APPENDIX B-1

SOILS INFORMATION

The soils information in Appendix B has been assembled to assist the plan preparer and reviewer in accomplishing responsibilities under Act 599.

Appendix B-1 contains charts of Georgia's soils series with *estimated* soil properties and soils limitations for urban uses. These charts may be used in conjunction with published soil survey information or other soils maps available through the Soil and Water Conservation Districts and the Natural Resources Conservation Service.

Appendix B-2 contains excerpts from NRCS Technical Release No. 51, "Procedure for Computing Sheet and Rill Erosion on Project Areas." Also included is a method for *estimating* soil erodibility or "K" values and sediment delivery ratio charts. This Appendix should be of assistance in planning for land-disturbing activities.

Explanation of Charts:
Appendix B-1
Soil Series Interpretations

Column 1: Soil Series

This column lists alphabetically the name of all the soil series which are used in the State of Georgia.

Column 2: Permeability

Soil permeability is the quality that enables soil to transmit water and air. Accepted as a measure of this quality is the rate at which soil transmits water while saturated. That rate is the "saturated hydraulic conductivity" of soil physics. In line with conventional usage in the engineering profession and traditional usage in the published soil surveys, this rate of flow, principally downward, continues to be expressed as "permeability". The permeability of a soil is the *rate of flow* for the most restrictive layer in the profile.

Soil permeability is rated using the numerical ranges shown below:

Permeability class	Numerical range (inches per hour)
Very slow	Less than 0.06
Slow	0.06 - 0.2
Moderately slow	0.2 - 0.6
Moderate	0.6 - 2.0
Moderately rapid	2.0 - 6.0
Rapid	6.0 - 20
Very Rapid	More that 20

Column 3: Soil Reaction

The degree of acidity or alkalinity of a soil is expressed in pH values. A soil with a pH 7.0 is precisely neutral in reaction. The pH ranges given in this column are the high and low values for the soil profile. The surface layer may be higher due to the addition of lime.

Column 4: Shrink-Swell Potential

Shrink-swell behavior is the quality that determines soil's volume change with change in moisture content. Building foundations, roads and other structures may be severely damaged by the shrinking and swelling of the soil. The volume change of soil is influenced by the amount of moisture change and the amount and kind of clay in the soil profile.

The shrink-swell interpretations are relevant to structures, such as houses and other low buildings, streets and roads, and parking lots. Three classes have been developed to express shrink-swell behavior; *low*, *moderate and high*.

Column 5 and 6: Corrosivity

Various metals and other materials corrode when on or in the soil, and some metals and materials corrode more rapidly when in contact with specific soils than when in contact with others. To be meaningful, corrosivity must be rated in relation to specific structural material. In these columns the soil series are given ratings on potential for inducing corrosion of uncoated steel (column 5) and of concrete (column 6).

Soils are assigned to one of three classes of corrosivity: *low, moderate, or high*.

Columns 7 and 8: Depth to Watertable and Bedrock

The depth to the watertable is given in feet (to the nearest half-foot). The value given is an indication of how close to the soil surface the watertable will rise during the wet season.

Depth to bedrock is given in inches. Hardness of rock may range from "rippable", which can be excavated using a single tooth ripping attachment on a 200 - 300 horsepower tractor, to "hard", where excavation may require blasting. Rock hardness should be determined by on-site investigation.

Both the depth to watertable and bedrock are *estimates* actual depths may vary from site to site.

Column 9: Flood Frequency

Flood frequency is an indicator of how often if ever, floods occur. Ratings are as follows:

None: No reasonable possibility of flooding.

Rare: Flooding unlikely but possible under unusual weather conditions.

Occasional: Flooding is expected infrequently under usual weather conditions.

Frequent: Flooding is likely to occur often under usual weather conditions.

Column 10: Hydrologic Soil Group

The hydrologic soil group parameter, A, B, C, or D, is an indication of the minimum rate of infiltration obtained for a bare soil after prolonged wetting.

