DATE: July 28, 2009

TO: Karen Remley, M.D., M.B.A., F.A.A.P., State Health Commissioner

FROM: Engineering Design Review Panel pursuant to § 32.1-163.6

SUBJECT: Summary of IFFC Conducted July 14, 2009
Location: 11510 Greenwood Rd, Glen Allen VA 23059-4745
Owner: Shawn Tuthill - Liberty Homes
Engineer: Tim Miller, P.E.
Onsite Treatment System for 450 gpd

Cc: Shawn Tuthill, Owner (Liberty Homes, 8249 Crown Colony Parkway, Mechanicsville, VA 23116)
Tim Miller, P.E., Engineer (172 South Pantops Dr., Charlottesville VA 22911
F. Lewis Clark, VDH Environmental Health Supervisor - Henrico County HD
VDH Division of Onsite Sewage and Water Services
Ms. Ishneila Moore, Assistant Attorney General

Background

A design for a 450 gallon per day onsite treatment system was submitted to the Henrico County Health Department on March 9, 2009, for review and approval (VDH ID# 2009-143-0031).

The design utilized a Norweco Singulair Model 960 TNT aerobic treatment, UV disinfection, an unlined wetlands cell with overflow to a pump tank, and final drip dispersal to an elevated sand mound.

The Henrico County Health Department with concurrence from the VDH Review Engineer denied the submittal for not complying with standard engineering practice, noting that the unlined constructed wetland disposal area does not provide the 12 inch separation needed from the high water table.

An Informal Fact Finding Conference (IFFC) was requested by the design engineer and the owner and held on July 14, 2009, at the VDH OEHS office in Richmond, VA. In attendance as members of the Engineering Design Review Panel were Chairman Marcia Degen, Ph.D. P.E. (DEQ); Joel Pinnix, P.E. (American Council of Engineering Companies of Virginia); John Schofield, P.E. (VDH); and Rick Blackwell, P.E. (Virginia Society of Professional Engineers). Also in attendance was Arthur Nielsen, an alternate member of the Panel.

The Panel first requested that VDH discuss why the design was denied. VDH noted that no soil evaluation had been submitted for the unlined wetland cell. VDH conducted a site visit and found the soil in the designated wetland cell to be wet to within 3 inches of the surface with evidence of water to the surface at times. VDH consulted with the VDH review engineer, John Aulbach, P.E.. Mr. Aulbach determined that the wetland cell was acting as a dispersal field and as such must comply

with the standoff distance to a water table for treated effluent of 12 inches. Additionally, the sand mound had been sized on 150 gpd so there was an assumption that a minimum of 300 gpd would infiltrate or otherwise be taken up by the wetland cell, but VDH questioned that amount given the saturated soil conditions. Mr. Aulbach contacted the engineer with the suggestion to line the wetland cell, but the engineer declined.

The engineers were then provided an opportunity to justify their design. The unlined cell was intentional as the engineers were concerned that there would insufficient water flow to support the wetlands year round. The engineers felt that the treatment provided (secondary with disinfection) was sufficient to mitigate the discharge into the water table. They justified the sizing of the sand mound based on water uptake of the plants. Another concern for the engineers was to provide a reserve area. That was provided by allowing for construction of a full size sand mound if needed in the future.

Discussion

As a result of the discussion, it was determined that this lot, due to its time of platting, did not have a reserve area requirement. While the Panel applauded the engineer's desire to maintain a reserve, it was not a requirement. Also the Panel noted that given that they were treating and disinfecting the wastewater prior to introduction to the mound, the likelihood of a failure was very low.

The Panel did not agree with the use of the unlined wetland cell. That was based over concerns of discharging effluent into the water table and potential nuisance conditions due to the wet nature of the soils in the area. The Panel also did feel that the engineer addressed the volume reduction through the wet cell adequately and recommended that a full size mound be installed.

Recommendation

The Panel recommends upholding the VDH denial of this application. Using an unlined wetland cell for effluent distribution without sufficient separation to the seasonal high groundwater table is not considered standard engineering practice for onsite systems, especially when there is sufficient area on the site for an alternate dispersal area, ie, the sand mound.