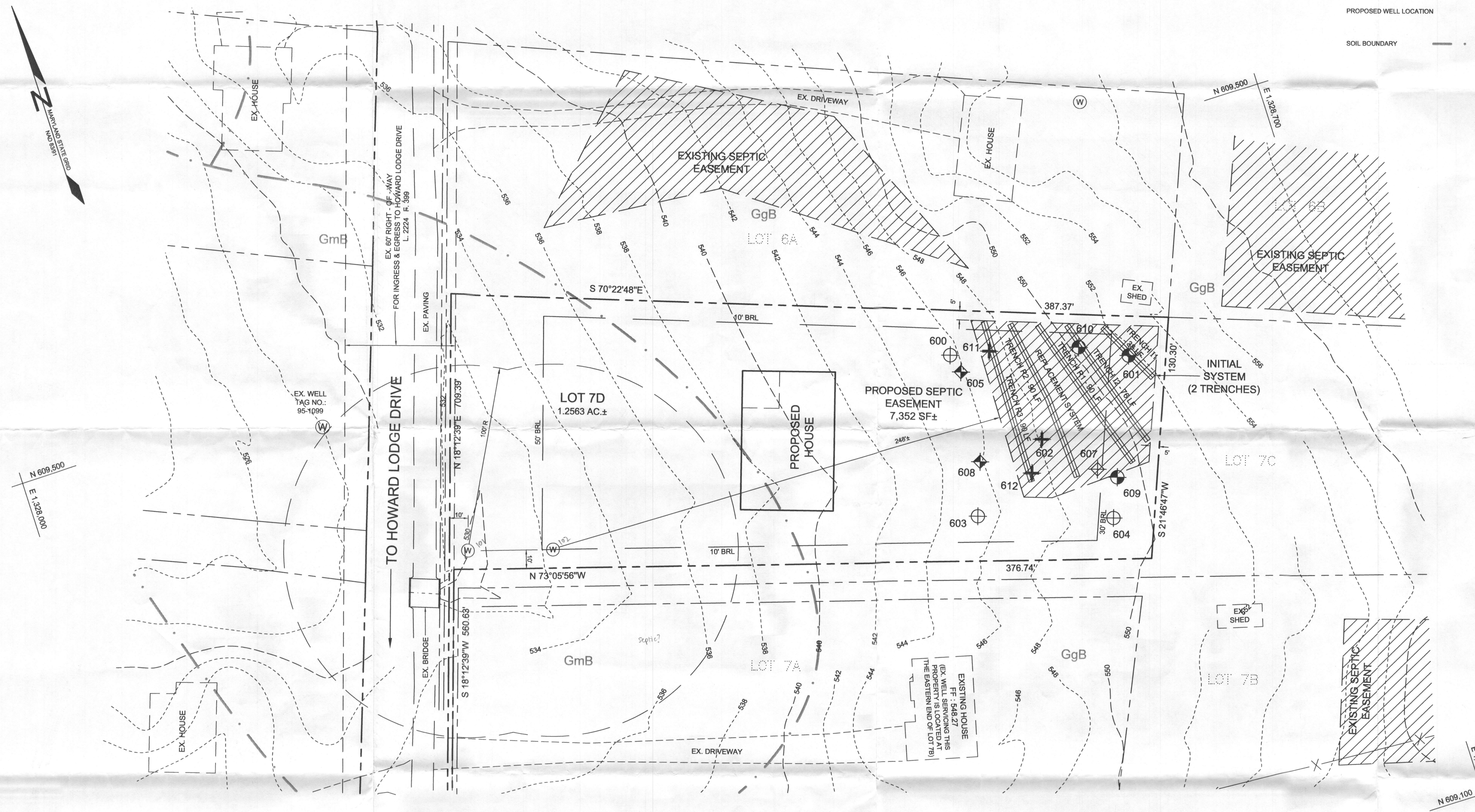