The hydrologic soil groups range from A, which are deep sands or gravels with low runoff, to D, which are soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

Some soil series may have a dual hydrologic soil group rating. The dual ratings are given for certain wet soils that can be adequately drained. The criteria used is making dual group ratings are as follows:

1. Soils are rated D in their natural condition.

2. Drainage is feasible and practical.

3. Drainage improves the hydrologic group by at least two classes (from D to A or B).

Columns 11-16: Limitation of Soils For Urban Uses

The soils are rated L for slight limitations, M for moderate limitations, or S for severe limitations.

A *slight* soil limitation (L) is the rating given soils that have properties favorable for the rated use. The degree of limitation is minor and can be overcome easily. Good performance and low maintenance can be expected.

A *moderate* soil limitation (M) is the rating given soils that have properties moderately favorable for the rated use. This degree of limitation can be overcome or modified by special planning, design, or maintenance. During some part of the year, the performance of the structure or other planned use is somewhat less desirable than for soils rated *slight*. Some soils rated *moderate* required treatment such as artificial drainage, runoff control to reduce erosion, extended sewage absorption fields, extra excavation, or some modification of certain features through manipulation of the soil. For these soils, modification is needed for those construction plans generally used for soils of slight limitation. Modification may include special foundations, extra reinforcement of structures, sump pumps, etc.

A *severe* soil limitation (S) is the rating given soils with one or more properties unfavorable for the rated use, such as steep slopes, bedrock near the surface, flooding hazard, high shrink-swell potential, a seasonal high watertable or low bearing strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance. Some of these soils, however, can be improved by reducing or removing the soil feature that limits use. In most situations, however, it is difficult and costly to alter the soil or to design a structure to compensate for a severe degree of limitation.

Following the limitation rating symbol will be a lower case symbol to indicate the reason for the particular rating. These symbols are s-slope, w-wetness, f-flooding, pk-slow percolation, cl-too clayey, ss-shrink swell potential, b-low bearing strength, r-shallow depth to rock, p-seepage, st-stones, cc-cutbanks may cave, h-too much humas, pf-poor filter, d-dense layer.

A number followed by a % indicates percent slope; for example 2-6% reads two to six percent slope.

Some soil series may have a flood frequency listing of two rating (Example: None-Occasional). Such soils may consequently have a two rating limitation. For example, a listing of means, if the soil is located where no flooding occurs, it is rated Moderate due to wetness and, if occasional flooding occurs, it is rated as Severe due to flooding.

None: M; w
Occ; S; f

Column 11: Septic Tank Absorption Fields

A septic tank absorption field is a soil absorption system for sewage disposal. It is a subsurface tile system laid in such a way that effluent from the septic tank is distributed with reasonable uniformity into the natural soil. Criteria used for rating soils *(slight, moderate, and severe)* for use as absorption fields are based on the limitations of the soil to absorb effluent.

Column 12: Sewage Lagoon Areas

A sewage lagoon (aerobic) is a shallow lake used to hold sewage for the time required for bacterial decomposition. Sewage lagoons require consideration of the soils for two functions, (1) as a vessel for the im-

pounded area and (2) as soil material for the enclosing embankment. The requirements for this embankment are the same as for other embankments designed to impound water. Enough soil material that is suitable for the structure must be available, and, when the lagoon is properly constructed, it must be capable of holding water with minimum seepage. The material should be free of coarse fragments (over 10 inches in diameter) that interfere with compaction.

Column 13: Shallow Excavations

These excavations require excavating or trenching to a depth of 5 or 6 feet. Note that limitation ratings for shallow excavations alone, though highly relevant, are insufficient for interpretations for ultimate uses, such as for dwellings with basements, sanitary landfills, cemeteries, and underground utility lines (sewers, pipelines, and cables). Additional soil features must be considered in evaluating for those uses. For example, additional interpretation concerning shrink-swell potential and corrosivity are needed for giving ratings for the ultimate use of soils for pipelines.

