VDH VIRGINIA DEPARTMENT OF HEALTH

Protecting You and Your Environment

Clarke County Health Department
100 N. Buckmarsh St
Berryville, VA 22611
(540) 955-1033 Voice
(540) 955-4094 Fax

Sewage Disposal System Operation Permit

Property Owner

Holy Cross Abbey
901 Cool Spring Ln
Berryville, Virginia 22611

Health Dept. ID: **043-12-0005**
Tax Map: **16-A-53**

Locality: Clarke

Property Location

Property Address: 901 Cool Spring Ln
Berryville, Virginia 22611

Holy Cross Abbey is hereby granted permission to operate a Composting toilet at the above referenced location, having a design capacity of **0** gallons per day (no bedrooms) for guests use when visiting a private cemetery. No water is plumbed to the structure.

This permit is issued in accordance with the provisions of Title 32.1, Chapter 6 of the Code of Virginia as Amended, and Section 12VAC 5-610-340 of the Sewage Handling and Disposal Regulations of the Virginia Department of Health. The issuance of an operation permit does not denote or imply any guarantee by the department that the sewage disposal system will function for any specified period of time. It shall be the responsibility of the owner or any subsequent owner to maintain, repair, or replace any sewage disposal system that ceases to operate in accordance with the regulations.

09/04 2012
Effective Date

Gregory M Lloyd
Environmental Health Specialist Sr.

VDH VIRGINIA DEPARTMENT OF HEALTH

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Clarke County Health Department
100 N. Buckmarsh St
Berryville, VA 22611
(540) 955-1033 Voice
(540) 955-4094 Fax

Septic Tank - Composting Toilet Construction Permit

Health Department ID Number: **043-12-0005**

Owner / Agent. Information	
Owner: Holy Cross Abbey 901 Cool Spring Ln Berryville, Virginia 22611 Owner Phone: (540) 955-4816 703-220-8362	Composting toilet for Cemetery Chapel

Location Information	
Property Address: 901 Cool Spring Ln Locality: Clarke Directions:	Tax Map: **16-A-53**

General Information	
System Type: None and None Type of Property: Non-Residential	Daily Flow: Number of Bedrooms: **0**

Septic Tank - Inlet Outlet Structure	
Capacity: Composting toilet Please install according to **12 VAC 5-610-980 B. 3.** (attached) Call Health Department for final inspection - 540-955-1033	

Please Note:

Construction Drawing
Schematic drawing of sewage disposal system and topographic features. **see attached**

This sewage disposal system construction permit is null and void if conditions are changed from those shown on the application or construction permit. No part of any installation may be covered or used until inspected, corrections made if necessary and the system is approved. The inspection will normally be made by the system designer, who may be an AOSE, PE, or EHS. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon direction of the Department or the system designer.

System Design By: Gregory Lloyd, EHSS ; Site Evaluation By: Gregory Lloyd, EHSS

Gregory Lloyd

Gregory Lloyd, Environmental Health Specialist Senior

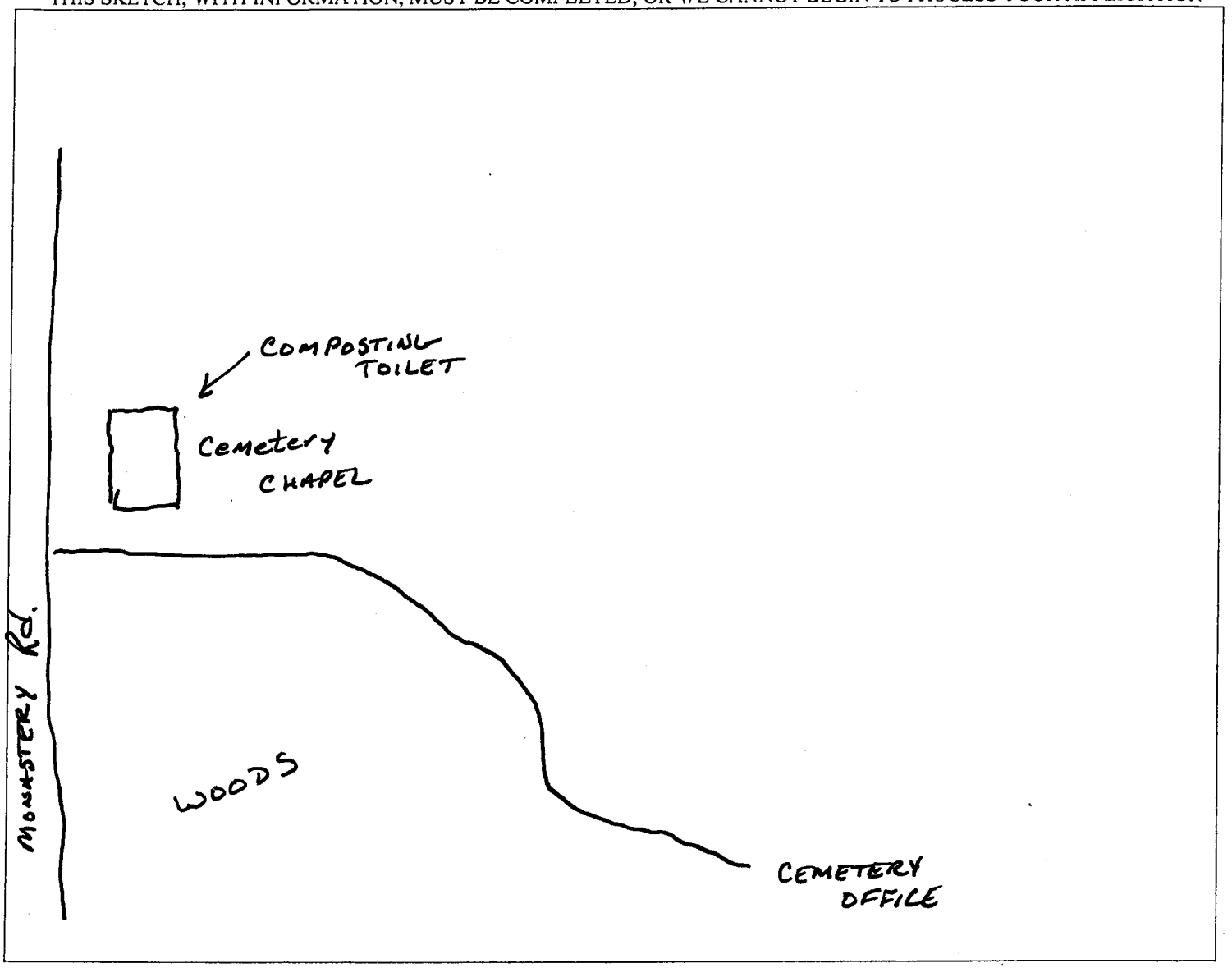
June 29, 2012
Issue Date

December 29, 2013
Expiration Date

043-12-0005

SITE SKETCH

THIS SKETCH, WITH INFORMATION, MUST BE COMPLETED, OR WE CANNOT BEGIN TO PROCESS YOUR APPLICATION



APPLICANT CHECKLIST OF ITEMS TO COMPLETE ON THE SITE SKETCH AND/OR ON THE PROPERTY:

Such items listed below are to be provided by the applicant at the time of application. Distances may be paced or estimated. This list is not inclusive, and if there are other distinguishing features or facts about the property that may be of concern, the applicant should note these on the site sketch as well.

____ 1.) Dimensions of Property Clearly Shown on, and Lot Lines/Property Corners Clearly Marked in the Field.
____ 2.) Staked Location and Dimensions of ALL Proposed and/or Existing Structures.
____ 3.) Measurements to Proposed and/or Existing Structures.
____ 4.) Location of Proposed and/or Existing Driveways.
____ 5.) Location of Underground or Above Ground Utilities.
____ 6.) Location of Easements or Right-of-Ways on the Property.
____ 7.) Location where you would like to have your Drainfield.
____ 8.) Location where you would like to have your Well.
____ 9.) Location of Existing Septic Systems and Wells/Cisterns on This Property AND Neighboring Properties.
____ 10.) Location of Bodies of Water, Streams, Springs (Drinking use or not) within 500 feet of the Property.
____ 11.) Location of any Drainage Ways or Swales on the Property, or Sinkholes on or within 200 feet of the Property
____ 12.) The property should be sufficiently cleared of brush to allow easy access for measurements, field work, and visibility of topography. Please consult with the EHS prior to clearing your lot extensively.

Applicant Signature: Edward M Leonard **Date:** 1-5-2012

12 VAC 5-610-980. Types.

A. Privies are divided into two categories, those that function as disposal facilities and those that function merely as holding facilities with ultimate disposal of the contents at another facility via pump and haul.

B. Disposal privies.

1. Pit privy.

a. Description. A pit privy consists of a lined earthen pit with a suitable rodent and insect proof structure and pit vent stack. The structure shall be provided with self-closing lid or lids on the seat riser. The pit privy is located exterior to a dwelling.

b. Location. Required separation distances from various structures and topographic features are the same as for subsurface soil absorption systems and may be found in Table 4.2. The bottom of the pit privy shall be at least two feet above the seasonal water table and any rock. Location of pit privies shall also comply with 12 VAC 5-610-593 1 through 6 and 10.

c. Utilization. The Uniform Statewide Building Code of Virginia normally prohibits the installation of pit privies at new homes. In case of hardship, unsuitable soil conditions or temporary recreational use, a privy can sometimes be constructed after obtaining the approval of the building official with the approval of the department. A sewage disposal system meeting the requirements of 12 VAC 5-610-250 A and B shall be provided to treat other sewage (wastewater) generated from activities such as laundering, bathing, handwashing, and cooking. Pit privies utilized at existing dwellings should be abandoned within one year of the availability of sanitary sewers. Proper abandonment consists of removing the structure and covering the pit with at least two feet of soil. Pit privies are an acceptable means of sewage disposal at isolated areas such as primitive camping areas, public boat launching areas, recreation areas, state parks and wilderness areas where pressurized water systems are not provided.

2. Incinerator toilets.

a. Description. Incinerator toilets are devices that utilize electrical energy or burning gas to incinerate human excreta deposited directly into them. They function both as toilet and disposal facility and produce an inert ash. Incinerator toilets are located in the interior of a dwelling.

b. Utilization. In addition to the conditions stated in subdivision 1 c of this subsection for pit privies, incinerator toilets shall not be utilized where they are subjected to frequent use and/or peak loading conditions.

c. Certification. All incinerator toilets must be certified by the National Sanitation Foundation as meeting the current Standard 41.

