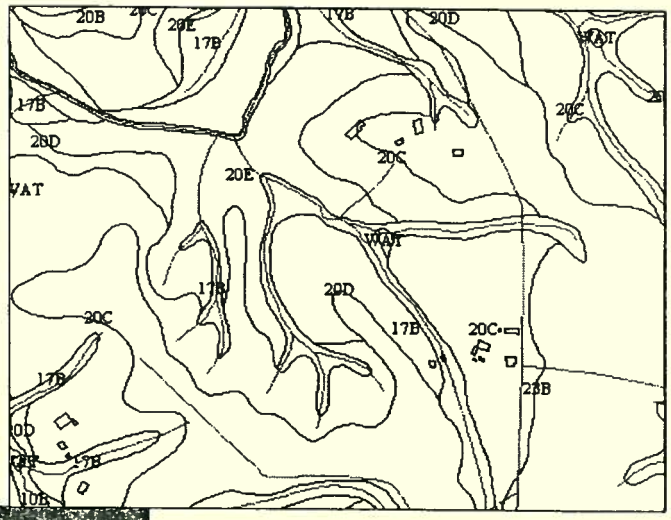
INTERPRETIVE GUIDE TO THE USE OF

SOILS MAPS

LOUDOUN COUNTY, VIRGINIA



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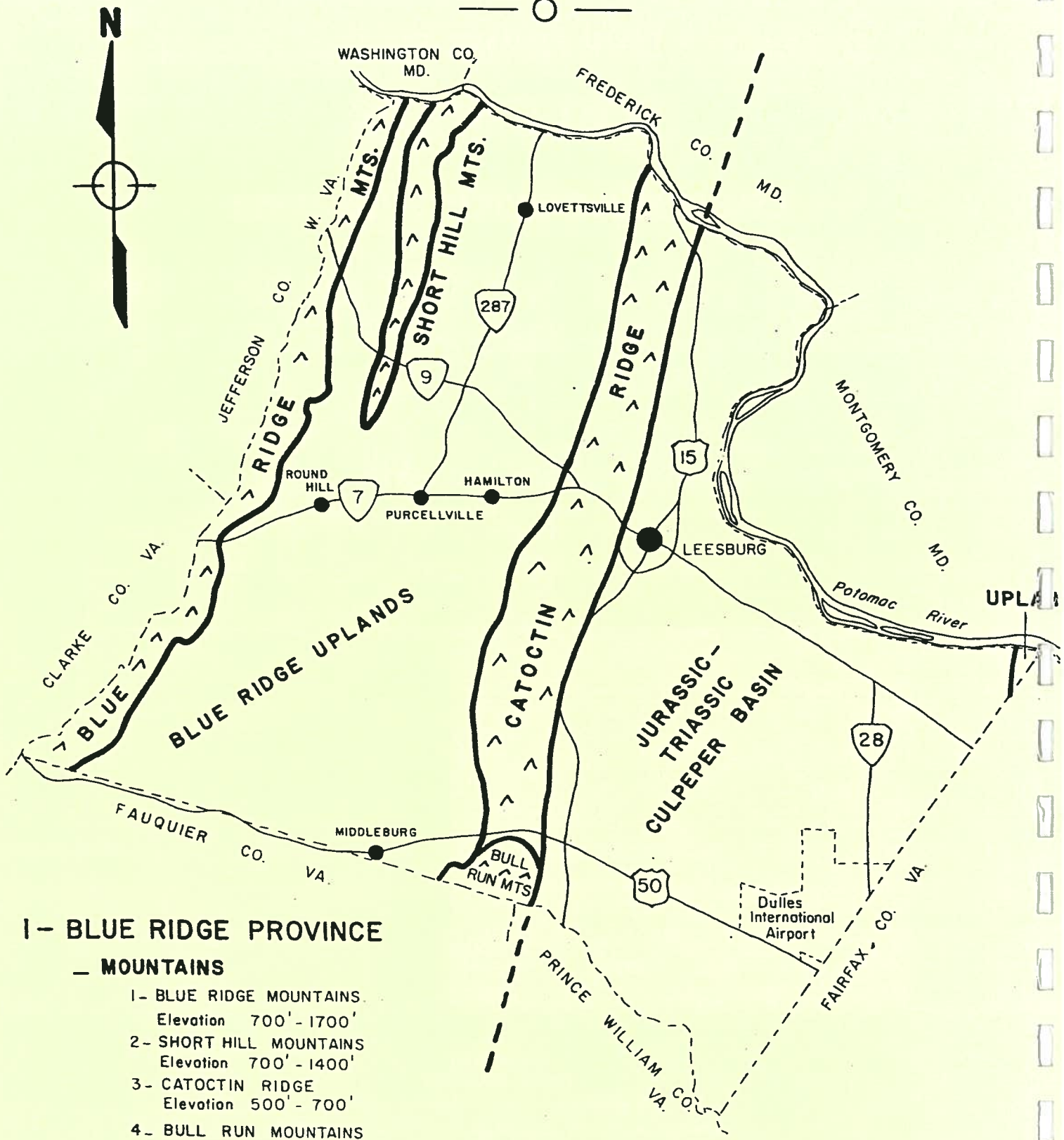
2000

GEOLOGIC REGIONS OF LOUDOUN COUNTY



I- BLUE RIDGE PROVINCE

- MOUNTAINS

1- BLUE RIDGE MOUNTAINS
Elevation 700' - 1700'

2- SHORT HILL MOUNTAINS
Elevation 700' - 1400'

3- CATOCTIN RIDGE
Elevation 500' - 700'

4- BULL RUN MOUNTAINS
Elevation 450' - 770'

- UPLANDS

Elevation 400' - 600'

II- PIEDMONT PROVINCE

- CULPEPER BASIN
Elevation 200' - 450'

- UPLANDS
Elevation 200' - 370'

INTERPRETIVE GUIDE
TO THE
USE OF SOILS MAPS
OF
LOUDOUN COUNTY, VIRGINIA

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Special thanks to the Office of Mapping and Geographic Information for assistance in updating this document and the soil maps

1998 Edition
Updated 1999
Updated 2000

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Codorus Series	2A
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INTRODUCTION

The Soil Survey of Loudoun County (field work) was conducted between 1947 and 1952 by soil scientists from Virginia Tech and the USDA Soil Conservation Service (now known as Natural Resource Conservation Service). Soils were originally shown on 1938 aerial photography at a scale of 4"= 1 mile; soils were later redrafted to a scale of 1" = 1666' (1:20000) for publication in the USDA's **Soil Survey of Loudoun County, Virginia,** Series 1951, Number 8, which was issued in September 1960. This publication is out of print, and the supply of copies for public distribution has been exhausted. A revision of the soil survey for Loudoun County has been completed. The manuscript is currently undergoing technical review and publication of the final document will be published by Natural Resource Conservation Service.

As part of the County's Geographic Information System (G.I.S.) mapping project, the soil survey maps were redrafted onto the County's base maps, at a scale of 1" = 200', then digitized. This information is available at the Office of Mapping and Geographic Information or through the County Soil Scientist in the Department of Building and Development. Although these updated soil maps rely heavily on the original soil survey, changes in both location of mapping unit lines and mapping unit descriptions/interpretations have occurred. The soils map is continuously being updated based on field site inspections and therefore the soils map merely represents a point in time. Many new soil series concepts have been developed and the emphasis has changed from primarily agricultural use to include urban uses.

This report is geared to mapping unit potential for general uses. Mapping unit potential ratings attempt to describe the broad range of conditions found in any given mapping unit for the noted uses. For more site-specific soil interpretations contact the County Soil Scientist in the Department of Building and Development.

USE OF INFORMATION IN THIS GUIDE

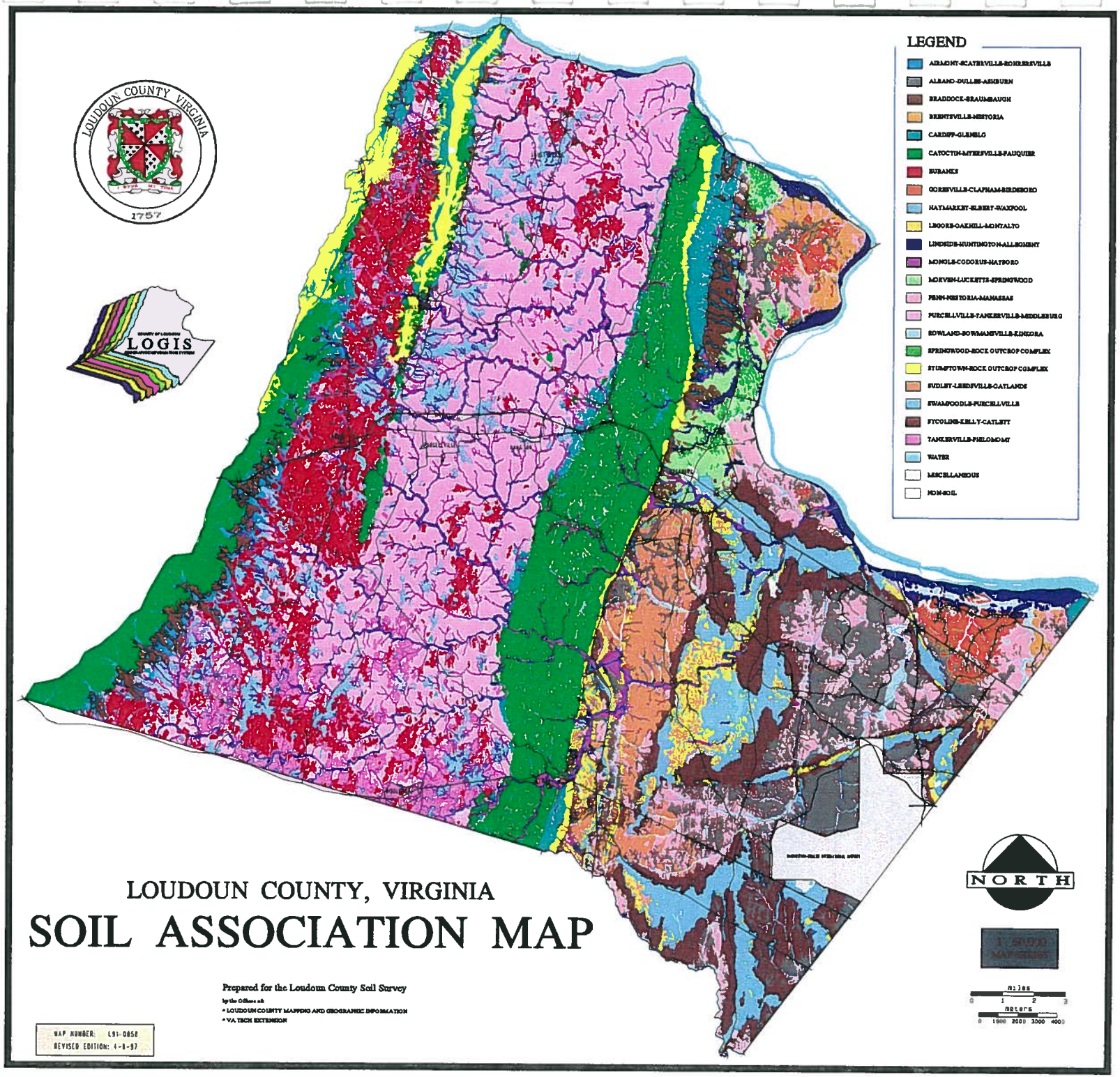
HOW TO USE THIS INFORMATION

This material is **intended for planning purposes, as well as to alert the reader to the broad range of conditions, problems, and use potential for each mapping unit.** A mapping unit (for example, "73B") is the Countywide sum of all mapping delineations (all the "73B" areas in the County). For most mapping units in Loudoun County, the individual series in a mapping unit name (for example, "Penn" soils in the 73B mapping unit or "Purcellville" soils in the 23B mapping unit) may account for only 50% of the soils actually to be found in the mapping unit. The mapping unit potential use rating refers to the overall combination of soil properties and landscape conditions. Therefore, a mapping unit rated as having good potential for urban uses probably contains some areas that have much poorer potential. Conversely, a mapping unit rated as having poor potential for a designated use may contain areas with good potential for that use. In on-site investigations, work is completed with much greater detail and inclusions of good or problem soils are specifically identified.

The information in this guide will enable the user to determine the distribution and extent of various classes of soil and generally, the types of problems that may be anticipated. For example, for a proposed subdivision using individual wells and septic tank drainfield systems, a site with mostly Class IV soils is probably not a viable project; whereas one with mostly Class I soils probably is, and would warrant a detailed on-site investigation. For a proposed rezoning or subdivision utilizing central water and sewer facilities, a site with mostly Class IV soils should have a Type 1, preliminary soils review conducted to determine the extent of problem areas, followed by a detailed geotechnical investigation at the subdivision stage to assist in design review and construction.

HOW <u>NOT</u> TO USE THIS INFORMATION

The information in this guide is **not intended for** use in determining **specific** use or suitability of soils for a particular site. It is of utmost importance that the reader understands that the information is geared to **mapping unit potential** and not to **specific site suitability**. An intensive on-site evaluation should be made to verify the soils map and determine the soil/site suitability for the specific use of a parcel.



