JUN-4-2003 01:51P FROM:

Howard County Health Department

APPLICATION

FOR PERCOLATION TESTING AND SITE EVALUATION

TEST DATE(S) ____________ TEST TIME ________ A/P A519038

AGENCY REVIEW: ____________ DATE 7/2/2003

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:
- [x] CONSTRUCT NEW SEPTIC SYSTEM(S) "SAND MOUND"
- [ ] REPAIR/ADD TO AN EXISTING SEPTIC SYSTEM
- [ ] REPLACE AN EXISTING SEPTIC SYSTEM

CHECK AS NEEDED:
- [x] 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
- [x] BUILD ON AN EXISTING PARCEL OF RECORD

IS THE PROPERTY WITHIN 2500' OF ANY RESERVOIR?
- [ ] YES
- [x] NO

THE TYPE OF STRUCTURE IS:
- [x] RESIDENTIAL WITH 4 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) CORNERSTONE HOMES

DAYTIME PHONE 410/792/2565 CELL ________ FAX ________

MAILING ADDRESS 9695 Norfolk Ave (STREET) Laurel (CITY/TOWN) Md (STATE) 20723 (ZIP)

APPLICANT SAME

DAYTIME PHONE ________ CELL ________ FAX ________

MAILING ADDRESS ________ STREET ________ CITY/TOWN ________ STATE ________ ZIP

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

PROPERTY LOCATION
SUBDIVISION/PROPERTY NAME Rt 99/ Marriottsville 21104 LOT NO. 19

PROPERTY ADDRESS [illegible] (STREET) ________ (TOWN/POST OFFICE)

TAX MAP PAGE(S) 10 GRID 22 PARCEL(S) 68 PROPOSED LOT SIZE 1.00 AC

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]
SIGNATURE OF APPLICANT

HOWARD COUNTY HEALTH DEPARTMENT, BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM
3525-H ELLICOTT MILLS DRIVE, ELLICOTT CITY, MARYLAND 21043-4544 (410) 313-1771 FAX (410) 313-2648
TDD (410) 313-2323 TOLL FREE 1-877-4MD-DHMH

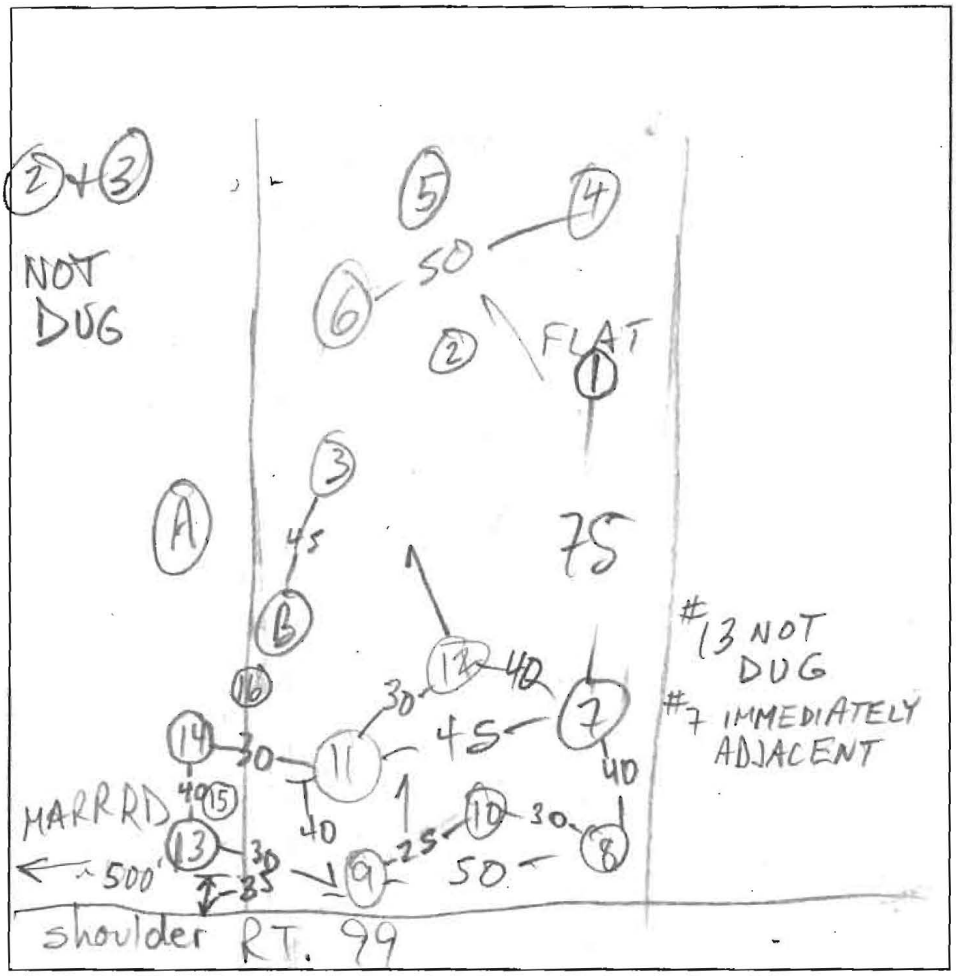
HD-216 (2/03) PLEASE SUBMIT ORIGINALS ONLY (BY MAIL OR IN PERSON)

A/P _____

4 brn sac l m
12" brn cl l m 20-30% Rx
24" brn cl l m 30-40% Rx
4 hvy orge gray mottles (perched)
7½ brn sa l m
9
10 H_2O

6
12" brn hvy l m
18" brn sac l m
24" brn cl l m
30

5
18" brn sac l m
30" brn cl l m



(7) brn sac l m
13 orge red brn cl l m
20 red brn cl l m
30

(1)
brn sac l m
30" tan olive cl l m
36"

B
red brn cl l m
32½ tan olive brn cl l m
6½
-7 gray cl mottled
8½

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2nd INCH	P/F/H
8/29/03	A	7'11	10:25	11			
			10:35	10½			
			10:45	10¼		31/32	
			10:55	9			
			11:05	9	3/4	12/16	
			11:15	9		12/32	
			11:25	9	1/32		
9/11/03	B V	8½	CONV. TRENCH PERC				(F)
11/17/03							

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 _____

APPLICATION

PERCOLATION TESTING

A _____

P _____

DISTRICT _____

DATE _____

HOWARD COUNTY HEALTH DEPARTMENT
BUREAU OF ENVIRONMENTAL HEALTH
3525-H ELLICOTT MILLS DRIVE/ELLICOTT CITY, MARYLAND 21043
TELEPHONE: 313-2640

TO: THE COUNTY HEALTH OFFICER
ELLICOTT CITY, MARYLAND

I HEREBY APPLY FOR THE NECESSARY TEST PRIOR TO APPLICATION FOR PERMIT TO CONSTRUCT (OR RECONSTRUCT) A SEWAGE DISPOSAL SYSTEM.