→ * 3. Composting toilets.

a. Description. Composting toilets are devices which incorporate an incline plane, baffles or other suitable devices onto which human excreta is deposited for the purpose of allowing aerobic decomposition of the excreta. The decomposing material is allowed to accumulate to form a humus type material. These units serve as both toilet and disposal devices. Composting toilets are located interior to a dwelling.

b. Utilization. In addition to the conditions stated in subdivision 1 c of this subsection for pit privies, all materials removed from a composting privy shall be buried. Compost material shall not be placed in vegetable gardens or on the ground surface.

c. Certification. All composting toilets must be certified by the National Sanitation Foundation as meeting the current Standard 41.

C. Holding privies.

1. General. Due to the nature of these devices, i.e., they require routine pump and haul, special care shall be taken in selecting these devices for use. These devices are satisfactory for use at mass gatherings, transient worker populations, construction sites, recreation areas, etc.

2. Vault privy.

a. Description. A vault privy is similar to a pit privy except that, instead of an earthen pit, a water and corrosion proof containment vessel (vault) is provided. The vault shall be provided with access for periodic removal of the vault contents.

b. Location. Vault privies shall be located to prevent contamination of ground water or surface water. The elevation of the top of the vault or access port shall be placed two feet above the annual flood elevation. Separation distances from structures and topographic features will be determined on a case-by-case basis.

ED LEONARD

$695.00

Commonwealth of Virginia

Application for: ☑ Sewage System ☐ Water Supply

VDH Use Only
Health Department ID# _____
Due Date _____

Owner HOLY CROSS ABBEY
Mailing Address 901 COOL SPRING LANE
BERRYVILLE VA 22611

Phone 540 955 4816
Phone _____
Fax _____
Phone _____
Phone _____
Fax _____
Email Edward M Leonard@GMAIL.com

Agent _____
Mailing Address _____

Site Address _____

Directions to Property: _____

Subdivision _____ Section _____ Block _____ Lot _____

Tax Map 16-A-53 Other Property Identification _____ Dimension/Acreage of Property _____

Sewage System

Type of Approval: Applicants for new construction are advised to apply for a certification letter to determine if land is suitable for a sewage system and to apply for a construction permit (valid for 18 months) **only when ready to build.**

For New Construction: ☐ Certification Letter ☑ Construction Permit
For Existing Construction: ☐ Repair ☐ Modification ☐ Expansion ☐ Replacement

Proposed Use:
☐ Single Family Home (**Number of Bedrooms** ___) ☐ Multi-Family Dwelling (**Total Number of Bedrooms** ___)
☑ Other (describe) COMPOSTING TOILET

Will there be a basement: Yes/No (circle one). If yes, will there be fixtures in Basement? Yes/No (circle one).

Are any conditions proposed on this construction permit? Yes/No (circle one). If yes, please check or describe all proposed conditions that apply: ☐ Reduced water flow ☐ Limited occupancy ☐ Intermittent of seasonal use ☐ Temporary use not to exceed 1 year ☐ Other (describe _____)

Water Supply

Will the water supply be ~~Public or Private~~ (circle one). Is the water ~~supply Existing~~ or Proposed (circle one).

If proposed, is this a replacement well? ~~Yes/No~~ (circle one). Will the ~~old well be abandoned~~? Yes/No (circle one).

Will any buildings ~~within 50'~~ of the proposed well be termite treated? Yes /No (circle one).

All Applicants

Is this an AOSE/PE application? Yes/No (circle one) If yes, is the AOSE package attached? Yes/No (circle one).

In order for VDH to process your application you must attach a site sketch and plat of the property. The site sketch should show your property lines, actual and/or proposed buildings and the desired location of your well and/or sewage system. When the site evaluation is conducted the property lines, building location and the proposed well and sewage system sites must be clearly marked ~~and the property sufficiently visible to see the topography, otherwise this application will be denied.~~

I give permission to the Virginia Department of Health (VDH) to enter onto the property described during normal business hours for the purpose of processing this application and to perform quality assurance checks of evaluations and designs certified by an Authorized Onsite Soil Evaluator (AOSE) or a Professional Engineer (PE) as necessary until the sewage disposal system has been constructed and approved.

* Edward M Leonard
Signature of Owner/Agent

* 1-5-2012
Date

LORD FAIRFAX HEALTH DISTRICT BARE/AOSE APP TAG SHEET

APPLICANT INFORMATON:

Applicant Name	Holy Cross Abbey	HDID#	0213120005		
Owner Name		TM#	16-A-53		
Agent Name		Receipt#	2743956		
Date	1-12-12	Application Type	CP-S		
Subdivision		Sec:	Blk:	Lot:	
Due Date					

Proposed Subdivision Y/N – If yes, county request required. The applicant will need to use an AOSE/PE for soil work when more than two lots are being evaluated, unless otherwise approved by the Supervisor.

I. APPLICATION

A. (BUSINESS OFFICE STAFF)

Date application received and reviewed: (See Checklist on back)	1/12
Previous health department files located and attached:	(Y) N
Immediate neighboring files located and attached *if applicable*:	Y (N)
Date application entered into VENIS:	1/12
Date submitted to EH Supervisor to assign:	1/12
Business office staff initials:	RH
**All applications should be reviewed for completeness using the QA Protocol*	

B. (EH SUPERVISOR)

Date reviewed and assigned to EHS:	1/12
Assigned to EHS:	GL
Comments to EHS:	
Was file complete? Y N If no, date returned to clerk for completion	

II. PROCESSING

A. (EHS)

BARE APPS (New soil work or CL to CP)				AOSE APPS	DATES
Date applicant contacted	Site requirements discussed?	1/16	Y N	Date(s) of level I review or subdivision review	
Date site visit scheduled for		1/16		If applicable – Date of administrative denial	
Date of courtesy review or required local ordinance visit		1/16		Date level II review scheduled	
Date of actual soil evaluation(s) or field review		1/16		Date of level II	
Date Administrative denial or 90 day letter sent		—		Date of courtesy review or local ordinance visit	
Reason for admin denial		—			
Date removed Administrative Denial		—			
Date of final approval		6/29/12		Date of final approval	
Date Closed in VENIS		6/29/12		Date application closed in VENIS	

*** ***for AOSE apps, EHS must attach a Level I, Level II, or Subdivision review sheet***

B. (SUPERVISOR AND BUSINESS OFFICE STAFF)

Final approval date from Supervisor if applicable: _____

Date Mailed/Ready for Pick-Up: _____

REVIEW:

General:

Applicant Owner &/or Agent Names		Site Plan, plat or sketch attached	
Current Address		Signature of Owner or Agent	
Phone Numbers		Current Date When Applied	
Site Address		Fees paid & receipt given and recorded	
Tax Map#		Application marked date received	
Subdivision Name		Health Dept ID number recorded	
Directions to Property are Clear			

System Info:		Applicant Reminder		AOSE Packet	
Type of Approval		Are property lines marked?		Submit 3 copies	
Proposed Usage		House site marked?		All pages numbered	
Number of Bdrms				Certification stmnt included	
Basement					
Water Supply					

Betterment Loans:	Date	Alternative System:	Date
Fee Paid?		Variance Request Received	
Application Addendum completed?		Notice of Recordation Given	
Eligible?		Memorandum Sent	
If yes, Estimate Provided?			
If No, Reason for Denial			

COMMENTS:

Date: _____

Date: _____

Date: _____

OP INFORMATION:

√	ITEM	Date Recv'd		ITEM	Date Recv'd
	Water Sample			Graveless Systems:	
	GW-2			Substitution Forms	
	Well Inspection			Installers "As Built"	
	PE "As Built"			AOSE Well Permit Only(AOSE Insp Report)	
	Contractors Completion Statement			Plastic Well Casing-(If Yes)–RHCP Calcs Req	
	AOSE Inspection Report			Other:	
	PE Inspection Report			Other:	
	EHS Inspection Completed			Other:	

Completion Statement

Commonwealth of Virginia
State Department of Health

Health Department Identification Number SD-87165

Clarke Co. Health Department

Name of Company/Corporation/Individual: R.A. Childers Childs Excavating

Address: RT VI BOX 351 Bluemont Telephone: 554-8784

Owner's Name Holy Cross Abbey

Owner's Address Rt. 2, Box 3870 Berryville, Va. 22611

Location of Installation: Lot _____ Block _____

Section: _____ Subdivision: _____

Other: E, Rt 603 1 mile to gate on Right, Holy Cross Abbey

I hereby certify that the onsite sewage disposal system has been installed and completed in accordance with the construction permit issued (date) 9-15-87 and is in compliance with Part D of the Sewage Handling and Disposal Regulations and when appropriate the plans and specifications for the project.

3/31/88
Date

R.A. Childers Owner
Signature and Title

Good Job!!

C.H.S. 203 Rev. 4/83

Sewage Disposal System Construction Permit

Commonwealth of Virginia
Department of Health
Clarke County Health Department

Health Department Identification Number 50-87-165
Map Reference 16-53-42

General Information

New ☑ Repair ☐ Expanded ☐ Conditional ☐ FHA ☐ VA ☐ Case No. _____

Based on the application for a sewage disposal system construction permit filed in accordance with Section 3.13.01, a construction permit is hereby issued to:

Owner Holy Cross Abbey Telephone 955-1425

Address Rt. 12, Box 3870, Berryville, Va. 22611

For a Type (N) I Sewage disposal system which is to be constructed on/at Rt. 7E, Rt. 603 four 1 mile to gate on Right

