

Preliminary Feasibility for
New Onsite Wastewater Dispersal Areas
On TMP 128-A2-22 and TMP 128A2-15
BF Yancey Elementary School

Albemarle County Schools
Building Services Department
2751 Hydraulic Road
Charlottesville, VA 22901

Analysis Performed By:

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Investigation

Two properties adjacent to the BF Yancey School were investigated to determine their suitability for onsite dispersal of treated wastewater. The first parcel investigated was the Scott property (TMP 128A2-22, 2.453 acres) and the second parcel was the Davies property (TMP 128A2-15, 4.5 acres). The investigation included topographical assessment, landscape suitability, soil identification through auger borings, and saturated hydraulic conductivity measurements.

Topographical and Landscape Assessment

Both properties have large areas that are unusable for onsite dispersal of treated wastewater due to either topographical features or their locations in Albemarle County's critical resource protection areas. The stream that runs across the back of both parcels is designated with a 100' setback. This makes the back 250 feet (+/-) of the Scott property and the back 125 feet (+/-) of the Davies property unusable for onsite dispersal of treated wastewater. The Davies property also has areas with critical slopes over 25% on the property line bordering the BF Yancey parcel. The center section of the Davies property has a large drainage swale which prohibits its use for onsite dispersal of treated wastewater. These sections are highlighted on Exhibit 1.

Available Soils for Onsite Dispersal

Steve Gooch AOSE identified two potential drainfield areas on the Scott property and four potential drainfield areas on the Davies property. The approximate locations of the dispersal areas are shown in Exhibit 2. A summary of the drainfield areas are presented below.

Drainfield Area	Average Slope (%)	Area		Depth of Installation (inches)	Infiltration Area Available (sqft)	Type of Drainfield
		Width (ft)	Length (ft)			
Scott A	5	40 to 74	75 to 105	8	3,600	Drip Dispersal
Scott B	9	65	97 to 100	12	6,400	Drip Dispersal
Davies A	6	80	120	60	1,980	Trench Dispersal
Davies B	4	55	100	12	5,500	Drip Dispersal
Davies C	4	50	100	12	5,000	Drip Dispersal
Davies D	4	20	50	12	1,000	Drip Dispersal

Old Dominion Engineering analyzed the hydraulic saturated conductivity of the dispersal zone soil horizon with a Johnson Permeameter in order to determine preliminary long term acceptance rates of the drainfields. Tests were run at the potential infiltration zones of the drainfields.

Summary of Ksat results

Scott Property

Test	Depth (inch)	Representative Ksat (cm/day)
1	13	26.3
2	12	92.7
3	12.5	102.9
4	12.5	216.3
5	12	417.3
6	8.5	251.9
7	8	105.4
8	8	20.5
9	9	32.0
10	8	39.3

Davies Property

Test	Depth (inch)	Representative Ksat (cm/day)
8A	14	3.8
8B	60	5.5
1/9A	14	30.2
1/9B	60	5.9
2A	14	278.9
4A	12	538.4
4B	60	12.8
5A	14	330.0
5B	60	4.7
10	12	18.2

Representative Ksats for Test Areas

The representative Ksat for the dispersal soil horizon for the Scott property dripfield A and B is 83.0 cm/day as determined by geometric mean of those tests run at the respective infiltrative surface (8" to 13"). The representative Ksat for the dispersal soil horizon for the Davies property drainfield A is 6.6 cm/day as determined by geometric mean of those tests run at the respective infiltrative surface (60"). The representative Ksat for the dispersal soil horizon for the Davies property dripfield B, C, and D is 60.2 cm/day as determined by the geometric mean of those tests run at the respective infiltrative surface (12" to 14").

Preliminary Allowable Effluent Quantity, Sewage Treatment Facilities, and Allowable Student Occupancy

Based upon the soil type, representative Ksats, area available, and depth of suitable soils, the potential drainfield and dripfield areas on the Scott and Davies properties will require secondary treatment in order to provide for system reliability/longevity, groundwater protection, and to meet

Virginia Department of Health regulations. This means that an additional treatment will be needed beyond a typical settling tank.

The following components will require removal in the treatment process:

- Biochemical Oxygen Demand (<30 mg/l BOD)
- Suspended Solids (<30 mg/l BOD)
- Fats, Oils, and Grease

The dripfield areas (both primary and reserve) are shallow installations. This will prevent the use of these areas for any other activities. These areas can potentially stay wooded as they are now depending upon the final dispersal area design. The trench dispersal area on the Davies property can be filled over and used for play fields or parking.