Column 14: Dwellings

This column gives ratings for undisturbed soils on which single-family dwellings or other structures with similar foundation requirements can be built. Buildings of more than three stories and other buildings requiring a foundation load in excess of that of a three-story dwelling are not considered in the entries in this column.

In some cases, a rating may differ depending on whether the dwelling will or will not have a basement. In such cases, the rating is marked with an asterisk (*) for dwellings *with* basements and a pound sign (#) for ones *without* basements.

Column 15: Small Commercial Buildings

This column provides limitations for commercial buildings of 3 stories or less.

Column 16: Local Roads and Streets

The limitation ratings given in this column apply to use of soils for construction and maintenance of improved local roads and streets that have all-weather surfacing commonly asphalt or concrete and that are expected to carry automobile traffic all year. The roads and streets consist of (1) underlying local soil material, whether cut or fill, that is called "the subgrade"; (2) the base material of gravel, crushed rock, lime-stabilized soil, or soil-cement-stabilized soils; and (3) the actual road surface or street pavement that is either flexible (asphalt), rigid (concrete), or, in some rural areas, gravel with binder in it. These roads and streets also are graded to shed water and conventional drainage measures are provided. With probable exception of the hard surfaces, the roads and streets are built mainly from the soil at hand; cuts and fills generally are limited to less than 6 feet of thickness. Excluded from consideration in the ratings in this column are highways designed for fast moving heavy trucks.

Also, the ratings cannot substitute for basic soil data and for on site investigation.

KEY TO SYMBOLS-SOIL SURVEY INTERPRETATIONS

Limitations of Soils:
L - - Slight Limitation
M - - Moderate Limitation
S - - Severe Limitation

Reasons for Limitations:
s - - slope
w - - wetness
f - - flooding
pk - - slow percolation
cl - - too clayey
ss - - shrink-swell potential
b - - low bearing strength
r - - depth to rock
P - - seepage
st - - stones
cc - - cutbank may cave
pf - - poor filter
h - - too much humus
d - - dense layer

Appendix B-2
Soil Loss Predictions

The first portion of Appendix B-2 is the SCS Technical Release No. 51, "Procedure for Computing Sheet and Rill Erosion on Project Areas." It explains the use of the Universal Soil-Loss Equation.

Also included in Appendix B-2 is a guide for developing the Soil Erodibility Factor (K).

Another section is devoted to applying sediment delivery ratio charts to the Universal Soil-Loss Equation for estimating sediment yields.

Additional information includes a textural classification chart and a chart for comparing different soil classification systems.

SOILS INFORMATION AND THE WEB SOIL SURVEY

The Web Soil Survey is an interactive, internet based application that contains soil maps and associated attribute data from soil surveys produced by the National Cooperative Soil Survey. Spatial and attribute data are available on the Web Soil Survey for all Georgia counties that have a completed, correlated soil survey, which includes most, but not all Georgia Counties. A status map of Georgia counties with spatial data available can be found on the Soil Data Mart at http://soildatamart.nrcs.usda.gov/Statusmap.aspx.

The URL to access the Web Soil Survey is http://websoilsurvey.nrcs.usda.gov/.

The Web Soil Survey Home Page contains guidance on how to use the application, including an explanatory document called "How to Use the Web Soil Survey".

A brief description of the Web Soil Survey, information it contains, and how to use the application follows. Additional help can be found by clicking on the question mark (?) throughout the application. Other links to downloadable soils data, archived soil survey publications, and a glossary are at the top of the Web Soil Survey screen.

Start the Web Soil Survey

Start the Web Soil Survey application by clicking on the big green button that says "Start WSS".

At the top of the page, there are 4 major tabs: Area of Interest (AOI), Soil Map, Soil Data Explorer, and Shopping Cart (Free).

