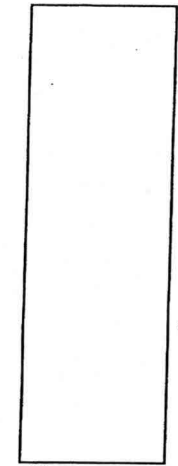
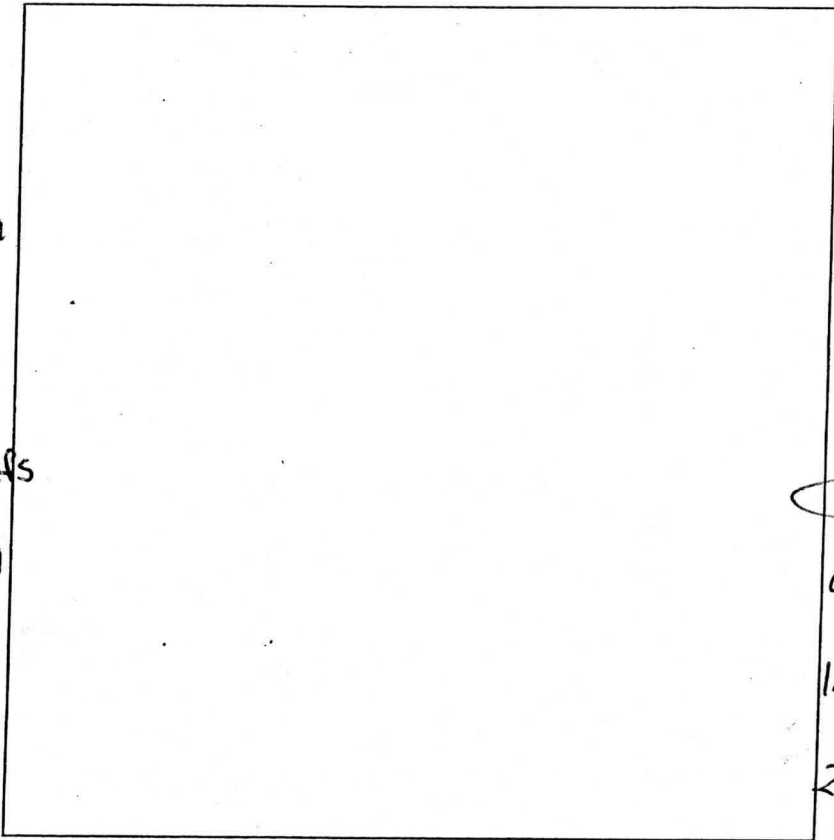


A/P

3B/4E

0.4' dk brn. sl
 1.5' brn scl
 2msbk
 common mica
 2.5' brn scl
 1fsbk
 few stone
 red-brn st
 dense ϕ in
 st sl
 3.5' red-brn vst Hs
 stones 40%
 & increasing
 4.5' - Refusal