The amount of secondary effluent that can be disposed of on these parcels is approximately 2,400 gallons per day or 1,200 gallons per day per parcel. Both properties will need to be purchased for the required drainfield areas. This will allow for a one hundred percent reserve area as required by the Virginia Department of Health (VDH). Note that a greater portion of the reserve will be located on the Davies property. This should accommodate the expansion of the BF Yancey Elementary School to the projected 222 students. The possibility exists that the system could accommodate an additional 18 to 28 student if portions of the existing drainfield are used, the treatment process is designed with additional treatment steps and flow equalization, and monitoring of the actual effluent quality and water usage at the facility does not exceed the capacity of the drainfield areas. A rough order of magnitude cost estimate for the new wastewater and drainfield system for the BF Yancey Elementary School would be approximately \$ 250,000 not including land purchase and depending upon final wastewater treatment facilities selected, reuse of existing facilities, dispersal mechanisms, and contractor selection.

Limitations

The soil characterization and analysis reflects our preliminary opinion as to the suitability of soils in the areas investigated to support an onsite wastewater system under the current VDH regulations. Final approval of any system will rest with the Albemarle County Health Department and be regulated under VDH regulations.



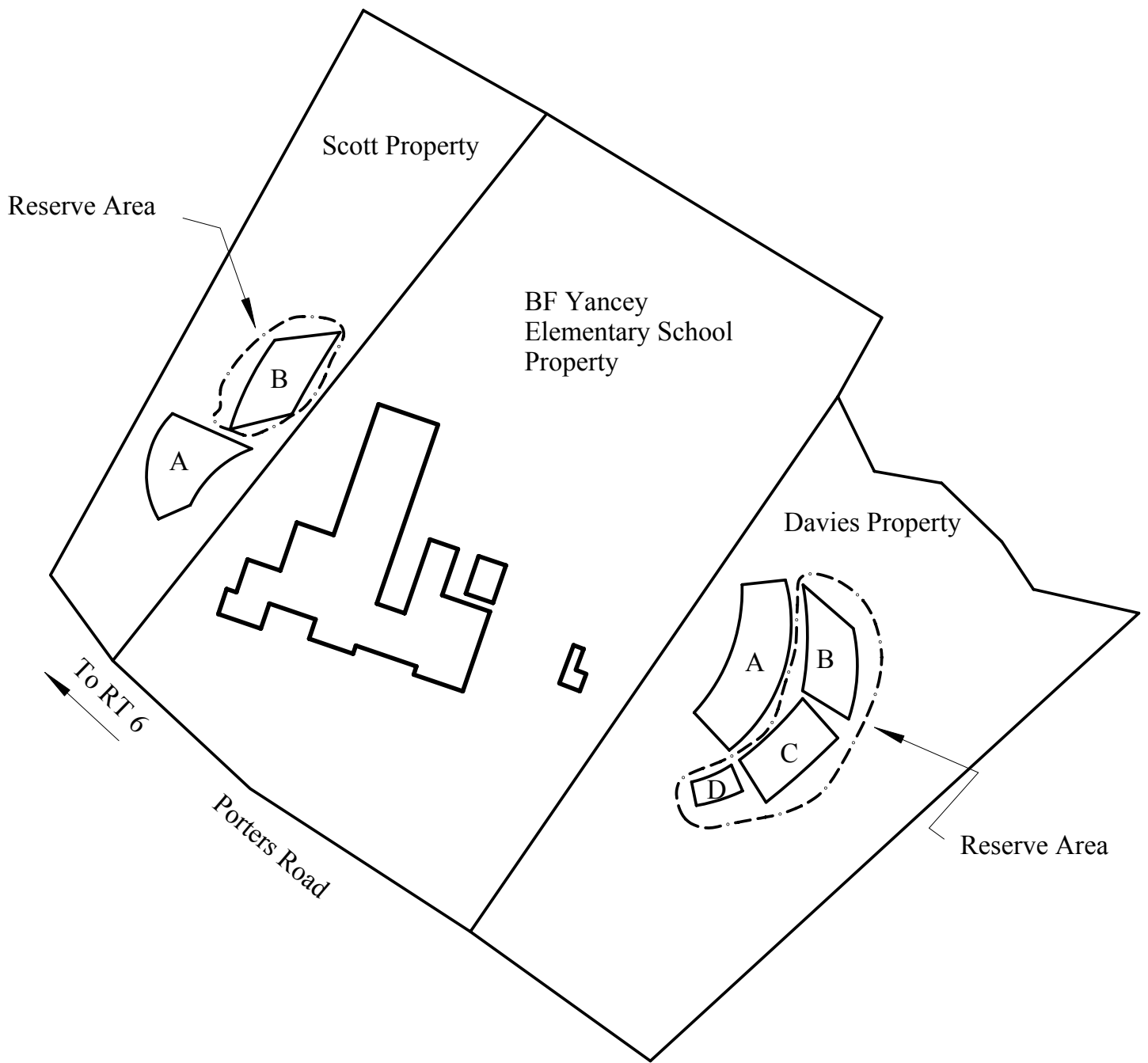


Exhibit 2
Approximate Drainfield Locations
Scott Property
Davies Property

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