Locate and Designate the Area of Interest (AOI)

The first step is to locate and outline the AOI. The AOI options will be displayed when the WSS application is started, but can also be accessed at anytime by clicking on the Area of Interest (AOI) tab. There is an Area of Interest Interactive Map on the right side of the screen, and an AOI can be located by progressively zooming in to the area on the map using the magnifier tool. Alternatively, quick navigation options are on the left side of the screen. These allow for easy selection of locations using several options, including an address, state and county, soil survey area, longitude and latitude, and others.

Click on the navigation method of choice, enter the appropriate selections, and click on *View.* Then use the magnifier tool to zoom in to the specific AOI. One of the two AOI tools is then used to delineate the AOI as a rectangle, or as a multi-sided polygon. Once identified, the AOI will appear as a hatched area within the prescribed boundary. The AOI must be 10,000 acres or smaller in size, unless the entire survey area is selected as an AOI. The AOI can be set to the entire survey area by clicking on *Set AOI*, rather than *View,* when using quick navigation.

View the Soil Map

Once the AOI is defined, the soil map for the area can be displayed by clicking on the *"Soil Map"* tab. A map with soil lines and soil symbols will be displayed on the right side of the screen. A legend with map symbols, soil map unit names, and the extent of each map unit will be displayed on the left side of the screen. At this point an ADOBE PDF file can be created for download or printing by clicking on the *Printable Version* bar.

Viewing of the map can be switched between a *Full Width Map Layout* , or a "*Normal Map Layout"* with legend, by clicking on the layout icons on the top-right portion of the screen.

Click on the *Legend* tab at the top-left portion of the map to open a legend that allows for customized viewing options. Various

features, such as streams, roads, cities, and counties can be turned on or off. The background map can also be switched between aerial photography and topographic maps.

Explore Soil Data and Interpretations

Access information about the soils by clicking on the Soil Data Explorer tab. This opens up a subset of folders that includes tabs for *Intro to Soils, Suitabilities and Limitations for Use, Soil Properties and Qualities, Ecological Site Assessment, and Soil Reports.*

Information on Ecological Site Assessment is not available at this time, but this tab will become active as Ecological Site information is developed in the future.

The *Intro to Soils* folder contains descriptive information about soils and their use. *The Suitabilities and Limitations for Use* folder contains land classifications, productivity ratings, and interpretations for urban and recreational uses, forestland, cropland, waste disposal, water management, and other uses. *The Soil Properties and Qualities* folder contains information about chemical and physical properties of the soils, water features related to the soils, erosion factors, and other soil qualities and features. The *Soil Reports* folder provides for grouping of similar items in soil reports, without the graphical display.

Information in the *Suitabilities and Limitations for Use*, and the *Soil Properties and Qualities* folders, when selected, can be displayed graphically on the map, as the items listed are related to specific soil components.

Click on the *Soil Properties and Qualities* tab, and a list of selectable groups of soil properties and qualities appears.

Click on one of these groups, and specific items appear for selection. For example, selecting *Soil Erosion Factors* will open up selections for K Factor Rock Free, K Factor Whole Soil, T Factor, Wind Erodibility group, and Wind Erodibility Index. Select K Factor Whole Soil, then View Rating to get a map display of the k factors with an associated legend. At this point an ADOBE .pdf file can be created for download or printing by clicking on the Printable Version bar. There is also an option to create a document with multiple selections. Click on the Add to Shopping Cart bar to add any number of items to a customized report, which will be created at the end of the session.
All selected items will have a View Description bar in addition to the View Rating bar. Click on the View Description bar for an explanation of the feature selected. There will also be a View Description option that can be checked to include a detailed description of the feature as part of the generated report.

