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Standard Guide for Site Characterization for Environmental Purposes With Emphasis on Soil, Rock, the Vadose Zone and Ground Water[1]

This standard is issued under the fixed designation D 5730; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

This guide covers the selection of the various ASTM Standards that are available for the investigation of soil, rock, the vadose zone, ground water, and other media where the investigations have an environmental purpose.[2] It is intended to improve consistency of practice and to encourage rational planning of a site characterization program by providing a checklist to assist in the design of an environmental reconnaissance/investigation plan. The subsurface conditions at a particular site are usually the result of a combination of natural geologic, topographic, hydrologic, and climatic factors, and of historical modifications both natural and manmade. An adequate and internally consistent site characterization program will allow evaluation of the results of these influences. Site characterization for engineering, design, and construction purposes are addressed in a separate guide, Guide D 420.

The understanding of environmental processes occurring in soil and rock systems depends on adequate characterization of physical, chemical, and biological properties of soil and rock. Processes of interest may include, but are not limited to, surface and subsurface hydrology, contaminant mobilization, distribution, fate and transport; chemical and biological degradation of wastes; and geomorphological/ecological processes. Although this guide focusses primarily on characterization of soil and rock, it is understood that climatic and biotic factors may also be important in understanding environmental processes in soil and rock systems.

1. Scope

1.1 This guide covers a general approach to planning field investigations that is useful for any type of environmental investigation with a primary focus on the subsurface and major factors affecting the surface and subsurface environment. Generally, such investigations should identify and locate, both horizontally and vertically, significant soil and rock masses and ground water conditions present within a given site area and establish the characteristics of the subsurface materials by sampling or in situ testing, or both. The extent of characterization and specific methods used will be determined by the environmental objectives and data quality requirements of the investigation. This guide focuses on field methods for determining site characteristics and collection of samples for further physical and chemical characterization. This guide does not address special considerations required for characterization of karst and fractured rock terrane. In such hydrogeologic settings refer to Quinlan and Guide D 5717, **(1)**.

1.2 This guide refers to ASTM standard methods by which soil, rock, vadose zone, and ground water conditions may be determined. Laboratory testing of soil, rock, and ground-water samples is specified by other ASTM standards which are not specifically discussed in this guide. Laboratory methods for measurement of physical properties relevant to environmental investigations are included in Appendix X1.

1.3 The values stated in SI units are to be regarded as the standard.

[1] This guide is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.01 on Surface and Subsurface Characterization.

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[2] This guide is under the jurisdiction of Subcommittee D18.01 (Surface and Subsurface Characterization) of the Committee on Soil and Rock, and as such has a primary focus on subsurface characterization, including soil, rock, and fluids contained therein (including liquid and gaseous components), and subsurface biota. Surface hydrology, meteorology, air quality, geomorphic processes, biota, and waste materials (when present at a site) are to a greater or lesser extent linked to environmental processes in soil and rock systems. Consequently other ASTM methods of particular relevance to environmental site investigations are identified in this guide, but are addressed in less detail.

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