Subdivision N/A Section/Block N/A Lot N/A

Actual or estimated water use 300 gpd

DESIGN	NOTE: INSPECTION RESULTS
Water supply, existing: (describe) _____ **To be installed:** class II B cased to 50' grouted to 50'	**Water supply location:** Satisfactory yes ☑ no ☐ comments G. W. 2 Received: yes ☑ no ☐ not applicable ☐
Building sewer: 4" I.D. PVC 40, or equivalent. Slope 1.25" per 10' (minimum). ☐ Other _____	**Building sewer:** yes ☑ no ☐ comments Satisfactory Crawl space w/ cleanout
Septic tank: Capacity 750 gals. (minimum). ☐ Other _____	**Pretreatment unit:** yes ☑ no ☐ comments Satisfactory 1000 Gal tank
Inlet-outlet structure: PVC 40, 4" tees or equivalent. ☐ Other _____	**Inlet-outlet structure:** yes ☐ no ☐ comments Satisfactory
Pump and pump station: No ☑ Yes ☐ describe and show design. if yes: _____	**Pump & pump station:** yes ☐ no ☑ comments Satisfactory N/A
Gravity mains: 3" or larger I.D., minimum 6" fall per 100', 1500 lb. crush strength or equivalent. ☐ Other _____	**Conveyance method:** yes ☑ no ☐ comments Satisfactory (last 50') .3'-7.03 Sch. 40
Distribution box: Precast concrete with 8 ports. ☑ Other To be set in concrete pad	**Distribution box:** yes ☑ no ☐ comments Satisfactory
Header lines: Material: 4" I.D. 1500 lb. crush strength plastic or equivalent from distribution box to 2' into absorption trench. Slope 2" minimum. ☐ Other _____	**Header lines:** yes ☑ no ☐ comments Satisfactory
Percolation lines: Gravity 4" plastic 1000 lb. per foot bearing load or equivalent, slope 2" 4" (min. max.) per 100'. ☐ Other _____	**Percolation lines:** yes ☐ no ☐ comments Satisfactory
Absorption trenches: Square ft. required 1275: depth from ground surface to bottom of trench 24"; aggregate size #5-#57; Trench bottom slope 2-4"/100'; center to center spacing 10'; trench width 3' Depth of aggregate 13"; Trench length 85; Number of trenches 5	**Absorption trenches:** yes ☐ no ☐ comments Satisfactory 24"-28" Depth Bottom Area 30" Date 3/31/88 Inspected and approved by: Joseph E. Cook Sanitarian

C.H.S. 202A Revised 6/84

7.52 8.66 10.28 11.62 12.80
7.76 8.80 10.42 11.72 13.0

12
1.2
24
12

Not to Scale — 950 Acres — Holy Cross Abbey —

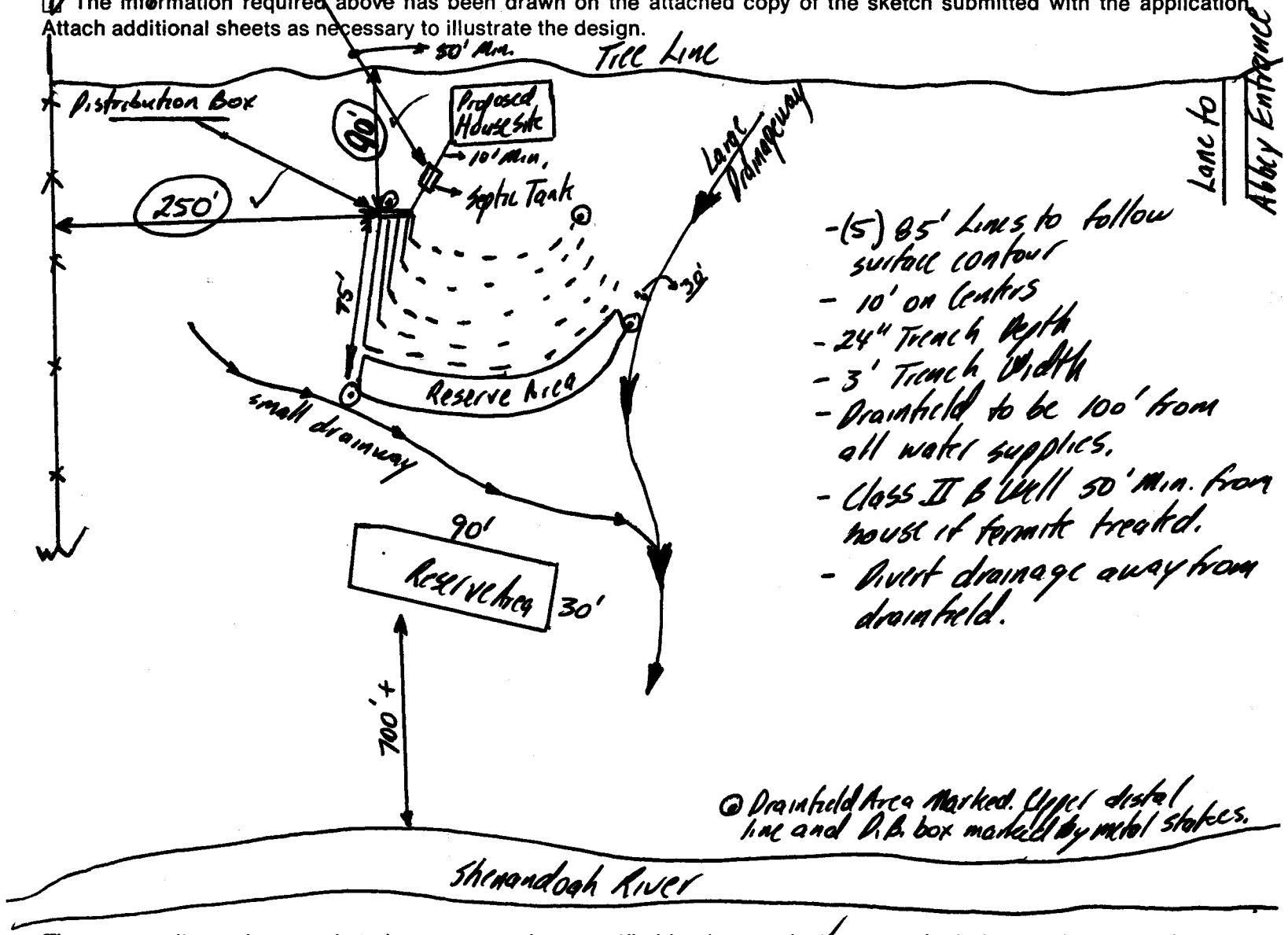
Health Department Identification Number SD-87-165

Schematic drawing of sewage disposal system and topographic features. PAGE 2 OF 2

Show the lot lines of the building lot and building site, sketch of property showing any topographic features which may impact on the design of the system, all existing and/or proposed structures including sewage disposal systems and wells within 100 feet of sewage disposal system and reserve area. The schematic drawing of the sewage disposal system shall show sewer lines, pretreatment unit, pump station, conveyance system, and subsurface soil absorption system, reserve area, etc. When a nonpublic drinking water supply is to be located on the same lot show all sources of pollution within 100 feet.

(Proposed Well Site) >10 YR. Flood Plain

☑ The information required above has been drawn on the attached copy of the sketch submitted with the application. Attach additional sheets as necessary to illustrate the design.



- (5) 85' Lines to follow surface contour
- 10' on Centers
- 24" Trench Depth
- 3' Trench Width
- Drainfield to be 100' from all water supplies.
- Class II B Well 50' Min. from house if permit treated.
- Divert drainage away from drainfield.

② Drainfield Area Marked. Upper distal line and D.B. box marked by metal stakes.

The sewage disposal system is to be constructed as specified by the permit ☑ or attached plans and specifications ☐.

This sewage disposal system construction permit is null and void if (a) conditions are changed from those shown on the application (b) conditions are changed from those shown on the construction permit.

No part of any installation shall be covered or used until inspected, corrections made if necessary, and approved, by the local health department or unless expressly authorized by the local health dept. Any part of any installation which has been covered prior to approval shall be uncovered, if necessary, upon the direction of the Department.

Date: 9/15/87 Issued by: _____ Sanitarian

Date: 10/2/87 Reviewed by: _____ Supervisory Sanitarian

This Construction Permit Valid until 3-15-92

If FHA or VA financing

Reviewed by Date _____ _____ Supervisory Sanitarian Date _____ _____ Regional Sanitarian

C.H.S. 202B Revised 6/84

Application for a Sewage Disposal System Construction Permit

Commonwealth of Virginia
Department of Health

For Department Use Only

Health Department Identification Number 9601194 SD-87-165
Map Reference 16-53-42

Clarke Co. Health Department

Date Received 7/27/87

To Be Completed By The Applicant

Type sewage system: ☒ New ☐ Repair ☐ Expanded ☐ Conditional
FHA/VA yes ☐ no ☐

Owner HOLY CROSS ABBEY (Cistercians of the Strict Observance of Virginia InC.) Address RT 2 BOX 3870 Berryville Va 22611 Phone 955-1425 955-3124

Agent Br Michael Desilets Address same Phone same

Directions to Property Route 7 east to 612 before bridge- 1 mile to gate

Subdivision _____ Section _____ Block _____ Lot _____

Other Property Identification Tax map 41

Dimensions/size of Lot/Property approx 950 acres

Other Application Information

I. **Building/facility** ☒ New ☐ Existing
Intermittent Use ☐ Yes ☒ No If yes, describe: _____

II. **Residential Use** ☒ Yes ☐ No
Termite Treatment ☐ Yes ☒ No
☒ Single Family ☐ Multifamily Number of Units ___ Number of Bedrooms 2
Basement ☐ Yes ☒ No
Fixtures in Basement ☐ Yes ☐ No

III. **Commercial Use** ☐ Yes ☒ No Describe: _____
Commercial/Wastewater ☐ Yes ☐ No Number of Patrons ___ Number of Employees ___
If yes, give volumes and describe _____

