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

January 28, 2004

MEMORANDUM

TO: Jim Clise
S/E Engineering
1414 Washington Road
Westminster, MD 21157

FROM: Mark Rifkin *MR*
Well and Septic Program

RE: Sand Mound Plan
Lot 4, Frederick Road
Victoria Palmer

This office has reviewed the referenced plan, which was found to be acceptable with the exception of one detail. According to page 5 of the attached MDE memo of September, 1994, sand mound reserve areas which tested at 60-120 min/inch are subject to the requirement that the linear loading rate be less than or equal to six. Or as a formula:

$$\frac{\text{design flow (gpd)}}{\text{bed length (ft)}} \leq 6$$

Although one test result was less than 60 min/inch, each of the other three relevant test results were 60-120 min/inch. Because the plan had already been reviewed, Barry Glotfelty was consulted to determine whether this requirement should apply at this stage. After consultation, Barry requests that the bed width be six feet; thus the length would approximate ninety feet for a 3 BR house.

CORRECTIONS: *mound*
I regret that I have to request the plan be redrawn to reflect the referenced requirement.

MR
cc: File

SANITARY/ENVIRONMENTAL ENG., INC.

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JOB LOT 4 FREDERICK RD.

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE 2/18/04

CHECKED BY SANDMOUND DATE _____

SCALE VICTORIA PALMER

3 BED ROOMS X 150 = 450 GPD 4 7% SLOPE
LOADING RATE - 1 GPD/SQ. FT. = 450 SQ. FT.

BED LENGTH = 77'
450/77' = 5.8' (BED G')

BED - 6' X 77' = 462 SQ. FT.

LINEAR LOADING RATE = 450/77 = 5.8 GPD

UP SIDE SAND DEPTH = 24"

DOWN SIDE SAND DEPTH = 24" + (.04 x 72") = 26.88 (27")

UP SLOPE SETBACK - (24" + 22") (3) (0.89) = 123" = 10'-3"

DOWN SLOPE SETBACK (27" + 22") (3) (1.14) = 168" 14'

BASAL AREA REQUIRED - 1800 SQ. FT.

1800 SQ. FT. / 77' = 23'-3" - 6' BED = 17'-3"

DOWN SLOPE SETBACK = 17'-3"

SIDE SLOPE SETBACK = $\frac{24" + 27"}{2} + 28" (3) = 13'-5"$

MOUND LENGTH = 77' + 13'-5" + 13'-5" = 103'-10"

MOUND WIDTH = 6' + 10'-3" + 17'-3" = 33'-6"

PUMP RATE - 44 PERFORATIONS @ 1.63 = 72 GPM

DOSE - 5 X 4 X 36.75' = 738' - 1 1/2" PVC @ 10.6 GAL/100'

7.38 X 10.6 = 78 GAL

PLUS - 75' - 2" PVC @ 17.4 GAL/100' = 0.75 X 17.4 = 13 GAL

DOSE = 78 + 13 = 91 GAL = 12 CU FT = 2 1/2" depth

EMERGENCY STORAGE = 58 SQ. FT. X 2' = 116 CU FT = 868 GAL.

TDH - ELEV. DIFFERENCE = 534.66 - 525.7 = 9'

DISTAL HEAD 2'

F. 2" PVC - 6' + 1.3' + 7' + 2' + 7' + 7' + 15' + 7' + 40' + 7' + 10' = 109'

F = 0.0984 $\frac{681.84}{2.067 \times 4.87}$ = 0.0984 $\frac{2354}{34.33}$ = 6.7' / 100'

1.09 X 6.7 = 7.3' TDH = 9' + 2' + 7.3' = 19'

Pump to remove ~~68~~ 72 GPM @ 19' TDH

GOULDS MODEL 3885 - W007 H 07 EQUAL



MARYLAND DEPARTMENT OF THE ENVIRONMENT
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Robert L. Ehrlich, Jr.
Governor

Kendall P. Philbrick
Acting Secretary

Michael S. Steele
Lt. Governor

Memorandum

TO: Environmental Health Directors

THRU: Jay Prager, Chief, On-Site Systems Division *JP*

FROM: Barry Glotfelty, Regional Consultant, On-Site Systems Division
Wastewater Permits Program *BP*

RE: Alternative Sand for Mounds

DATE: September 4, 2003

Contractors and some counties have experienced considerable difficulty in acquiring sand for use in sand mounds that consistently meets the specification from COMAR 26.04.02.05 Q (I) requiring an effective size of 0.25 – 0.5 mm. with a uniformity coefficient ≤ 3.5 . This has led us to explore whether sands with different qualities could be approved for use in Maryland mounds.

Recent research from the University of Wisconsin indicates that a sand with slightly different properties than those currently deemed suitable for use in Maryland also give acceptable performance in mounds. The State of Wisconsin's sand specification is included in the Wisconsin Mound Soil Absorption System: Siting, Design and Construction Manual, January 2000. The portions of the document that relate to sand specification are attached to this memo. The entire document, publication # 15-24, is available at the Small Scale Waste Management Project's website www.wisc.edu/sswmp/publist.html

Sand meeting the specification described in the Wisconsin manual can be accepted for use in Maryland mounds if all of the following conditions are met:

1. A recent sieve analysis should be included with the proposed sand indicating that the parameters of the Wisconsin specification are met including allowable percentages of particles less than 0.053 mm and greater than 2 mm (see figure 5).
2. The mound employing the sand must be classified as an alternative (non-conventional) system instead of a conventional mound. This is because the sand specification for use in a conventional mound is explicit in our regulation.

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3. The design conditions included in the Wisconsin manual must be employed in the design of the mounds that use the alternative sand. These conditions include bed loading rates of 1.0 gpd/ft² or less, gravel beds less than 10 ft wide ensuring a linear loading rate of less than 10 gpd/ft., and effluent filters employed in the outlet of the second compartment of the two compartment septic tank used for pretreatment. Additionally, observation ports must be installed in the mound (see Maryland's 1993 Sand Mound Design and Construction Manual).

BG:je

Attachment

**cc: J. James Dieter
Regional Consultants**