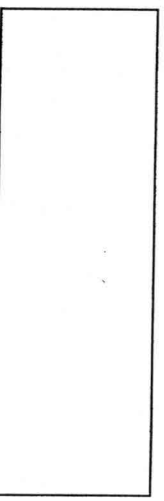
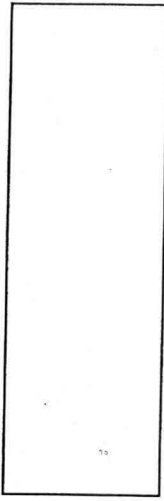
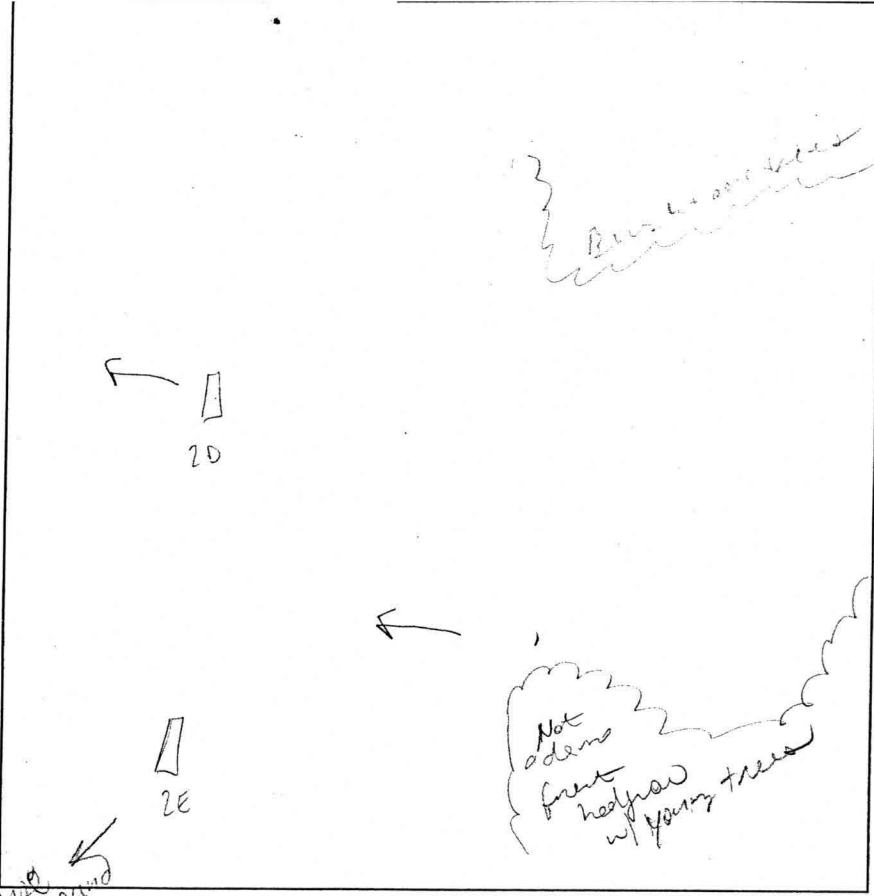
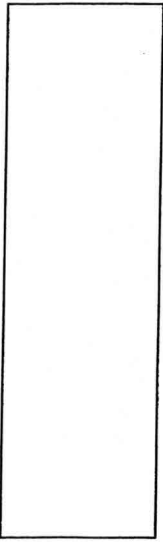


3D

0.3' dk brn sl
 1.2' brn scl
 2msbk
 2.5' lt. red-brn
 scl, 2msbk
 4.5' lt. red-brn
 scl, 1fsbk
 to ϕ in
 6.5' yel-red st. sl
 dense, ϕ in
 10' brn vst sl
 60% & increasing

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	PIF/H
12/11/07	3B/4E	4.5'	Refusal		Stone increasing		F
12/11/07	3D	6.5' 10'	Stopped operator		stones > 50% increasing		F
	2F		1:02	1:04	1:12	8	P

REMARKS _____
 SANITARIAN RB BACKHOE Zack OTHERS Bruce Burton
 TEST HOLES USED IN SDA _____ AVG. PERC TIME _____ SQ. FT/BR _____
 TRENCH WIDTH _____ INLET DEPTH _____ MAX. BOT DEPTH _____ EFFECTIVE SW _____



2E

11'3" dark brown & shk sticky
brown s&l shk
2' brown m&S p
3' multicolored (some red brown) m&S & Sapulpa
4' brown m&S multicolored (red brown) Sapulpa
6' red yellow s&l pale yellow clay like chert / cover chert Sapulpa + c

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
12/11/07	2E	4'5" / 12'5"	10:37	10:39	10:43	4	P
	3A/4D	27" / 11'	11:52				
	4A	3'8"			NO MOUND		F

4A

dark brown &
17" 18" 75% rock strong fractured rock
3'8" refined

12'5" 3A/4D
1' brown & red yellow s&l
3 1/2' multicolored brown red brown m&S
1/2 - 6 1/2' strong 75%
11'

REMARKS 3A/4D, dry on plan if the rock was at least 2' deep we could have tested for lead mercury.