PROPERTY OWNER _____

ADDRESS _____ PHONE _____

AGENT OR PROSPECTIVE BUYER _____

ADDRESS _____ PHONE _____

PROPERTY LOCATION:

SUBDIVISION Williams LOT NO. _____

ROAD AND DESCRIPTION _____

_____

TAX MAP _____ PARCEL # _____

SIZE OF LOT _____ TYPE BLDG. _____
(SINGLE FAMILY DWELLING OR COMMERCIAL)

THE SYSTEM INSTALLED UNDER THIS APPLICATION IS ACCEPTABLE ONLY UNTIL PUBLIC FACILITIES BECOME AVAILABLE. I FULLY UNDERSTAND THE FEE CONNECTED WITH THE FILING OF THIS PERC TEST APPLICATION IS NON-REFUNDABLE UNDER ANY CIRCUMSTANCES. I ALSO AGREE TO COMPLY WITH ALL M.O.S.H.A. REQUIREMENTS IN TESTING THIS LOT. _____
(SIGNATURE OF APPLICANT)

APPROVED BY _____ FOR _____ DATE _____

DISAPPROVED BY _____ FOR _____ DATE _____

HOLD PENDING FURTHER TESTS _____

REASONS FOR REJECTION OR HOLDING _____

PERCOLATION TEST PLAT/PRELIMINARY PLAT - TITLE OR I.D. # _____ DATE _____

SITE DEVELOPMENT PLAN/FINAL PLAT - TITLE OR I.D # _____ DATE _____

THIS IS NOT A PERMIT

HD-216 (3/92)

COUNTY #

SOIL PROFILE

0'

Brown/Blk Lm — 1½
Light Brown Lm — 2'
Red/Brown coarse grain SiCl — 5½
Light Brown tan w/ gray mottles
water — 6'1"

14A

Orange/Red Brown SiCl — 2½
Red/Yellow SiCl — 4½
Brown/tan Sandy Clay loam — 5½
glade
— 6'

12A

Brown L — 1'
Red/orange Brown Silty Clay Clay
water — 57"
— 6'

SOIL PROFILE 8B

0'

Red/Brown SiCl — 2½'
orange/Red ~~tan~~ SiCl — 4'
Brown/tan Sand clay loam — 4½
glade
— 6'9"

INDICATE NORTH - NAME ADJOINING ROADWAY AS BASE LINE.

DATE	TEST NO.	DEPTH	PRE-WET START	PRE-WET STOP	TEST - 1" DROP START	TEST - 1" DROP STOP	TIME
12/16/03	P-15	29"	2:07	2:41	2:41	3:28	47
	P-16	28"	2:15	3:20	3:46	¼"	F
3/19/04	9A	30"	10:19	10:49	11:37	48 min	
	14A	30"	10:31	11:01	- ¾" -	Pulled -	F
	12A	30"	11:08	11:41	12:28	~~48~~ min	47
	B2	30"	11:40	12:19	1:17	58 min	

REMARKS

TYPE OF SOIL

TESTED BY ______ ALSO PRESENT ______

TRENCH DESIGN DATA: AVERAGE PERCOLATION TIME ______ TRENCH WIDTH ______

INLET DEPTH ______ MAXIMUM BOTTOM DEPTH ______ SQ. FT/BEDROOM ______

TEST DATA

NAME Williams FILE NO 5-9038

LOCATION Rt. 99 W of Marriottsville Rd COUNTY Howard

DATE 11/17/03

GRID ____ E

RECORDED BY M. Rifkin N

HOLE NO.	TEST NO. H_2O	DEPTH HOLE	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
13	7"	28"	10:54	—	10"	
			11:09	15	9 15/16	> 1/16 FAIL
			11:24	15	9 14/16	> 1/16
0	organics & topsoil					
6	brn loam					
14	org e brn sa cl lm					
28	org e cl lm					
32						
14	7"	28"	11:20	—	11"	
			11:35	15	10 3/4	> 1/4
			11:50	15	10 5/8	> 1/8
			12:05	15	10 1/2	> 1/8
			12:20	15	10 3/8	> 1/8
			12:35	15	10 1/4	> 1/8
			12:50	15	10 1/8	> 1/8 OK
0	organics & topsoil					
6	org e brn lm					
16	org e loamy sa					
28	org e cl lm					
30						120 min/in

TEST DATA

NAME Cornerstone Homes FILE NO 519038

LOCATION Rt. 99, W of Marriottsville COUNTY Howard

DATE 9/11/03

GRID E

RECORDED BY Mark Riffkin N

HOLE NO.	TEST NO. H_2O DEPTH	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
4	7"	12"	9:54	—	11"	
			10:09	15	10 10/16	> 6/16
			10:24	15	10 1/2	> 2/16
			10:49	25	10 5/16	> 3/16
			11:04	15	10 4/16	> 1/16
			11:19	15	10 2/16	> 2/16
			11:34	15	10 1/16	> 1/16
			11:49	15	10	> 1/16 (F)
5	7"	18"	10:16	—	11"	
			10:31	15	10 1/2	> 8/16
			10:46	15	10 1/4	> 4/16
			11:01	15	10 1/16	> 3/16
			11:16	15	9 25/32	> 9/32
			11:31	15	9 20/32	> 5/32
			11:48	17	9 12/32	> 8/32
			12:03	15	9 5/32	> 3/32
			12:18	15	9 1/32	> 4/32 120 min/inch
			12:37	19	8 28/32	> 6/32 ~120 min/inch OK

TEST DATA

NAME Williams/Cornerstone FILE NO 519038

LOCATION Rt. 99, W of Marriottsville Rd COUNTY Howard

DATE 9/11/03

GRID E

RECORDED BY M. Rifkin N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
6	#8	24"	10:30	—	8"	
	7"		10:48	18	7 2/16	> 14/16
			11:03	15	6 7/16	> 11/16
			11:22	19	5 3/4	> 11/16
			11:37	15	5 1/4	> 8/16
			11:52	15	4 11/16	> 9/16
			12:07	15	4 4/16	> 7/16
			12:22	15	3 15/16	> 5/16 ~48 min/inch
			12:37	15	3 9/16	> 6/16
1	7"	30"	1:55	—	11	> 6/16
			2:10	15	10 10/16	> 1/16
			2:25	15	10 9/16	> 1/32 (F)
			2:40	15	10 17/32	
7	7"	20"	3:03	—	11	
			3:15	12	10 1/4	> 3/4
			3:28	13	9 6/16	> 14/16
			3:43	15	8 11/16	> 11/16
			3:58	15	7 15/16	> 12/16
			4:13	15	7 1/4	> 11/16
			4:28	15	6 10/16	> 10/16 68 min/inch

TEST DATA

NAME Williams / Cornerstone FILE NO 519038

LOCATION Rt. 99, W of Marriottsville COUNTY Howard

DATE 10/1/03

GRID ____ E

RECORDED BY M. Ripkin ____ N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
10	#7"	27	11:06	—	10	> 9/16
			11:21	15	9 7/16	> 6/16
profile	brn lm	0	11:36	15	9 1/16	> 13/32
		10	11:53	17	8 21/32	> 15/32
	brn orge sicl lm		12:13	20	8 3/16	> 6/16 53
		27	12:33	20	7 13/16	> 5/16 48
	brn orge cl lm	36	12:58	28	7 5/16	~53 min/inch
			1:13	15	7	
9	8"	30	11:20	—	10	> 9/16
			11:35	15	9 7/16	> 11/32
			11:50	15	9 3/32	> 19/32
			12:10	20	8 1/2	> 6/16 53
			12:30	20	8 2/16	> 5/16 56
			12:57	27	7 10/16	~64 min/inch
			1:17	20	7 5/16	

TEST DATA

NAME Williams / Cornerstone FILE NO 519038

LOCATION Rt. 99, W of Marriottsville COUNTY Howard

DATE 10/1/03

GRID ____ E

RECORDED BY M. Rifkin ____ N

HOLE NO.	TEST NO.	DEPTH	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
8	7"	30"	1:07	—	9	> 11/16
			1:27	20	8 5/16	> 7/16
profile			1:45	18	7 14/16	> 6/16
	brn l sac l m	0	2:00	15	7 1/2	> 6/16
			2:15	15	7 1/16	7/16
	brn yel sicl lm	16	2:30	15	6 13/16	> 4/16
			2:45	15	6 8/16	> 5/16
	orge brn cl lm	22	3:00	15	6 4/16	> 4/16 60 min/inch
	orge brn hvy cl lm	30				