IV. **Water Supply:** ☐ Public ☒ New Describe: _____
☒ Private ☐ Existing

V. **Proposed Installation:** ☒ Septic tank and drainfield ☐ Other
If other, describe _____

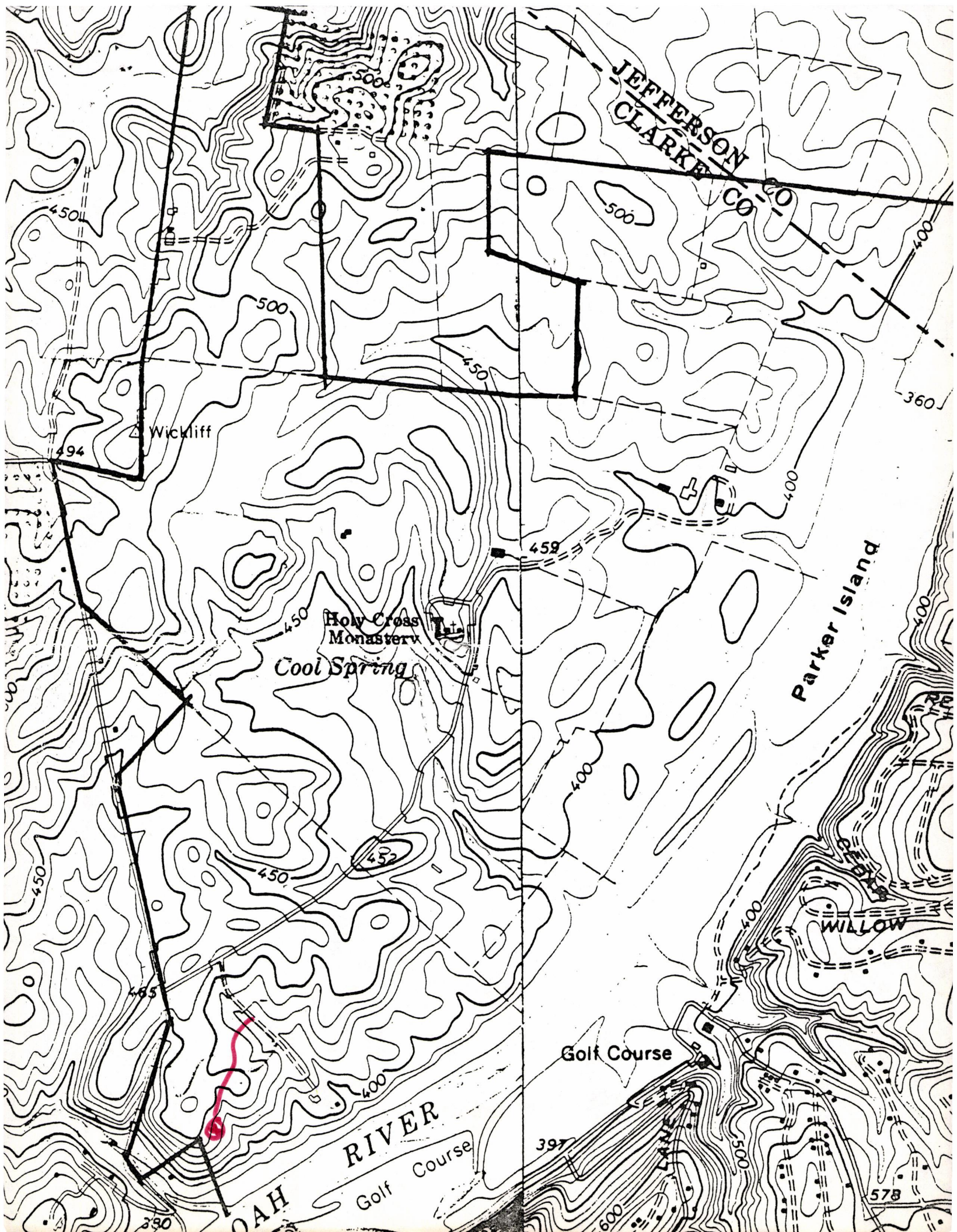
SITE PLAN Attach a site plan (rough sketch) showing dimensions of property, proposed and/or existing structures and driveways, underground utilities, adjacent soil absorption systems, bodies of water, drainage ways, and wells and springs within 200 feet radius of the center of the proposed building or drainfield. Distances may be paced or estimated.

The property lines and building location are clearly marked and the property is sufficiently visible to see the topography. I give permission to the Department to enter onto the property described for the purpose of processing this application.

Br Michael Desilets
Signature of owner/agent

7/27/87
Date

C.H.S. 200 Revised 4/83


JEFFERSON
CLARKE CO
Wickliff
494
Holy Cross
Monastery
Cool Spring
Parker Island
WILLOW
Golf Course
RIVER
Golf Course
500
450
400
360
459
452
465
397
578
600

Soil Evaluation Form

Commonwealth of Virginia
Department of Health

Health Department Identification Number SP-87-165
Tax Map Number 16-53-42

General Information

Date 9/1/87, 9/4/87 — Clarke Co. Health Department

Applicant Holy Cross Abbey — Telephone No. 955-4125

Address Rt. 2, Box 3870 Berryville, Va. 22611 (Brother Michael Resides) 955-3124

Owner _____ Address _____

Location Rt. 7E, Rt. 603 before Shen. River, Rt. on Rt.

Subdivision N/A Block/Section N/A Lot N/A 950 Acres

Soil Information Summary

1. Position in landscape satisfactory Yes ☑ No ☐ Describe side slope, knoll

2. Slope (12) 10-18 %

3. Depth to rock/impervious strata Max. _____ Min. _____ None ✓

4. Depth to seasonal water table (gray mottling or gray color) No ☑ Yes ☐ _____ inches

5. Free water present No ☑ Yes ☐ _____ range in inches

6. Soil percolation rate estimated Yes ☑ Texture group I II (III) IV
No ☐ Estimated rate 25 min/ inch

7. Percolation test performed Yes ☐ Number of percolation test holes _____
No ☑ Depth of percolation test holes _____
Average percolation rate _____

Name and title of evaluator: Joseph E. Lock, Sanitarian

Signature: Joseph E. Lock

Department Use

☑ Site Approved: Drainfield to be placed at 24" depth at site designated on permit.

☐ Site Disapproved:

(5) 85' Lines
10' on Centers

Reasons for rejection:

1. ☐ Position in landscape subject to flooding or periodic saturation.
2. ☐ Insufficient depth of suitable soil over hard rock.
3. ☐ Insufficient depth of suitable soil to seasonal water table.
4. ☐ Rates of absorption too slow.
5. ☐ Insufficient area of acceptable soil for required drainfield, and/or Reserve Area.
6. ☐ Proposed system too close to well.
7. ☐ Other Specify _____

Date of Evaluation 9-1-87
9/4/87

Profile Description
SOIL EVALUATION REPORT

Health Department Identification No. 88-87165

Page 2 of 2

Where the local health department conducts the soil evaluation the location of profile holes may be shown on the schematic drawing on the construction permit or the sketch submitted with the application. If soil evaluations are conducted by a private soil scientist, location of profile holes and sketch of the area investigated including all structural features i.e., sewage disposal systems, wells, etc., within 100 feet of site (See Section 4) and reserve site shall be shown on the reverse side of this page or prepared on a separate page and attached to this form.

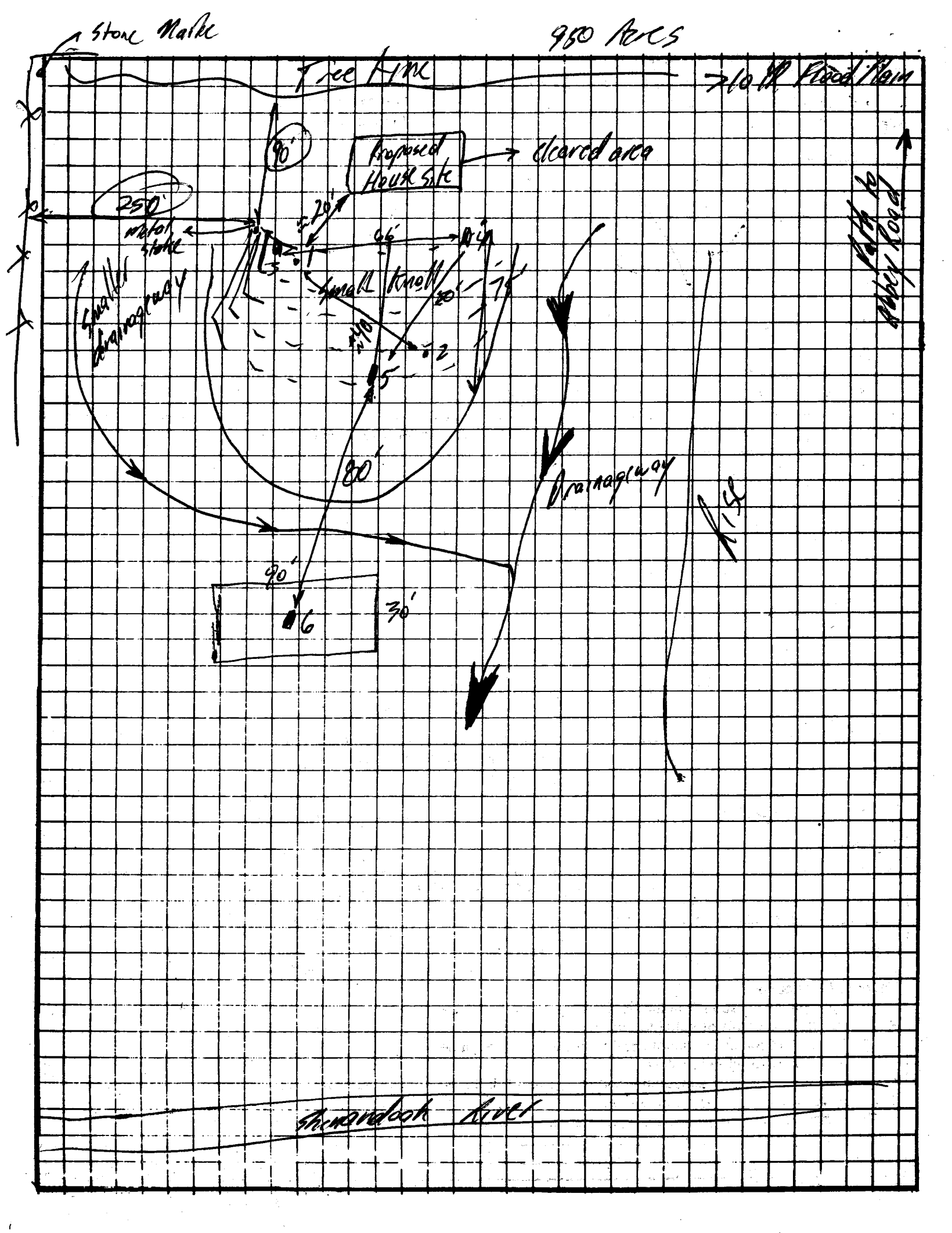
☑ See application sketch ☐ See construction permit ☐ See sketch on reverse side or page attached to this form.