SANITARIAN _____ BACKHOE _____ OTHERS _____

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

TRENCH WIDTH _____ INLET DEPTH _____ MAX. BOT DEPTH _____ EFFECTIVE SW _____

MOUND TEST DATA SHEETS

Property I.D. Wheeler 13893 Forsythe Road
Lot # 3 Date 12/21/07

Sanitarian RB/HS Landscape Position side slope

% Slope 7% Soil Type McL Contractor Level Land

HOLE # 10 DEPTH OF TEST 16" START TIME 12:59

dk grey brn sl
 2 v fsbk & fg
3"
 brn sl
 2 v fsbk & fsbk
14"
 red-brn v scl
 2 u sbk
26"
 red-brn v scl
 1 fsbk
36"
 pale red &
 lt grey brn
 sl, saprolite
58"

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
9 10/16	0	Begin		
9 13/16	10	3/16		
9 10/16	10	3/16		
9 7/16	10	3/16		

$3/16 \times 6 = 1\frac{1}{8}"/hr$
 Begin equilibration at 12:30

HOLE # 9 DEPTH OF TEST 14" START TIME 1:39

dk brn sl, 2 v fsbk
 & fg
4"
 brn sl, 2 fsbk
 & v fsbk
11"
 red brn v scl
 2 u sbk & fsbk
18"-20"
 red brn v scl
 1 u sbk & stone
40"+ 40% stone

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
8 14/16	0	Begin		
8 7/16	10	9/16		
7 13.5/16	10	9.5/16		
7 5/16	10	8 7/16		
6 13/16	10	8 1/16		
6 4.5/16	10	8.5/16		

$8\frac{3}{16} \times 6 = 3\frac{1}{8}"/hr$
 Begin equilibration at 1:06

MOUND TEST DATA SHEETS

Property I.D. Wheeler 13893 Forsythe Road Lot # 3 Date 12/21/2007

Sanitarian RB/HS Landscape Position Side Slope

% Slope 7% Soil Type MeC Contractor Level Land

HOLE # 8 DEPTH OF TEST 18" START TIME 11:55

5" dk, brn sl, 2fg, 4fsbk
 14" brn sl, 1fsbk, 4msbk
 18" red-brn scl, 7msbk
 34" brn, red-brn, dk grey brn sl, 0m saprolite
 54" + 10% stone, few boulders

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
9 16/16	0	Begin		
9 12.5/16	10	3.5		
9 9/16	10	3.5		
9 5.5/16	10	3.5		

$3.5 \times 6 = \frac{21}{16} = 1 \frac{5}{16} \text{ hr}$
 = $2 \frac{1}{16} = 1 \frac{5}{16} \text{ hr}$
 begin equilibration at 11:30

HOLE # 7 DEPTH OF TEST 17" START TIME 12:47

5" dk brn sl, 2fg, 4fsbk
 14" brn gr scl, 2fsbk, 2msbk
 26" brn scl, 1msbk
 44" red-brn scl, 1fsbk, dauser black lithochromes
 52" + 17 brn, dk grey brn STS, saprolite

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
9 16/16	0	Begin		
8 4/16	10	12/16		
6 10/16	10	10/16		
5 3/16	10	17/16		
4 0/16	10	13/16		
2 17/16	10	15/16		
1 7/16	10	14/16		

$20/16 \times 6 = 120/16 = 7 \frac{1}{2} \text{ hr}$
 Begin equilibration at 12:00

MOUND TEST DATA SHEETS

13893 Forsythe Road

Property I.D. Wheeler Lot # 3 Date 12/21/07

Sanitarian RR/AS Landscape Position side slope

% Slope 6.5% Soil Type McC Contractor Level Land

HOLE # 12 DEPTH OF TEST 12" START TIME 2:02

2" dk brn sl 2fg
 16" brn sl 2f sbk
 15" red-brn sl 2msbk
 30" brn sl 7msbk
 45" red-brn stsl
 57" 1/2 in heavy
 1/2 grey brn stsls

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
8 14/16	0	Begin		
8 4/16	5	8 10/16		
7 12/16	5	8/16		
7 4/16	5	7/16		
6 13/16	5	8/16		
6 5/16	5	6.5/16		
5 13/16	5	8.5/16		
5 8/16	5	5/16		
5 3/16	5	5/16		
4 13/16	5	6/16		
4 6/16	5	5/16		