TEST DATA

NAME Williams/Cornerstone FILE NO 519038

LOCATION Rt. 99, W of Marriottsville COUNTY Howard

DATE 10/1/03

GRID E

RECORDED BY M. Rifkin N

HOLE NO.	TEST NO. H_2O	DEPTH TEST	CLOCK TIME	ELAPSED TIME	MEASUREMENT	REMARKS (Method, Moisture, Biopores)
12	7"	18"	10:37	—	9"	
			10:52	15	8 9/16	> 7/16
			11:07	15	8 3/16	> 6/16
profile		0	11:22	15	7 14/16	> 5/16
	orge brn lmsicl	11	11:37	15	7 21/32	> 7/32
	orge brn cl lm		11:52	15	7 11/32	> 9/32
		18	12:17	25	6 15/16	> 7/16
	orge brn hvy cl lm	29	12:32	15	6 9/16	> 6/16
						~40 min ok inch
11	7"	10"	10:50	—	10"	
			11:05	15	9 1/32	> 31/32
		0	11:20	15	8 5/32	> 28/32 NOT IN DENSEST LAYER
	orge brn sicl lm	10	11:35	15	7 12/32	> 25/32
	orge brn cl lm		11:52	17	6 1/2	> 28/32
			12:15	23	5 13/32	> 35/32
22			12:38	15	4 18/32	> 27/32
	orge brn h. cl lm	22	12:52	—	10	RETEST
			1:12	20	9 1/8	> 7/8
32			1:27	15	8 3/4	> 3/8 12
			1:42	15	8 15/32	> 9/32 ~50 min/inch
			1:57	15	8 1/32	> 14/32
			2:12	15	7 3/4	> 9/32
			2:27	15	7 13/32	> 11/32
			2:42	15	7 4/32	> 9/32
			2:57	15	6 26/32	> 10/32

SANITARY/ENVIRONMENTAL ENG., INC.
Consulting Engineers
1414 Washington Road
WESTMINSTER, MARYLAND 21157
(410) 876-7740
FAX (410) 840-9924

JOB WILLIAMS LOT 14
SHEET NO. OLD FREDERICK ROAD OF
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE 6/11/04
SCALE LOW PRESSURE - REDESIGN

3 BED ROOMS x 150 = 450 GPD
LOADING RATE - 0.5 GPD/Sq.ft = 900 Sq. Ft.
36" TRENCH - 900/3 = 300 LINEAR FEET

4 TRENCHES @ 40' + 90' + 90' + 80' = 300 LINEAR FEET

PUMP RATE - 60 PERFORATIONS @ 1.63 = 98 GPM

PUMP DOSE 5 x (35' + 85' + 85' + 75') = 1400' - 2" PVC
14 x 17.4 GAL/100' = 244 GAL
PLUS - 50' - 3" FM and MANIFOLD @ 38.4 GAL/100'
0.5 x 38.4 = 19 GAL DOSE = 244 + 19 = 263 GAL
263 GAL / 7.48 = 35 cu ft / 60 Sq. ft = 0.6' = 7"

EMERGENCY STORAGE = 1.7' x 60 Sq ft = 103 cu ft = 767 GAL

TDH - ELEV DIFFERENCE - 475.0' - 467.7' = 5.3'
DISTAL HEAD 2.0'

F - 2" - 6' + VALVE + L + UNION + L + L + REDUCER.
6 + 1.5 + 7 + 2 + 7 + 7 + 10 = 40.8'
f - 2" = 0.0984 $\frac{98^{1.85}}{2.067^{4.87}}$ = 0.0984 $\frac{4828}{34.33}$ = 13.8' / 100'
f - 2" = 0.405 x 13.8' = 5.6'
f - 3" = 20' + L + 1 + L
20' + 10 + 1 + 10 = 41' f = 2.09' / 100' = 0.41 x 2.09 = 0.86'
F = 5.6 + 0.86 = 6.5'
TDH = 5.3' + 2.0' + 6.5' = 13.8' (14')
PUMP TO REMOVE 98 GPM @ 14' TDH
GOULDS MODEL 3885 - WE 10 H - OR EQUAL

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.

Christopher A. Malagari, P.E., President
Donald A. Mason, P.E., Vice President

March 9, 2004

Mr. John Boris Jr., RS
Howard County Bureau of Environmental Health
3525 H Ellicott Mills Drive
Ellicott City, MD. 221043

Re: Williams Property
Revised Percolation Testing Plan

Dear Mr. Boris:

Enclosed please find the revised copy of the Percolation Test Plan for the above referenced project.

As discussed with you on the phone in February, we have performed additional field survey work to assist in satisfying your Departments needs. We have field located Route 99, the existing "farm road", staked 3 additional perc holes to be tested and detailed topography of the low area immediately west of the "farm road". All this is reflected on the plan. What you will see from the spot elevations within the low area is that it is very flat (+/- 0.1 foot) in either direction. The drainage area to this low area was calculated by our office and appears to be approximately 3400 square feet ± (0.8 acres) of drainage to this area. This is a very insignificant amount of water. This low area can be eliminated by providing positive drainage in either direction (east or west) to allow for any "trapped" water to flow out.

For the record, the original percolation test hole locations were ***not*** staked off the subject lot. It was determined after further review of the plan and field information that the holes shown on the Percolation Certification Plan are the actual field located test holes. The field tests were performed in a different location than where we actually staked the holes. This can be easily determined because the original stakes are still in the ground and you can see where the tests were performed in relationship to the stakes. Therefore, the Health Department and backhoe operator in an area chosen by them, not by Benchmark Engineering or my client, dug holes 7 and 8 shown off the lot.

8480 Baltimore National Pike • Suite 418 • Ellicott City, Maryland 21043 • Phone 410-465-6105 • Fax 410-465-6644 • E-mail: Benchmrk@cais.com

In closing, the enclosed plan shows three (3) additional holes to be tested. They are labeled as hole numbers 9A, 12A and 14A. Please notify us of the percolation dates. We want to be present during the testing so please do not test without us or the owner being present.

Thanks for your time and assistance in this important matter. We look forward to hearing from you.

Sincerely,

Christopher A. Malagari, P.E., NSPE
President

Cc: Mr. Paul Hinkle, Owner
Mr. Frank Skinner, Director Health Dept.

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.

Christopher A. Malagari, P.E., President
Donald A. Mason, P.E., Vice President

Mr. John Boris Jr., RS
Bureau of Environmental Health
Howard County
3525 H Ellicott Mills Drive
Ellicott City, Md. 21043

Re: Williams Property
Low Dose System 4-bedroom Devonshire Proposed

Dear Mr. Boris:

Enclosed please find a copy of the proposed Low Dose System for the above referenced project.

The limits of the proposed septic easement shown are based on your request per a conversation you had with the property owner, Paul Hinkle. We still feel that there is additional area to the north of the Perc hole 10 and west of perc hole 9 that appears to be satisfactory based on the field testing performed.

The information provided indicates that 606± feet of a Low Dose System will fit within the limits of the septic easement.

We would like to meet with you after you have reviewed the enclosed drawing. Please call me or Paul Hinkle to let us know your schedule and a time/date.

