S&EC

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S&EC #5-1265

America's Homeplace
Attn: C.L. Ellison
168 Norman Station
Suite D
Mooresville, NC 28117

Re: Soil/Site Evaluation-Donna Young Property, Iredell County, NC

Dear Mr. Ellison:

Soil and Environmental Consultants, PA (S&EC) has performed a preliminary soil and site evaluation on a ±0.6-acre parcel near Mooresville, NC. The property is located off Sun Lane off Rhinehart Road. At your request the evaluation was performed to evaluate soil areas for subsurface wastewater disposal.

S&EC walked over the property, taking note of the landscape (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through hand auger borings. The site was evaluated during moist soil conditions. From these observations an evaluation of the site relative to subsurface wastewater disposal was developed. The soil/site evaluation criteria used was that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

Once potentially usable areas are identified, the next consideration is the horizontal extent (size) of those areas. The size and configuration of the usable soil area dictate how many systems an area can support. The size of a subsurface septic field is determined by; 1) the design flow (120 gallons/bedroom/day in residences), and 2) long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration of the soil area must be such that an efficient layout of drain lines (on contour) is possible and not contain unsuitable topography. An additional consideration is the required setbacks for the system from various elements such as wells (100'), streams and ponds (50') or more depending on watershed regulations, property lines (10'), top of embankment (15'), watershed buffers, etc. (see Attachment 1).

FINDINGS

Soils identified on the property were derived from acid crystalline parent materials. Much of the upland soil areas were most similar to the Cecil soil series. These soil types are generally suitable for supporting subsurface septic systems. S&EC identified usable soil areas on most of the site (see map). We identified 3 different classes of usable soil areas: 18-24", 24-30", and 36"+. The areas with 18 to 24 inches of usable soil have potential to support drip irrigation or LPP-fill systems. Soil areas with 24 to 30 inches of usable soil material have potential to support at-grade conventional or Low Pressure-Pipe septic systems. Usable soil areas with 36 inches depth to unsuitable characteristics have potential to support block panel septic systems. At-grade conventional systems use a soil cap put over a shallow placed conventional system. Block panel systems are space savers that require only ½ the soil area as a typical conventional system.

Unsuitable soil areas identified during the evaluation contained unsuitable topography. The in area at the very back of the lot contains a ditch that cannot used to support a subsurface septic system (see map).

GENERAL WASTEWATER CONSIDERATIONS

The utility of a potentially usable soil area for supporting a subsurface system is most accurately determined by an on-ground layout or demonstration of the proposed system. The total area needed for system and repair areas will depend upon the system type, the topography of the area and the total design flow (factors mentioned above). The typical area needed for a three-bedroom (360 gpd) residence is approximately 12,000 ft^2 (could be more depending on site features). These estimates reference Laws and Rules for Sewage Treatment and Disposal Systems for North Carolina and use a LTAR of 0.3gpd/ft^2 for conventional systems. The ultimate LTAR will be determined by the Health Department after their evaluation.

A site plan for any lot must ensure that adequate soil area for system and repair is unaffected by site elements (house placement, driveway, wells, patios, decks, etc.). The area ultimately designated by the health department for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the health department. A lot with adequate usable soil area may be rendered unusable as a result of improper site planning and/or disturbance.

This report discusses the general location of potentially usable soils for on-site subsurface wastewater disposal and does not constitute or imply any approval or permit needed by the client from the local heath department. S&EC, PA is a professional consulting firm that specializes in the delineation of soil areas for wastewater disposal and the layout and design of wastewater treatment systems. As a professional consulting firm, S&EC is hired for its professional opinion in these matters. The rules governing wastewater treatment (interpreted and governed by local and state