Check Out

Click on the *Shopping Cart (Free)* tab to create a customized soil report for any or all of the soil items or reports that were previously selected using the Add to Shopping Cart option. The *Report Properties* option allows for designation of titles, paper sizes and scales. Selections can be made under the *Table of Contents* to remove any reports or descriptive materials not needed. Finally, click on the *Check Out* bar. Choices are to get the report now, or download later. It may be better to download very large files at a later time. An ADOBE PDF file containing customized maps, and selected items about the soils, will be created and made available for download.

Most of the information under the *Suitabilities and Limitations for Use* tab, and the *Soil Properties and Qualities* tab, can also be found under the *Soil Reports* tab. Information from the Soil Reports tab will not be graphically displayed on the map. However, the soil reports offer groupings of several related items, rather than the single item

displayed from the other tabs. The reports, along with the associated soil map, may be a good option for many applications.

Download data

There is an option in Web Soil Survey to download the spatial and tabular data for the defined AOI in a format that can be utilized on a local computer in a GIS system, such as ArcMap. Once the AOI has been identified, click on the *Download Soils Data* option at the top of the screen. Select or deselect tabular data, template database, or spatial data to download, enter an email address, and click the *Download* bar. Processing of the request will commence, and when completed, an email will be sent with a link for downloading the requested data.

Content of the Web Soil Survey

Soil properties, qualities, and interpretations that are currently in the Web Soil Survey under suitabilities, limitations, soil qualities and features, and soil reports are listed below. Content of the Web Soil Survey is refreshed periodically with updates and with additional information.

Suitabilities and Limitations Ratings in the Web Soil Survey

Category	Interpretation
Building Site Development	Corrosion of Concrete
Building Site Development	Corrosion of Steel
Building Site Development	Dwellings With Basements
Building Site Development	Dwellings Without Basements
Building Site Development	Lawns, Landscaping, and Golf Fairways
Building Site Development	Local Roads and Streets
Building Site Development	Shallow Excavations
Building Site Development	Small Commercial Buildings
Construction Materials	Gravel Source
Construction Materials	Roadfill Source
Construction Materials	Sand Source
Construction Materials	Topsoil Source
Disaster Recovery Planning	Catastrophic Mortality, Large Animal Disposal, Pit
Disaster Recovery Planning	Catastrophic Mortality, Large Animal Disposal, Trench
Disaster Recovery Planning	Clay Liner Material Source
Disaster Recovery Planning	Composting Facility - Subsurface
Disaster Recovery Planning	Composting Facility - Surface
Disaster Recovery Planning	Composting Medium and Final Cover
Disaster Recovery Planning	Rubble and Debris Disposal, Large-Scale Event
Land Classifications	Farmland Classification (this includes prime farmland and farmland of statewide importance)
Land Classifications	Hydric Rating by mapunit
Land Classifications	Soil Taxonomy Classification
Land Management	Construction Limitations for Haul Roads and Log Landings
Land Management	Erosion Hazard (Off-Road, Off- Trail)
Land Management	Erosion Hazard (Road, Trail)
Land Management	Harvest Equipment Operability
Land Management	Mechanical Site Preparation (Deep)
Land Management	Mechanical Site Preparation (Surface)
Land Management	Potential for Seedling Mortality
Land Management	Soil Rutting Hazard
Land Management	Suitability for Hand Planting
Land Management	Suitability for Log Landings
Land Management	Suitability for Mechanical Planting
Land Management	Suitability for Roads (Natural Surface)
Military Operations	Bivouc Areas
Military Operations	Excavations for Crew-Served Weapon Fighting Positions

Military Operations,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,Excavations for Individual Fighting Positions
Military Operations......................................Excavations for Vehicle Fighting Positions
Military Operations......................................Helicopter Landing Zones
Military Operations......................................Vehicle Trafficability

Recreational Development ....Camp Areas
Recreational Development ....Paths and Trails
Recreational Development ....Picnic Areas
Recreational Development ....Playgrounds