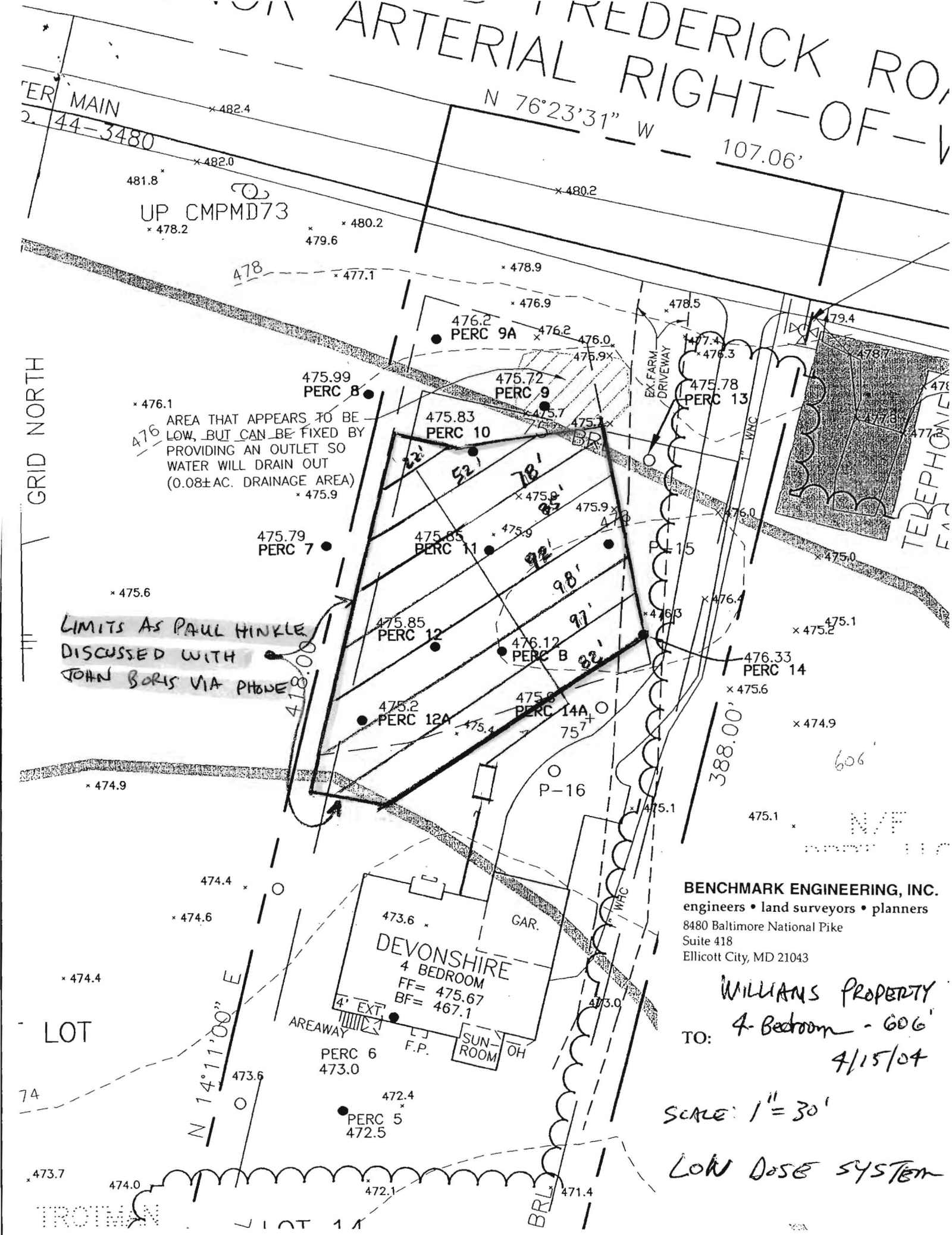
Thanks again for your time and efforts on this important matter.

Sincerely,

Christopher A. Malagari, PE, NSPE
President

Enclosure

8480 Baltimore National Pike • Suite 418 • Ellicott City, Maryland 21043 • Phone 410-465-6105 • Fax 410-465-6644 • E-mail: Benchmrk@cais.com



BENCHMARK ENGINEERING, INC.
engineers • land surveyors • planners
8480 Baltimore National Pike
Suite 418
Ellicott City, MD 21043

WILLIAMS PROPERTY
TO: 4-Bedroom - 606'
4/15/04

SCALE: 1" = 30'

LOW DOSE SYSTEM

Howard County
Health Department

3525 H Ellicott Mills Drive, Ellicott City, MD 21043
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Penny E. Borenstein, M.D., M.P.H., Health Officer

January 2, 2004

Cornerstone Homes
9695 Norfolk Avenue
Laurel, MD 20723
Attn: Paul Henkel

RE: Percolation Test Results – A 519038
Williams Property, Old Frederick Road
Tax Map 21, Parcel 68, Lot 14
Existing Parcel of Record

Dear Mr. Henkel:

Percolation testing conducted August 29, September 11, October 1, November 17 and December 16, 2003 on the referenced property indicated insufficient satisfactory soil conditions. The primary limiting factors for proposed sand mounds or a trench system with pretreatment are dense clay layers with slow test times and some unsuitable topography. The primary limiting factors for conventional trench designs are deep, dense clay layers and shallow groundwater. Lot size is also an issue. Copies of the test results are enclosed.

For the record, the following chronology is provided:

July 2, 2003: Application submitted with plan showing parcel other than that proposed for testing
August 28: Revised plan showing correct parcel confirmed for testing
August 29: Initial testing stopped due to inability to stake test locations with confidence
September 11: Two of four staked sand mound test locations in initial layout fail, two pass; builder advises Health Dept. that lot is approximately 15' wider than previously thought
October 1: Testing conducted in higher locations; all test locations meet test time guidelines
November ~3: Engineer advises Health Dept. that parcel location now known to be inaccurate based on boundary survey; actual parcel location now shifted 35' to the east, placing two passed test holes off the parcel five to ten feet beyond the western parcel boundary
November 17: Testing conducted east of passed test holes of 10/1; one test marginal, one test fails
December 9: Site inspection with this inspector, Regional Sanitarian Barry Glotfelty and Chris Malagari of Benchmark Engineering; Barry recommends additional testing to support shallow trench system with pretreatment; test locations agreed upon by all parties
December 16: Testing conducted as recommended; one test passes, one test fails

If you choose to pursue further review despite this disapproval, such review is contingent upon submission by a registered engineer/surveyor of a cerrtification plan showing the following:

1) actual locations of all excavated test holes with suitable designations for passed/failed and for type of test (conventional, sand mound, trench w/pretreatment)
2) proposed house location
3) proposed sewage reserve area with layout for two systems
4) proposed driveway, public water connection and utility lines

Howard County
Health Department

3525 H Ellicott Mills Drive, Ellicott City, MD 21043
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Penny E. Borenstein, M.D., M.P.H., Health Officer

January 2, 2004

Cornerstone Homes
9695 Norfolk Avenue
Laurel, MD 20723
Attn: Paul Henkel

RE: Percolation Test Results – A 519038
Williams Property, Old Frederick Road
Tax Map 21, Parcel 68, Lot 14
Existing Parcel of Record

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Percolation testing conducted August 29, September 11, October 1, November 17 and December 16, 2003 on the referenced property indicated insufficient satisfactory soil conditions. The primary limiting factors for proposed sand mounds or a trench system with pretreatment are dense clay layers with slow test times. The primary limiting factors for conventional trench designs are deep, dense clay layers and shallow groundwater. Copies of the test results are enclosed.

Further review is contingent upon submission by a registered engineer/surveyor of a percolation certification plan showing the following:

1) actual locations of all excavated test holes with suitable designations for passed/failed and for type of test (conventional, sand mound, trench w/pretreatment)
2) proposed house location
3) proposed sewage reserve area with layout for two systems
4) proposed driveway, public water connection and utility lines
5) note certifying that all existing wells and septic systems within 100 feet of property boundaries have been shown
6) a note indicating that depicted topography reflects field-verified information
7) the plan identification number (PC 519680) in the title block

The percolation certification plat should be submitted within 60 days to allow field verification if necessary. If you have any questions regarding this matter, please contact me at the above address or by calling (410) 313-2640.

Very truly yours,

Mark E. Rifkin, R.S.
Water and Sewerage Program

MR
Enclosures
cc: Benchmark Engineering
File

Howard County
Health Department

3525 H Ellicott Mills Drive, Ellicott City, MD 21043
(410) 313-2640 Fax (410) 313-2648
TDD (410) 313-2323 Toll Free 1-866-313-6300
website: www.hchealth.org

Penny E. Borenstein, M.D., M.P.H., Health Officer

October 23, 2003

John Connors
c/o Cornerstone Homes
9695 Norfolk Ave
Laurel, MD 20723

RE: Sand Mound Percolation Test Results – A 519038
Williams Property, Route 99, Tax Map 10, Parcel 68
Ex. Parcel of Record

Dear Mr. Connors:

Percolation testing conducted September 11, 2003 on the referenced property indicated unsatisfactory soil conditions due to slow test times. Subsequent testing higher on the lot on October 1, 2003 produced satisfactory soil conditions. Copies of the test results are enclosed.