(2) Auger holes attempted

Hole #	Horizon	Depth (inches)	Description of, color, texture, etc.	Texture Group
1	A	0"-12"	Brown topsoil, extremely dry	
	B_1	12"-19"	Light brown silt loam, friable w/ sandstone cobbles, extremely cobbly, auger refusal on cobbles	
2	A	0"-12"	Brown topsoil, extremely dry	
	B_1	12"-18"	Light brown clay loam, friable, with fine sand deposits, (Alluvial dep's) Cobbly Auger Refusal on cobbles	
	Backhoe Pit 9/4/87			
3	A	0"-8"	Brown topsoil, loam	
	B_1	8"-18"	(2.5YR 4/6) Red sandy clay loam with cobbles, 45%60%, weak mod. sbk	
	B_2	18"-42"	Red sandy clay, weak mod. sbk with few cobbles, friable	
4	A	0"-4"	Brown topsoil, loam	
	B_1	8-11"	Reddish brown clay loam with cobbles (25%)	
	B_2	11"-45"	Reddish brown to strong brown silt loam with pockets of sandy weak fine subang. friable	
5	A	0"-8"	Brown topsoil, loam	
	B_1	8"-24"	Redd. sh brown sandy clay loam, slightly brittle, fine mod. sbk, with few cobbles	
	B_2	24"-44"	Red sandy clay loam, with 45% cobbles, weak mod sbk, friable	
(A/A) 6	A	0"-4"	Brown topsoil	
	B_1	4"-20"	Red sandy clay loam weak fine sbk, friable w/ cobbles	
	B_2	20"-49"	Red sandy clay, weak mod sbk, with 40% cobbles, sand lenses	

Remarks:

24"


Stone Marker
950 Acres
Tree Line
10 M Flood Plain
Proposed House Site
Cleared area
90'
250'
water stake
20'
66'
80'
Small knoll
Small drainageway
80'
Drainageway
90'
30'
6
5
4
3
2
1
Shenandoah River

If Mr Locke is not their by 4:00 p.m. go ahead and start. grout 2/24/88

Form GW-2
1978-10,000

COMMONWEALTH OF VIRGINIA

WATER WELL COMPLETION REPORT

(Certification of Completion/County Permit)

• BWCM No. _____ 9:30 Monday 3/7/88

State Water Control Board
P. O. Box 11143
2111 North Hamilton St.
Richmond, Va. 23230

SWCB Permit _____
County Permit _____

Certification of inspecting official:
This well does _____ does not _____ meet code/low requirements.
S. _____
Date _____
For Office Use

County/City Clark County — Rt. 603 Holy Cross Abbey
County/City Stamp

• Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
• Topo. Map No. _____
• Elevation _____ ft.
• Formation _____
• Lithology _____
• River Basin _____
• Province _____
• Type Logs Drillers
• Cuttings _____
• Water Analysis _____
• Aquifer Test _____

• Owner Holy Cross Abbey % Bishop Michaels
• Well Designation or Number SD-87-165
Address Rt. 2 Box 3870
Berryville, VA 22611
Phone 955-1425 955-3124

• Drilling Contractor Valley Drilling Corporation of VA
Address Rt. 1 Box 6K
Upperville, VA 22176
Phone 703-592-3239

Tax Map I.D. No. 16-53-42
Subdivision _____
Section _____
Block _____
Lot _____
Class Well: I _____, IIA _____
IIB X, IIIA _____, IIIB _____
IIIC _____ IIID _____ IIIE _____

Rt. 50 East to Rt. 340 take right turn right on
WELL LOCATION: _____ (feet/miles) _____ (direction) of ~~Rt. 7 tanke left on to Rt. 603~~
and _____ feet/miles _____ (direction) of ~~well is located on Catholic~~ Monistery
(If possible please include map showing location marked)

Date started 2/22/88 • Date completed 2/26/88 Type rig Rotary

1. WELL DATA: New X Reworked _____ Deepened _____
• Total depth 260' ft.
• Depth to bedrock 42 ft.
• Hole size (Also include reamed zones)
• 10 inches from 0 to 235 ft.
• 6 inches from 235 to 260 ft.
• _____ inches from _____ to _____ ft.
• Casing size (I.D.) and material
• 6 inches from +1 to 236 ft.
Material Steel
Wt. per foot #13 or wall thickness .188 in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• Screen size and mesh for each zone (where applicable)
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• Gravel pack
• From _____ to _____ ft.
• From _____ to _____ ft.
• Grout
• From 0 to 52 ft., Type Cement
• From _____ to _____ ft., Type _____

2. WATER DATA • Water temperature 56 o
• Static water level (unpumped level-measured) 62 f
• Stabilized measured pumping water level _____ f
• Stabilized yield 15 gpm after 2½ hou
Natural Flow: Yes _____ No X, flow rate: _____ g pr
Comment on quality Clear

3. WATER ZONES: From _____ To _____ 15gpm @ 250
From _____ To _____ From _____ To _____
From _____ To _____ From _____ To _____

4. USE DATA:
Type of use: Drinking X, Livestock Watering _____
Irrigation _____ Food processing _____, Household X
Manufacturing _____, Fire safety _____, Cleaning _____
Recreation _____, Aesthetic _____, Cooling or heating _____
Injection _____, Other _____
• Type of facility: Domestic X, Public water supply _____
Public institution _____ Farm _____, Industry _____
Commercial _____, Other _____

5. PUMP DATA: Type _____ • Rated H.P. _____
• Intake depth _____ • Capacity _____ at _____ head

6. WELLHEAD: Type well seal _____
Pressure tank _____ gal., Loc. _____
Sample tap _____, Measurement port _____
Well vent _____, Pressure relief valve _____
Gate valve _____, Check valve (when required) _____
Electrical disconnect switch on power supply _____

7. DISINFECTION: Well disinfected _____ yes _____ no
Date _____, Disinfectant used _____
Amount _____, Hours used _____

8. ABANDONMENT (where applicable) • yes _____ no _____
Casing pulled yes _____ no _____ not applicable _____
Plugging grout From _____ to _____ material _____

9:25 50' + Grout Pipe @ T.
>75' from drainfield
-30' from house

OVER

Owner _____ BWCM No. _____

9. State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State intended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals (unless exemption is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly pumpage and use reports are required from owners of public supply and industrial wells. County or State permits to drill may be required in some parts of the state. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well completion report for public supply wells.

10. DRILLERS LOG (use additional Sheets if necessary)

DEPTH (feet) From	DEPTH (feet) To	TYPE OF ROCK OR SOIL (color, material, fossils, hardness, etc.)	REMARKS (water, caving, cavities, broken, core, shot, (etc.)	11. Drilling Time (Min.)
0	38	Overburden		
38	260	Limestone		

12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)

13. Well lot dedicated? _____; Size _____ ft. X _____ ft.; Well house? _____
Distance to nearest pollutant source _____ ft., Type _____
Distance to nearest property line _____ ft., Building _____ ft.

14. WATER SERVICE PIPE: Checked under _____ p.s.i. for _____ minutes. Pipe size _____ inches, Material _____
Installer _____
Date _____

15. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia.

Signature Jane Barrett (Seal) Date 3/2/88
(Well driller or authorized person)

License No. _____

State Water Control Board Regional Offices

Valley Reg. Off.
116 North Main Street
P. O. Box 268
Bridgewater, Va. 22812
703-828-2595

Piedmont Reg. Off.
4010 West Broad Street
P. O. Box 6616
Richmond, Va. 23230
804-257-1006

Southwest Reg. Off.
408 East Main Street
P. O. Box 476
Abingdon, Va. 24210
703-628-5183

Tidewater Reg. Off.
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Va. Beach, Va. 23462
804-499-8742

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
703-982-7432

Northern Virginia Reg. Off.
5515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703-750-9111

Form GW-2
1978-10000

COMMONWEALTH OF VIRGINIA
WATER WELL COMPLETION REPORT

• BWCM No. _____

(Certification of Completion/County Permit)

State Water Control Board
P. O. Box 11143
2111 North Hamilton St.
Richmond, Va. 23230

SWCB Permit _____
County Permit _____
Certification of inspecting official:
This well does _____ does not _____
meet code/low requirements.
S. _____
Date _____
For Office Use

County/City Clarke Co.
County/City Stamp

• Virginia Plane Coordinates
_____ N
_____ E
Latitude & Longitude
_____ N
_____ W
• Topo. Map No. _____
• Elevation _____ ft.
• Formation _____
• Lithology _____
• River Basin _____
• Province _____
• Type Logs _____
• Cuttings _____
• Water Analysis _____
• Aquifer Test _____

• Owner Holy Cross Abbey
• Well Designation or Number _____
Address _____
Phone _____
• Drilling Contractor Payne Well Drilling Inc.
Address _____
Phone _____

Tax Map I.D. No (16) _____
Subdivision _____
Section _____
Block _____
Lot _____
Class Well I _____ (IIA) _____
IIB _____ (X) _____, IIIB _____
IIIC _____ IIID _____ IIIE _____

WELL LOCATION: _____ (feet/miles _____ direction) of _____
and _____ feet/miles _____ (direction) of _____
(If possible please include map showing location marked)

Date started June 24 • Date completed June 24 '85 Type rig Rotary

1. WELL DATA: New ✓ Reworked _____ Deepened _____
• Total depth 300 ft.
• Depth to bedrock 16 ft.
• Hole size (Also include reamed zones)
• 10 inches from 0 to 50 ft.
• 6 1/4 inches from 50 to 300 ft.
• _____ inches from _____ to _____ ft.
• Casing size (I.D.) and material
• 6 1/4 inches from 0 to 50 ft.
Material Steel
Wt. per foot 18.55 or wall thickness .188 in.
• _____ inches from _____ to _____ ft
Material _____
Wt. per foot _____ or wall thickness _____ in.
• _____ inches from _____ to _____ ft.
Material _____
Wt. per foot _____ or wall thickness _____ in.
• Screen size and mesh for each zone (where applicable)
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft.
• Mesh size _____ Type _____
• _____ inches from _____ to _____ ft
• Mesh size _____ Type _____
• Gravel pack
• From _____ to _____ ft.
• From _____ to _____ ft
• Grout
• From 0 to 21 ft., Type Portland
• From _____ to _____ ft., Type 8 bags

2. WATER DATA • Water temperature _____ °F
• Static water level (unpumped level-measured) _____ ft
• Stabilized measured pumping water level _____ ft.
• Stabilized yield 20 gpm after _____ hours
Natural Flow: Yes _____ No ✓, flow rate _____ g pm
Comment on quality _____

3. WATER ZONES: From 287 To 289
From _____ To _____ From _____ To _____
From _____ To _____ From _____ To _____

4. USE DATA:
Type of use: Drinking ✓, Livestock Watering _____,
Irrigation _____, Food processing _____, Household _____,
Manufacturing _____, Fire safety _____, Cleaning _____,
Recreation _____, Aesthetic _____, Cooling or heating _____,
Injection _____, Other _____
• Type of facility: Domestic ✓, Public water supply _____,
Public institution _____, Farm _____, Industry _____,
Commercial _____, Other _____

5. PUMP DATA: Type _____ • Rated H.P. _____
• Intake depth _____ • Capacity _____ at _____ head

6. WELLHEAD: Type well seal _____
Pressure tank _____ gal, Loc. _____
Sample tap _____, Measurement port _____
Well vent _____, Pressure relief valve _____
Gate valve _____, Check valve (when required) _____
Electrical disconnect switch on power supply _____

7. DISINFECTION: Well disinfected _____ yes _____ no
Date _____, Disinfectant used _____
Amount _____, Hours used _____

8. ABANDONMENT (where applicable) • yes _____ no _____
Casing pulled yes _____ no _____ not applicable _____
Plugging grout From _____ to _____ material _____

OVER

(1)

Owner _____ BWCM No. _____

9. State law requires submitting to the Virginia State Water Control Board information about groundwater and wells for every well made in the State intended for water, or any other non-exempt well. This information must be submitted whether the well is completed, on standby, or abandoned. Information required includes: an accurately and completely prepared water well completion report, full data from any aquifer pumping tests, drill cuttings taken at ten foot intervals (unless exemption is secured), the results of any chemical analyses, and copies of any geophysical logs. Quarterly pumpage and use reports are required from owners of public supply and industrial wells. County or State permits to drill may be required in some parts of the state. Some counties require submission of a water well completion report. The Virginia State Health Department requires a water well completion report for public supply wells.