Sanitary Facilities..Daily Cover for Landfill
Sanitary Facilities..Sanitary Landfill (Area)
Sanitary Facilities..Sanitary Landfill (Trench)
Sanitary Facilities..Septic Tank Absorption Fields
Sanitary Facilities..Sewage lagoons

Vegetative Productivity.................................Forest Productivity (Cubic Feet per Acre per Year)
Vegetative Productivity.................................Forest Productivity (Tree Site Index)
Vegetative Productivity.................................Yield of Irrigated Crops (Component)

Vegetative Productivity.................................Yield of Non-Irrigated Crops (Component)

Water management.....................................Embankments, Dikes, and Levees
Water management.....................................Excavated Ponds (Aquifer-Fed)

Soil Properties and Qualities in the Web Soil Survey

Category	Soil Property or Quality
Soil Chemical Properties	Calcium Carbonate (CaCO3)
Soil Chemical Properties	Cation-Exchange Capacity (CEC-7)
Soil Chemical Properties	Effective Cation-Exchange Capacity (ECEC)
Soil Chemical Properties	Electrical Conductivity (EC)
Soil Chemical Properties	Gypsum
Soil Chemical Properties	pH (1 to 1 Water)
Soil Chemical Properties	Sodium Adsorption Ratio (SAR)
Soil Erosion Factors	K Factor, Rock Free
Soil Erosion Factors	K Factor, Whole Soil
Soil Erosion Factors	T Factor
Soil Erosion Factors	Wind Erodibility Group
Soil Erosion Factors	Wind Erodibility Index
Soil Physical Properties	Available Water Capacity
Soil Physical Properties	Available Water Supply, 0 to 100 cm
Soil Physical Properties	Available Water Supply, 0 to 150 cm
Soil Physical Properties	Available Water Supply, 0 to 25 cm
Soil Physical Properties	Available Water Supply, 0 to 50 cm
Soil Physical Properties	Bulk Density, 15 Bar
Soil Physical Properties	Bulk Density, One-Tenth Bar
Soil Physical Properties	Bulk Density, One-Third Bar
Soil Physical Properties	Linear Extensibility
Soil Physical Properties	Liquid Limit
Soil Physical Properties	Organic Matter
Soil Physical Properties	Percent Clay
Soil Physical Properties	Percent Sand
Soil Physical Properties	Percent Silt
Soil Physical Properties	Plasticity Index
Soil Physical Properties	Saturated Hydraulic Conductivity (Ksat)
Soil Physical Properties	Saturated Hydraulic Conductivity (Ksat), Standard Classes
Soil Physical Properties	Surface Texture
Soil Physical Properties	Water Content, 15 Bar
Soil Physical Properties	Water Content, One-Third Bar
Soil Qualities and Features	ASHTO Group Classification (Surface)
Soil Qualities and Features	Depth to a Selected Soil Restrictive Layer
Soil Qualities and Features	Depth to Any Soil Restrictive Layer
Soil Qualities and Features	Drainage Class
Soil Qualities and Features	Frost Action
Soil Qualities and Features	Frost-Free Days
Soil Qualities and Features	Hydraulic Soil Group
Soil Qualities and Features	Map Unit Name

Soil Qualities and Features.....Parent Material Name
Soil Qualities and Features.....Representative Slope
Soil Qualities and Features.....Unified Soil Classification (Surface)

Water Features.....Depth to Water Table
Water Features.....Flooding Frequency Class
Water Features.....Ponding Frequency Class

Reports in the Web Soil Survey

Report **Feature**

AOI Inventory
Component Legend.....Map unit symbol
Component Legend .....Map unit name
Component Legend.....Component percent
Component Legend.....Component name
Component Legend .....Component kind
Component Legend.....Slope percent
Map Unit Description.....Map Unit Description
Map Unit Description (Brief).....Map Unit Description (Brief)
Map Unit Description (Brief, Generated)....Map Unit Description (Brief, Generated)

