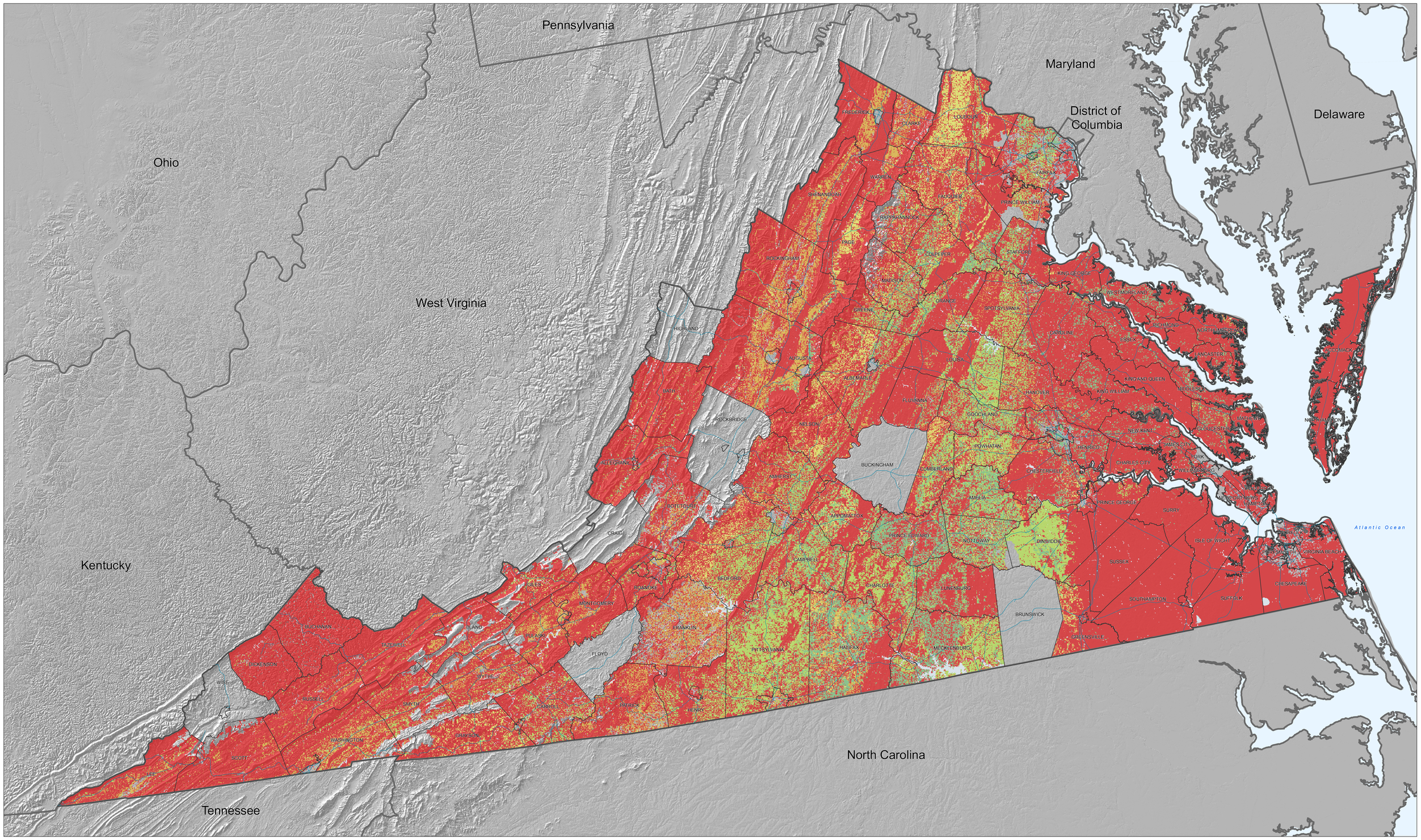
Limitations for Large Animal Disposal (Catastrophic Mortality), Trench - Virginia (2009)



This map was prepared as a general planning aid; on-site soil evaluations may be required prior to making land management decisions. Soils were rated solely on the basis of physical soil properties. Ratings are for soils in their present condition and do not consider current land use.

Geographic proximity to watercourses and land use were not considered in this interpretive rating. In cases where multiple soil series are mapped within a given soil delineation (e.g., a map unit complex), the interpretive rating associated with the most common soil series was applied to the entire delineation.