10. DRILLERS LOG (use additional Sheets if necessary)				11.	12. DIAGRAM OF WELL CONSTRUCTION (with dimensions)
DEPTH (feet)		TYPE OF ROCK OR SOIL	REMARKS		
From	To	(color, material, fossils, hardness, etc.)	(water, caving, cavities, broken, core, shot, (etc.)	Drilling Time (Min.)	

SEP 1985
CLARKE COUNTY
HEALTH
DEPARTMENT

13. Well lot dedicated? _____. Size _____ ft. X _____ ft., Well house? _____
Distance to nearest pollutant source 100+ ft., Type _____
Distance to nearest property line _____ ft., Building _____ ft.

14. WATER SERVICE PIPE Checked under _____ p.s.i. for _____ minutes. Pipe size _____ inches, Material _____
Installer _____
Date _____

15. I certify that the information contained herein is true and correct and that this well and/or system has been installed and constructed in accordance with the requirements for well construction as specified in compliance with appropriate county or independent city ordinances and the laws and rules of the Commonwealth of Virginia

Signature Gary Hayes (Seal), Date 6-26-85
(Well driller or authorized person)
License No 03/362

State Water Control Board Regional Offices

Valley Reg. Off.
116 North Main Street
P. O. Box 268
Bridgewater, Va. 22812
703-828-2595

Piedmont Reg. Off.
4010 West Broad Street
P. O. Box 6616
Richmond, Va. 23230
804-257-1006

Southwest Reg. Off.
408 East Main Street
P. O. Box 476
Abingdon, Va. 24210
703-628-5183

Tidewater Reg. Off.
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Va. Beach, Va. 23462
804-499-8742

West Central Reg. Off.
Executive Park
5312 Peters Creek Road
Roanoke, Va. 24019
708 - 982 - 7432

Northern Virginia Reg. Off.
5515 Cherokee Avenue
Suite 404
Alexandria, Va. 22312
703-750-9111

Slow permeability in the fragipan and the perched seasonal high water table limit the use of this soil for septic tank absorption fields, sewage lagoons, sanitary landfills, shallow excavations, dwellings, and small commercial buildings. These limitations also affect most types of recreation.

This Monongahela soil is in capability subclass IIe.

26B—Monongahela-Braddock complex, 3 to 8 percent slopes. This gently sloping complex consists of deep and moderately well drained Monongahela soils and well drained Braddock soils. These soils are on moderately broad ridges in the Shenandoah Valley. They are so intermingled that it was not practical to map them separately. This complex is about 45 percent Monongahela soils, 35 percent Braddock soils, and 20 percent other soils. Slopes are smooth and about 200 to 600 feet long. Areas of this complex are long and winding or oval and range from about 5 to 75 acres.

Typically, the surface layer of the Monongahela soil is brown cobbly loam about 9 inches thick. The subsoil is yellowish brown cobbly loam to a depth of 21 inches. Below this a brittle, firm fragipan extends to a depth of at least 60 inches. It is mainly yellowish brown and strong brown cobbly sandy clay loam.

Typically, the surface layer of the Braddock soil is black gravelly loam about 2 inches thick. The subsurface layer is yellowish brown gravelly loam 9 inches thick. The subsoil extends to a depth of 41 inches. It is mainly red gravelly clay and dark red gravelly sandy clay. The substratum is dark red very gravelly sandy clay loam with olive and brown mottles to a depth of at least 74 inches.

Included with this complex in mapping are small intermingled areas of the Poplimento, Thurmont, Webbtown, and Zoar soils. The Poplimento and Webbtown soils are near the boundaries of the map unit. The Thurmont and Zoar soils are similar in location to the Monongahela and Braddock soils. Also included are areas that are very gravelly and areas that are very cobbly. Areas of the included soils make up about 20 percent of this map unit.

The permeability of the Monongahela soils is moderate above the fragipan and slow in the fragipan. Permeability is moderate in the Braddock soils. The available water capacity is moderate in both soils. Surface runoff is medium. The erosion hazard is moderate. The surface layer of both soils has a high content of coarse fragments. The shrink-swell potential of the Monongahela soils is low, and that of the Braddock soils is moderate. The root zone extends to the top of the fragipan, which is at a depth of 18 to 30 inches in the Monongahela soils and more than 60 inches in the Braddock soils. Depth to bedrock is more than 60 inches in both soils.

Both soils have low natural fertility and low organic matter content. Both soils are very strongly acid or strongly acid unless lime has been applied. The Monongahela soils have a perched seasonal high water table above the fragipan from December through April.

Most areas of this complex are used for pasture. A small acreage is cultivated, and some areas are in woodland.

This Monongahela-Braddock complex is moderately well suited to cultivated crops. The major limitations are the high content of coarse fragments, acidity, and low natural fertility in both soils and the shallow rooting depth in the Monongahela soils. Tilth is poor because the high content of coarse fragments interferes with seedbed preparation and cultivation. Crop yields can be increased by applying lime and fertilizer. Contour tillage, conservation tillage, and crop rotations that include grasses and legumes reduce runoff, help control erosion, conserve moisture, and maintain organic matter content.

This complex is moderately well suited to fruits, nuts, and berries if air drainage is adequate. The shallow rooting depth in the Monongahela soil and the acidity and low natural fertility in both soils may limit plant growth and crop yields.

This complex is moderately well suited to pasture. The shallow rooting depth in the Monongahela soils and the acidity and low natural fertility in both soils are limitations to plant growth and yields. Establishing and maintaining a mixture of grasses and legumes, rotating pastures, deferring grazing, controlling weeds, proper stocking, and applying lime and fertilizer increase the productivity and carrying capacity of pastures.

The potential of the Monongahela soils for trees is moderately high, and that of the Braddock soils is high. Seedlings survive and grow well if competing vegetation is controlled. Cobbles on the surface limit the use of some equipment on this complex.

Slow permeability in the fragipan and the perched seasonal high water table in the Monongahela soils, the high content of coarse fragments in both soils, and the moderate shrink-swell potential in the Braddock soils limit the use of this complex for septic tank absorption fields, sewage lagoons, sanitary landfills, shallow excavations, cover for landfills, dwellings, small commercial buildings, and local roads and streets. These limitations also affect most types of recreation.

This Monongahela-Braddock complex is in capability subclass IIIe.

26C—Monongahela-Braddock complex, 8 to 15 percent slopes. This rolling complex consists of deep and moderately well drained Monongahela soils and well drained Braddock soils. These soils are on narrow side slopes in the Shenandoah Valley. They are so intermingled that it was not practical to map them separately. This map unit is about 40 percent Monongahela soils, 35 percent Braddock soils, and 25 percent other soils. Slopes are complex and about 200 to 500 feet long. Areas of this complex are long and winding or oval and range from about 5 to 40 acres.

0.4 mile northwest of the junction
55 and 620 and 0.9 mile
ion of Highways 655 and 634:

rk yellowish brown (10YR 4/4)
derate fine granular structure;
ky, slightly plastic; many fine and
percent shale fragments; mildly
oth boundary.
llowish brown (10YR 5/4) shaly
edium distinct yellowish red (5YR
own (7.5YR 5/6) mottles; weak
ubangular blocky structure; friable,
tly plastic; many fine roots; many
ale fragments; 40 percent shale
/ acid; gradual smooth boundary.
ownish yellow (10YR 6/6) very
ny medium faint strong brown
s; massive; friable, slightly sticky,
y silt coatings on shale
ent shale fragments; strongly
th boundary.
tilted shale.

solum ranges from 18 to 36
k ranges from 20 to 40 inches.
ale, fine-grained sandstone, or
50 percent of the A horizon, 25
ial subhorizons of the B2 horizon,
the C horizon. The weighted
ients between 10 inches and
an 35 percent. The soil ranges
hrough medium acid unless

of 10YR, value of 3 through 5,
is shaly silt loam or shaly loam.
f 7.5YR or 10YR, value of 5 or
gh 8. It is shaly or very shaly silt
izon has hue of 7.5YR or 10YR,
ma of 3 through 6. It is very
he bedrock is rippable shale,
sandstone that is fractured and

s consists of moderately deep
ined soils in saddles and
eways and on side slopes in
hese soils formed in materials
stone, and fine-grained
from 3 to 15 percent.
commonly are near the Berks
rks Variant soils are wetter

Variant shaly silt loam, in an
t shaly silt loams, 3 to 8

percent slopes, approximately 660 feet northwest of the junction of Virginia Highways 634 and 657:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) shaly silt loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; 40 percent shale fragments; medium acid; clear smooth boundary.

B2—8 to 24 inches; yellowish brown (10YR 5/4) shaly silt loam; many medium distinct light olive gray (5Y 6/2) mottles; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; 45 percent shale fragments; strongly acid; gradual smooth boundary.

C—24 to 32 inches; yellowish brown (10YR 5/4) very shaly silt loam; many medium distinct gray (5Y 6/1) and black (10YR 2/1) mottles on shale fragments; massive; friable, slightly sticky, slightly plastic; few medium clay flows; 80 percent shale fragments; strongly acid; gradual smooth boundary.

R—32 inches; rippable tilted shale.

The thickness of the solum ranges from 18 to 36 inches. Depth to bedrock ranges from 20 to 40 inches. Coarse fragments of shale, fine-grained sandstone, or siltstone make up 15 to 50 percent of the A horizon, 25 to 75 percent of individual subhorizons of the B2 horizon, and 50 to 85 percent of the C horizon. The weighted average of coarse fragments between 10 inches and hard bedrock is more than 35 percent. The soil ranges from very strongly acid through medium acid unless limed.