Selected Soil Interpretations.....Selected Soil Interpretations
Selected Survey Area
Interpretation Descriptions.....Selected Survey Area Interpretation Descriptions

Survey Area Data Summary.....Survey area version
Survey Area Data Summary.....Survey area version established date
Survey Area Data Summary.....Tabular data version
Survey Area Data Summary.....Tabular data NASIS export data
Survey Area Data Summary.....Tabular data certification status

Building Site Development
Dwellings and Small Commercial Buildings.....Dwellings without basements
Dwellings and Small Commercial Buildings.....Dwellings with basements
Dwellings and Small Commercial Buildings.....Small commercial buildings

Construction Materials
Source of Roadfill and Topsoi.....Potential as a source of roadfill
Source of Roadfill and Topsoil.....Potential as a source of topsoil
Source of Sand and Gravel.....Potential as a source of sand
Source of Sand and Gravel.....Potential as a source of gravel

Land Classifications
Hydric Soils.....Hydric Soils
Land Capability Classification.....Land Capability Classification
Prime and other Important Farmlands.....Farmland classification
Taxonomic Classification of the Soils.....Taxonomic Classification of the Soils

Land Management
Hazard of Erosion and Suitabilities for Roads on Forestland Hazard of off-road or off-trail erosion
Hazard of Erosion and Suitabilities for Roads on ForestlandHazard of erosion on roads and trails
Hazard of Erosion and Suitabilities for Roads on ForestlandSuitability for roads (natural surface)

R**ecreational Development**
Camp Areas, Picnic Areas, and Playgrounds.....Camp areas
Camp Areas, Picnic Areas, and Playgrounds.....Picnic areas
Camp Areas, Picnic Areas, and Playgrounds.....Playgrounds
Paths, Trails, and Golf Fairways.....Paths and trails
Paths, Trails, and Golf Fairways.....Golf fairways

Sanitary Facilities
Landfills.....Trench sanitary landfill
Landfills.....Area sanitary landfill
Landfills.....Daily cover for landfill
Sewage Disposal.....Septic tank absorption fields
Sewage Disposal.....Sewage lagoons

Soil Chemical Properties
Chemical Properties.....Cation exchange capacity
Chemical Properties.....Effective cation exchange capacity
Chemical Properties.....Calcium carbonate
Chemical Properties.....Soil reaction
Chemical Properties.....Gypsum
Chemical Properties.....Salinity
Chemical Properties.....Sodium absorption ratio

Erosion
RUSLE2 Related Attributes.....hydrologic group
RUSLE2 Related Attributes.....Kf
RUSLE2 Related Attributes.....T factor
RUSLE2 Related Attributes.....Sand percent
RUSLE2 Related Attributes.....Silt percent
RUSLE2 Related Attributes.....Clay percent

Soil Physical Properties
Engineering Properties.....USDA texture
Engineering Properties.....Unified classification
Engineering Properties.....AASHTO classification
Engineering Properties.....Fragments > 10 inches

Engineering Properties.....Fragments 3-10 inches
Engineering Properties.....Percent passing sieve number 4
Engineering Properties.....Percent passing sieve number 10
Engineering Properties.....Percent passing sieve number 40
Engineering Properties.....Percent passing sieve number 200
Engineering Properties.....Liquid limit
Engineering Properties.....Plasticity index
Particle Size and Coarse Fragments.....Horizon
Particle Size and Coarse Fragments.....Depth
Particle Size and Coarse Fragments.....Sand percent
Particle Size and Coarse Fragments.....Silt percent
Particle Size and Coarse Fragments.....Clay percent
Particle Size and Coarse Fragments.....Total Fragments
Particle Size and Coarse Fragments.....Fragments 2-74 mm
Particle Size and Coarse Fragments.....Fragments 75-249 mm
Particle Size and Coarse Fragments.....Fragments 250-599 mm
Particle Size and Coarse Fragments.....Fragments >=600 mm