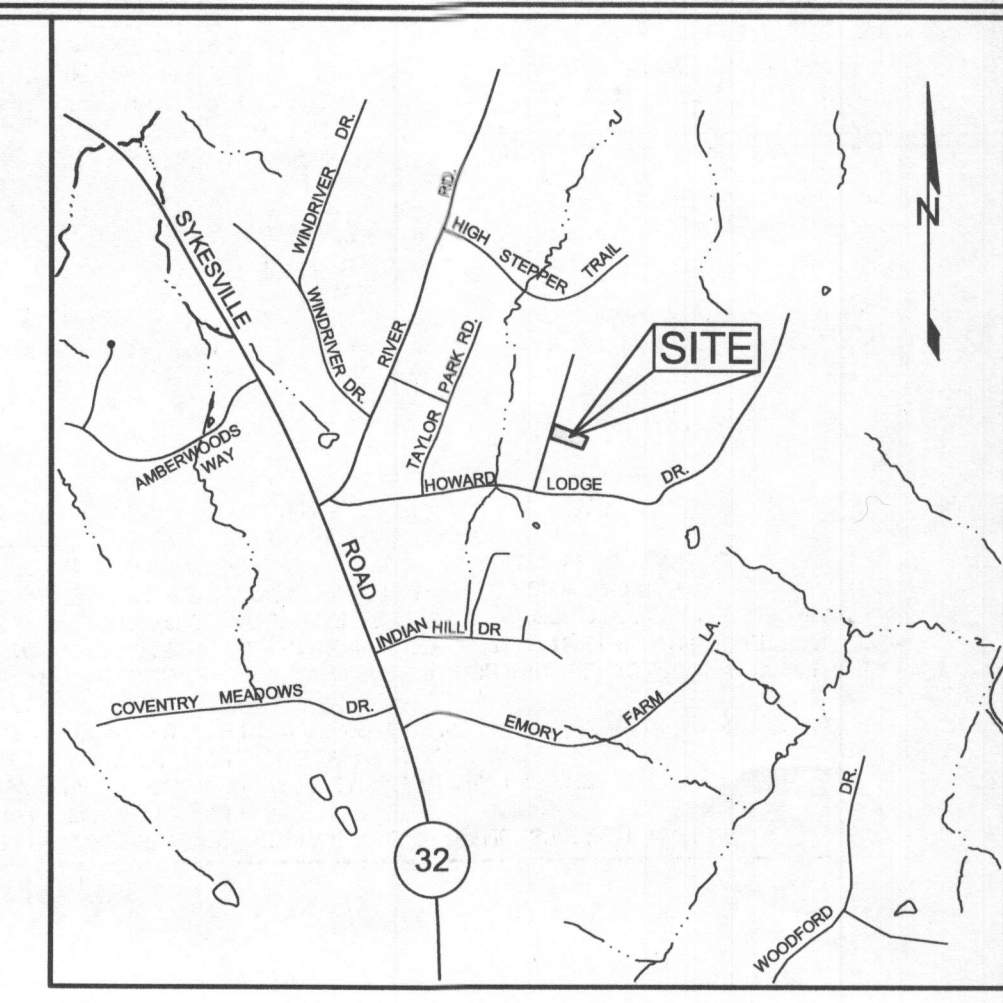
DATE: 7/6/2015