$5.25/16 \times 12 = 3.9"/hr$

Begin equilibration at 1:43

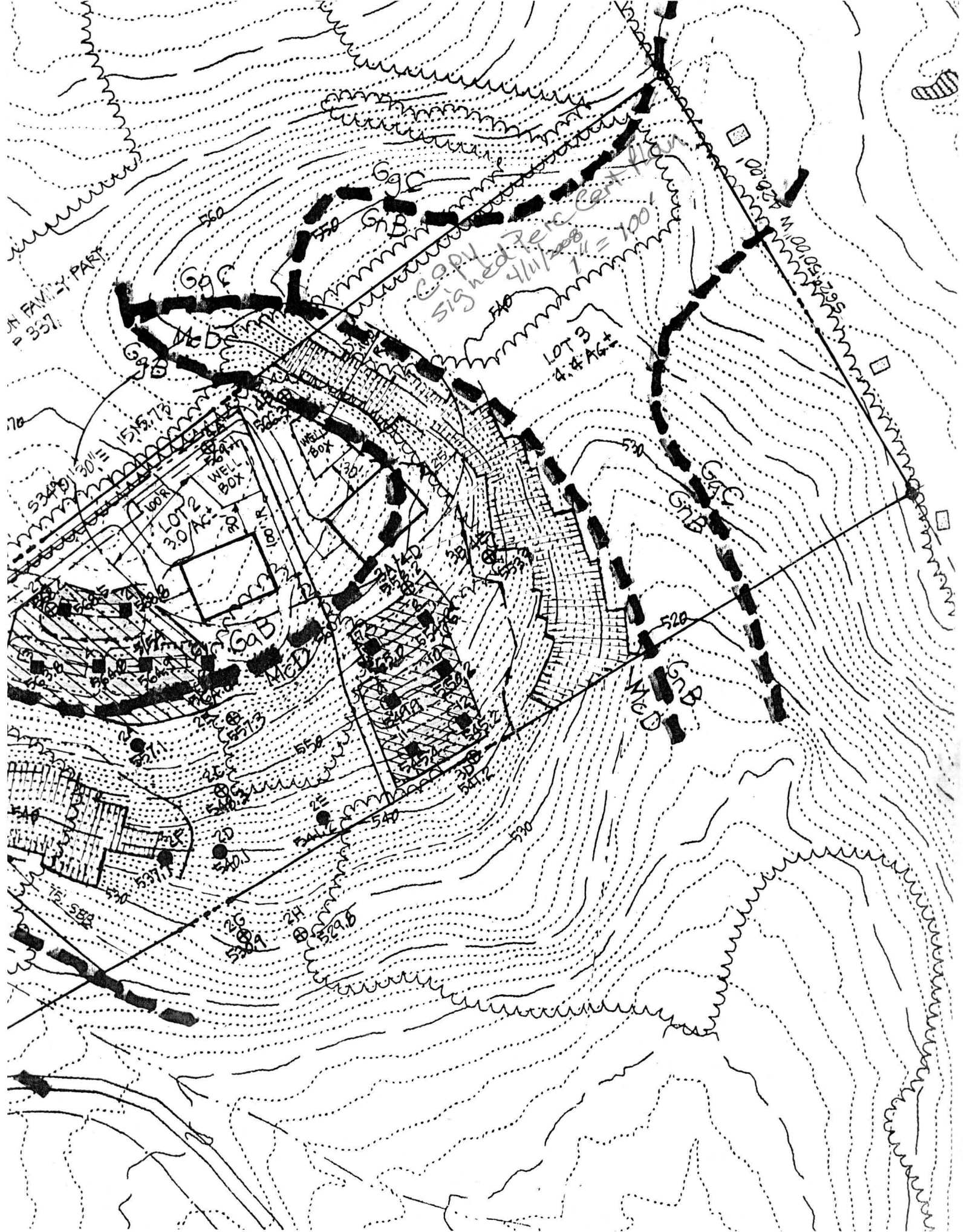
HOLE # 11 DEPTH OF TEST 12" START TIME 2:44