LOUDOUN COUNTY, VIRGINIA

SOIL ASSOCIATION MAP

Prepared for the Loudoun County Soil Survey

by the Offices of:

- LOUDOUN COUNTY MAPPING AND GEOGRAPHIC INFORMATION
- VA TECH EXTENSION

MAP NUMBER: L91-0858
REVISED EDITION: 4-8-97

GENERAL SOIL ASSOCIATION MAP

The general soil association map outlines broad areas that have distinctive patterns in landscape and general geographic appearance. Each of the soil associations has a unique set of features which effect general use and management including shape and length of slope; width of ridgetops and valleys; frequency, size, and direction of streams; type of vegetation, rate of growth; and agriculture. These differences are largely the result of broad differences in kinds of soils and in the geologic materials from which the soils formed. A mapping unit typically consists of one or more major soils with minor soils, and is named for the major soils.

This map shows, in small scale, a summary of the information contained on the individual detailed soil maps for Loudoun County. Because of its small scale and general soil descriptions, it is not suitable for planning small areas or specific sites, but it does present a general picture of soils in the County, and can show large areas generally suited to a particular kind of agriculture or other special land use. For more detailed and specific soils information, please refer to the detailed soils maps and other information available from the County Soil Scientist.

GEOLOGIC SETTING

Loudoun County is in the northeastern part of Virginia. It is bordered on the north and east by the Potomac River, and on the west by the Blue Ridge Mountains. The eastern half of the County occurs in the Piedmont geologic province and the western half in the Blue Ridge geologic province; the footslopes of the Catoctin Ridge form the boundary line between the two (see Frontpiece). Topography varies sharply in Loudoun, with elevations above sea level ranging from 180' to 1900'. Major drainage systems include Broad Run, Goose Creek, Catoctin Creek, Bull Run, and numerous minor tributaries to the Potomac. All of these drainage systems are part of the Potomac River Basin.

The Potomac River separates the County from Washington, Frederick, and Montgomery Counties in Maryland. To the west, Loudoun County is bounded by Clarke County, Virginia, and Jefferson County, West Virginia; to the south and to the east by Fairfax County, Virginia. Loudoun County has an area of 521 square miles, or 333,498 acres.

The Blue Ridge Anticlinorium is the structural control for western Loudoun. The Precambrian and Cambrian age metamorphosed rock materials present include crystalline gneisses, metadiabase, and metabasalt, as well as a host of metasedimentary rocks ranging from quartzite to phyllites. The ridge-formers are the white to yellowish-brown Quartzite and limey green to greenish-black metabasalts. The valley between the three major ridges (Blue Ridge, Short Hill Mountain, and Bull Run Mountain-Catoctin Ridge-Furnace Mountain) is underlain by gneisses and metasediments which have been intruded with this metadiabase and subsequently sheared in the metamorphic processes. This complexity of geologic materials, combined with geologic erosion, has led to the formation of a highly complex array of soils.

The structural control of eastern Loudoun is the Culpeper Basin. The sediments which gave rise to the red bedrock materials in the Basin were deposited during late Triassic to early Jurassic time, from

135 to 225 million years ago. The sedimentary rocks are dominantly siltstone, but include shales, sandstones, and sizeable areas of conglomerates on the western edge. The conglomerates range substantially in composition, depending on the source area, and include the limestone conglomerates north of the Town of Leesburg, and acid metasedimentary conglomerates near Evergreen Mills. The sedimentary rocks were subsequently intruded with lava (igneous rock ie. diabase and basalt). A contact zone of thermally altered rock formed between the diabase and the red sedimentary beds that consists of hornfel and granulite rock materials.

Rock materials on the extreme eastern edge of the County are mica schists of the Piedmont geologic province. These materials comprise a very small area of the County, and the soils formed are similar to those of the Harpers geologic formation in the Blue Ridge.

GENERAL SOIL MAP UNIT DESCRIPTIONS

1. Penn-Nestoria-Manassas Association

This association consists primarily of well to moderately well drained, moderately deep and deep soils over red siltstones and fine-grained sandstone. It occurs on broad, undulating uplands with steeper, more dissected areas along major drainageways. The association comprises 6% of the County and has elevations ranging from 220' to 360' above sea level. The major mapping units of this association are Penn(73), Nestoria(77), and Manassas(14) soils. Mapping units of lesser extent include Ashburn(74), Dulles(78), and Albano(79) soils. The major soils have fair potential for most agricultural uses, including woodland management. These soils have good potential for general development on central sewer and fair to poor potential for on-site sewage disposal systems. Depth to rock, droughtiness, and seasonal water tables are major problems in this association.

2. Albano-Dulles-Ashburn Association

This association consists primarily of poorly to moderately well drained, moderately deep to deep soils over red siltstones and shales. It occurs on nearly level upland flats and depressions with little dissection. This association comprises 6% of the County and has elevations ranging from 280' to 300' above sea level. The major mapping units of this association are Albano(79) soils, Dulles(78) soils and Ashburn(74) soil. Mapping units of lesser extent include Penn(73), Nestoria(77), and Manassas(14) soils. The major soils have fair potential for row crops and woodland management. They have poor to very poor potential for general development on central sewer or on-site sewage disposal systems. Seasonal water tables and clayey subsoils are the limiting factors in the use of this association for either agricultural or engineering purposes.

3. Brentsville-Nestoria Association

This association consists primarily of well drained, shallow to moderately deep soils formed

in residuum of interbedded Triassic arkosic sandstones, siltstones, and shales. It occurs on undulating to rolling landscapes with moderate relief, but more dissected areas occur along larger drainageways. This association comprises 1% of the County, and has elevations ranging from 250' to 350' above sea level. The major mapping units in this association are Brentsville(80), Nestoria(77), and Penn(73) soils. Mapping units of lesser extent include Manassas(14), Ashburn(74) and Albano(79) soils. The major mapping units of this association have fair potential for agriculture, including woodland management. They have fair to good potential for general development on central sewer, but fair to poor potential for septic tank drainfields. Depth to rock, droughtiness, and steep slopes are major problems in this association.

4. Sycoline-Kelley-Catlett Association

This association consists primarily of moderately well drained to somewhat poorly drained, moderately deep to deep soils over hornfel and granulites. It occurs on nearly level to gently sloping landscapes with low relief, with steeper, more dissected areas along large drainageways. This association comprises 5% of the County and has elevations ranging from 250' to 470' above sea level. The major mapping units of this association are Sycoline-Kelly(62) Complex, Kelly(63) soils, Catlett(60) soils and Sycoline-Catlett Complex. Mapping units of lesser extent include Waxpool(66), Haymarket-Jackland(67), Dulles(78) and Albano(79) soils. The major soils have fair potential for row crops and most tree species due to seasonal water tables. They have fair to poor potential for general development on central sewer or on-site sewage disposal systems due to high shrink-swell clays and seasonal wetness.

5. Goresville-Clapham-Birdsboro Association

This association consists primarily of well to somewhat poorly drained, very deep soils developed in old alluvium on nearly level terrace positions along the Potomac River. The association comprises 1% of the County, and occurs on three distinct terrace levels with elevations ranging from 220' to 430' above sea level. The major mapping units of this association are Goresville(95), Clapham(98) and Birdsboro(72) soils. Mapping units of lesser extent include Penn(73), Kinkora(99) and Manassas(14) soils. The Goresville and Birdsboro soils have fair to good potential for general development, on-site sewage disposal systems and agricultural use. The Clapham soils have fair to poor potential for most uses due to high seasonal water tables and swelling clays.

6. Haymarket-Elbert-Waxpool Association

This association consists primarily of well to poorly drained, very deep soils formed in material weathered from diabase and basalt. It occurs on nearly level to gently sloping

undulating landscapes with low relief. This association comprises 6% of the County, and has elevations ranging from 290' to 430' above sea level. The major mapping units of this association are Haymarket-Jackland(67) Complex, Elbert(69) and Waxpool(66) Soils. Mapping units of lesser extent include Legore(64), Legore-Oakhill(64C) Complex and Montalto(65) soils. The major soils have fair to very poor potential for most agricultural uses, including woodland management, and very poor potential for most urban uses. High shrink-swell clays and seasonal water tables are major problems.

7. Legore-Oakhill-Montalto Association

This association consists primarily of well drained, deep to moderately deep soils formed in material weathered from diabase and basalt. It occurs on gently sloping to sloping convex landscapes and landforms with rolling relief. This association comprises 2% of the County, and has elevations ranging from 250' to 450' above sea level. The major mapping units of this association are Legore(64), Oakhill(64D), Legore-Oakhill(64D) Complex and Montalto(65) soils. Manassas(14), Jackland-Haymarket(67) and Elbert(69) soils are also found within this association, though to a lesser extent. The major soils have good potential for pasture and hay crops or woodland management. They have fair to good potential for general development on central water and sewer or on-site sewage disposal systems. High rock fragment content and depth to rock are major limiting factors.

8. Rowland-Bowmansville-Kinkora Association

This association consists primarily of moderately well to poorly drained, very deep soils developed from recent alluvium. Located along larger drainageways, this association comprises 2% of the County and has elevations ranging from 180' to 300' above sea level. The major mapping units of this association are Rowland(5), Bowmansville(6), Delanco and Kinkora(99) soils. Mapping units of lesser extent include Albano(79), Comus(2), Huntington(7) and Lindside(8) soils. The major soils have good potential for grassland agriculture, but very poor potential for general development on central sewer or for on-site sewage disposal systems. Seasonal high water tables, low bearing capacity, and flooding are major problems.

9. Morven-Lucketts-Springwood Association

This association consists primarily of well-drained, very deep soils developed from residuum and mountain colluvium over residuum of calcareous conglomerates. It occurs on convex ridgecrests and gentle side slopes in undulating landscapes. This association comprises 2% of the County and has elevations ranging from 250' to 450' above sea level. The major mapping units of this association are Morven(13), Lucketts(84) and Springwood(90) soils. Mapping units of lesser extent include Penn(73), Sudley-Oatlands(76) complex, Braddock(83) and Brumbaugh(81) soils. The major soils have good potential for most agricultural uses and most species of trees. They have fair to very poor potential for general development on central

sewer and are poorly suited for on-site sewage disposal systems. Sinkholes, rock outcrops, slowly permeable subsoils, and potential groundwater pollution are major problems in this association.

10. Lindside-Huntington-Allegheny Association

This association consists primarily of moderately well to well-drained, very deep soils developed from recent alluvium. Located along larger drainageways, this association comprises 1% of the County, and has elevations ranging from 180' to 250' above sea level. The major mapping units of this association are Lindside(8), Huntington(7), and Allegheny(94) soils. Mapping units of lesser extent include Comus(2), Hatboro(4), Delanco and Kinkora(99) soils. The major soils have good potential for cropland agriculture, but very poor potential for general development on central sewer or for on-site sewage disposal systems. Flooding, low bearing strengths and seasonal high water tables are major problems.

11. Mongle-Codorus-Hatboro Association

This association consists primarily of moderately well to poorly drained, very deep soils developed from recent alluvium. Located along larger drainageways, this association comprises 2% of the County, and has elevations ranging from 180' to 300' above sea level. The major mapping units of this association are Mongle(10), Codorus(3) and Hatboro(4) soils. Mapping units of lesser extent include Comus(2), Middleburg(17) and Lindside(8) soils. The major soils have good potential for grassland agriculture, but very poor potential for general development on central sewer or for on-site sewage disposal systems. Seasonal high water tables, low bearing capacity, and flooding are major problems.

12. Springwood-Rock Outcrop Association

This association consists primarily of well-drained, very deep soils developed from residuum of calcareous conglomerates in complex with rock outcrops. It occurs on convex ridgecrests and gentle side slopes in undulating landscapes. This association comprises 3% of the County and has elevations ranging from 250' to 450' above sea level. The major mapping units of this association are Springwood(90-91) soils, and Rock Outcrops. Mapping units of lesser extent include Morven(13), Lucketts(84), Braddock(83) and Penn(73). The major soils have good potential for grassland agricultural uses and most species of trees. They have poor to very poor potential for general development on central sewer and are poorly suited for on-site sewage disposal systems. Sinkholes, rock outcrops, slowly permeable subsoils, and potential groundwater pollution are major problems in this association.

13. Braddock-Brumbaugh Association

This association consists of well to moderately well-drained, very deep, gravelly soils formed in old mountain colluvium. It occurs on rolling convex landforms that are well dissected.

This association comprises 3% of the county and has elevations ranging from 240' to 500' above sea level. The major mapping units in this association are Braddock(83) and Brumbaugh(81) soils. Mapping units of lesser extent include Rohrersville(12) and Middleburg(17) soils. The major soils of this mapping unit have fair to good potential for agricultural use and woodland management and good potential for orchards. They have fair to good potential for general development on central sewer and fair potential for on-site sewage disposal systems. Slow substratum permeability and eroded surface soils are major problems in this association.

14. Sudley-Leedsville-Oatlands Association

This association consists primarily of well-drained, very deep to moderately deep soils over red sandstones and conglomerates. It occurs on broad and narrow convex ridgetops and upper side slopes in dissected rolling landscapes. This association comprises 4% of the county and has elevations ranging from 295' to 400' above sea level. The major mapping units of this association are Sudley-Oatlands(76) Complex, and Leedsville(70) soils. Mapping units of lesser extent include Manassas(14) and Penn(73) soils. The soils in this association have good potential for agricultural and woodland management. The major soils have good potential for general development on central sewer and fair to good potential for on-site sewage disposal systems. Cobbles in the surface and depth to rock are the problems in this association.