Further review is contingent upon submission by a registered engineer/surveyor of a percolation certification plan showing the following:

1) actual locations of all excavated test holes with field-verified topography at 2' contours
2) proposed sewage reserve area to fit the mound design specifications as enclosed
4) proposed house
5) proposed driveway and utility connections located at least 10' from any sand mound
6) a note certifying that all existing wells and septic systems within 100 feet of property boundaries have been shown
7) a note indicating that depicted topography reflects field-verified information
8) the plan identification number (PC 519038) in the title block
9) a note specifying that a sand mound design plan will be approved prior to issuance of building permit

The percolation certification plat should be submitted within 60 days to allow field verification if necessary. If you have any questions regarding this matter, please contact me at the above address or by calling (410) 313-2640.

Very truly yours,

Mark E. Rifkin, R.S.
Water and Sewerage Program

MR
Enclosures
cc: Benchmark Engineering
File

5) note certifying that all existing wells and septic systems within 100 feet of property boundaries have been shown
6) a note indicating that depicted topography reflects field-verified information
7) the plan identification number (PC 519680) in the title block

If you so choose, two proposals can be submitted: one depicting proposed sand mounds, and a second depicting a proposed shallow trench system with pretreatment. The percolation certification plans should be submitted within 60 days to allow field verification if necessary. If you have any questions regarding this matter, please contact me according to the above information.

Very truly yours,

Mark E. Rifkin

Mark E. Rifkin, R.S.
Water and Sewerage Program

MR
Enclosures
cc: Frank Skinner, Bureau Director
Benchmark Engineering
File

EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS
FROM DESIGN AND CONSTRTUCTION MANUAL FOR SAND MOUND SYSTEMS
TABLE 3.1

% slope =	3 %	or	0.03 ft./ft.
Upslope correction factor =	0.92	see Table 3.2 below	
Downslope correction factor =	1.1	see Table 3.2 below	
Absorption rate =	1.0	gpd/ft.²	
Number of Bedrooms =	4		
Design Flow =	600	gpd (150 gpd/bedroom)	
Depth to water table (Z) =	36	in.	

Absorption bed ft.² (A × B) = Design Flow / Absorption rate = 600 ft.²

Bed length (B) = 40 ft. (21 ft. to 101 ft dependent on site)

Bed width (A) = $\frac{\text{Absorption bed ft.}^2}{\text{Bed length}}$ = 15.00 ft. (15 ft. or less)

Upslope sand fill depth (D) = 48 in. - Z in. = 12 in. (12 in. min.)

Down slope sand fill depth (E) = [12 A × % slope] + D in. = 17.40 in.

Cap + topsoil at bed center	(H) = 18 in.
Cap + topsoil at bed edge	(G) = 12 in.
Total bed depth	(F) = 10 in.

Sideslope setback (K) = [((D + E)/2) + 28 in.] × 3 = 128.10 in. or 10.68 ft.

Upslope setback (J) = (22 in. + D) × 3 × upslope corr. factor = 93.84 in. or 7.82 ft.

Downslope setback (I) = (22 in. + E) × 3 × downslope corr. factor = 130.02 in. or 10.84 ft.

Total width of mound (W) = 12A + J + I = 403.86 in. or **33.66** ft.

Total length of mound (L) = 12B + K + K = 736.20 in. or **61.35** ft.

area = 2,065 sq. ft.

TABLE 3.2
Downslope and upslope correction factors
for sand mounds on sloping sites

Slope %	Downslope Correction Factor	Upslope Correction Factor
0	1.00	1.00
2	1.06	0.94
4	1.14	0.89
6	1.22	0.86
8	1.32	0.80
10	1.44	0.77
12	1.57	0.73

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 fax: 410-465-6644
e-mail: BENCHMRK@CAIS.COM

PROJECT NO: 1689
DESIGNED BY: CAM DATE: 11/18/03
CHECKED BY: _____ DATE: _____
PROJECT: Williams Property
TITLE: _____

EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS
FROM DESIGN AND CONSTRTUCTION MANUAL FOR SAND MOUND SYSTEMS
TABLE 3.1

% slope =	1 %	or	0.01 ft./ft.
Upslope correction factor =	0.97	see Table 3.2 below	
Downslope correction factor =	1.03	see Table 3.2 below	
Absorption rate =	1.2 gpd/ft.²		
Number of Bedrooms =	4		
Design Flow =	600 gpd (150 gpd/bedroom)		
Depth to water table (Z) =	36 in.		

Absorption bed ft.² (A × B) = Design Flow / Absorption rate = 500 ft.²

Bed length (B) = 42 ft. (42 ft. to 104 ft dependent on site)

Bed width (A) = Absorption bed ft.² / Bed length = 11.90 ft. (12 ft. or less)

Upslope sand fill depth (D) = 48 in. - Z in. = 12 in. (12 in. min.)

Down slope sand fill depth (E) = [12 A × % slope] + D in. = 13.43 in.

Cap + topsoil at bed center	(H) = 18 in.
Cap + topsoil at bed edge	(G) = 12 in.
Total bed depth	(F) = 10 in.

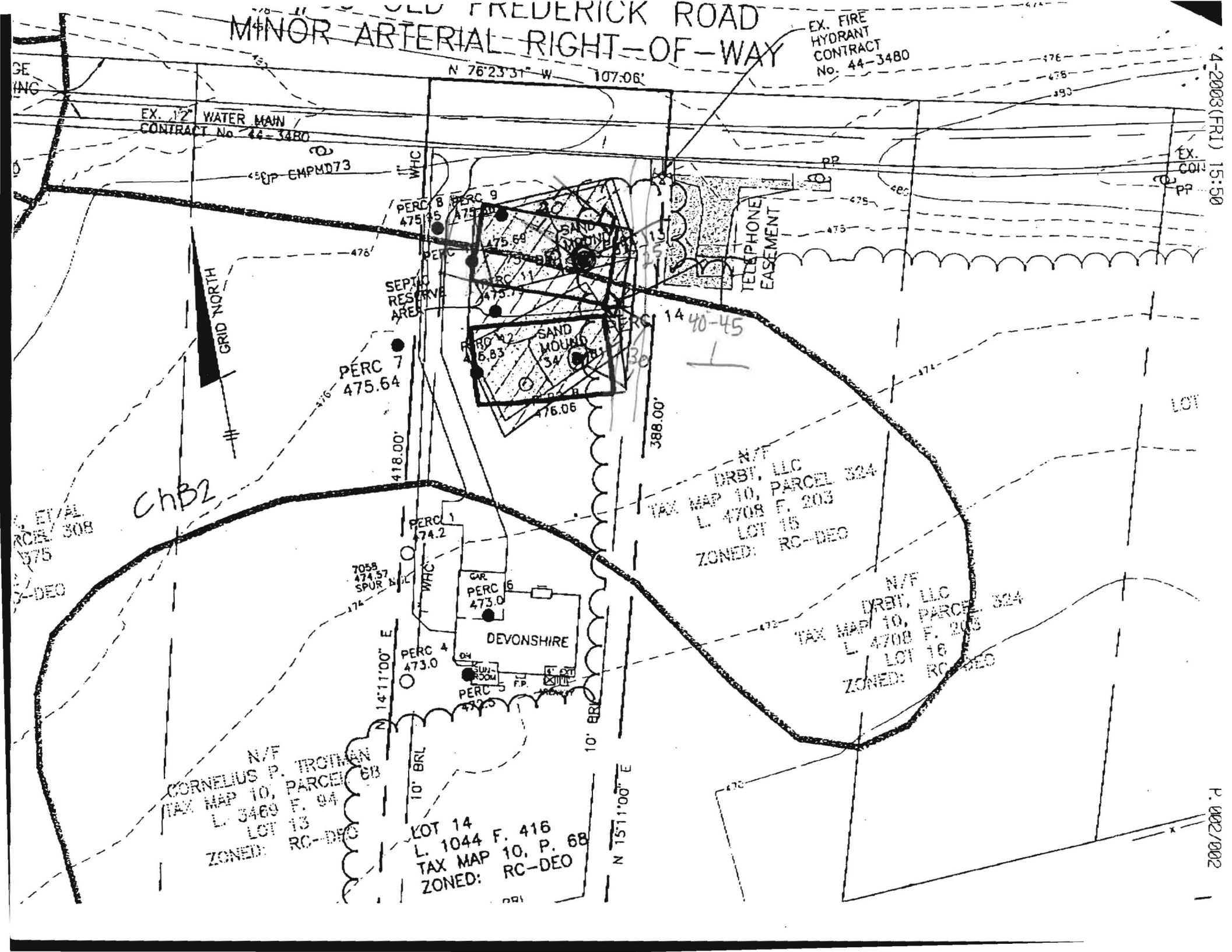
Sideslope setback (K) = [((D + E)/2) + 28 in.] × 3 =	122.14	in. or	10.18 ft.
Upslope setback (J) = (22 in. + D) × 3 × upslope corr. factor =	98.94	in. or	8.25 ft.
Downslope setback (I) = (22 in. + E) × 3 × downslope corr. factor =	109.47	in. or	9.12 ft.
Total width of mound (W) = 12A + J + I =	351.27	in. or	**29.27** ft.
Total length of mound (L) = 12B + K + K =	748.29	in. or	**62.36** ft.

