APPENDIX B

SAND MOUND

I. Introduction

All soil absorption components and technologies shall be designed and installed to meet the requirements of rule 3701-29-15 of the Administrative Code for soil absorption. This appendix establishes the minimum standards for a sand mound to be used for dispersal of sewage effluent from approved septic tanks or pre-treatment components

II. Limitations and Conditions for Use

(A) Sand mounds shall be sited to allow for the vertical separation distances specified in rule 3701-29-15 of the Administrative Code.

(B) The basal area of the mound shall be oriented parallel to natural surface contours and shall be sited to avoid natural drainage features and depressions that may hold surface water or otherwise impact the installation or functionality of the mound. A design for a mound shall address surface water diversion as needed.

(C) An interceptor drain or perimeter drain in compliance with paragraphs (C) and (D) of rule 3701-29-16 of the Administrative Code may be used when determined to be necessary by the board of health, soil evaluator, or system designer.

(D) Sites with boulders or numerous trees are less desirable for a mound soil absorption component. Such conditions shall be avoided, when possible, or the design shall increase the basal area to compensate for losses due to boulders or flush cut trees and shall include special instructions for the basal area preparation under such conditions.

III. Sand Mound Design

(A) The design shall include the calculations used for determining the distribution area width and length and the basal area width and length including any variation due to slope and the subsequent increase in sand fill depth. The design may include references to mound resource manuals.

(1) The basal area of the mound shall be calculated using the soil loading rate from table 3 of rule 3701-29-15 of the Administrative Code and the daily design flow. The minimum length along contour shall be calculated using the linear loading rate from table 4 of rule 3701-29-15 of the Administrative Code and the daily design flow.

(B) In addition to the basal area, the area downslope from the mound for slopes greater than five per cent, or a radial area surrounding the mound for slopes less than five per cent as appropriate for the site, shall be free of any site disturbances.

(C) The mound sand fill depth shall be determined based on the depth to the limiting conditions. The sand fill depth shall not be less than four inches for effluent from a pretreatment component approved by the director for meeting the BOD_5 and TSS standard and six inches for septic tank effluent. The loading rate for the sand fill material shall not exceed one gallon per day per square-foot. For the purpose of this rule, natural sand is defined as naturally deposited silica based sand not manufactured by mechanical processing such as the crushing of rock or coarse aggregates. The mound sand fill shall be a natural sand meeting one the following:

(1) Sand specifications in the Ohio State University Mound Bulletin (2004).

(2) Sand meeting the gradation requirements of ASTM C33, provided not more than five per cent passes the No. 200 (75 µm) sieve as determined by ASTM C117, “Test Method for Material Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing”.

(3) Having an effective size between 0.15 to 0.3 millimeters, a uniformity coefficient of 5 or less, with not more than five per cent passing the No. 200 (75 µm) sieve as determined by ASTM C117, “Test Method for Material Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing” and not less than eighty per cent passing the No. 8 (2.36mm) sieve.

(D) A geotextile fabric or straw covering of the aggregate in the distribution area or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water.

(E) The soil cover shall be applied to allow for an approximate depth of six inches after settling, and the mound shall be crowned to promote runoff. Soil cover shall be of a quality to allow for oxygen transfer and growth of vegetation.

IV. Distribution Network and Media

(A) The distribution network of the mound shall be designed in accordance with rule 3701-29-15.1 of the Administrative Code. The design shall include the entire distribution network configuration, including pipe lengths and sizes for the force main, any force main branches, manifolds, laterals with orifice size, spacing, and shielding, and the calculations used to determine the dose volume and pump selection.

(B) Mound distribution media shall consist of one of the following:

(1) A minimum of three inches of approved coarse aggregate placed beneath the distribution pipe and at least one inch of approved coarse aggregate placed over top of the pipe;

(2) Approved chamber or bundled polystyrene distribution media products having a minimum eight inch height used in accordance with manufacturer specifications for installation; or

(3) Other alternative distribution media materials as authorized by the department of health.

V. Site Preparation and Installation

The mound shall be installed in accordance with Chapter 3701-29 of the Administrative Code, the installation permit, the approved design, any referenced resource and the following:

(A) If any site disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health.

(B) Prior to installation, the registered installer shall check all elevations in the design relative to the established benchmark including the surface contour and the flow line elevation of other components to assure proper flow through the system and freeze protection, as applicable.

(C) Soil moisture conditions shall be evaluated and basal area preparation shall not proceed when there is risk of smearing or compaction of soil.

(D) All vegetation shall be cut close to the ground and removed from the site. Removal of stumps, roots, sod, topsoil, and boulders shall be limited to minimize basal area compaction and disturbance.

(E) The force main should be installed from the upslope side. All vehicle traffic on the basal area and downslope area of the mound should be avoided with installation work being conducted from the upslope side or end of the mound basal area.

(F) The basal area of the mound shall be prepared to create a sand/soil interface to increase infiltration. The basal area preparation shall not reduce the infiltrative capacity of the soil surface. The degree of basal area preparation shall be determined on a site by site basis depending on soil conditions but shall not extend deeper than the topsoil. Any basal scarification or other basal area preparation shall be conducted working along the contour. Sand may be incorporated into the basal area during the preparation process. Following basal preparation, a layer of sand fill shall be placed on the entire basal area to prevent damage from precipitation and foot traffic.

(G) The specified depth and sufficient amount of sand fill shall be placed to cover the basal area, and shall not be steeper than three to one side slopes. The distribution area shall be formed to the specified dimensions and the sand surface of the distribution area shall be level.

(H) The area around the mound system shall be protected from erosion through upslope surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection.

(I) Installer documentation shall include, but not be limited to, the measured height of the distal operating head, the system flow rate, and dose volume settings as baseline measures for future O&M and monitoring. Documentation shall be provided to the board of health to be included in the permit record.

VI. Operation and Maintenance

The mound system shall be operated, maintained, and monitored as required by the operation permit issued by the board of health. A service agreement for a mound system with a pretreatment component shall also include the

maintenance and monitoring of all system components. In conjunction with any operation permit conditions or O&M provisions required by the board of health, the O&M of a mound soil absorption system shall include but is not limited to:

(A) Checking the mound for vegetative cover, erosion or settling, and any evidence of seepage on the sides or toes of the mound;

(B) Flushing of distribution laterals;

(C) Checking for ponding in the distribution area;

(D) Monitoring the dose volume and operating pressure head of the distribution system;

(E) Checking for any surface water infiltration or clear water flows from the dwelling or structures into the system components or around the mound soil absorption area; and

(F) Review and document event counters, elapsed time meters, flow meters, and alarm conditions, where present.