15. Cardiff-Glenelg Association

This association consists primarily of well drained moderately deep to very deep soils over quartz Muscovite schist and phyllites. It occurs in side slopes and ridgetops in rolling to steep landforms. This association comprises 2% of the county and has elevations ranging from 400' to 900' above sea level. The major mapping units of this association are Cardiff(52) and Glenelg(55) soils. Mapping units of lesser extent include Middleburg(17) soils. The major soils have poor to good potential for agriculture and woodland management. They have good potential for general development on central sewer and for on-site sewage disposal systems. The major problems in this association are steep slopes, depth to rock and very low inherent fertility.

16. Stumptown-Rock Outcrop Association

This association consists primarily of well drained, moderately deep soils formed in residuum and slope creep of interbedded quartz and quartz Muscovite schist. It occurs on ridgetops, side slopes and benches of the northern Blue Ridge, Short Hill, and Bull Run Mountains. This association comprises 4% of the county and has elevations ranging from 300' to 1300' above sea level. The major mapping units of this association are Airmont(27, 59), Weverton(89) and Stumptown(50-51) soils. The major soils have poor potential for most agricultural uses and have fair potential for woodland management. They have fair to very poor potential for general development on central sewer and have poor potential for on-site sewage disposal

systems. Major problems in the association are steep slopes, rough terrain, numerous stones and rock outcrops and depth to rock.

17. Airmont-Scattersville-Rohrersville Association

This association consists of well to moderately well drained to somewhat poorly drained, very deep, gravelly soils formed in old mountain colluvium. It occurs on rolling convex landforms that are well dissected. This association comprises 2% of the County and has elevations ranging from 240' to 500' above sea level. The major mapping units in this association are Airmont(27,59), Scattersville(82), and Rohrersville(12) soils. Mapping units of lesser extent include Weverton(89), Stumptown(50-51), Catoctin(40) and Cardiff(52) soils. The major soils of this mapping unit have poor potential for agricultural use and good potential woodland management, and good potential for orchards. They have poor potential for general development on central sewer and on-site sewage disposal systems. Slow substratum permeability, high water tables, and surface stones and boulders are major problems in this association.

18. Catoctin-Myersville-Fauquier Association

This association consists primarily of well to moderately well drained, moderately deep to deep soils over metabasalt. It occurs on upland ridges and side slopes with rolling to hilly landforms with high relief. This association comprises 9% of the county and has elevations ranging from 450' to 850' above sea level. The major mapping units of this association are Myersville-Catoctin(43) Complex, Catoctin(40) and Fauquier(45) soils. Mapping units of lesser extent include Rohersville(12), Fauquier(45), and Middleburg(17) soils. The major mapping units have fair to good potential for agricultural crops and good potential for orchards, woodland management, and grassland agriculture. They have fair potential for general development on central sewer, and fair to poor potential for on-site sewage disposal systems. The major problems in this association are depth to rock, steep slopes, and slowly permeable subsoils.

19. Purcellville-Tankerville-Middleburg Association

This association consists primarily of well to moderately well drained, deep to very deep soils over residuum of granite gneiss that has been intruded with many large to small metadiabase dikes. It occurs on broad upland ridges in undulating landscapes with low relief. This association comprises 21% of the County and has elevations ranging from 450' to 550' above sea level. The major mapping units of this association are Purcellville(23), Middleburg(17) and Purcellville-Tankerville(20) Complex. Mapping units of lesser extent include Swampoodle(22, 38), Philomont-Tankerville(30-31)complex, Mongle(10) and Eubanks(28) soils. The major soils are the best agricultural soils in the county and have good potential for most agricultural uses. These soils have good potential for general development on central sewer and fair to good potential for on-site sewage disposal systems. Depth to rock and

landscape position are the problems in this association.

20. Swampoodle-Purcellville Association

This association consists of moderately well to poorly drained, deep or very deep soils in residuum and fluvium from crystalline rock of the Blue Ridge uplands. It occurs on nearly level to undulating landforms with low relief. This association comprises 5% of the County and has elevations ranging from 250' to 500' above sea level. The major mapping unit of this association is the Purcellville-Swampoodle(22) Complex and Swampoodle(38) soils. Mapping units of lesser extent are Middleburg(17) soils and Mongle(10) soils. The major soils of this association have fair potential for agricultural use, including woodland management. They have good to very poor potential for general development on central sewer and for on-site sewage disposal systems. Major problems in this association are seasonal water tables and high shrink-swell clay subsoils.

21. Tankerville-Philomont Association

This association consists primarily of well drained, moderately deep to very deep soils developed from granite gneiss with narrow metadiabase dikes. It occurs on gently sloping and rolling landforms. This association comprises 3% of the County and has elevations from 450' to 550' above sea level. The major mapping units of this association are Philomont-Tankerville(31) Complex and Middleburg(17) soils. Mapping units of minor extent include Eubanks(28), and Purcellville-Tankerville(20) complex soils. The major soils have fair to good potential for agriculture and woodland management. They have good potential for grassland agriculture. They have good potential for general development on central water and sewer and fair to good potential for on-site sewage disposal systems. Rock outcrop and depth to rock are major problems in this association.

22. Eubanks Association

This association consists of well-drained, deep to very deep soils formed in residuum of undifferentiated metadiabase, granite gneiss, and charnockites of the Blue Ridge uplands. It occurs on undulating and rolling landscapes with moderate relief. This association comprises 6% of the County and has elevations ranging from 600' to 800', above sea level. The major mapping units of this association are Eubanks(28-29), Philomont Tankerville(30) and Middleburg(17) soils. Mapping units of lesser extent include Purcellville-Tankerville(20) Complex, Swampoodle(38) and Mongle(10) soils. The major soils of this association have good potential for agriculture, woodland management, orchards, and most urban uses. Major problems are slow subsoil permeability in some areas and surface stones in some areas.

23. Water

Any body of water such as streams, rivers, lakes and ponds.

24. Miscellaneous Areas

These include quarries, man made areas, etc.

TYPES OF INFORMATION AVAILABLE

The following mapped information may be obtained by contacting Loudoun County's Soil Scientist in the Department of Building and Development, 1 Harrison Street, SE, 3rd Floor, Leesburg VA (703) 777-0397 or the Information Specialists at the Department of Mapping and Geographic Information, Loudoun County Government Center, 1 Harrison Street, SE, 2nd Floor, Leesburg, VA (703) 771-5778.

MAPS

1. Soil maps at a scale of 1" - 200' (Detailed Scale) these maps are corrected and redrafted. Soil Survey information available as overlays to the County's planimetric base map.

2. Soil maps at a scale of 1"- 1000' (Block Scale).

3. Type 1 Preliminary Soils Reports which include an on-site investigation, are available upon request from the County Soil Scientist in the Department of Building and Development. These reports can help the user to understand the potential of a specific site for any intended use.

NARRATIVES AND MANUSCRIPTS

In addition to mapped information, the following are a few sources of information about the soils and geology of Loudoun County:

1. Soil Survey of Loudoun County, Virginia, Series 1951, No. 8, U.S. Department of Agriculture, September, 1960. Out of print; copies for cross-reference are available at the Library, Natural Resource Conservation Service and the Loudoun Cooperative Extension Office.

2. Interpretive Guide to the Use of Soils Maps, Department of Building and Development, Loudoun County, Virginia, 2000.

3. Facilities Standards Manual, Loudoun County, Virginia, 1993.
   The FSM contains a discussion of soils and geotechnical matters, with types of investigations needed to review and evaluate soil problems.

4. Detailed soil profile descriptions from pits and laboratory analyses conducted on samples are available from the County Soil Scientist. This information is highly technical and is of limited use to the lay person.

5. Geologic Map of Loudoun County Virginia, USGS United States Geological Survey open file report 92-716 by W. C. Burton, A. J. Froelich, J. S. Schindler, and C. S. Southworth, 1992.

6. Geologic Map of Virginia and Expanded Explanation, Virginia Division of Mineral Resources.

7. Interpretive Guide to Geology and Groundwater in Loudoun County Virginia by the Department of Environmental Resources of Loudoun County 1993. No longer available.

MAP SYMBOLS

SELECTED MAP SYMBOLS USED IN UPDATED COUNTY MAPS

(1) **DRAINAGE**

STREAMS

Large Streams or River 

Perennial (Drainageway) 

Intermittent (Drainageway) 

LAKE, POND, RESERVOIR

Lake 

Pond 

OTHER SYMBOLS

Springs 

Marsh 

Wet Spot 

(2) **RELIEF**

Escarpments VVVVV

Sink Hole or Depression 

Gullies 

(3) WORKS AND STRUCTURES

ROADS AND TRAILS

Good motor

Poor motor

Trail

Marker, US 

Cemetery 

(4) SOIL SURVEY DATA

Soil Type Outline & Symbol

Gravel 

Stones 

Rock Outcrops 

Sample Site (Type location) 

Made Land 

MAPPING UNIT POTENTIAL

Soil properties and landscape features unique to a particular mapping unit can be used to describe a mapping unit's potential for certain generalized uses. The mapping unit potential ratings, which are used, are intended to indicate general information on soil and site properties for a single mapping unit or group of mapping units.

Mapping unit potential ratings and class criteria have been developed for the following three generalized uses:

- General Development on Central Water and Sewer
- On-site Sewage Disposal
- Agricultural Use

These three mapping unit potential ratings allow the comparison of the relative compatibility among a group of soil and site properties and a group of similar uses.

This document contains discussion of use potentials for the three groups named above, including descriptions of potential classes, class criteria, and problems associated with each class. Additionally the criteria for hydrologic group are defined for use in storm water runoff calculations and map units that are dominately hydric soils are identified.

This information is provided for use in conceptual planning and review, and as an organizational guide for site-specific investigations. The chief objective of mapping unit potential ratings for soils is to maximize the effective use of soil maps. The chief objective of interpretive materials is to spotlight potential soil problems for a variety of uses which may be proposed.

MAPPING UNIT POTENTIAL FOR DEVELOPMENT ON CENTRAL WATER AND SEWER

In this section, the soil mapping unit use potentials for general development (on central water and sewer) are discussed. These potentials apply generally to the group of soils occurring within any given mapping unit. Major engineering operations in and on soils in land-development operations were taken into consideration (these include, but are not limited to, roads, foundations, basements, building slabs, shallow excavations, use of soil as controlled fill material, and erosion/sediment control).

1. <u>Soil/Site Criteria Used in Rating Mapping Unit Potential</u>

   A. Compaction rates at various moisture contents are determined generally by the amounts of sand, silt, and clay present, and how well this material is graded (particle size distribution).
   B. Stability at various moisture contents is also determined by particle size distribution, kind of clay, amount of mica, kind of mica, etc. Such factors also determine the ability

of the soil material to resist sloughing at various slope gradients in the fill.

C. Plasticity and potential volume change (shrink-swell) of materials

D. Bearing capacity of compacted and in-situ material

E. Texture, particularly silt content

F. If used for dam construction, resistance to piping by compacted material; sealing qualities of parent material if in place

G. Nature of the various layers in the soil profile, whether or not they contain fragipans or clay pans, etc.

H. Kind of clay in subsoil and parent material; ability of these layers to withstand erosion

I. Landscape position, whether area receives seepage or is subject to ponding

J. Presence of seasonal water table or restricted drainage

K. Presence and characteristics of bedrock or stones in soil

L. Presence of recent alluvium

M. Presence in the limestone outcrop belt

N. Presence of soil materials subject to slippage (mountain colluvium)

O. Natural slope

P. Soil variability

2. Classes

Mapping units in the **Soil Survey of Loudoun County** were grouped into one of four classes, which reflected their use potential (good, fair, poor, and very poor). These four classes are defined elsewhere in this guide, but may be briefly described as follows:

A. CLASS I - Good potential;

few major problems

B. CLASS II - Fair potential;

problems can generally be corrected satisfactorily at low cost

C. CLASS III - Poor potential;

major problems, many difficult to correct, and results may not always be satisfactory, regardless of other input

D. CLASS IV - Very poor potential;

severe problems, some not correctable, and others requiring extensive and costly engineering solutions which may be unsatisfactory

3. Factors

With the exception of Class I (good potential), all other classes have been subdivided into subclasses, with factor subscripts labeling the dominant problem area (not the sole problem area). These soil/site considerations were placed into six major factors, which are:

1. Slope ..... S
2. Boulder Content and/or Depth to Rock ..... R
3. Wetness ..... W
4. Flood Plain ..... F
5. Plastic (shrink-swell clays) ..... P
6. Geomorphic stability (limestone/karst or debris flow area) ..... G

SUMMARY OF MAP UNIT CRITERIA

KEY TO CLASSIFICATION OF LOUDOUN COUNTY MAPPING UNITS FOR SOIL POTENTIAL ON CENTRAL WATER AND SEWER

SUBCLASS	*IV VERY POOR*	*III POOR*	*II FAIR*	*I GOOD*
SHRINK-SWELL POTENTIAL (P)	high to very high PV	moderate to high PVC high activity silt fraction	low to moderate PVC a low activity silt fraction	low PVC
DEPTH TO SEASONAL WATER TABLE (WETNESS) (W)	<18" to prolonged perched water table		water 30-60" (short duration, <3 weeks)	<60"
DEPTH TO NON-RIPPABLE ROCK (R)	rocky land; >25% of land surface covered by stones and rock outcrop <12" to non-rippable rock	12-30" to non-rippable rock	30-60" to non-rippable	>60"
SLOPE (S)	>25% slopes	15-25% slopes	8-15% slopes	<8% slopes
GEOMORPHIC STABILITY (G)	mapping units over limestone conglomerate certain mountain colluvial deposits on >15% slopes			
FLOOD PLAIN (F)	developed from recent alluvium subject to periodic flooding			

5. Subclasses Defined

SUBCLASS/CLASS I - GOOD POTENTIAL

A. General Description of the Subclass

These soils are found on convex ridgetops and side slopes in undulating and rolling landscapes with slopes ranging from 2-15%. They occur over red shales, sandstones, and conglomerates in eastern Loudoun, and over greenstone, biotite schist, quartz-biotite, and granitic rocks in western Loudoun. Class/Subclass I soils have good surface drainage and are moderately well to well drained internally for urban use. Shrink-swell potential is low to moderate; frost heave potential is moderate to low; depth to hard rock averages greater than five feet. These mapping units account for 33.5% of Loudoun County's land area.