area = 1,825 sq. ft.

TABLE 3.2
Downslope and upslope correction factors
for sand mounds on sloping sites

Slope %	Downslope Correction Factor	Upslope Correction Factor

0	1.00	1.00
2	1.06	0.94
4	1.14	0.89
6	1.22	0.86
8	1.32	0.80
10	1.44	0.77
12	1.57	0.73



To: Mark Hitchcox	From: John C
Co./Dept.	Co.
Phone #	Phone #
Fax #	Fax #

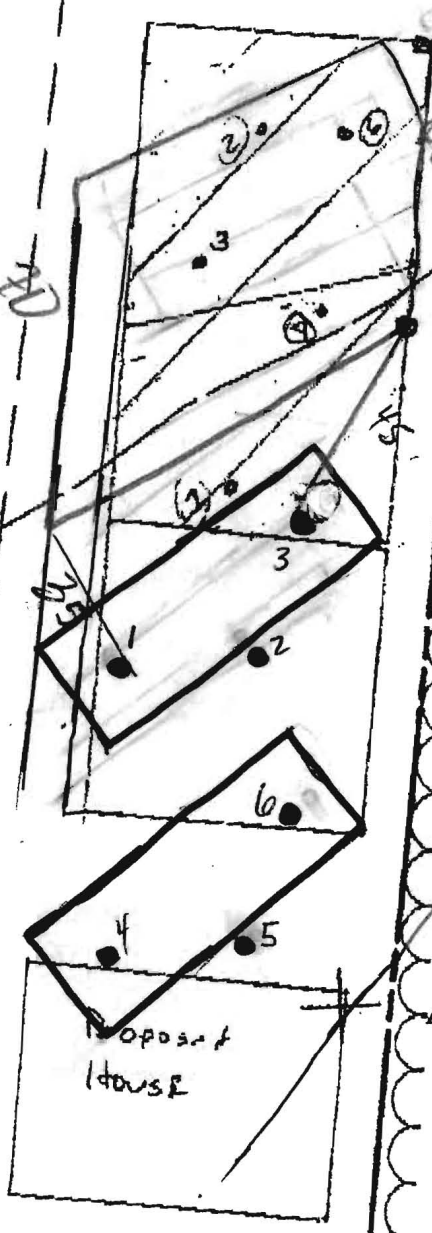
FREDERICK

90

470

* public water available

PLAN LATER FOUND TO BE IN ERROR — LOT IS 15' WIDER THAN SHOWN 1:40 SEE ENG'R PLAN



8/28/03 MR

REVISED PLAN: PREV. PLAN SHOWED INCORRECT PARCEL; BLDR TO REDRAW 2 BEDS ON CONTOUR MIN 65'X25'

472

LOT 14

100

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.

8480 Baltimore National Pike • Suite 418 • Ellicott City, Maryland 21043
410 465-6105 410 465-6644 (Fax)
Email: Benchmrk@cais.com

LETTER OF TRANSMITTAL

TO: Mark Rifkin

DATE 11-20-03	PROJECT No. 1689
ATTENTION	
RE: Williams Property	

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via hand the following items

☐ Photocopies ☑ Prints ☐ Originals ☐ Samples
☐ Specifications ☐ Invoices ☐ Change Order ☐ Other _____

COPIES of	No. of SHEETS	DESCRIPTION
1	1	Perc Certification plan
1	2	Sand mound design calculations

THESE ARE TRANSMITTED as checked below

☐ For Comment ☐ For your use ☑ For Approval
☑ For Review ☐ As requested ☐ Other _____

REMARKS:

COPY TO: _____

RECEIVED BY: Mary L Briggs

If enclosures are not as noted, kindly notify us at once.

SIGNED: CL Malagari

SANITARY/ENVIRONMENTAL ENG., INC.
Consulting Engineers
1414 Washington Road
WESTMINSTER, MARYLAND 21157

(410) 876-7740
FAX (410) 840-9924

LETTER OF TRANSMITTAL

TO HOWARD CO. HEALTH DEPT
BUREAU OF ENVIRONMENTAL HEALTH
3525-H ELLICOTT MILLS DRIVE
ELLICOTT CITY, MD 21043

DATE 6/15/04	JOB NO.
ATTENTION JOHN BODIS	
RE: LOT 14	
OLD FREDERICK RD	
LOW PRESSURE SYSTEM	

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☒ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
2			PRINTS - PLANS + SPECIFICATIONS
1			CALCULATIONS
			REDESIGN - LOADING RATE 0.5