Soil Qualities and Features
Soil Features.....Restrictive Layer
Soil Features.....Subsidence
Soil Features.....Potential for frost action
Soil Features.....Risk of corrosion-Uncoated steel
Soil Features.....Risk of corrosion-Concrete

Vegetative Productivity
Forestland Productivity.....Common trees
Forestland Productivity.....Site Index
Forestland Productivity.....Volume of wood fiber
Forestland Productivity.....Trees to manage
Irrigated Yields by Map Unit Component.....Land capability
Irrigated Yields by Map Unit Component.....Crop yields
Nonirrigated Yields by Map Unit Component.....Land capability
Nonirrigated Yields by Map Unit Component.....Crop yields

Waste Management
Large Animal Carcass Disposal.....Large Animal Carcass Disposal, Pit
Large Animal Carcass Disposal.....Large Animal Carcass Disposal, Trench

Water Features
Water Features.....Hydrologic group
Water Features.....Surface runoff
Water Features.....Water table
Water Features.....Ponding
Water Features.....Flooding

Water Management
Ponds and Embankments.....Pond reservoir areas
Ponds and Embankments.....Embankments, dikes, and levees

Index for the Suitabilities and Limitations Tab in the Web Soil Survey

Interpretation — Category

Bivouac Areas.....Military Operations
Camp Areas.....Recreational Development
Catastrophic Mortality, Large Animal Disposal, Pit.....Disaster Recovery Planning
Catastrophic Mortality, Large Animal Disposal, Trench .....Disaster Recovery Planning
Clay Liner Material Source.....Disaster Recovery Planning
Composting Facility - Subsurface.....Disaster Recovery Planning
Composting Facility - Surface.....Disaster Recovery Planning
Composting Medium and Final Cover.....Disaster Recovery Planning
Construction Limitations for Haul Roads and Log Landings..Land Management
Corrosion of Concrete.....Building Site Development
Corrosion of Steel.....Building Site Development
Daily Cover for Landfills.....Sanitary Facilities
Dwellings With Basements Building.....Site Development
Dwellings Without Basements.....Building Site Development

Embankments, Dikes, and Levees.....Water management
Erosion Hazard (Off-Road, Off- Trail).....Land Management
Erosion Hazard (Road, Trail).....Land Management
Excavated Ponds (Aquifer-Fed).....Water management
Excavations for Crew-Served Weapon Fighting Positions...Military Operations
Excavations for Individual Fighting Positions.....Military Operations
Excavations for Vehicle Fighting Positions.....Military Operations
Farmland Classification (includes prime farmland
and farmland of statewide importance).....Land Classifications
Forest Productivity (Cubic Feet per Acre per Year).....Vegetative Productivity
Forest Productivity (Tree Site Index).....Vegetative Productivity
Gravel Source.....Construction Materials
Harvest Equipment Operability.....Land Management
Helicopter Landing Zones.....Military Operations
Hydric Rating by mapunit.....Land Classifications

Lawns, Landscaping, and Golf Fairways Building.....Site Development
Local Roads and Streets.....Building Site Development
Mechanical Site Preparation (Deep).....Land Management
Mechanical Site Preparation (Surface).....Land Management
Nonirrigated Capability Class.....Land Classifications
Nonirrigated Capability Subclass.....Land Classifications
Paths and Trails.....Recreational Development

Picnic Areas.....Recreational Development
Playgrounds.....Recreational Development
Potential for Seedling Mortality.....Land Management
Roadfill Source.....Construction Materials
Rubble and Debris Disposal, Large-Scale Event.....Disaster Recovery Planning
Sand Source.....Construction Materials
Sanitary Landfill (Area).....Sanitary Facilities
Sanitary Landfill (Trench).....Sanitary Facilities
Septic Tank Absorption Fields.....Sanitary Facilities
Sewage lagoons.....Sanitary Facilities
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