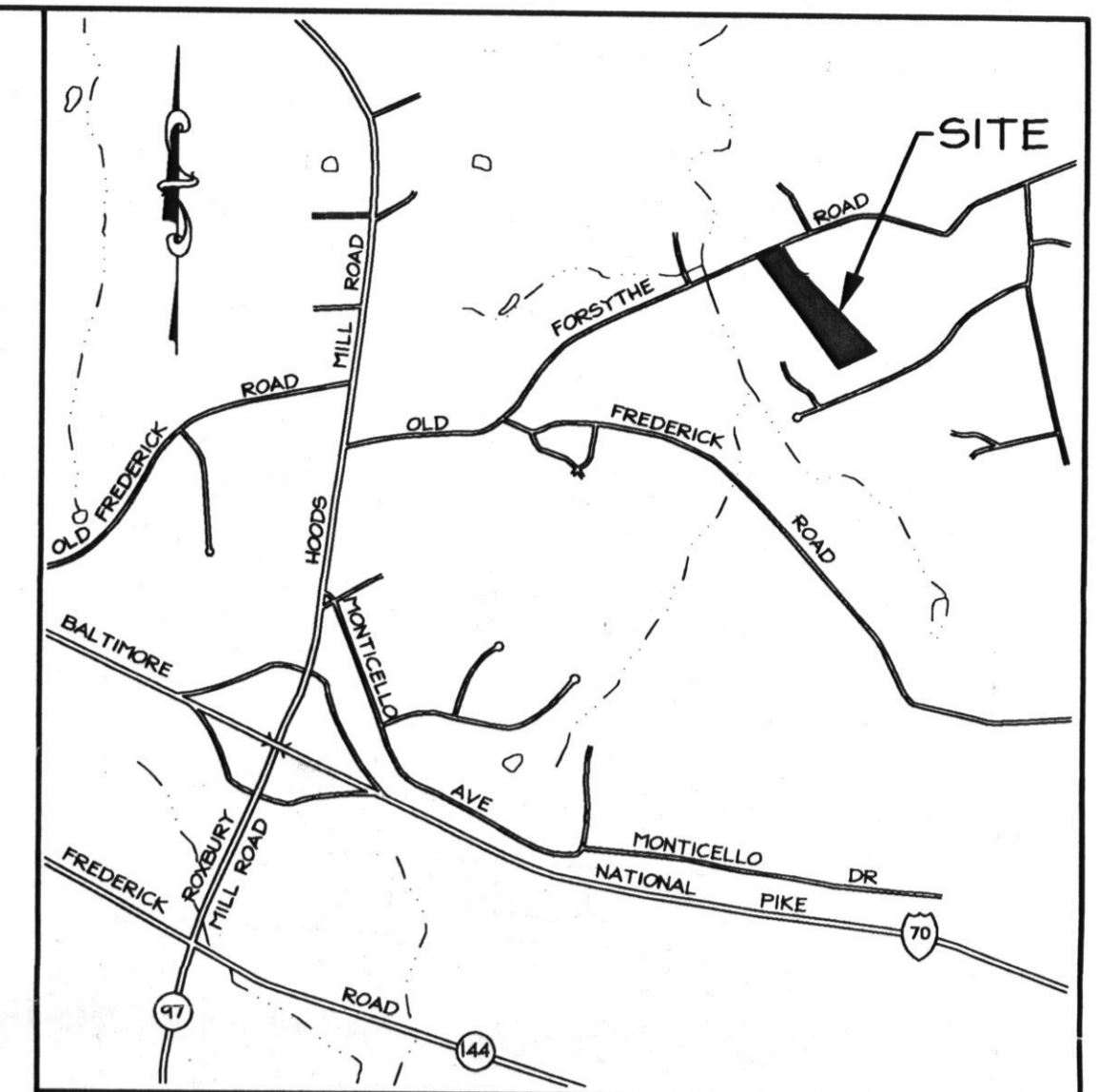
5" dk brn sl
 12" brn sl 2f sbk
 red brn
 green
 21" 7msbk
 red brn
 28" stsl
 red brn
 41" stsl