B. Problems Associated with the Subclass

Mapping units in this class have soil and site properties generally considered good for general development on central water and sewer. Engineering problems common to many Class I soils are high silt content and dense-in-place but rippable weathered rock materials. While some soils are moderately slow to slowly permeable, perched water which may occur in the soil is of short duration (less than three weeks).

C. Potential Remedial Actions

Soil-site characteristics (landscape, slope, drainage, plasticity, depth) are favorable, allowing highly effective low-cost engineering solutions to soil and water problems. The rock outcrops occurring in some mapping units are generally few in number and often readily moved by conventional earthmoving equipment. Frost heave problems can usually be averted by using conventionally required footing depths.

D. Criteria of the Subclass

Mapping units which predominantly meet most or all of the following criteria:

(1) low to moderate PVC (shrink-swell)
(2) more than 60" depth to seasonal water table
(3) more than 60" depth to non-rippable rock
(4) less than 15% slope

Subclasses Defined (continued)

SUBCLASS II WP - FAIR POTENTIAL, WETNESS AND SOIL STABILITY

A. General Description of the Subclass

These mapping units occur on nearly level ridgetops and sloping colluvial positions. Surface drainage is fair to good and permeability is moderate to slow. The majority of Subclass II WP mapping units have high silt content soils, although these do not have high shrink-swell potential. Depth to hard rock is generally greater than five feet. Subclass II WP mapping units occur throughout the County and account for 8.5% of Loudoun County's land area.

B. Problems Associated with the Subclass

Mapping units in this subclass have a combination of wetness and soil stability problems which somewhat restrict their development potential. Overall, shrink-swell (or plasticity) of these soils is low to moderate, and is generally not a problem. Frost heave potential is moderate to high. The major problem with respect to utilization of the soils in these mapping units is high silt content, which gives rise to low bearing capacity when wet and high frost heave potential.

C. Potential Remedial Actions

Soil problems associated with this subclass can be adequately corrected by appropriate engineering analysis and design. These mapping units can generally be effectively utilized by providing surface grading and foundation drainage. In the case of colluvial soils included in this subclass, controlled fill is suggested to elevate structures out of low-lying waterflow zones. Most soils within mapping units in Subclass II WP have adequate bearing capacity, either on rock or low silt content subsoils, at depths ranging from 20-40".

D. Criteria of the Subclass

Mapping units which predominantly meet most or all of the following criteria:

(1) low to moderate shrink-swell (PVC)
(2) low activity silt fractions
(3) short-duration (under three weeks) perched water tables at 30-60"

5. Subclasses Defined (continued)

SUBCLASS IV R - VERY POOR POTENTIAL ROCK CONTENT & DEPTH TO ROCK

A. General Description of the Subclass

Mapping units in Subclass IV R are generally described as miscellaneous land types that have stones and outcrops that occupy 15-50% or more of the soil surface. Many areas have only float rock on the land surface, but some mapping units have bedrock at or above the land surface. Subclass IV R units occur primarily in the Catoctin, Short Hill, and Blue Ridge Mountains, and over diabase or limestone conglomerate rock material in eastern Loudoun. They account for 9.5% of Loudoun County's land area.

B. Problems Associated with the Subclass

Subclass IV R mapping units provide numerous development problems for almost any kind of construction. Considerable blasting may be required for both foundations and roads, and in many areas, particularly in eastern Loudoun, the soil between rock outcrops has a high shrink-swell type clay subsoil similar to that described in Subclass IV P. Removal of float rock more than 10" in diameter from soil material is difficult and costly, particularly in more plastic soils. Stones and boulders make compaction and fine grading difficult unless removed from fill materials under roads and houses. If left in backfill material, they can crush sewer and water pipes and break basement and foundation walls

C. Potential Remedial Actions

Float rock, stone, and boulders should be removed from controlled fill materials. Stepped footings or steel-reinforced footings may be a partial solution to differential bearing capacity. Areas of extensive bedrock outcrop or very large boulders should be left in a natural state. Where soils between stones and rock outcrop have wetness problems or high shrink-swell clays, see the remedial action section under Subclasses IV W and IV P. Soil materials containing large stones should not be used as backfill over pipes or against foundation walls. Where development is proposed on these mapping units, a geotechnical study should be used to address the potential problems and make design recommendations.

D. Criteria of the Subclass

(1) more than 15% of land surface is rock outcrop or large boulders
(2) the probability of special-method rock removal from a site should any construction take place is very high

MAPPING UNIT POTENTIAL FOR ON-SITE SEWAGE DISPOSAL

In this section, soil mapping unit use potential for individual septic tank and drainfield sewage disposal sites is provided. The potentials apply generally to the group of soils occurring within any given mapping unit. Major soil/site factors affecting use for drainfields were considered. These ratings may apply to selected alternative on-site, in-soil sewage disposal (such as low pressure or spray irrigation systems). However, since these systems are design and site specific, general ratings often do not apply.

1. Factors Considered

   A. depth to water table or natural drainage
   B. whether area receives seepage and runoff water (colluvial areas)
   C. whether area is subject to flooding (alluvial areas)
   D. texture and structure
   E. amount and kind of clay
   F. thickness of the surface soil and thickness of subsoil or depth to friable, weathered parent material
   G. nature of parent material
   H. general depth to hard rock or restricting layer
   I. past percolation tests of the soil and performance of septic tank drainage fields on this soil
   J. steepness of slope (installation problem)

2. Classes Defined

A. CLASS I - Good Potential

These mapping units have a combination of soil and landscape properties that are most suitable for the broadly defined use. The potential for finding suitable sites within these mapping units is good.

B. CLASS II - Fair Potential

These mapping units have some favorable and some unfavorable soil and landscape properties, or questionable soil properties. Variability of conditions affecting use as drainfield sites is high and predictability is low. Often these mapping units have soils which require percolation tests as one consideration to permit action.

C. CLASS III - Poor Potential

Those mapping units have questionable and unfavorable soil and landscape features and/or unfavorable soil properties. Predictability within mapping units is fairly accurate, although a site may be found on mapping unit inclusions (soils outside of the norm described for the

unit). The majority of these mapping units are moderately deep soils over siltstones or crystalline rock, or are moderately well to somewhat poorly drained soils on nearly-level ridgetops and mountain colluvial positions.

D. CLASS IV - Very Poor Potential

These mapping units have highly accurate predictability relative to landscape and drainage features and properties. They have soil and/or landscape features that are generally considered unsuited for satisfactory drainfield use. These mapping units include somewhat poorly to poorly drained colluvial soils (in swales and depressions), flood plains, soils with high shrink-swell (expanding clay) subsoils, soils with prolonged high seasonal water tables and soils on greater than 25% slopes or very shallow to rock.

UNIT POTENTIAL FOR AGRICULTURE

In this section, soil mapping unit potential for agricultural use is provided. Potential ratings are made primarily by soil characteristics; some ratings are influenced by observations of different crops on various soils and by actual yield data. The ratings applied indicate the most conservative use, although certainly not the sole use. Local conditions may strongly impact the use potential of an individual mapping delineation.

1. Factors Considered

   A. surface and subsoil texture, and general depth of each

   B. natural drainage

   C. response of soil to liming, fertilization, and other management factors

   D. physical condition as influenced by texture, structure, kind of clay, etc.

   E. kind of parent material as it affects the chemical and physical nature of the soil

   F. depth to restricting layers (clay pan, fragipan, hard rock, Cr horizon, etc.)

   G. water-holding capacity--plus ability of the soil to release this water

   H. base exchange capacity--ability of the soil to hold and yet release nutrients to plants

   I. characteristics of plant or tree root zone; shallow or deep-rooted crops; also type of root--tap or fibrous; tolerance to wet or droughty soils; food habits (e.g., alfalfa is a heavy user of calcium or lime)

   J. presence of large quantities of toxic elements (e.g., aluminum or manganese)

   K. air drainage

   L. slope aspect

   M. elevation

2. Classes Defined

   A. Class I - Prime Farmland

      These mapping units have a combination of soil and landscape properties that make them highly suited for use as cropland. They have characteristics which require only

basic conservation practices and short rotations. The soils in these mapping units generally have high inherent fertility, good water-holding capacity, deep or thick effective rooting zones, and are not subject to periodic flooding. The estimated potential corn yield average is greater than 125 bushels per acre; although insufficient data are available at this time to project soybean yields, it is estimated that these should fall in excess of 45 bushels per acre. This class also has good potential for use in grassland agriculture and forestry, and as wildlife habitat.

B. Class II - Secondary Cropland

Mapping units in this class have soil properties or a combination of soil and site properties that limit their yield potential to marginal levels when used as cropland. Soils in these map units are best used in medium to long rotations including grassland agriculture. Some map units may require intensive conservation practices (such as tile drainage, diversions, surface water management, or strip cropping). Major features and properties include seasonal perched water tables; restrictive layers limiting rooting zones; stones and/or cobbles which limit water-holding capacity and affect tillage, seed bed preparation, and harvesting; and abrupt textural change or bulk density change between the surface and the subsoil, which affects root penetration. The estimated long-term corn yield potential of these map units is 80-125 bushels per acre. Soybean yields are estimated between 20-40 bushels per acre. This class also has good potential for use in grassland agriculture and forestry, and as wildlife habitat.

C. Class III - Unique Orchard Land

Map units in this class have a combination of soil properties and landscape features that make them uniquely suited for use as orchard lands or in various fruit production. These features include aspect, air drainage or relief, natural fertility, and elevation to some degree. Many of the mapping units in this class also fit the criteria for Class II, and a few fit the Class I criteria. This class also has good potential for use in grassland agriculture and forestry, and as wildlife habitat.

D. Class IV - Grassland Agriculture

This class includes map units which are best suited to use as hay and pasture in grassland agriculture. Included in this class are map units with shallow soils on marginally steep slopes and soils with drainage conditions not conducive to cropping. This class also has good potential for use in forestry or as wildlife habitat.

E. Class V - Woodland Use and Wildlife Habitat

This class includes map units on very steep slopes, map units with very shallow soils on marginally steep slopes, and map units with substantial rock outcrop. The lands in these map units are best left undisturbed in their natural wooded environment for use in timber production and wildlife habitat due to difficulty of maintenance of grasslands (as in rock outcrop land or due to erosion and stability problems on steeper slopes with shallow soils). Many of these map units, particularly those on very steep slopes, are considered to be critical environmental areas and stream buffers. Other areas include mountainside slopes, particularly where slopes are very steep. Although some map delineations within this class have been cleared and planted to pasture grasses, their best use is in woodland and as wildlife habitat.

HYDROLOGIC SOIL GROUPS

This section provides a description of hydrologic soil group classes used in determining soil-cover complexes in Chapter 2 of Technical Release 55, "Urban Hydrology for Small Watersheds", prepared by the USDA Soil Conservation Service.

The hydrologic parameter (A, B, C, or D) is an indicator of the minimum rate of infiltration obtained for a bare soil after prolonged wetting. By using the hydrologic classification and the associated land use, runoff curve numbers can be selected. Runoff curve numbers are used for determining peak quantity and total volume of surface water runoff for given conditions.

Classes Defined

1. A - Low Runoff Potential

   Soils having a high infiltration rate, even when thoroughly wetted, and consisting chiefly of deep, well to excessively drained sands or gravels.

2. B - Soils with Moderate Infiltration Rate

   Soils having a moderate infiltration rate when thoroughly wetted, and consisting chiefly of moderately well to well drained soils with moderately fine to moderately coarse texture.

3. C - Soils with Slow Infiltration Rate

   Soils having a slow infiltration rate when thoroughly wetted, and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture.

4. D - High Runoff Potential

   Soils having a very slow infiltration rate when thoroughly wetted, and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly-impervious material.

GLOSSARY OF TERMS USED IN THIS GUIDE

ALLUVIAL SOIL	A soil developing from recently deposited alluvium and which exhibits essentially no horizon development or modification of the recently deposited material.
ALLUVIUM	Sand, clay, etc., deposited by flowing water, especially along a riverbed (see OVERLAYS).
BOULDERS	(See COARSE FRAGMENTS)
CAPPINGS	(See OVERLAYS)
CHANNERS	(See COARSE FRAGMENTS)
CLAY	1) the smallest soil separate consisting of particles less than 0.002 mm in equivalent diameter, very sticky when wet, and 2) See TEXTURE (SOIL).
CLAY PAN	A dense, compacted layer in the subsoil having a much higher clay content than the overlying material, from which it is separated by a sharply defined boundary; formed by downward movement of clay or by synthesis of clay in place during soil formation. Clay pans are usually hard when dry, and very plastic and sticky when wet. Clays usually have high shrink-swell potential. Clay pans usually impede the downward movement of water and air, and the growth of plant roots.
COARSE FRAGMENTS	Rock or mineral particles greater than 2.0 mm (.079") in diameter, such as stones, gravels, or cobble.