PERCOLATION TEST ELEVATIONS	
TEST NUMBER	ELEVATION
600	545.3
601	551.9
602	548.1
603	545.3
604	548.6
605	545.9
607	548.5
608	545.9
609	548.8
610	550.1
611	547.1
612	547.5

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.20
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LEGEND	
EXISTING CONTOUR	---
EXISTING TREELINE	---
PROPOSED SPOT ELEVATION	+
PERCOLATION TEST HOLE STANDARD, PASSED	⊕
PERCOLATION TEST HOLE STANDARD, FAILED	⊖
PERCOLATION TEST HOLE NON-CONVENTIONAL, PASSED	⊕
PERCOLATION TEST HOLE INFILTRMETER, PASSED	⊕
PERCOLATION TEST HOLE INFILTRMETER, FAILED	⊖
PROPOSED WELL LOCATION	⊙
SOIL BOUNDARY	---



- GENERAL NOTES**
- SUBJECT PROPERTY ZONED RR-DEO PER 02/02/04 COMPREHENSIVE ZONING PLAN.
  - TOTAL AREA OF PROPERTY = 1.25 AC.
  - PRIVATE WATER AND PRIVATE SEWER WILL BE USED WITHIN THIS SITE.
  - THIS AREA DESIGNATES A PRIVATE SEWER EASEMENT, ACCORDING TO THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL (COMBINED 28.04.03). IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWER EASEMENT. RECORDATION OF A MODIFIED SEWERAGE EASEMENT SHALL NOT BE NECESSARY.
  - THE BOUNDARY SHOWN HEREON IS BASED ON HOWARD COUNTY A FIELD RUN BOUNDARY SURVEY PREPARED BY ADCOCK & ASSOCIATES, LLC IN MAY 2015.
  - THE TOPOGRAPHY SHOWN HEREON WAS FIELD RUN BY ADCOCK & ASSOCIATES, IN MAY 2015.
  - PROPERTY ADDRESS: 12348 HOWARD LODGE DRIVE
  - REFERENCES: LIBER 2224, FOLIO 399
  - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP, WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
  - ALL EXISTING WELLS, SEPTIC SYSTEMS AND SEWAGE DISPOSAL EASEMENTS WITHIN 100 FEET OF THE PROPERTY BOUNDARIES AND ALL EXISTING AND PROPOSED WELLS THAT ARE LOCATED WITHIN 200 FEET DOWN-GRADE OF EXISTING OR PROPOSED SEPTIC SYSTEMS AND SEWAGE DISPOSAL EASEMENTS HAVE BEEN FIELD LOCATED.
  - THE LOWER AREA OF THE SEPTIC DISPOSAL AREA (SDA) WAS TESTED AND ANALYZED FOR A SAND MOUND SYSTEM. THE SAND MOUND DESIGN WAS BASED ON A SIX PERCENT (6%) GRADE AND FOUR BEDROOMS, UTILIZING A 9'X56" ABSORPTION BED AND 35'X84" FINAL DIMENSIONS PER TABLE 2.2, MARYLAND DEPARTMENT OF THE ENVIRONMENT, DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS, JUNE 2003, FOURTH EDITION. HOWEVER, A SAND MOUND SYSTEM HAS NOT BEEN APPROVED FOR THE LOWER PORTION OF THE SDA AT THIS TIME AS THE CHARACTERISTICS OF DRAINAGE ON THE PROPERTY CAUSES THE LENGTH OF THE MOUND TO BE TRUNCATED, THEREFORE THE LINEAR LOADING RATE FOR THE SAND MOUND WOULD BE GREATER THAN IS ADVISABLE AT THIS TIME.
  - THE REPLACEMENT SYSTEM WILL REQUIRE A PRESSURIZED DESIGN WHEREAS THE COMBINED DISCHARGE OF TRENCHES 2 AND 3 NEARLY EQUAL THE DISCHARGE OF TRENCH 1.
  - THE MARYLAND DEPARTMENT OF THE ENVIRONMENT HAS APPROVED A VARIANCE TO ALLOW THE WELL ON THE SUBJECT PROPERTY, (TAX MAP 9) PARCEL 306, LOT 7D, TO BE DOWNGRADE FROM THE SEWAGE DISPOSAL AREAS ON PARCEL 306, LOTS 7D, 7A, AND 7B, AND SEVERAL OTHER LOTS WITHIN A 17.21-ACRE AREA, PURSUANT TO THE FOLLOWING CONDITIONS:  
 A. A BEST AVAILABLE TECHNOLOGY UNIT FOR REDUCTION OF NITRATE RELEASED FROM THE WASTEWATER EFFLUENT MUST BE INCLUDED IN THE SEPTIC SYSTEM INSTALLATION ON LOT 7D.  
 B. THE WELL TO BE INSTALLED ON PARCEL 306, LOT 7D MUST HAVE A STEEL CASING THAT EXTENDS TO A 50 FEET DEPTH OR TEN FEET INTO COMPETENT BEDROCK, WHICHEVER IS DEEPER.  
 C. ALL WASTEWATER DISTRIBUTION SYSTEMS TO BE INSTALLED ON PARCEL 306, LOT 7D MUST BE DESIGNED FOR PRESSURIZED DISTRIBUTION AND INSTALLED AS LOW-PRESSURE DISTRIBUTION OR EQUIVALENT.
  - THE LIMITATIONS OF SOIL PROPERTIES ARE SUCH THAT A HOUSE WITH NO MORE THAN FOUR BEDROOMS COULD BE SUPPORTED BY THE SEWAGE DISPOSAL AREA ILLUSTRATED ON THIS PLAN.
  - THE PROPERTY LINE MUST BE MARKED BY A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER PRIOR TO THE LAYOUT INSPECTION FOR SEPTIC SYSTEM INSTALLATION.
  - THE REPLACEMENT SYSTEM IS AN ALTERNATIVE SYSTEM UNDER THE CURRENT REGULATIONS DUE TO PERCOLATION RATES. A DESIGN FOR BOTH SYSTEMS MUST BE SHOWN ON THE BAT DESIGN PLAN PRIOR TO BUILDING PERMIT APPROVAL.
  - AN INNOVATIVE AND ALTERNATIVE SEWAGE DISPOSAL SYSTEM AGREEMENT MUST BE SIGNED BY THE OWNER AND THE HEALTH DEPARTMENT AND RECORDED IN LAND RECORDS FOR THE PROPERTY PRIOR TO BUILDING PERMIT APPROVAL.