Hook Gauge Reading	Elapsed Time (min)	Measured Drop	Estimated Rate	% Change
10 10/16	2:44	0		
10 10/16	2:59	6/16		
10 4/16	3:04	6/16		
9 15/16	2:59	5/16		
9 9/16	3:04	6/16		

$5.75/16 \times 12 = 4.3"/hr$

Begin equilibration at 2:17





VICINITY MAP
SCALE: 1"=2000'

LEGEND

- PROPOSED SEWAGE DISPOSAL EASEMENT
- INITIAL SAND MOUND
- REPLACEMENT SAND MOUND
- SAND MOUND PERC TESTS PASSED 12/21/07
- EXISTING WELL
- EXISTING TREE
- EXISTING TREE TO BE SAVED
- PRIMARY WELL LOCATION
- ALTERNATE WELL LOCATION
- CONVENTIONAL PERC TESTS 12/11/07**
- PASSED
- FAILED/ROCK

SOILS LEGEND

- GgB GLENELG LOAM 3-8% SLOPES
- GgC GLENELG LOAM 8-15% SLOPES
- MdD MANOR LOAM 15-25% SLOPES
- MdC MANOR LOAM 15-25% SLOPES, VERY ROCKY

NOTES:

1. Existing Zoning: RC per 2-2-04 Comprehensive Zoning Plan
2. Deed Reference: Liber 671, Folio 618
3. Total Area of Lot: 14.00 Ac.±
4. The lot shown hereon complies with the minimum lot area and ownership width as required by the Maryland Department of the Environment.
5. All existing wells and septic systems within 100 feet of the lot which may effect this proposal have been shown.
6. The topography shown is taken from Howard County Aerial Photogrammetry, AND FIELD RUN ELEVATIONS WITHIN THE BUILDABLE AREA OF THE LOTS.
7. Any changes to the Private Sewage Easement shall require a Revised Percolation Certification Plan.
8. There is a Historic House located on Lot 1 identified on the Historic Register as HO-3, "Pleasant Valley" circa 1754, to remain.
9. THE EXISTING WELL SERVING THE EXISTING DWELLING ON LOT 1 (#13889) SHALL BE UPGRADED OR (REPLACED AND) ABANDONED PRIOR TO THE HEALTH OFFICERS SIGNATURE OF THE RECORD PLAT.

THIS AREA DESIGNATES A PRIVATE SEWAGE EASEMENT OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC 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.

LDE Inc.

Engineers, Surveyors, Planners
9250 Ramsey Road, Suite 106 Columbia, Maryland - 21045
(410)715-1070 - (301)596-3424 - FAX (410)715-9540

DESIGNED BDB	PERCOLATION CERTIFICATION PLAN WHEELER PROPERTY LOTS 1-3 A 527915 TAX MAP 9 GRID 7 P/O PARCEL 92 4th ELECTION DISTRICT HOWARD COUNTY, MD	SCALE 1"=100'
DRAWN STB		DRAWING 1 OF 1
CHECKED BDB		JOB NO. 07-017
DATE 3/2008		FILE NO.
OWNER: KENNETH L. WHEELER, JR. 13943 Forsythe Road Sykesville, MD 21784	DEVELOPER: CHRISTINA WHEELER 707 Eastshire Drive Catonville, MD 21228	

NO.	DATE	REVISIONS
1	12/13/07	REVISE PLAN FOR SAND MOUND TESTS
2	2/08	REVISE PLAN PER 12/21/08 SAND MOUND TESTING
3	3/19/08	REVISE PLAN PER 3/13/08 HEALTH DEPT. COMMENTS



PERC CERTIFICATION

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.