Rounded or Angular Fragments

Gravel (Collection of pebbles)	2mm - 3" diameter
Cobbles	3 - 10" diameter
Stones	10" - 2' diameter
Boulders	2 - 10' diameter

COARSE FRAGMENTS

Flat on one side or one dimension much less than the other

Channers	04"(2mm) - 6" long
Flagstone	6 - 15" long
Stones	15" - 2' long
Boulders	more than 2'

COLLUVIAL SOILS

Soils formed, wholly or in part, from colluvium, and generally found in swales and heads of drainageways or at the base of a steep slope. Most colluvial soils have a lateral seepage characteristic due to landscape position.

COLLUVIUM

A deposit of rock fragments and soil material accumulated at the base of steep slopes as a result of gravitational action (See OVERLAYS).

CR HORIZON

Mineral horizons or layers of weathered bedrock and saprolite such as granite, or partly consolidated soft bedrock such as sandstone/siltstone/shale, with bulk density or consolidation such that roots cannot easily enter. The material can be dug with difficulty with a spade and chunks of gravel size will disperse more or less completely, in overnight shaking with water or sodium hexametaphosphate solution. This horizon layer is equivalent to the material underlying the paralithic content of Soil **Taxonomy** (See PARALITHIC CONTACT).

DEPTH (SOIL)

Refers to depth below surface to a restrictive layer. This restrictive layer may be a Cr horizon, fragipan, rock, or other material that impedes the downward movement of water and may be non-penetrable by roots. Roots further than 4" apart, center to center, are not considered substantial penetration.

VERY SHALLOW	0 - 10"
SHALLOW	10 - 20"
MODERATELY DEEP	20 - 40"
DEEP	40 - 60"
VERY DEEP	>60"

DRAINAGE (SOIL)

Generally, an interpreted characteristic of a soil which is a function of slope runoff and permeability. Soil drainage classes relate to the net effect of natural moisture regimes on the soil (See WATER TABLE). Classes used:

WELL DRAINED	No indication of a seasonal water table or restricted drainage to 60"+ or into Cr horizon 8"
MODERATELY WELL	Depth to a seasonal water table or
MODERATELY WELL	Depth to a seasonal water table
SOMEWHAT POORLY DRAINED	Depth to a water table (restricted drainage) is 8-18" below surface
POORLY DRAINED	Depth to a water table (restricted

EROSION (SOIL)

The wearing away of the land surface by running water, wind, ice, or other geologic agents, including gravitational creep processes; classes recognized are:

NORMAL	Less than 25% of the surface soil has been removed by plowing in the surface. Includes some depositional soils (colluvial and alluvial soils); has no numeric notation in legend
ERODED	25-75% of the surface soil removed and plow layer consists of a mixture of surface and subsoil. May contain gullies which are shown by a symbol designation.(see MAP SYMBOLS)
SEVERELY ERODED	More than 75% of the surface soil has been removed. The plow layer consists of mostly subsoil. Usually many gullies occur. Shown by a "3" (e.g.77C3 Nestoria Channery silt loam, severely eroded)

FLUVIUM	Alluvium deposited in a fan or delta due to decrease in hydraulic gradient or ponding effects, often locally reworked (See OVERLAY).
FRAGIPAN	A natural subsurface horizon with high bulk density relative to the solum above, seemingly cemented when dry, but when moist showing a moderate to weak brittleness.
GRAVEL	(See COARSE FRAGMENTS)
LITHIC CONTACT	The zone in weathered rock below which rock materials have a hardness greater than 3 on Mohs Scale and are considered unweathered bedrock.
LITHOLOGIC DISCONTINUITY	A change in rock material in soils; in a soil profile, generally indicates that the upper portion of the profile has not developed in place.
LIMESTONE OUTCROP BELT	Those areas underlain by carbonate bedrock, including, but not limited to, Triassic-Jurassic conglomerate and Cambrian limestone dolomites, and which have landscape with carbonate bedrock outcrop, sinks, and sinkholes; solution channels in bedrock; and which often exhibit aspects of Karst or Karren topography.
MAP DELINEATION	A single area on a soils map depicted by the soil boundary line.
MAP UNIT	The collective of all soil map delineations of the same type (number) for a survey area (County). Map units may contain one or more soils which may vary considerably in their characteristics and use potential.
OVERLAY (CAPPING)	General term referring to soils formed in or from materials deposited during past geologic activity; may be alluvial, colluvial, or fluvial in nature.
PARALITHIC	Boundary of the soil-rock weathering zone below which contact with the mineral material is generally consolidated, but has a hardness of less than 3

(Mohs Scale) and gravel-size chunks that can be broken out will partially disperse within 15 hours shaking in water or sodium hexametaphosphate solution; often referred to as weathered bedrock.

RELIEF — The difference in elevation between the high and low points in a land surface (landform).

RESIDUUM — Unconsolidated and partially weathered mineral materials accumulated by disintegration of consolidated rock in place.

PERMEABILITY (SOIL) — Permeability is the rate of flow of water through a unit cross-section of saturated soil in a unit of time, under specified temperature and hydraulic conditions. In rating soils as to their suitability for on-site sewage disposal systems, permeability tests (PERC TEST) are one of the basic criteria considered. Permeability classes are determined by data from Uhland core hydraulic conductivity. Soil scientist used the following sets of classes of soil permeability:

	Rates per Hour	
SLOW	Inches	Centimeters
1. VERY SLOW	<0.06	<.15
2. SLOW	0.06-0.2	.15-.50
MODERATE		
3. MODERATELY SLOW	0.2-0.6	.50-1.50
4. MODERATE	0.6-2.0 1	.50-5
5. MODERATELY RAPID	2-6	5-15
RAPID		
6. RAPID	5-20	15-50
7. VERY RAPID	>20	>50

*(These rates through saturated, undisturbed cores in a laboratory and are not the same as percolation tests done for the Health Department and recorded as minutes per inch)

SAND — 1) a soil separate consisting of particles 2mm-.05mm in equivalent diameter, individual grains can be seen and felt readily. 2) See TEXTURE (SOIL)

SILT — 1) a soil separate consisting of particles .05mm-.002 in

Slope classes in the Blue Ridge (Western Loudoun County) are:

A	0 -	2%	NEARLY LEVEL
B	2 -	7%	GENTLY SLOPING
C	7 -	15%	SLOPING
D	15 -	25%	MODERATELY STEEP
E.	25% +		STEEP

Slope classes in the Piedmont (Eastern Loudoun County) are:

A	0 -	3%	NEARLY LEVEL
B	3 -	8%	GENTLY SLOPING
C	8 -	15%	SLOPING
D	15 -	25%	MODERATELY STEEP
E	25%+		STEEP

SURFACE — Topsoil, layer that is darkened by organic matter (generally less than 10" thick in Loudoun County).

SUBSOIL — Subsurface layer in which maximum clay occurs; in most Loudoun County soils less than 40" thick.

SUBSTRATUM — The zone of weathered rock material (saprolite) or other weathered parent material below the surface and subsoil above hard rock.

TEXTURE (SOIL) — The relative percentage of the various soil separates (sand, silt, and clay) of soil materials less than 2mm in equivalent diameter, modified by coarse fragments, where present. The following is a partial list of USDA soil textural classes with the class limits:

SANDY LOAM	Soil material that contains either clay or less and the percentage of silt plus twice the percentage of clay 52% sand
LOAM	Soil material that contains 7-27% clay, 28-50% silt and <52% sand
SILT LOAM	Soil material that contains 50% or more silt and 12-27% clay or 50-80% silt & <12% clay
SANDY CLAY LOAM	Soil material that contains 20-50% clay, <28% silt, and 45% or more sand
CLAY LOAM	Soil material that contains 40% clay and 20-45% sand
SILTY CLAY	Soil material that contains 40% or more clay and 40% or more slit
CLAY	Soil material that contains 40% or more clay, <45% sand and <40% silt

SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIALS

The following section/chart contains soil mapping unit characteristics and use potentials for the following three categories:

1. DEVELOPMENT ON CENTRAL WATER/SEWER

2. CONVENTIONAL SEPTIC TANK DRAINFIELDS

3. AGRICULTURAL USE

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
2A Codorus silt loam, (0-3%) occasional flooding (C)	Very deep, moderately well drained brown and mottled brown and gray silty soils with seasonal water tables on level terrace positions in the flood plain; developed in alluvium of mica-bearing soils derived from crystalline rock	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	II - secondary cropland
		depth to hard bedrock is generally greater than 6'		3W
3A Comus silt loam, (0-3%) occasional flooding (B)	Very deep, well drained brown sandy soils on convex terrace positions in the flood plain; developed in alluvium of mica-bearing soils derived from crystalline rock	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2W
4A Hatboro loam, (0-3%) frequent flooding, Hydric soil (D)	Very deep, poorly drained dominantly gray silty or clayey soils with seasonal water tables on concave terrace positions in the flood plain; developed in alluvium of mica-bearing soils derived from crystalline rock	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6'		4W

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
5A Rowland silt loam, (0-3%) occasional flooding (C)	Very deep, moderately well to somewhat poorly drained reddish-brown and mottled reddish-brown and gray silty and clayey soils with seasonal water tables on level terrace positions in flood plains; soils developed in alluvium, derived from Triassic shale and siltstone	IV F - very poor potential; subject to flooding	IV – very poor; flooding potential	IV – grassland agriculture
		depth to hard bedrock is generally greater than 6'		2W
6A Bowmansville silt loam, (0-3%) occasional flooding, Hydric soil (C)	Very deep, poorly drained dominantly gray silty and clayey soils with seasonal water tables on concave terrace positions in the flood plain; soils developed in alluvium derived from Triassic shale and siltstone	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	IV – grassland agriculture
		depth to hard bedrock is generally greater than 6'		4W
7A Huntington silt loam, (0-3%) occasional flooding (A)	Very deep, well drained brown silty soils on convex terrace positions in the flood plain; developed in alluvium of mica-bearing soils derived from mixed acid and basic rock	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2W

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
8A Lindside silt loam, (0-3%) occasional flooding (C)	Very deep, moderately well drained brown and mottled brown and gray silty soils with seasonal water tables on level terrace positions in the flood plain; developed in alluvium of mica-bearing soils derived from mixed acid and basic rock	IV F - very poor potential; subject to flooding	IV - very poor; flooding potential	II – secondary cropland
		depth to hard bedrock is generally greater than 6'		2W
10B Mongle loam, (0-7%) brief ponding (D)	Very deep, somewhat poorly drained brown and mottled brown and gray loamy to silty soils with seasonal water tables in concave drainageway positions; developed in alluvium and local colluvium from mixed acid and basic rock	IV W - very poor potential; prolonged high water table	IV - very poor; landscape position and prolonged high water table	IV – grassland agriculture
		depth to hard bedrock is generally greater than 5'		4W
12B Rohrersville cobbly loam, (1-7%) brief ponding (C)	Very deep, somewhat poorly to moderately well drained brown and mottled brown and gray silty soils with seasonal water tables on footslopes and in drainageways at the base of mountains; developed in colluvium from soils derived from mixed acid and basic rock	IV W - very poor potential; seasonal water table	IV - very poor; landscape position and prolonged high water table	IV – grassland agriculture
		depth to hard bedrock is generally greater than 5'		3W

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
13B Morven silt loam, (1-8%) (B)	Very deep, well drained yellowish-red and reddish-brown silty soils with intermittent seasonal water tables in concave positions (swales); developed in recent colluvium of soils derived from calcareous conglomerate	IV G - very poor; solution weathering/ collapse of underlying calcareous materials; pollution by sinkholes & rock outcrops	IV - very poor; landscape position and groundwater pollution	I - prime farmland cropland
		depth to hard bedrock is generally greater than 5'		2E
14B Manassas silt loam, (1-8%) (B)	Very deep, well to moderately well drained brown to reddish-brown silty soils with intermittent seasonal water tables in concave upland positions (swales); developed in recent colluvium of soils derived from Triassic siltstone and shale	II W - fair potential; low bearing capacity & short duration perched water tables	IV - very poor; landscape position and flooding potential	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		2E
17B Middleburg silt loam, (1-7%) (B)	Very deep, well drained yellowish-brown to brown loamy soils with intermittent seasonal water tables in concave upland positions (swales); developed in recent colluvium of soils derived from mixed acid and basic rock	IIIW - poor potential; short duration water tables	IV - very poor; landscape position and short duration water tables	I - prime farmland
		depth to hard bedrock is generally greater than 5'		2E