Sources:
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National Atlas (http://www.nationalatlas.gov/). Hydrography. (03/2007).
USDA-NRCS Staff. 2003. County Boundaries derived from 1:100,000 (Bureau of Census – TIGER) source as provided by C. Lloyd, USDA-NRCS, Information Technology Center, Fort Collins, CO.
USDA-NRCS. 2008. DHS - Catastrophic Mortality, Large Animal Disposal, Trench Interpretation. Soil Data Mart Source (http://soildatamart.nrcs.usda.gov). Fiscal Year 2009, first quarter edition.
USDA-NRCS. 2008. Soil Survey Geographic Database (SSURGO) version 2.1. Virginia Collection. Richmond, VA. Soil Data Mart Source (http://soildatamart.nrcs.usda.gov). Fiscal Year 2009, first quarter edition.
USGS. Analytical Hillshade computed from 30 meter National Elevation Dataset (NEDS) using the following parameters: 315 degrees altitude, 45 degrees azimuth, and z factor 1x. Prepared by USDA-NRCS-NGDC, Morgantown, WV.

Large Animal Disposal (Trench)

Catastrophic Mortality, Large Animal Disposal, Trench is a method of disposing of dead animals by placing the carcasses in successive layers in an excavated trench. The carcasses are spread, compacted, and covered daily with a thin layer of soil that is excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the filled trench area.

The estimated land area needed to dispose of mature cattle ranges from 1.2 (McDaniel, 1991) to 3.5 (Ollis, 2002) cubic yards. A single adult bovine is considered equivalent to 5 sheep or 5 hogs (McDaniel, 1991; USDA, 1980). Lund et al estimate that about 92,000 cubic yards of volume (roughly seven acres) would be needed to dispose of 30,000 head of cattle, assuming a trench depth of 8.5 feet (which is somewhat below the depth of observation for typical soil survey). Leachate collection should be considered because the putrefaction of one adult bovine is estimated to release 21 gallons of fluid in the first week and a total of about 42 gallons in the first month (Munroe, 2001). Collection of gases released during the decomposition process should also be considered. To bury adult hogs or sheep, a rule of thumb is to multiply the capacities listed above by five. For broiler chickens, multiply the capacity by 200. For turkeys, multiply the capacity by 40 (Ollis, 2002).

Soils are rated and placed into "Catastrophic Mortality, Large Animal Disposal, Trench" interpretive rating classes per their rating indices. These are not limited (rating index = 0), somewhat limited (rating index > 0 and < 1.0), or very limited (rating index = 1.0). Ratings are based on properties and qualities to the depth normally observed during soil mapping (approximately 6 or 7 feet). However, because trenches may be as deep as 15 feet or more, geologic investigations are needed to determine the potential for pollution of ground water as well as to determine the design needed.

Properties that influence the risk of pollution, ease of excavation, trafficability, and revegetation are major considerations. Soils that flood or have a water table within the depth of excavation present a potential pollution hazard and are difficult to excavate. Slope is an important consideration because it affects the work involved in road construction, the performance of the roads, and the control of surface water around the trench. It may also cause difficulty in constructing trenches for which the trench bottom must be kept level and oriented to follow the contour. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and difficult to place as a uniformly thick cover over a layer of carcasses.

This interpretation is applicable to both heavily populated and sparsely populated areas. While some general observations may be made, onsite evaluation is required before the final site is selected. Improper site selection, design, or installation may cause contamination of ground water, seepage, and contamination of stream systems from surface drainage or floodwater. Potential contamination may be reduced or eliminated by installing systems designed to overcome or reduce the effects of the limiting soil property.

References:
Lund, R. D., I. Kruger, and P. Weldon. Options for the mechanized slaughter and disposal of contagious diseased animals - a discussion paper. Proceedings from Conference on Agricultural Engineering, Adelaide.

McDaniel, H. A.1991. Environmental protection during animal disease eradication programmes. Revue scientifique et technique Office international des Epizooties, 10(3), 867-884.

Munro, Ronald. 2001. Decomposition of farm animal corpses in mass burial sites. Veterinary Laboratories Agency report, United Kingdom, pp 1-9.

Ollis, Gerald. 2002. Pre-selecting mass carcass disposal sites. View on-line at: (http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex5727)

USDA. 1980. APHIS. Foot and mouth disease - guidelines for eradication. Hyattsville, MD. United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services.

N
W E
S

0 30 60
Kilometers

0 15 30
Miles

Original Map Scale 1:500,000

Original Map Scale is 1:500,000 when printed using a page size of 60"W x 54"H. When printed at other page sizes, the original absolute map scale will no longer be valid and scale bars should be used for reference.

Albers Equal Area Map Projection
North American Datum of 1983

NRCS Natural Resources Conservation Service

Soil Limitations

- Water
- Null or No Data
- 0.00: Not Limited
- 0.01 to 0.20: Slightly Limited
- 0.21 to 0.40: Moderately Limited
- 0.41 to 0.60: Moderately Limited
- 0.61 to 0.80: Moderately Limited
- 0.81 to 0.99: Significantly Limited
- 1.00: Very Limited
- State Boundaries
- CLAY County Boundaries
- Roads
- Hillshade