Bruce D. Burton
BRUCE D. BURTON, PROFESSIONAL ENGINEER
MD Reg. NO. 19184
Date 3/20/08

Approved For Private Water and Private Sewerage
Howard County Health Department
Peter Beileman
Peter Beileman, MD
Date 4/11/2008
Howard County Health Officer

F:\07-017-017 PERC APP.dwg, Layout: 11/14/2007 4:20:00 PM

Lot 3

Location

SAND MOUND CALCULATIONS

Total mound width:	<u>35.2</u>	feet
Total mound length:	<u>83.6</u>	feet

SITE SPECIFIC INFORMATION

Slope Percent:	<u>12</u>	%
Z- Restrictive Depth to rock or water:	<u>36</u>	inches
Percolation Rate:	<u>15</u>	minutes/inch
Design Flow:	<u>600</u>	gallons per day

BED/MOUND CALCULATIONS

Design infiltration rate for sand:	<u>1</u>	gal. per sq. ft. per day
Absorption bed: Design flow / Design infiltration rate =	<u>600</u>	square feet
A- Bed width (15 feet or less):	<u>10.00</u>	feet
B- Bed length: Absorption bed (sq.ft)/Bed width (ft) = (21 to 101 feet)	<u>60.00</u>	feet
D- Upslope sand fill depth: 48 in - Z =	<u>12</u>	inches
E- Downslope sand fill depth: 12 A x % slope + D in. =	<u>26</u>	inches
H- Cap + topsoil at bed center =	<u>18</u>	inches
G- Cap + topsoil at bed edge =	<u>12</u>	inches
F- Total Bed Depth:	<u>10</u>	inches
K- Sideslope setback: { ((D + E) / 2] + 28 in.) / 12 } x 3 =	<u>11.80</u>	feet
Upslope correction factor (from chart):	<u>0.73</u>	
J- Upslope setback: ((22 in + D) / 12) x 3 x Upslope corr. Factor =	<u>6.21</u>	feet
Downslope correction factor (from chart):	<u>1.57</u>	
I- Downslope setback: ((22 in + E) / 12) x 3 x Downslope corr. Factor =	<u>19.00</u>	feet
W- Preliminary Width of Mound: A + J + I =	<u>35.2</u>	feet
L- Total Length of Mound: B + 2K =	<u>83.6</u>	feet

LOADING RATE AND BASAL AREA CALCULATIONS

Linear loading rate: Design flow / Bed Length =	<u>10.0</u>	gallons per linear ft.
Soil infiltration rate based on percolation rate:	<u>1.2</u>	<u>0.5</u> gal. per sq. ft. per day
Basal area required: Design flow / infiltration =	<u>1200</u>	square feet
Basal area provided with preliminary width: Level Site = L x W; Slope Site (A+I)xB	<u>1740</u>	square feet ✓

X

Adequate basal area is provided - no modifications to preliminary dimensions required
In order to provide adequate basal area, the downslope setback must be increased as follows:

Modified downslope setback: (Basal Area Required / A) - B = N/A feet

Therefore, the overall mound with changes as follows:

New mound width = A + J + modified downslope setback = N/A feet

TABLE 3.1
EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS

Absorption Bed ft^2 (A x B) = $\frac{\text{Design Flow}}{1.2 \text{ gpd / ft}^2} = \underline{600.00} \text{ ft.}^2$

Bed length (B) = $\underline{60.00}$ ft. (42 ft to 104 ft dependent on site)

Bed width (A) = $\frac{\text{Bed area}}{\text{Bed Length}} \text{ ft}^2 = \underline{10.00}$ ft. (12 ft. or less)

Upslope sand fill depth (D) = 48 in - Z in. = $\underline{12}$ in. (12 in. min.)

Downslope sand fill depth (E) = $[12A \times \% \text{slope}] + D$ in = $\underline{26}$ in.

Cap + topsoil at bed center (H) = $\underline{18}$ in.

Cap + topsoil at bed edge (G) = $\underline{12}$ in.

Total bed depth (F) = $\underline{10}$ in

Sideslope setback (K) = $\frac{[(D + E) + 28 \text{ in.}] \times 3}{2} = \underline{11.80}$ in.

Upslope setback (J) = $(22 \text{ in.} + D) \times 3 \times \text{upslope corr. factor} = \underline{6.21}$ in.

Downslope setback (I) = $(22 \text{ in.} + E) \times 3 \times \text{downslope corr. factor} = \underline{19.00}$ in.

Total width of mound (W) = $12A + J + I = \underline{422.42}$ in.

Total length of mound (L) = $12B + K + K = \underline{1003.20}$ in.