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
20B Purcellville and Tankerville soils, (2-7%) (B/C)	Complex of very deep, well drained yellowish-red silty Purcellville and moderately deep well drained, yellowish-brown loamy soils on convex upland positions; developed in residuum weathered from mixed granite gneiss and metadiabase rock	II R - fair potential; depth to rock	II - fair potential; depth to rock	II – secondary cropland
		depth to hard bedrock is generally greater than 6' in Purcellville and greater than 30" in Tankerville		2E, 3S
20C Purcellville and Tankerville soils, (7-15%) (B/C)	complex of very deep, well drained yellowish-red silty Purcellville and moderately deep well drained, yellowish-brown loamy soils on convex upland positions; developed in residuum weathered from mixed granite gneiss and metadiabase rock	II R - fair potential; depth to rock	II - fair potential; depth to rock	II – secondary cropland
		depth to hard bedrock is generally greater than 6' in Purcellville and greater than 30" in Tankerville		3E, 4S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
20D Purcellville and Tankerville soils, (15-25%) (C)	complex of very deep, well drained yellowish-red silty Purcellville and moderately deep well drained, yellowish-brown loamy soils on convex upland positions; developed in residuum weathered from mixed granite gneiss and metadiabase rock	II R - fair potential; depth to rock	II - fair potential; depth to rock and slope	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6' in Purcellville and greater than 30" in Tankerville		4E, 4S
20E Purcellville and Tankerville soils, (25-45%) (C)	complex of very deep, well drained yellowish-red silty Purcellville and moderately deep well drained, yellowish-brown loamy Tankerville soils on convex upland positions; developed in residuum weathered from mixed granite gneiss and metadiabase rock	II RS - poor potential; steep slope, depth to rock	IV - very poor or no potential; steep slopes and depth to rock	V - forestry and wildlife
		depth to hard bedrock is generally greater than 6' in Purcellville and greater than 30" in Tankerville		6E, 6S

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
22B Purcellville-Swampoodle Complex, (2-7%) (B/C)	complex of very deep, well drained yellowish-red silty Purcellville and very deep moerately well drained, strong brown and mottled strong brown and gray silty Swampoodle soils in broad, nearly level to concave upland positions; developed in residuum weathered from mixed granite gneiss and metadiabase rock	II WP - fair potential; seasonal water table depth to hard bedrock is generally greater than 5'	III - poor potential; seasonal water table, slow permeability	II – secondary cropland 2E, 4W
23B Purcellville silt loam, (2-7%) (B)	very deep, well drained yellowish-red silty to loamy soil on undulating and gently sloping uplands; developed in residuum weathered from mixed granite gneiss and metadiabase	I - good potential depth to hard bedrock is generally greater than 6'	I - good potential	I - prime farmland 2E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
27C Airmont very flaggy loam (7-15%) (B)	very deep, moderately well drained yellowish-brown loamy soil with intermittent perched water tables and stones on moderately steep concave mountain slopes and benches; developed in local colluvium weathered from coarse grained rocks like sandstone, quartzite and charnokites	IV W - very poor potential; seasonal water table	IV - very poor; landscape position, fragipans and prolonged high water table	V - forestry and wildlife
		depth to hard bedrock is generally greater than 5'		5S
28B Eubanks loam, (2-7%) (B)	very deep, well drained reddish-yellow to red loamy soil on undulating and gently sloping uplands; developed in residuum weathered from mixed gneiss, metadiabase and other metamorphosed granitic rocks	I - good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E
28C Eubanks loam, (7-15%) (C)	very deep, well drained yellowish-red to red loamy soil on undulating and sloping uplands; developed in residuum weathered from mixed gneiss, metadiabase and other metamorphosed granitic rocks	I - good potential	I - good potential	III - prime Orchard
		depth to hard bedrock is generally greater than 6'		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
29B Eubanks loam, stony (2-7%) (B)	very deep, well drained yellowish-red to red loamy soil on undulating and gently sloping uplands; developed in stony residuum weathered from mixed gneiss, metadiabase and other metamorphosed granitic rocks	I - good potential	I - good potential	III - prime orchard
		depth to hard bedrock is generally greater than 6'		3S
29C Eubanks loam, stony (7-15%) (C)	very deep, well drained yellowish-red to red loamy soil on undulating and sloping uplands; developed in residuum weathered from mixed gneiss, metadiabase and other metamorphosed granitic rocks	I - good potential	I - good potential	III - prime orchard
		depth to hard bedrock is generally greater than 6'		4S
29D Eubanks loam, stony (15-25%) (C)	very deep, well drained yellowish-red to red loamy soil on sloping uplands; developed in residuum weathered from mixed gneiss, metadiabase and other metamorphosed granitic rocks	I - good potential	II- fair potential; slope	III - prime orchard
		depth to hard bedrock is generally greater than 6'		5S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses for Selected Uses		
		General Development Central Water and Sewer/Depth to Rock	Conventional Septic Tank Drainfields	Agricultural, Forestry and Horticultural/ USDA Land Use Capability Class
30C Tankerville and Philomont soils, (7-15%) (C/B)	Complex of moderately deep well drained, yellowish-brown loamy Tankerville soils and very deep, well drained yellowish-brown loamy Philomont on convex upland sideslopes; developed in residuum weathered from coarse grained granite gneiss	II R – fair potential; depth to rock	II – fair potential; depth to rock	II – secondary cropland
		Depth to hard bedrock is generally greater than 6' in Philomont and greater than 30" in Tankerville		4S, 3E
30D Tankerville and Philomont soils, (15-25%) (C)	Complex of moderately deep well drained, yellowish-brown loamy Tankerville soils and very deep, well drained yellowish-brown loamy Philomont on convex upland sideslopes; developed in residuum weathered from coarse grained granite gneiss	II R – fair potential; depth to rock	II – fair potential; depth to rock	II – secondary cropland
		Depth to hard bedrock is generally greater than 6' in Philomont and greater than 30" in Tankerville		4S, 4E
31B Philomont and Tankerville soils, (2-7%) (B/C)	Complex of very deep, well drained yellowish-brown loamy Philomont and moderately deep well drained, yellowish-brown Tankerville soils on convex upland positions; developed in residuum weathered from coarse grained granite gneiss	I – good potential	I – good potential	I – prime farmland
		Depth to hard bedrock is generally greater than 6'		2E, 3S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
38B Swampoodle silt loam, (1-7%) brief ponding (C)	Very deep, moderately well drained, strong brown and mottled strong brown and gray silty soils with seasonal water tables in broad, nearly level to concave upland positions; developed in residuum derived from mixed acid and basic rock	IV WP - very poor potential; seasonal high water table and areas of shrink-swell clays	IV - very poor; landscape position and prolonged high water table	IV - grassland agriculture
		depth to hard bedrock is generally greater than 5'		4W
40C Catoctin channery silt loam, (7-15%) (C)	moderately deep, well drained strong brown, shaley/silty soil with few rock outcrops and common flag stones on convex sideslopes; developed from greenstone schist	II R - fair potential; depth to rock	III - poor potential; depth to rock	IV - grassland agriculture
		depth to hard bedrock ranges between 2 and 4'		3E
40D Catoctin channery silt loam, (15-25%) (C)	moderately deep, well drained strong brown, shaley/silty soil with few rock outcrops and common flag stones on moderately steep convex sideslopes; developed from greenstone schist	II R - fair potential; depth to rock	III - poor potential; depth to rock and slope	V - forestry and wildlife
		depth to hard bedrock ranges between 2 and 4'		4E
40E Catoctin channery silt loam, (25-45%) (C)	moderately deep, well drained strong brown, shaley/silty soil with few rock outcrops and common flag stones on steep convex sideslopes; developed from greenstone schist	II RS - fair potential; depth to rock	IV - very poor or no potential; depth to rock and slope	V - forestry and wildlife
		depth to hard bedrock ranges between 2 and 4'		7E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
43B Myersville-Catoctin Complex, (2-7%) (B)	complex of deep, well drained, yellowish-red loamy Myersville and moderately deep, well drained, strong brown, shaley/silty Catoctin soils on gently rolling convex landscapes; developed from greenstone schist	I - good potential	II - fair potential; moderate permeability	I - prime farmland
		depth to hard bedrock is generally greater than 4' in Myersville and 2 to 4' in Catoctin		2E, 3E
43C Myersville-Catoctin Complex, (7-15%) (C)	complex of deep, well drained, yellowish-red loamy Myersville and moderately deep, well drained, strong brown, shaley/silty Catoctin soils on convex rolling sideslopes; developed from greenstone schist	II R - fair potential; depth to rock	II - fair potential; moderate permeability and depth to rock	II - secondary cropland
		depth to hard bedrock is generally greater than 4' in Myersville and 2 to 4' in Catoctin		3E, 4E
45B Fauquier silt loam, (2-7%) (C)	very deep well drained red clayey soils on gently sloping uplands in dissected landforms; developed from greenstone schist	I - good potential	I - fair potential; moderate permeability	I - prime farmland
		depth to hard bedrock is generally greater than 5'		2E
45C Fauquier silt loam, (7-15%) (C)	very deep well drained red clayey soils on gently sloping uplands in dissected landforms; developed from greenstone schist	I - good potential	I - fair potential; moderate permeability	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
50C Stumptown flaggy loam, (7-15%) (C)	moderately deep, well to excessively drained skeletal yellowish-brown loamy soils with many quartzite flagstones and boulders on mountain ridgetops	II RS - fair potential; shallow to rock	III - poor potential; shallow to rock	V - forestry and wildlife
		depth to hard bedrock ranges from 20 to 40"		4S
50D Stumptown flaggy loam, (15-25%) (C)	moderately deep, well to excessively drained skeletal yellowish-brown loamy soils with many quartzite flagstones and boulders on moderately steep mountain sideslopes	II RS - fair potential; shallow to rock and steep slopes	III - poor potential; shallow to rock and steep slopes	V - forestry and wildlife
		depth to hard bedrock ranges from 20 to 40"		6S
51E Stumptown-Rock outcrop complex, (25-45%) (D)	moderately deep, well to excessively drained skeletal yellowish-brown loamy soils with many quartzite outcrops, flagstones and boulders on sloping to steep mountain sideslopes	II RS - fair potential; shallow to rock and steep slopes	IV - very poor or no potential; shallow to rock and steep slopes	V - forestry and wildlife
		depth to hard bedrock ranges from 20 to 40"		7E, 8
52C Cardiff Channery silt loam, (7-15%) (B)	deep, well drained yellowish-brown loamy soils with common quartzite flagstones and boulders on mountain sideslopes and ridgetops	I - good potential;	I - good potential;	IV - grassland agriculture
		depth to hard bedrock ranges from 40 to 60"		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
52D Cardiff Channery silt loam, (15-25%) (C)	deep, well drained yellowish-brown loamy soils with common quartzite flagstones and boulders on mountain sideslopes and ridgetops	II RS- fair potential; depth to rock and steep slopes	II - fair potential; depth to rock and steep slopes	V - forestry and wildlife
		depth to hard bedrock ranges from 40 to 60"		4E
52E Cardiff Channery silt loam, (25-45%) (C)	deep, well drained yellowish-brown loamy soils with common quartzite flagstones and boulders on mountain sideslopes and ridgetops	IV RS- very poor potential; depth to rock and steep slopes	IV - very poor or no potential; depth to rock and steep slopes	V - forestry and wildlife
		depth to hard bedrock ranges from 40 to 60"		6E
55B Glenelg silt loam, (2-7%) (A)	deep, well drained yellowish-red loamy soils with common quartz stones on convex upland and mountain sideslopes and ridgetops	I - good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 4'		2E
55C Glenelg silt loam, (7-15%) (B)	deep, well drained yellowish-red loamy soils with common quartz stones on convex upland and mountain sideslopes and ridgetops	I - good potential;	I - good potential;	II - secondary cropland
		depth to hard bedrock is generally greater than 4'		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
55D Glenelg silt loam, (15-25%) (C)	deep, well drained yellowish-red loamy soils with common quartzite flagstones and boulders on mountain sideslopes and ridgetops	II S- fair potential; slope	II - fair potential; slope	IV - grassland agriculture
		depth to hard bedrock ranges from 40 to 60" or more		4E
59C Airmont loam, very rubbly (7-15%) (D)	very deep, moderately well drained yellowish-brown bouldery loamy soil with intermittent perched water tables and stones on sloping to moderately steep concave mountain slopes (swales); developed in stony and bouldery local colluvium weathered from coarse grained rocks like sandstone, quartzite and charnokites	IV WG - very poor potential; seasonal water table, landscape and stones, slippage potential	IV - very poor; landscape position, stones and prolonged high water table	V - forestry and wildlife
		depth to hard bedrock is generally greater than 5'		7S
60C Sycoline-Catlett complex, (7-15%) (C/D)	complex of moderately deep, moderately well drained yellowish-brown silty (sycoline) and shallow, well drained grayish-brown skeletal (Catlett) soils with perched seasonal water tables on convex side slopes; developed from hornfel and granulites	II R - fair potential; shallow soils over rock	IV - very poor potential; shallow to rock	IV - grassland agriculture
		depth to hard bedrock generally ranges between 20 to 40" in Sycoline and 10 to 30" in Catlett		3E, 6S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
60D Catlett gravelly silt loam, (15-25%) (D)	moderately deep to shallow well drained grayish-brown silty skeletal seasonal perched seasonal water tables on moderately steep slide slopes; developed from hornfel and granulites	III RS - poor potential; shallow to rock and steep slopes	IV - very poor potential; shallow to rock and steep slopes	IV - grassland agriculture
		depth to hard bedrock generally ranges between 10 to 30"		6S
60E Catlett-Rock outcrop complex, (25-45%) (D)	moderately deep to shallow well drained grayish-brown silty skeletal soils with many rock outcrops, stones, gravels and boulders on steep to very steep side slopes; developed from hornfel and granulites	IV S - very poor potential; shallow to rock and steep slopes	IV - very poor or no potential; shallow to rock and steep slopes	V - forestry and wildlife
		depth to hard bedrock generally ranges between 10 to 30"		7S, 8
62B Kelly-Sycoline complex, (3-8%) (D/C)	complex of moderately deep, moderately well to somewhat poorly drained, yellowish-brown silty (Sycoline) soils; and deep, somewhat poorly drained gray and grayish-brown clayey (Kelly) soils with seasonal perched water table on gently sloping to nearly level ridge crests; developed from hornfel and granulites	III WP - poor potential; high shrink-swell clays and moderate duration perched water table	III - poor potential; high water tables	II - secondary cropland
		depth to hard bedrock generally ranges 40 to 60" in Kelly and 20 to 40" in Sycoline		2E, 4W