The A horizon has hue of 7.5YR or 10YR, value of 3 through 5, and chroma of 3 or 4. It is shaly silt loam or shaly loam. The B horizon has hue of 10YR through 5Y, value of 5 through 7, and chroma of 4 through 8. It is shaly silt loam, shaly loam, or very shaly silt loam. The C horizon has colors similar to those of the B horizon. It is very shaly silt loam or very shaly loam. The bedrock is rippable shale, siltstone, or fine-grained sandstone that is fractured and has very few voids.

Braddock series

The Braddock series consists of deep and well drained soils on low-lying ridges and foot slopes in the foothills of the Blue Ridge Mountains and on stream terraces in the Shenandoah Valley. These soils formed in colluvial and alluvial sediments derived mainly from crystalline igneous rocks. Slope ranges from 3 to 45 percent.

The Braddock soils commonly are near the Monongahela and Zoar soils. The Braddock soils are better drained than the other soils.

Typical pedon of Braddock loam, 3 to 8 percent slopes, approximately 0.4 mile southwest of the northern junction of Virginia Highways 606 and 649 and 150 feet west of Highway 606:

O1—2 inches to 0; undecom
black (10YR 2/1) partial
matter.

A1—0 to 2 inches; black (10
and medium granular st
fine medium and coarse
very strongly acid; clear

A2—2 to 11 inches; yellowis
weak fine and medium
slightly sticky, slightly pl
coarse roots; 2 percent
clear smooth boundary.

B1t—11 to 18 inches; red (2
medium distinct strong
moderate fine and med
structure; friable, sticky,
medium roots; many m
peds; 2 percent pebble
wavy boundary.

B21t—18 to 31 inches; dark
common medium distin
mottles; moderate fine
blocky structure; friable
and medium roots; mo
faces of peds; 5 percer
clear smooth boundary

B22t—31 to 42 inches; darl
medium distinct strong
yellowish brown (10YR
and medium subangula
sticky, plastic; commor
medium continuous cla
percent pebbles and c
clear smooth boundary

IIB31t—42 to 58 inches; da
clay; many medium dis
5/6), olive (5Y 5/4), a
(10YR 3/2) mottles; m
subangular blocky stru
few fine roots; many n
peds; 35 percent cobb
strongly acid; diffuse s

IIB32t—58 to 74 inches; re
loam; many medium d
strong brown (7.5YR 5
subangular blocky stru
many medium clay filr
percent cobblestones
acid.

The thickness of the sol
inches or more. Depth to
Rock fragments make up
horizons and 2 to 80 perc
The soil is very strongly a
limed.

northwest of the
57:

(10YR 4/4)
lar structure;
; many fine and
ıments; medium

YR 5/4) shaly
olive gray
ıngular blocky
tly plastic; few
ts; strongly acid;

'R 5/4) very
gray (5Y 6/1)
le fragments;
y plastic; few
fragments;
ry.

18 to 36
o 40 inches.
ndstone, or
A horizon, 25
he B2 horizon,
weighted
ıches and
soil ranges
d unless

, value of 3
silt loam or
through 5Y,
gh 8. It is
loam. The C
horizon. It is
bedrock is
tstone that is

well
ɔes in the
stream
ils formed
nly from
3 to 45

oils are

ɔent
e northern
150 feet

O1—2 inches to 0; undecomposed leaves and twigs and black (10YR 2/1) partially decomposed organic matter.

A1—0 to 2 inches; black (10YR 2/1) loam; strong fine and medium granular structure; very friable; many fine medium and coarse roots; 2 percent pebbles; very strongly acid; clear smooth boundary.

A2—2 to 11 inches; yellowish brown (10YR 5/4) loam; weak fine and medium granular structure; friable, slightly sticky, slightly plastic; many fine, medium and coarse roots; 2 percent pebbles; very strongly acid; clear smooth boundary.

B1t—11 to 18 inches; red (2.5YR 4/6) clay loam; many medium distinct strong brown (7.5YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; many fine and medium roots; many medium clay films on faces of peds; 2 percent pebbles; very strongly acid; gradual wavy boundary.

B21t—18 to 31 inches; dark red (2.5YR 3/6) clay; common medium distinct yellowish red (5YR 5/8) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; common fine and medium roots; medium continuous clay films on faces of peds; 5 percent pebbles; strongly acid; clear smooth boundary.

B22t—31 to 42 inches; dark red (2.5YR 3/6) clay; many medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; friable, sticky, plastic; common fine and medium roots; medium continuous clay films on faces of peds; 15 percent pebbles and cobblestones; strongly acid; clear smooth boundary.

IIB31t—42 to 58 inches; dark red (2.5YR 3/6) cobbly clay; many medium distinct strong brown (7.5YR 5/6), olive (5Y 5/4), and very dark grayish brown (10YR 3/2) mottles; moderate medium and fine subangular blocky structure; friable, sticky, plastic; few fine roots; many medium clay films on faces of peds; 35 percent cobblestones and pebbles; very strongly acid; diffuse smooth boundary.

IIB32t—58 to 74 inches; red (2.5YR 4/6) cobbly clay loam; many medium distinct olive (5Y 5/4) and strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; friable, sticky, plastic; many medium clay films on faces of peds; 35 percent cobblestones and pebbles; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches or more. Depth to bedrock is more than 5 feet. Rock fragments make up 2 to 35 percent of the A and B horizons and 2 to 80 percent or more of the C horizon. The soil is very strongly acid or strongly acid unless limed.

The A1 or Ap horizon has hue of 7.5YR or 1 value of 2 through 5, and chroma of 1 through horizon has hue of 7.5YR or 10YR, value of 4 and chroma of 4 through 8. The A horizon is lc sandy loam or the gravelly or cobbly analogs c textures. The B1 horizon has hue of 2.5YR thr 7.5YR, value of 4 or 5, and chroma of 4 throug sandy clay loam or clay loam or the gravelly or analogs of those textures. The B2t horizon has 10YR or 2.5YR, value of 3 through 5, and chrc 8. It is clay loam or clay or the gravelly or cobt of those textures. Some pedons do not have a discontinuity. The B3 horizon has colors simila of the B2t horizon. It is cobbly clay or cobbly c The C horizon has colors similar to those of th horizon and is usually mottled. It is loamy soil with variable amounts of rock fragments.

Buckton series

The Buckton series consists of deep and we soils on flood plains in the Shenandoah Valley soils formed in loamy, calcareous, alluvial sedi derived mainly from limestone, sandstone, sha granite. Slope ranges from 0 to 3 percent.

The Buckton soils are taxadjuncts because more sand in the control section than is define range for the series. This does not affect the management of the soils.

The Buckton soils commonly are near the C Lobdell, and Weaver soils and the Udipsamm Buckton soils are not as acid throughout as th soils and are better drained than the Lobdell c soils. They are not as sandy as the Udipsamm

Typical pedon of Buckton silty clay loam, in Buckton soils, approximately 0.2 mile south of junction of Opequon Creek and U.S. Highways 50:

Ap—0 to 7 inches; brown (10YR 4/3) silty cla moderate medium granular structure; friat sticky, slightly plastic; many fine roots; ma wormholes; slight effervescence; mildly a clear smooth boundary.

C1—7 to 19 inches; brown (10YR 4/3) clay lc medium and coarse subangular blocky st friable, slightly sticky, slightly plastic; few many wormholes; strong effervescence; r alkaline; diffuse smooth boundary.

C2—19 to 31 inches; brown (10YR 4/3) loam coarse subangular blocky structure; friabl sticky, slightly plastic; few fine roots; mar wormholes; 2 percent shale fragments; s effervescence; moderately alkaline; gradu boundary.

B22—17 to 26 inches; dark brown (10YR 4/3) loam; many medium faint dark grayish brown (10YR 4/2) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable, slightly sticky, slightly plastic, common fine roots; many medium dark grayish brown coatings on faces of peds; common thin black coatings on faces of peds; common krotovinas; slightly acid; diffuse smooth boundary.

C—26 to 64 inches; dark yellowish brown (10YR 4/4) loam; many medium distinct grayish brown (2.5Y 5/2) mottles; massive; friable, slightly sticky, slightly plastic; few fine roots; common medium black coatings; common krotovinas; medium acid.

The thickness of the solum ranges from 24 to 40 inches. Depth to bedrock is more than 5 feet. Coarse fragments make up 0 to 5 percent of the A horizon and 0 to 15 percent of the B horizon and C horizon. The soil ranges from strongly acid through neutral in the A and B horizons and from medium acid through neutral in the C horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 through 3. Value and chroma of 3 or less are confined to an A horizon less than 10 inches thick. The A horizon is fine sandy loam, sandy loam, loam, or silt loam. The B horizon has hue of 7.5YR through 2.5Y, value of 4 or 5, and chroma of 3 or 4. Some pedons have thin layers with value of 3 and chroma of 2. The B horizon is silt loam, silty clay loam, loam, clay loam, or sandy loam. The C horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 2 through 8. It is loam, silt loam, sandy loam, clay loam, sandy clay loam, or fine sand. Some pedons have gravel and cobblestones, and some pedons are stratified.

McGary series

The McGary series consists of deep and somewhat poorly drained soils in depressions and along streams in the Shenandoah Valley. These soils formed in clayey alluvial sediments derived from limestone. Slope ranges from 0 to 3 percent.

The McGary soils commonly are near the Hollywood, Pagebrook, Timberville, and Weaver soils. They have a lighter colored surface layer than the Hollywood soils and are more poorly drained than the Hollywood, Pagebrook, Timberville, or Weaver soils.

Typical pedon of McGary silty clay loam, approximately 0.15 mile east-southeast of the junction of Opequon Creek and Virginia Highway 664:

Ap—0 to 9 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine roots; neutral; abrupt smooth boundary.

B21tg—9 to 14 inches; mottled light gray (10YR 6/1) and yellowish brown (10YR 5/8) clay loam; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; few fine roots; many medium clay films on faces of peds; 10 percent black and brown concretions; neutral; clear smooth boundary.

B22tg—14 to 26 inches; gray (10YR 6/1) clay; many medium distinct yellowish brown (10YR 5/8) mottles; moderate medium and coarse subangular blocky structure; firm, sticky, plastic; few fine roots; continuous medium clay films on faces of peds; mildly alkaline; clear smooth boundary.

B23tg—26 to 33 inches; gray (10YR 6/1) clay; many medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky, plastic; few fine roots; continuous medium clay films on faces of peds; 15 percent black and brown concretions; 5 percent shale fragments; mildly alkaline; clear smooth boundary.

B3tg—33 to 42 inches; light brownish gray (2.5Y 6/2) clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky, plastic; few fine roots; many medium clay films on faces of peds; 1 percent black and brown concretions; 2 percent shale fragments; mildly alkaline; clear smooth boundary.