**OWNER/DEVELOPER**  
 JAY & HELEN MILLER  
 785 CLUBSIDE DRIVE  
 ROSWELL, GA 30076

**SEPTIC SYSTEM TRENCH DESIGN SPECIFICATIONS**

**PLAN VIEW**  
 SCALE: 1"=30'

- |  |   |   |
|--|---|---|
| <p><b>INITIAL SYSTEM:</b></p> <ul style="list-style-type: none"> <li>- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)</li> <li>- APPLICATION RATE: 0.8</li> <li>- EFFECTIVE AREA BEGINNING DEPTH: 3.0'</li> <li>- BOTTOM MAXIMUM DEPTH: 4.0'</li> <li>- SIDEWALL REDUCTION CREDIT: 45.5%</li> <li>- TRENCH REQUIRED: 114 LF</li> <li>- TRENCH PROVIDED: 114 LF</li> <li>- TRENCH I1 = 38 LF (END FEED)</li> <li>- TRENCH I2 = 76 LF (CENTER FEED)</li> </ul> | <p><b>REPLACEMENT SYSTEM (TRENCH R1):</b></p> <ul style="list-style-type: none"> <li>- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)</li> <li>- APPLICATION RATE: 0.8</li> <li>- EFFECTIVE AREA BEGINNING DEPTH: 3.0'</li> <li>- BOTTOM MAXIMUM DEPTH: 6.0'</li> <li>- SIDEWALL REDUCTION CREDIT: 45.5%</li> <li>- TRENCH REQUIRED: 90 LF</li> <li>- TRENCH PROVIDED: 90 LF</li> <li>- TRENCH R2 = 90 LF</li> <li>- TRENCH R3 = 90 LF</li> </ul> | <p><b>REPLACEMENT SYSTEM (TRENCH R2 &amp; R3):</b></p> <ul style="list-style-type: none"> <li>- DESIGN FLOW: 600 GPD (FOUR BEDROOMS)</li> <li>- APPLICATION RATE: 0.4</li> <li>- EFFECTIVE AREA BEGINNING DEPTH: 5.0'</li> <li>- BOTTOM MAXIMUM DEPTH: 5.0'</li> <li>- SIDEWALL REDUCTION CREDIT: 0.0%</li> <li>- TRENCH REQUIRED: 180 LF</li> <li>- TRENCH PROVIDED: 180 LF</li> <li>- TRENCH R2 = 90 LF</li> <li>- TRENCH R3 = 90 LF</li> </ul> |
|--|---|---|

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWAGE SYSTEMS IN ACCORDANCE WITH THE MASTER PLAN OF HOWARD COUNTY

*Paul M. Sill*  
 COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT

DATE: 7/6/2015

I CERTIFY THAT THE INFORMATION SHOWN HEREON IS BASED ON FIELD WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, AND IS CORRECT, TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Paul M. Sill*  
 PAUL M. SILL, PE, LEED AP  
 LICENSED PROFESSIONAL ENGINEER #32025

DATE: 7/6/15

**PERCOLATION CERTIFICATION PLAN**  
**MILLER PROPERTY**  
 LOT 7D

TAX MAP 9 GRID 12  
 3RD ELECTION DISTRICT

PARCEL 306  
 HOWARD COUNTY, MARYLAND

DESIGN BY: PS  
 DRAWN BY: ZS  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: JUNE 25, 2015  
 PROJECT #: 14-003  
 SHEET #: 1 of 1

**SILL ENGINEERING GROUP, LLC**  
 3300 North Ridge Road, Suite 160  
 Ellicott City, Maryland 21043  
 Phone: 443.325.7682  
 Fax: 443.325.7685  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32025, EXPIRATION DATE: JUNE 25, 2015.