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
63A Kelly silt loam, (0-3%) (D)	deep somewhat poorly drained gray and grayish-brown claypan soils with seasonal water tables on gently sloping to nearly level uplands with low relief; developed from hornfel and granulites	IV PW - very poor potential; high shrink-swell clays and prolonged perched water table	IV - very poor potential; high water table	IV - grassland agriculture
		depth to hard bedrock generally ranges 40 to 60"		4W
64B Legore loam, (3-8%) (B)	well drained very deep brown to reddish-brown loamy soils with few stones and rock outcrop on gently sloping uplands; developed from diabase or basalt	II R - fair potential; rock outcrops	II - fair potential	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		6S
64C Legore loam, (8-15%) (B)	well drained very deep brown to reddish-brown loamy soils with common stones and few rock outcrop on side slopes; developed from diabase or basalt	II R - fair potential; rock outcrops	II - fair potential	IV - grassland agriculture
		depth to hard bedrock is generally greater than 5'		7S
64D Oakhill gravelly silt loam, very stony (15-25%) (C)	well to excessively drained moderately deep brown to yellowish-red loam skeletal soils with many rock outcrop and stones on moderately steep side slopes; developed from diabase or basalt	III RS - poor potential; rock outcrops and steep slopes	III - poor potential; steep slopes and shallow to rock	IV - grassland agriculture
		depth to hard bedrock generally ranges between 20 to 40"		7S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
65B Montalto silty clay loam, (3-8%) (C)	deep to very deep well drained red clayey soils with common to many stones and boulders on convex gently sloping uplands in rolling landforms; developed from diabase and basalt	I - good potential	I - good potential	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		2E
66A Waxpool silt loam, (0-3%) ponding (D) Hydric soil	very deep somewhat poorly to poorly drained gray and brown clayey soils with seasonal perched water tables on nearly level upland flats; developed from diabase	IV PW - very poor potential; high shrink-swell clays and prolonged perched water table	IV - very poor potential; high water table, shrink-swell clays	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6'		4W
67B Haymarket and Jackland soils, (3-8%) (D)	complex of very deep moderately well drained yellowish-brown to olive brown (Jackland) and well drained strong brown (Haymarket) soils with perched water tables on convex ridgetops and side slopes over diabase and some basalt	IV P - very poor potential; high shrink-swell clays and seasonal perched water tables	IV - very poor potential; high water tables, shrink swell clays	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		5E, 5W

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
67C Haymarket and Jackland soils, (8-15%) (D)	complex of very deep moderately well drained yellowish-brown to olive-brown (Jackland) and well drained strong brown (Haymarket) claypan soils with perched water tables on convex sloping side slopes in dissected landforms; developed from diabase	IV P - very poor potential; high shrink-swell clays and seasonal perched water table	IV - very poor potential; high water table, shrink-swell clays	IV - grassland agriculture
		depth to hard bedrock is generally greater than 5'		5E, 5W
68B Haymarket and Jackland soils, very stony (3-8%) (D)	complex of very deep stony moderately well drained yellowish-brown to olive-brown (Jackland) and strong brown (Haymarket) claypan soils with perched water tables on convex uplands; developed in diabase	IV P -very poor potential; wetness and high shrink-swell clays	IV - very poor potential; wetness and high shrink-swell clays	V - forestry and wildlife
		depth to hard bedrock is generally greater than 5'		5S, 5S
68C Haymarket and Jackland soils, very stony (8-15%) (D)	complex of very deep stony moderately well drained yellowish-brown to olive-brown (Jackland) and strong brown (Haymarket) claypan soils with perched water tables and common rock outcrop on convex sloping side slopes; developed from diabase	IV P - very poor potential; wetness and high shrink-swell clays	IV - very poor potential; high water tables and high shrink-swell clays	V - forestry and wildlife
		depth to hard bedrock is generally greater than 5'		5S, 5S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
69A Elbert silty clay loam, (0-3%) ponding (D) Hydric soil	very deep poorly drained soil in drainageways; developed from diabase and basalt	IV PW - very poor potential; wetness and high shrink-swell clays	IV - very poor potential; high water table and shrink-swell clays	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6'		5W
70B Leedsville cobbly silt loam, (3-8%) (B)	very deep well drained cobbly yellowish-red and red fine loamy soils on convex gently sloping uplands; developed from residuum of Goose Creek conglomerate	I -good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		3S
70C Leedsville cobbly silt loam, (8-15%) (B)	very deep well drained cobbly yellowish-red and red fine loamy soils on convex gently sloping uplands; developed from residuum of Goose Creek conglomerate	I -good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		4S
71B Panorama silt loam, (3-8%) (B)	Deep well drained reddish-brown silty soils on convex ridge crests and side slopes; developed from fluvium over Triassic siltstones and shales	I -good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
72C Birdsboro loam, (8-15%) (B)	very deep well drained red and yellowish-red fine-loamy soils on convex and straight side slopes; developed from thin river terrace deposits over siltstone	I -good potential; few problems	II - fair potential	II - secondary cropland
		depth to hard bedrock is generally greater than 5'		3E
73B Penn silt loam, (3-8%) (C)	moderately deep well drained silty soils on sloping convex landscapes; developed from Triassic siltstones and shales	I -good potential; few problems	III - poor potential; perched water tables	II - secondary cropland
		depth to hard bedrock generally ranges 20 to 40"		2E
73C Penn silt loam, (8-15%) (C)	moderately deep well drained silty soils on sloping convex landscapes; developed from Triassic siltstones and shales	I -good potential; few problems	III - poor potential; shallow to rock	IV - grassland agriculture
		depth to hard bedrock generally ranges 20 to 40"		3E
74B Ashburn silt loam, (1-8%) (C)	moderately deep moderately well drained yellowish-brown silty soils with seasonal perched water tables on level to gently sloping landscapes; developed from thin fluvial cappings over Triassic siltstones	II - WP - fair potential; wetness and low bearing capacity	III - poor potential; perched water tables	II - secondary cropland
		depth to hard bedrock generally ranges 20 to 40"		2W

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
76B Sudley-Oatlands Complex, (3-8%) (B)	complex of very deep (Sudley) and moderately deep (Oatlands) well drained strong brown to reddish-brown loamy soils on gently sloping convex ridgetops and upper side slopes; developed from Triassic sandstones and red conglomerates	I - good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6' in Sudley and 20 to 40" in Oatlands		2E, 3S
76C Oatlands gravelly silt loam, (8-15%) (B)	moderately deep well drained strong brown to reddish-brown loamy soils on sloping convex side slopes; developed from Triassic sandstones and red conglomerates	I - good potential; few problems	II - fair potential	II - secondary cropland
		depth to hard bedrock is generally greater than 20 to 40"		4S
76D Oatlands gravelly silt loam, (15-25%) (C)	moderately deep well drained strong brown to reddish-brown loamy soils on sloping convex side slopes; developed from Triassic sandstones and red conglomerates	II - S - fair potential; steep slopes and subject to erosion	III - poor potential; steep slopes and shallow to rock	V - forestry and wildlife
		depth to hard bedrock is generally greater than 20 to 40"		4E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
77C3 Nestoria gravelly silt loam, severely eroded (8-15%) (C)	shallow, well to excessively drained, eroded reddish-brown loamy-skeletal soils on steep convex slopes in highly dissected terrain with gullies; developed from Triassic sandstones/siltstones and shales	II R - fair potential; shallow to shale and siltstone; little soil material available for landscaping or grading	III - poor potential; shallow to rock	IV - grassland agriculture
		depth to rippable bedrock is generally less than 20" and hard bedrock is greater than 4'		4E
77D3 Nestoria gravelly silt loam, severely eroded (15-25%) (D)	shallow, well to excessively drained, eroded reddish-brown loamy-skeletal soils on steep convex slopes in highly dissected terrain with gullies; developed from Triassic sandstones/siltstones and shales	III RS - poor potential; shallow soils over rock and steep slopes	IV - very poor potential; shallow to rock and steep slopes	V - forestry and wildlife
		depth to rippable bedrock is generally less than 20" and hard bedrock is greater than 4'		6E
77E3 Nestoria gravelly silt loam, severely eroded (25-45%) (D)	shallow excessively drained eroded reddish-brown loamy skeletal soils with gullies on steep slopes along drainageways; developed from Triassic sandstone/siltstone/ shales	IV RS - very poor potential; steep slopes and rock outcrops	IV - very poor or no potential; steep slopes and shallow to rock	V - forestry and wildlife
		depth to rippable bedrock is generally less than 20" and hard bedrock is greater than 4'		7E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
78A Dulles silt loam, (0-3%) (C)	deep moderately well to somewhat poorly drained yellowish-brown mottled with gray clayey soils with seasonal perched water tables on nearly level landscapes; developed from fluvial cappings overlying siltstone and shales	IV W - very poor potential; low soils strength and prolonged perched water table	IV - very poor potential; low soil strength and prolonged perched water table	II - secondary cropland
		depth to hard bedrock generally ranges 40 to 60"		4W
79A Albano silt loam, (0-3%) brief ponding (D) Hydric soil	deep poorly drained mottled yellowish-brown and gray clayey soils with seasonal perched water tables in concave landscapes (swales); developed in colluvium and local alluvium of soils derived from Triassic siltstones and shales	IV W - very poor potential; seasonal perched water tables	IV - very poor potential; high water tables	IV - grassland agriculture
		depth to hard bedrock generally ranges 40 to 60"		4W
80B Brentsville loam, (3-8%) (B)	moderately deep well drained brown to reddish-brown loamy soils on gently sloping ridge crests and upper side slopes; developed from Triassic acid (arkosic) sandstones and pebbly conglomerate	I - good potential	II - fair potential; depth to rock	IV - grassland agriculture
		depth to hard bedrock generally ranges 20 to 40"		2E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
80C Brentsville loam, (8-15%) (B)	moderately deep well drained brown to reddish-brown loamy soils on sloping side slopes in dissected landscapes; developed from Triassic acid (arkosic) sandstones and pebbly conglomerates	II R - fair potential, depth to rock	II - fair potential	IV - grassland agriculture
		depth to hard bedrock generally ranges 20 to 40"		3E
81B Brumbaugh cobbly silt loam, (2-7%) (B)	very deep moderately well drained gravelly strong brown to yellowish-red loamy soils with discontinuous perched water tables on gently sloping mountain toe slopes and foot slopes; developed from old mountain colluvium derived from acidic rocks	II W - fair potential; perched water tables	III - poor potential; high water tables	II - secondary cropland
		depth to hard bedrock is generally greater than 6'		2E
81C Brumbaugh cobbly silt loam, (7-15%) (B)	very deep moderately well drained gravelly strong brown to yellowish-red loamy soils with discontinuous perched water tables on flat to concave sloping mountain toe slopes and foot slopes; developed from old mountain colluvium acidic rocks	II W - fair potential; perched water tables	III - poor potential	II - secondary cropland
		depth to hard bedrock is generally greater than 6'		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
82B Scattersville silt loam, (1-7%) brief ponding (D)	very deep somewhat poorly to poorly drained gravelly yellowish-brown mottled strong brown and gray loamy soils on gently sloping concave lowlands along drainageways at the base of the mountains; developed from old mountain colluvium of mixed acid and basic rocks	IV W - very poor potential; perched water tables	IV - very poor potential; high water tables	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6'		4W
83B Braddock cobbly loam, (2-7%) (B)	very deep well drained gravelly red clayey soils on convex gently sloping mountain side slopes and foot slopes in rolling landforms; developed from old mountain colluvium derived from acidic rocks	I - good potential	II - fair potential; moderate permeability	II - secondary cropland
		depth to hard bedrock is generally greater than 6'		2S
83C Braddock cobbly loam, (7-15%) (B)	very deep well drained gravelly red clayey soils on convex gently sloping mountain side slopes and foot slopes in rolling landforms; developed from old mountain colluvium derived from acidic rocks	I - good potential	II - fair potential; moderate permeability	II - secondary cropland
		depth to hard bedrock is generally greater than 6'		3S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
84B Lucketts silt loam, (2-7%) (B)	very deep well drained yellowish-red to red clayey soils on undulating upland with low relief; developed partly from alluvial/colluvial cappings and partly from residuum of calcareous conglomerate	II G- fair potential; solution channels may cause collapse and/or ground water pollution evaluate by geotechnical investigation	II -fair potential; moderate permeability above dicontinuity	II - secondary farmland
		depth to hard bedrock is generally greater than 6'		2E
84C Lucketts silt loam, (7-15%) (B)	very deep well drained yellowish-red to red clayey soils on undulating upland with low relief; developed partly from alluvial/colluvial cappings and partly from residuum of calcareous conglomerate	II G- fair potential; solution channels may cause collapse and/or ground water pollution	II -fair potential; moderate permeability above dicontinuity	II - secondary farmland
		depth to hard bedrock is generally greater than 6'		3E
88C Lew channery silt loam, stony (7-15%) (B)	very deep well drained brown soils on concave sloping side slopes in depressions and on benches on mountain side slopes; developed from recent mountain colluvium derived from greenstone rock materials	IV G - very poor potential; subject to slippage and unstable when cut	III - poor potential, landscape position	V - forestry and wildlife
		depth to hard bedrock is generally greater than 6'		3E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	Soil Characteristics	Mapping Unit Potential Subclasses For Selected Uses		
		General Development Central Water and Sewer/ Depth to rock	Conventional Septic Tank Drain fields	Agricultural Forestry and Horticultural/ USDA Land use capability class
88D Lew channery silt loam, stony (15-25%) (C)	very deep well drained brown soils on concave sloping side slopes in depressions and on benches on mountain side slopes; developed from recent mountain colluvium derived from greenstone rock materials	IV G - very poor potential; subject to slippage and unstable when cut	III - poor potential; steep slopes, questionable landscape position and laterally moving water	V - forestry and wildlife
		depth to hard bedrock is generally greater than 6'		6E
89D Weverton very flaggy silt loam, (15-25%) (C)	deep, well drained yellowish-brown loamy soil with many quartzite flagstone on moderately steep mountain side slopes; developed from colluvium and residuum of quartzite	IV G - very poor potential; slippage. mountain colluvium deposits may be unstable when cut (graded); proposals for development should be based on a geotechnical investigation	II - fair potential; moderate permeability; depth to rock	V - forestry and wildlife
		depth to hard bedrock generally ranges 40 to 60"		7S