Cg—42 to 60 inches; light brownish gray (2.5Y 6/2) clay loam; many medium distinct yellowish brown (10YR 5/8) mottles; massive; firm, sticky, plastic; 1 percent black and brown concretions; 15 percent shale fragments; mildly alkaline.

The thickness of the solum ranges from 24 to 50 inches. The soil is neutral or mildly alkaline in the A horizon and upper part of the B horizon and ranges from slightly acid to moderately alkaline in the lower part of the B horizon and in the C horizon.

The Ap horizon has hue of 10YR, value of 4 through 6, and chroma of 1 through 3. It is silty clay loam or silt loam. The Bt horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 1 through 4. The Bt horizon is clay, silty clay, silty clay loam, or clay loam. The C horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 1 through 3. It is clay, silty clay, silty clay loam, or clay loam. Some pedons contain secondary carbonate accumulations.

Monongahela series

The Monongahela series consists of deep and moderately well drained soils on high river terraces in the Shenandoah Valley. These soils formed in alluvial sediments derived mainly from crystalline rocks. Slope ranges from 3 to 15 percent.

The Monongahela soils commonly are near the Braddock, Thurmont, and Zoar soils. They have less clay

*generally more like Braddock than Monongahela

MONONGAHELA CONTINUED

than the Braddock soils and are not as red. They have a fragipan, which is not characteristic of the Braddock, Thurmont, or Zoar soils.

Typical pedon of Monongahela loam, 3 to 8 percent slopes, approximately 0.85 mile south of the junction of Spout Run and Virginia Highway 621, 20 feet north of Highway 621 (fig. 10):

Ap—0 to 9 inches; brown (10YR 4/3) loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; 5 percent pebbles and cobblestones; mildly alkaline; clear smooth boundary.

B2t—9 to 21 inches; yellowish brown (10YR 5/4) loam; many medium distinct pale brown (10YR 6/3) mottles; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common thin clay films on faces of peds; 2 percent pebbles and cobblestones; slightly acid; clear smooth boundary.

The "X" STANDS FOR FRAGIPAN

Bx1—21 to 31 inches; light yellowish brown (10YR 6/4) clay loam; moderate medium platy structure; firm, 80 percent of the mass is brittle, slightly sticky, slightly plastic; few fine roots in cracks; many medium clay films mostly on horizontal faces of peds; many dark yellowish brown (10YR 4/4) coatings; 10 percent pebbles and cobblestones; very strongly acid; gradual smooth boundary.

NOT AS RED AS BRADDOCK

Bx2—31 to 45 inches; yellowish brown (10YR 5/4) clay loam; moderate medium platy structure; firm, 80 percent of the mass is brittle, slightly sticky, slightly plastic; many medium clay films on both horizontal and vertical faces of peds; many dark brown (7.5YR 3/2) coatings; 1 percent pebbles; very strongly acid; diffuse smooth boundary.

NO ROOTS DESCRIBED

Bx3—45 to 60 inches; strong brown (7.5YR 5/8) clay loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak medium and thick platy structure; firm, 80 percent of the mass is brittle, slightly sticky, slightly plastic; common medium clay films mostly on horizontal faces of peds; 1 percent pebbles; very strongly acid.

The thickness of the solum ranges from 40 to 72 inches. Depth to the fragipan ranges from 18 to 30 inches. Depth to bedrock is more than 5 feet. Pebbles and cobblestones make up 0 to 30 percent of the soil above the fragipan and 0 to 35 percent of the fragipan. Some pedons have a C horizon that is 10 to 40 percent cobblestones and pebbles. The soil is very strongly acid or strongly acid unless limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. A thin A1 horizon, when present, has value and chroma of 3 or 4. The A horizon is loam, silt loam, sandy loam, or the cobbly analogs of those textures. The B2t horizon has hue of 7.5YR or 10YR, value of 4 through 6, and chroma of 4 through 8. It is silt

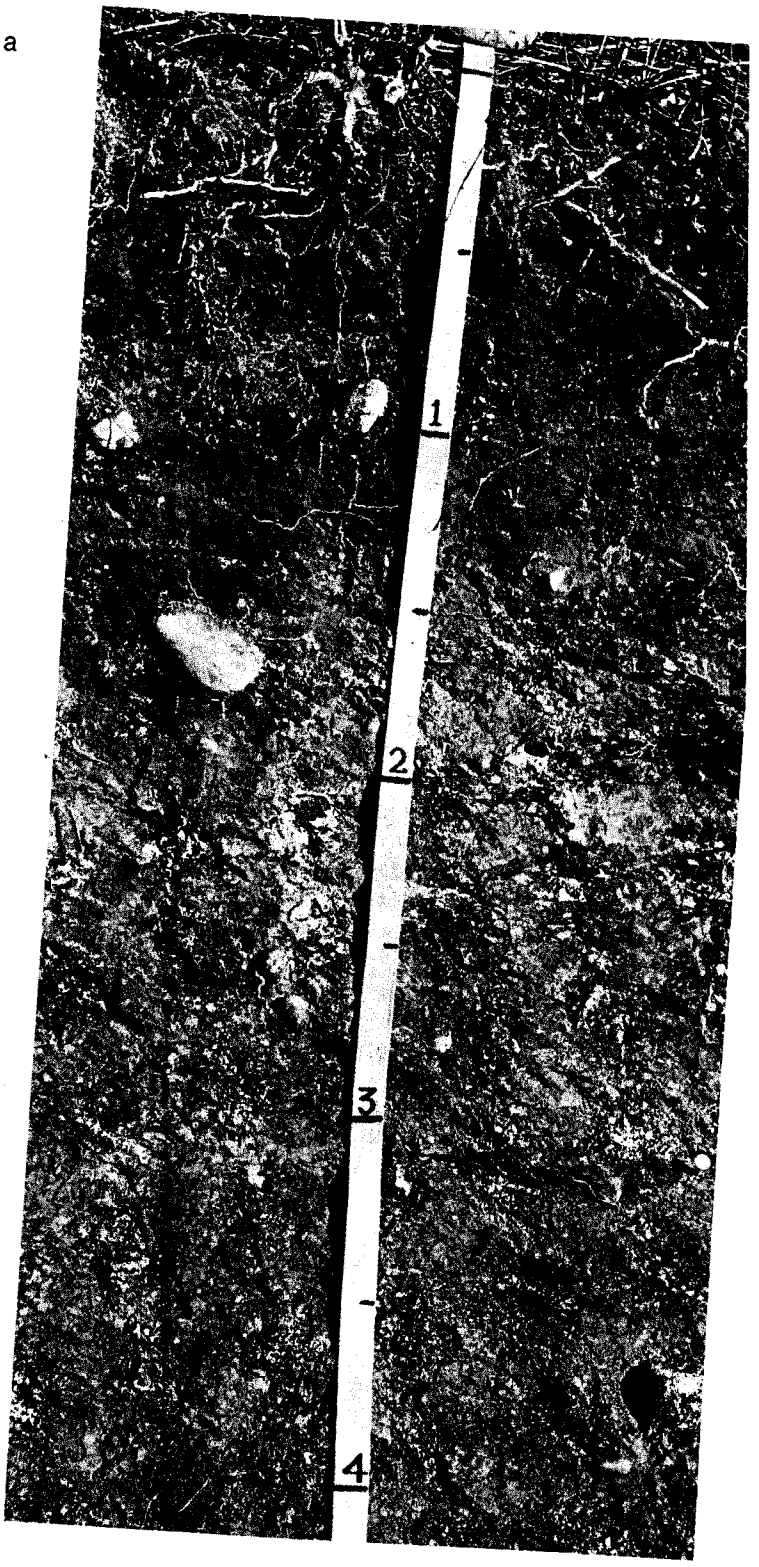


Figure 10.—Profile of Monongahela loam, 3 to 8 percent slopes, shows a firm, brittle fragipan below 22 inches. Scale is in feet.

I left out the last page, not pertinent

Post-it® Fax Note 7671	Date 6/27	# of pages ▶ 5
To ALISON	From GREG	
Co./Dept.	Co. Health Dept.	
Phone #	Phone # 955-1033	
Fax #	Fax # 955-4094	

Brief explanation of soils, in area of proposed Monastery cemetery.

Enclosed, are 5 pages from the Soil Survey of Clarke County relating to # 26B- the main soil complex described in the piece of land that was presented to me by Alison Teetor, with Clarke County Planning.

Page 1 (page 36 in the survey) Is an over all description of the soils. I have tried to underline the most pertinent information. This soils area mainly contains 2 soil types- Monangahela & Braddock. These make up 80% of the area, while the other soils make up 20%. The only way to know where exactly these soils begin and end, is to look at the soils themselves, either with a backhoe or an auger.

The Monongahela soils have what is called a fragipan that ranges in depth from 21" below ground surface (bgs) to 60" (bgs). A fragipan is an area of slow percolation. In the wet months, there may be a seasonal perched water table above this part of the soil. This would not lend itself well for drainfields or cemetery purposes (in my opinion), however there are no regulations governing this, other than setback requirements (distance to wells, river, sinkholes, etc.)

The Braddock soils do not have a fragipan, but they have more potential for shrink-swell, which means that the clay type and content can have a varying effect upon the downward percolation of water. However the root zone is much deeper in the Braddock than in the Monongahela.

The Braddock soils are much redder than the Monongahela, and typically have a deeper root zone. However, in my experience with these soils, they don't always "act" like the descriptions described above. Sometimes, when we have dug pits, the Braddock pits held water, while the Monongahela pits did not. That's the opposite of what one would expect. I can't pretend to explain this.

I would say that Alex Blackburn has studied these soils, and in the past has done water table studies on these soils, in conjunction with the Health Dept. The Health Dept. involvement came to an end because we were just too busy trying to keep up during the period of rapid growth that went on in the late 80's thru the 90's up to the present major slowdown. I don't know if the studies were completed or what the end result might have been.

I hope this gives you an idea of the complex nature of the soils we are talking about, and it would be a good idea to get a professional opinion on this. Mr Blackburn is a Professional soil scientist, and has worked with soils professionally both as a soils evaluator in Clarke County, and other counties in the Lord Fairfax Health District, and as an employee of Loudoun County, working in soils evaluation. You can use any professional that you wish to- I don't mean to recommend anyone, but in this case it seems to make good sense to at least bring it up. Greg Lloyd, Environmental Health Specialist Senior, with Clarke County Health Department.

Greg Lloyd