SECTION II

II - D. SOIL INTERPRETATIONS

4. Nonagricultural Land Uses

INTRODUCTION

The purpose of these interpretations is to help engineers, planners, and others understand how soil properties influence behavior when used for nonagricultural uses such as building site development and construction materials. Ratings for proposed uses are given in terms of limitations and restrictive features; suitability and restrictive features; or only restrictive features. Only the most restrictive features are listed. Other features may need to be treated to overcome soil limitations for a specific purpose.

Soils are rated in their "natural" state, that is, no unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance, with the benefits of the intended use.

BUILDING SITE DEVELOPMENT INTERPRETATIONS

General

Soil Properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Soil limitation ratings of "No Limitations" and "Limitations" along with the specific limiting feature(s) are given in the reports available through the USDA-NRCS Soil Data Mart and USDA-NRCS Web Soil Survey.

Within the Soil Data Mart, building site development interpretations are contained in the "Dwellings and Small Commercial Buildings (CA)", "Roads and Streets and Shallow Excavations (CA)", and "Lawns, Landscaping, and Golf Fairways (CA)" reports.

Within the Web Soil Survey, building site development maps and tables are found under the "Suitabilities and Limitations for Use" tab under the section "Building Site Development". "Lawns, Landscaping, and Golf Fairways (CA)" maps and tables are found under the section "Recreational Development".

Shallow Excavations (CA)
Shallow excavations are trenches or holes dug in the soil to a maximum depth of 5 or 6 feet. They are used for pipelines, sewer lines, telephone and power transmission lines, basements, open ditches, and cemeteries. The excavations are most commonly made by trenching machines or backhoes. The ratings are based on the soil properties that influence ease of digging and resistance to sloughing.

Dwellings and Small Commercial Buildings (CA)
These are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for commercial buildings without basements. The ratings are based soil properties and site features affecting soil strength and settlement under a load and those that affect excavation and construction costs. These properties and features include high water table, flooding, shrink-swell potential, organic layers, depth to bedrock or cemented pan, and large stones.

Local Roads and Streets (CA)
Limitation ratings are given for the use of soils for construction of improved local roads and streets that have all-weather surfacing, commonly of asphalt, gravel with binder in it, or concrete that is expected to carry automobile and light truck traffic all year. These roads and streets are graded to shed water, and conventional drainage measures are provided. With the probable exception of the hard surface, roads and streets are built mainly from the soil at hand.

Lawns, Landscaping, and Golf Fairways (CA)
The soils are rated for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential landscaping. These ratings are based on the use of soil material at the location with some land smoothing. Irrigation may or may not be needed and is not a criterion in the rating. Sand traps, trees, roughs, and greens are not considered as part of the golf fairway. The properties considered are those listed that affect plant growth and trafficability after vegetation is established.

CONSTRUCTION SOURCE MATERIALS

General

Soils are rated as sources for roadfill, topsoil, sand, and gravel. Suitability ratings of Good, Fair, or Poor are given for soils used as a source of roadfill, topsoil, sand, and gravel. The ratings for sand and gravel do not consider the quality of the source material because quality depends on how the source material is to be used. These ratings can be found in reports available on the USDA-NRCS Soil Data Mart and the USDA-NRCS Web Soil Survey.

Within the Soil Data Mart, interpretations for Construction Source materials are found in the “Source of Reclamation Material, Roadfill, and Topsoil (CA)” and “Source of Sand and Gravel (CA)” reports.

Within the Web Soil Survey, maps and tables for Construction Source materials are found under the "Suitabilities and Limitations for Use" tab, under the section "Construction Materials".

Roadfill Source (CA)
Roadfill consists of soil material that is excavated from its original position and used in road embankments elsewhere. The evaluations for roadfill are for low embankments that are less than 6 feet in height and are less exacting in design than high embankments such as those along superhighways. The rating is given for the whole soil, from the surface to a depth of about 5 feet, based on the assumption that soil horizons will be mixed in loading, dumping, and spreading. Soils are rated as to the amount of material available for excavation, the ease of excavation, and how well the material performs after it is in place.

Topsoil Source (CA)
The term "topsoil" has several meanings. As used here, the term describes soil material used to cover an area so as to improve soil conditions for the establishment and maintenance of adapted vegetation. Generally, the upper part of the soil, which is richest in organic matter, is most desirable; however, material excavated from deeper layers is also used. In this rating, the upper 40 inches of soil material is evaluated for use as topsoil. In the borrow area, the material below 40 inches is evaluated for its suitability for plant growth after the upper 40 inches is removed. The soil properties that are used to rate the soil as topsoil are those that affect plant growth, the ease of excavation, loading and spreading, and those that affect the reclamation of the borrow area.

Sand Source (CA)
Sand as a construction material is usually defined as particles ranging in size from 0.074 mm (sieve #200) to 4.75 mm (sieve #4) in diameter. Sand is used in great quantities in many kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show only the probability of finding material in suitable quantity. The suitability of the sand for specific purposes is not evaluated. If the lowest layer of the soil contains sand, the soil is rated as a Good source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness.

Gravel Source (CA)
Gravel as a construction material is defined as particles ranging in size from 4.76 mm (sieve #4) to 76 mm (3 inches) in diameter. Gravel is used in great quantities in many kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show only the probability of finding material in suitable quantity. The suitability of the gravel for specific purposes is not evaluated. If the lowest layer of the soil contains gravel, the soil is rated as a Good source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness.

Reclamation Source (CA)

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material, or unconsolidated geological material or both are placed in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the report do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.