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

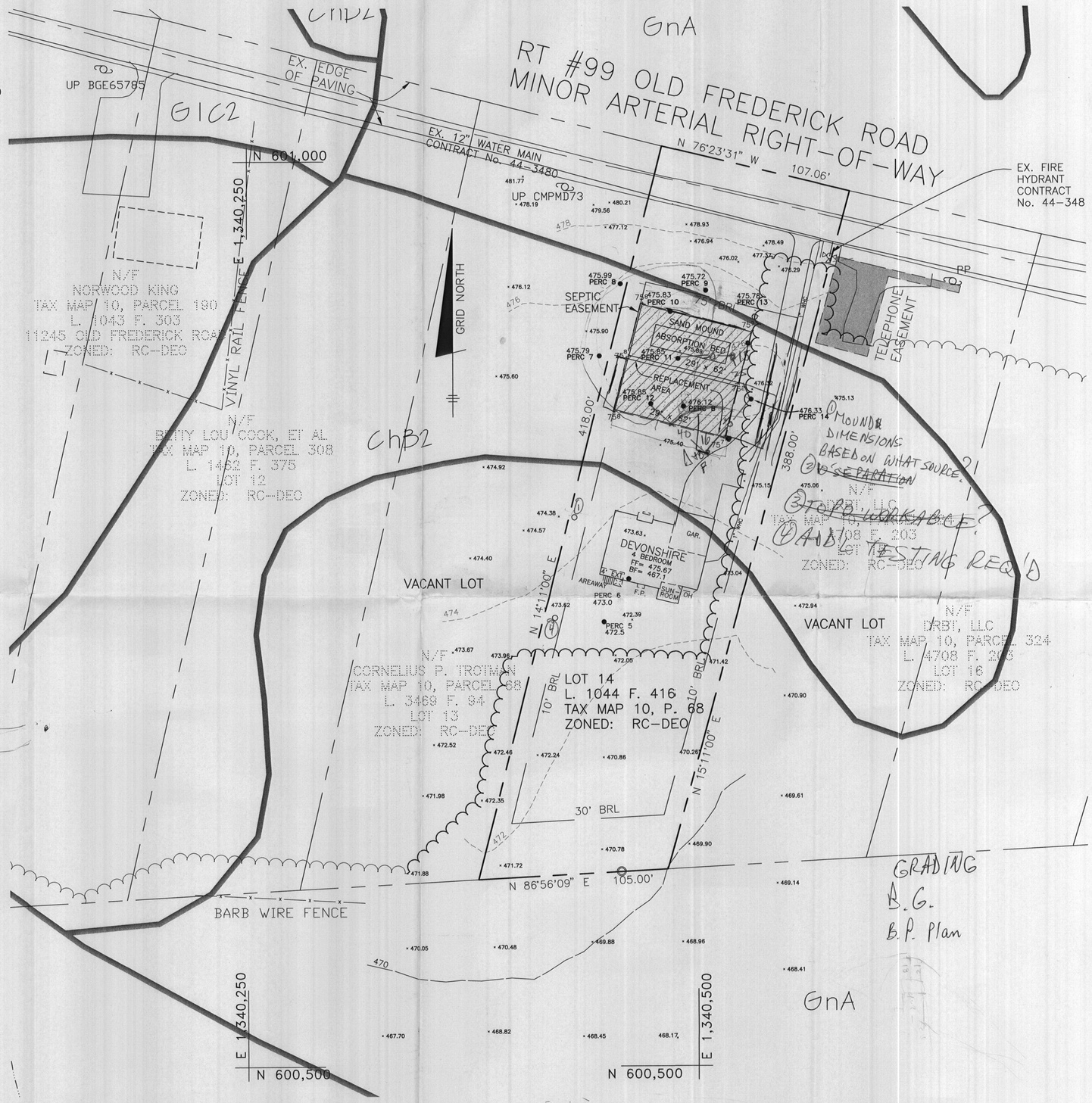
COPY TO File
Bob Sheesley

SIGNED: Jim Clise

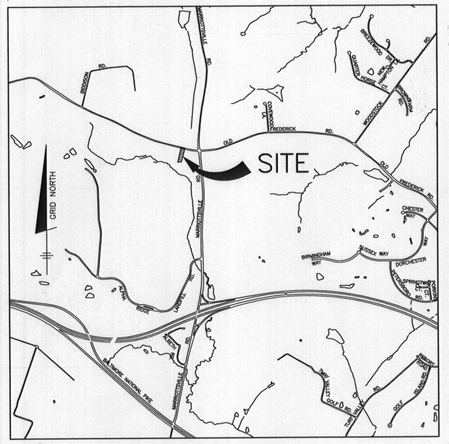
If enclosures are not as noted, kindly notify us at once.

LEGEND

- 470 — EXISTING CONTOURS (FIELD SURVEYED OCT. 2003)
- EXISTING TREELINE
- CL STREAM
- PROPOSED SAND MOUND
- SOILS DELINEATION LINE (GnB2)
- PERC 1 422.7 — PERC FAILED LOCATION
- 475.79 PERC 7 — FIELD SHOT / PERC PASSED LOCATION
- x 475.79 — FIELD SHOT PERC PASSED LOCATION



PLAN VIEW
SCALE: 1" = 30'



VICINITY MAP
SCALE: 1" = 2000'

GENERAL NOTES

1.) THE LOT SHOWN HEREON WAS CREATED BY DEED PRIOR TO 1972.
2.) TOPOGRAPHY SHOWN IS BASED ON INFORMATION FROM DIGITAL GIS TOPOGRAPHY PURCHASED FROM HOWARD COUNTY AND WAS FIELD VERIFIED BY BENCHMARK ENGINEERING, INC. IN OCTOBER, 2003.
3.) THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THE PROPERTY BOUNDARY EXCEPT AS NOTED.
4.) SAND MOUND DESIGN PLAN SHALL BE APPROVED PRIOR TO ISSUANCE OF A BUILDING PERMIT.

SOILS LEGEND		
MAP SYMBOL	SOIL GROUP	SOIL TYPE
ChB2	B	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GnA	C*	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES
* INDICATES HYDRIC SOILS		
TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND (ISSUED JULY 1968) MAP NO. 31		

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.

CHRIS MALAGARI
PLAN PREPARER

APPROVED FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

HOWARD COUNTY HEALTH OFFICER — DATE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

BUILDER:
CORNERSTONE HOLDINGS, LLC
9695 NORFOLK AVENUE
LAUREL, MD 20723
410-792-2565

PROJECT: WILLIAMS PROPERTY
LOT 14
LIBER 1044, FOLIO 416

LOCATION: TAX MAP: 10, GRID: 22
PARCEL: 68
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PERCOLATION CERTIFICATION PLAN
PLAN IDENTIFICATION NUMBER PC 519038

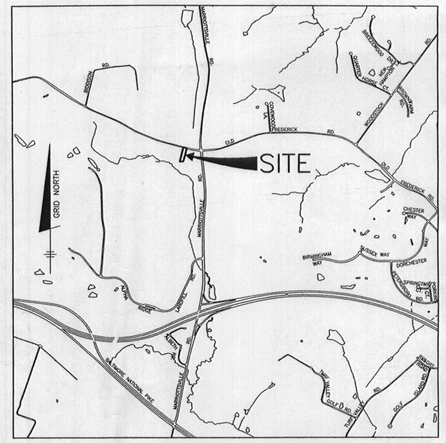
DATE: NOVEMBER, 2003 — PROJECT NO. 1689

DES: JMC — DRAFT: JMC — CHECK: CAM

SCALE: 1" = 30' — SHEET 1 OF 1

LEGEND

- EXISTING CONTOURS (5' INTERVALS)
- EXISTING TREELINE
- CL STREAM
- PROPOSED SEWAGE DISPOSAL AREA
- WELL — 1500 S.F WELL AREA
- PROPOSED SAND MOUND SYSTEM
- ChD2 — SOILS DELINEATION LINE
- PERC 1 422.7 — PERC FAILED LOCATION
- PERC 5 372.6 — PERC PASSED LOCATION
- PERC 2 372.6 — PERC STAKED BUT NOT DUG LOCATION
- PERC 11 ELEV. — PERC TO BE TESTED



VICINITY MAP
SCALE: 1" = 2000'

GENERAL NOTES

1.) THE LOT SHOWN HEREON WAS CREATED BY DEED. Prior to 1972.
2.) TOPOGRAPHY SHOWN IS BASED ON INFORMATION FROM DIGITAL GIS TOPOGRAPHY PURCHASED FROM HOWARD COUNTY.
3.) THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THE PROPERTY BOUNDARY EXCEPT AS NOTED.

SOILS LEGEND		
MAP SYMBOL	SOIL GROUP	SOIL TYPE
ChB2	B	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GnA	C *	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES

* INDICATES HYDRIC SOILS
TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND (ISSUED JULY 1968) MAP NO. 31

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.