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
89E Weverton very flaggy silt loam, (25-45%) (C)	deep, well drained yellowish-brown loamy soil with many quartzite flagstone on moderately steep mountain side slopes; developed from colluvium and residuum of quartzite	IV G - very poor potential; steep slopes and slippage, mountain colluvium deposits may be unstable when cut (graded); proposals for development should be based on a geotechnical investigation	IV - very poor or no potential; steep slope	V - forestry and wildlife
		depth to hard bedrock generally ranges 40 to 60"		7S
90B Springwood silt loam, (3-8%) (B)	very deep well drained reddish-brown to red clayey soils on undulating uplands; developed from calcareous conglomerate	III G- poor potential; potential for collapse from underlying solution channels; proposals for development should be based on a geotechnical investigation	II - fair potential; pollution potential from sink holes/solution channels	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

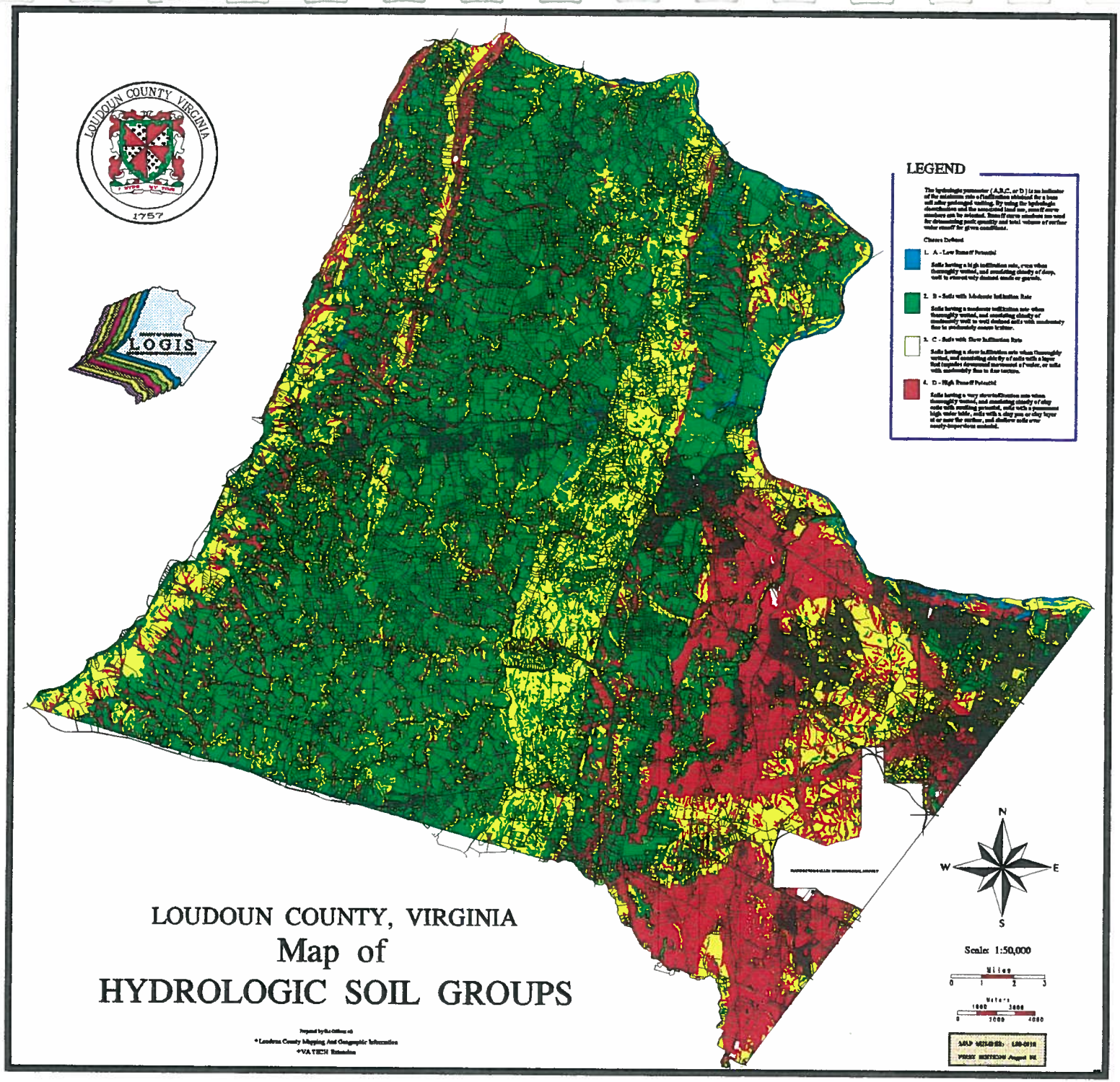
Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
91B Springwood-Rock outcrop complex, (3-8%) (B)	very deep well drained reddish- brown to red clayey soils with numerous rock outcrops and sinkholes on undulating uplands; developed from calcareous conglomerate	IV G - very poor; solution weathering collapse of underlying calcareous materials and potential groundwater pollution by sinkholes rock outcrops; evaluate by geotechnical investigation	IV - very poor potential; pollution potential from sinkholes and rock outcrops	V - forestry and wildlife
		depth to hard bedrock is generally greater than 6'		2E, 8
91C Springwood-Rock outcrop complex, (8-15%) (B)	very deep well drained reddish- brown to red clayey soils with numerous rock outcrops and sinkholes on sloping side slopes in dissected landscapes; developed from calcareous conglomerate	IV G - very poor; solution weathering collapse of underlying calcareous materials and potential groundwater pollution by sinkholes rock outcrops; evaluate by geotechnical investigation	IV - very poor potential; pollution potential from sinkholes and rock outcrops	V - forestry and wildlife
		depth to hard bedrock is generally greater than 6'		3E, 8

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
93B Hibler silt loam, (0-5%) rarely flooded (B)	very deep moderately well drained yellowish-red loamy and silty soils with gray in the lower part and seasonal high water tables on convex river terrace positions; developed from alluvium of soils derived from sedimentary rock	II FW - fair potential, high seasonal water table, flooding	III - poor potential, moderate permeability and high water table	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E
94B Allegheny silt loam, (0-5%) rarely flooded (A)	very deep well drained brown to yellowish-red loamy and silty soils with short duration perched water tables on convex river terrace positions; developed from alluvium of soils derived from sedimentary rock	II FW - fair potential, rare flooding	II - fair potential, moderate permeability	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E
95B Goresville gravelly silt loam, (0-5%) (B)	very deep well drained red and yellowish-red clayey soils on convex high river terrace positions; developed from old alluvium of soils derived from sedimentary rock	I - good potential	I - good potential	I - prime farmland
		depth to hard bedrock is generally greater than 6'		2E

Table 1. SUMMARY OF SOIL CHARACTERISTICS AND USE POTENTIAL

Mapping Unit Number, Name, Slope, Flooding Potential and Hydrologic Group	**Soil Characteristics**	**Mapping Unit Potential Subclasses For Selected Uses**		
		General Development Central Water and Sewer/ Depth to rock	**Conventional Septic Tank Drain fields**	**Agricultural Forestry and Horticultural/ USDA Land use capability class**
98B Clapham silt loam, (1-8%) (C)	very deep moderately well to somewhat poorly drained yellowish-brown or mottled brown/gray and red clayey soils with fragipans and perched water tables on nearly level river terraces; developed from old alluvium of soils derived from sedimentary rock	III W - poor potential; perched water tables	IV - very poor potential; perched water tables	IV - grassland agriculture
		depth to hard bedrock is generally greater than 6'		4W
99A Kinkora-Delanco complex, (0-3%) rarely flooded Hydric soil (D/C)	very deep poorly drained mottled gray clayey (Kinkora) and moderately well drained yellowish-brown loamy (Delanco) soils with a seasonal water table on concave to level terrace positions over siltstone	IV FW - very poor potential; prolonged water table and high shrink-swell clays	IV - very poor potential; water tables	IV -- grassland agriculture
		depth to hard bedrock is generally greater than 6'		2W



LOUDOUN COUNTY, VIRGINIA

Map of

HYDROLOGIC SOIL GROUPS

Appendix I.
Hydrologic Soil Groups

The Hydrologic soil groups indicate the rate at which surface water runs off or infiltrates a given soil. Factors that affect water runoff include soil permeability, slope, degree of soil saturation and the percentage of plant or leaf cover on the soil. The soils in the Triassic Basin (eastern Loudoun) generally are less permeable and wetter than the majority of soils in western Loudoun. Therefore, even though they generally occur on less slope they often have higher runoff potential than the more permeable soils in western Loudoun (the Blue Ridge).

Appendix II
Hydric Soil List

Hydric Soils are those that are wet at or near the ground surface for significant periods of the growing season. Hydric soils are one of the three parameters used to define wetlands. The other two parameters include Hydrology (actual perched or apparent water tables) and vegetation (plants identified to survive only or best in wet areas). This list of Hydric Soils should be used only as a guide since soils maps are not intended for site-specific purposes.

Mapping units that are dominantly Hydric Soils

4A Hatboro loam, 0 to 3% slopes
6A Bowmansville silt loam, 0 to 3% slopes
66A Waxpool silt loam, 0 to 3% slopes
69A Elbert silty clay loam, 0 to 3% slopes
79A Albano silt loam, 0 to 3% slopes
99A Kinkora-Delanco complex, 0 to 3% slopes

Mapping units that contain significant inclusions of Hydric Soils

5A Rowland silt loam, 0 to 3% slopes
10B Mongle loam, 0 to 7% slopes
12B Rohrersville cobbly loam, 1 to 7% slopes
63A Kelly silt loam, 0 to 3% slopes
78A Dulles silt loam, 0 to 3% slopes
82B Scattersville silt loam, 1 to 7% slopes
98B Clapham silt loam, 1 to 8% slopes

Appendix III
Loudoun County Mountainside Development Overlay District

The Mountainside Development Overlay District (MDOD) in Loudoun County is intended to protect the public from building in areas known to have debris flow or slippage potential, to protect the County's major groundwater recharge areas and to protect the rural/vegetated visual value of the mountainsides to the County.

The Mountainside Overlay District is defined by the use of six (6) natural features including:

1) Mountain soils
2) Groundwater recharge
3) Slippage or debris flow potential
4) Slope
5) Elevation
6) Tree cover

All of these criteria are weighted according to their importance for protection of visual resources, groundwater, and public safety. The MDOD soils worksheet is designed to help individuals determine if they are within the MDOD as well as which category (Somewhat Sensitive, Sensitive or Highly Sensitive) their property may be in. The restrictions on clearing and building relate directly to the specific MDOD category.

MOUNTAINSIDE OVERLAY DISTRICT SOILS WORKSHEET

Applicant: _____ **Evaluator:** _____

Property ID: _____ **Date:** _____

9 = *Somewhat Sensitive*	**Total Score** 10-13 = *Sensitive*	≥14 = *Highly Sensitive*

SOIL MAP UNIT	MTN SOIL	GW RECHARGE	SLIP-PAGE	SLOPES	SUB-TOTAL	FOREST (+2)	CRITICAL ELE. (+3)	TOTAL
12B	2				2			
20B	2	2			4			
20C	2	2			4			
20D	2			2	4			
20E	2			4	6			
27C	4	4	8		16			
28B	2	2			4			
28C	2	2			4			
29B	2	2			4			
29C	2	2			4			
29D	2	2		2	6			
38B	2	4			6			
40C	2	2			4			
40D	2	2		2	6			
40E	2	2		4	8			
43B	2	2			4			
43C	2	2			4			
45B	2	2			4			
45C	2	2			4			
50C	4	4			8			
50D	4	4		2	10			
51E	4	2		4	10			
52C	4	2			6			
52D	4	2		2	8			
52E	4	2		4	10			
55B	2	4			6			
55C	2	4			6			
55D	2	4		2	8			
59C	4		8	2	14			
81B	2	2			4			
81C	2	2			4			
82B	2				2			
83B	2	2			4			
83C	2	2			4			
88C	4	4	8		16			
88D	4	4	8	2	18			
89D	4	2		2	8			
89E	4	2		4	10			

Critical Elevation:	Catoctin Ridge	550 ft.
	Short Hill Mountain	700 ft.
	Blue Ridge Mountains	700 ft.