JOHN M. CARNEY
PLAN PREPARER

APPROVED FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

HOWARD COUNTY HEALTH OFFICER — DATE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

BUILDER:
CORNERSTONE HOLDINGS, LLC
9695 NORFOLK AVENUE
LAUREL, MD 20723
410-792-2565

PROJECT: WILLIAMS PROPERTY
LOT 14
LIBER 1044, FOLIO 416

LOCATION: TAX MAP: 10, GRID: 22
PARCEL: 68
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PERCOLATION TESTING PLAN

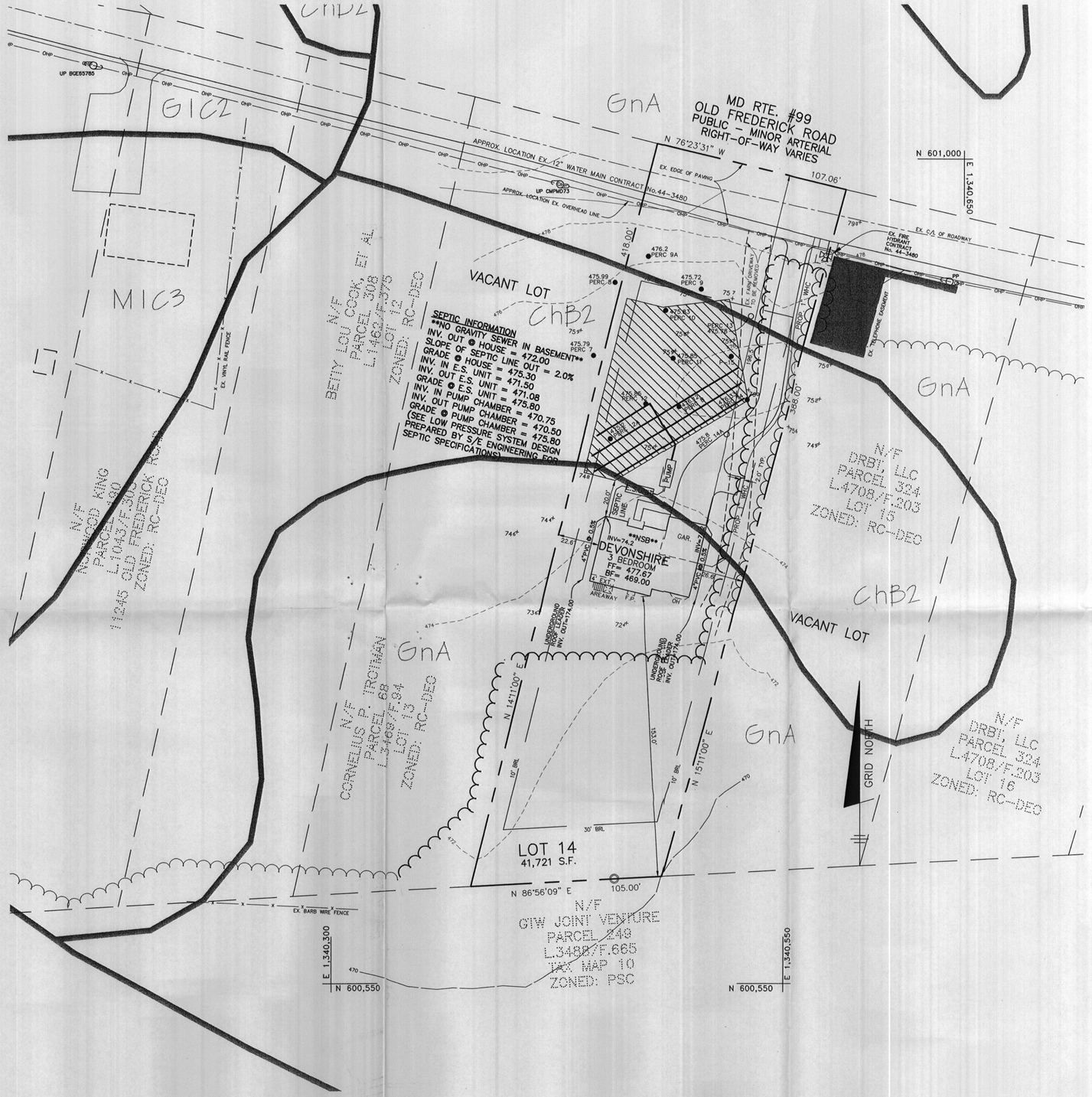
DATE: SEPTEMBER, 2003 — PROJECT NO. 1689

DES: JMC | DRAFT: JMC | CHECK: CAM

SCALE: 1" = 50' — SHEET 1 OF 1

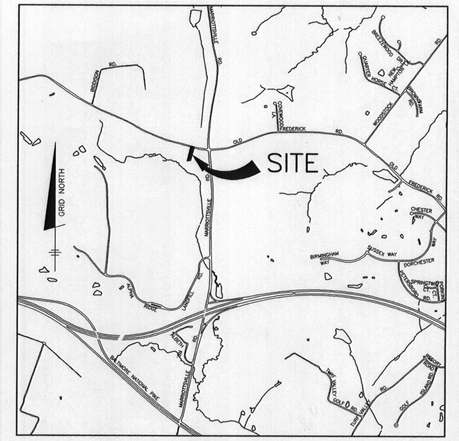
LEGEND

SOILS CLASSIFICATION	AbC1
SOILS DELINEATION	
EXISTING CONTOURS	999
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
PROPOSED STRUCTURE	
PERC. TEST – FAILED	O
PERC. TEST – PASSED	●
APPROVED PRIVATE SEWERAGE EASEMENT	
EX. FIELD-SHOT ELEVATION	+999



PLAN VIEW
SCALE: 1" = 30'

SOILS LEGEND		
MAP SYMBOL	SOIL GROUP	SOIL TYPE
ChB2	B	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GnA	C*	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES
* INDICATES HYDRIC SOILS		
TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND (ISSUED JULY 1968) MAP NO. 31		



VICINITY MAP
SCALE: 1" = 2000'

GENERAL NOTES

1.) THE LOT SHOWN HEREON WAS CREATED BY DEED PRIOR TO 1972.

2.) TOPOGRAPHY SHOWN WAS FIELD VERIFIED BY BENCHMARK ENGINEERING INC. IN OCTOBER, 2003 AND AGAIN IN MARCH 2004.

3.) THERE ARE NO KNOWN EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THE PROPERTY BOUNDARY EXCEPT AS NOTED.

4.) WATER SUPPLY SHALL BE PUBLIC AND IS TO BE PROVIDED BY A 1" SUPPLY LINE FROM EX. CONTR. NO.44-3480

5.) THE SEPTIC SYSTEM DESIGNED FOR THIS LOT IS PROPOSED TO BE A LOW PRESSURE DOSE SYSTEM. FOR DESIGN INFORMATION, SEE PLAN PLAN PREPARED BY S/E ENGINEERING, INC.

6.) SPOIL FROM THE TRENCHING OF THE SEPTIC AREA IS TO BE PLACED ON THE UPHILL SIDE OF THE EXCAVATION.

7.) ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

8.) ▨ THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWER IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWERAGE EASEMENT. RECORDATION OF A MODIFIED SEWERAGE EASEMENT PLAT SHALL NOT BE REQUIRED.

9.) SEPTIC EASEMENT IS TO BE FENCED PRIOR TO BUILDING PERMIT ISSUANCE.

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

Donald Mason 7/12/04
DONALD MASON
PLAN PREPARER

APPROVED FOR PUBLIC WATER AND PRIVATE SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

Robert Weber 7/22/04
HOWARD COUNTY HEALTH OFFICER — DATE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
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www.bei-civilengineering.com

BUILDER:
CORNERSTONE HOLDINGS, LLC
9695 NORFOLK AVENUE
LAUREL, MD 20723
410-792-2565

PROJECT: WILLIAMS PROPERTY
LOT 14
LIBER 1044, FOLIO 416

LOCATION: TAX MAP: 10, GRID: 22
PARCEL: 68
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PERCOLATION CERTIFICATION PLAN
PLAN IDENTIFICATION NUMBER PC 519038

DATE: JULY, 2004 | PROJECT NO. 1689

DES: CAM | DRAFT: EDD | CHECK: CAM | SCALE: 1" = 30' | SHEET 1 OF 1

P:\PROJECTS\1689-WILLIAMS PROP\dwg\1011c1PERCCERT.dwg, PERC CERT, 7/12/2004 10:41:10 AM, edd