



## Standard Practice for Estimating Peat Deposit Thickness<sup>1</sup>

This standard is issued under the fixed designation D 4544; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

<sup>ε1</sup> NOTE—Section 1.3 was added editorially in January 1999.

### 1. Scope

1.1 This practice uses a technique of probing to estimate the thickness of surficial peat deposits overlying mineral soil or bedrock. These estimates may be needed for energy, horticultural, or geotechnical purposes.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

### 2. Referenced Documents

- 2.1 *NRC Canada Document:*  
Peat Testing Manual<sup>2</sup>

### 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *peat*—a naturally occurring organic substance derived primarily from plant materials.

### 4. Summary of Practice

4.1 The resistance to penetration of a pushed or driven rod will increase sharply at the boundary of a peat layer with underlying mineral soil or bedrock. When this abrupt change is measured in a series of probings with an appropriate spacing,

the thickness and areal extent of peat can be defined and the volume of peat may be calculated.

4.2 Sampling of the peat may be required to determine the peat characteristics.

### 5. Significance and Use

5.1 This practice allows the determination of the depth at which the resistance to penetration of a pushed or driven rod increases sharply. When the overlying material is peat and the underlying one is mineral soil or bedrock, the depth of change may be interpreted as the thickness of peat. Successive areal determinations of this depth, in combination with surface measurements of the lateral extent of peat will allow calculation of the volume of peat in the deposit.

### 6. Interferences

6.1 Sampling of the zone of contact of peat with underlying material is usually necessary to verify the interpretations of material change from the rod penetration resistances.

6.2 Where the peat – mineral transition zone is of significant thickness, or where the peat is underlain by soft clays or marls, further sampling and testing will be required (see 7.2).

6.3 The frequency of sampling is highly dependent upon the physical details of the deposit.

6.4 Penetration of the rod may be prevented by wood pieces in the peat deposit. Data should be examined and rechecked if this occurrence is suspected.

6.5 The thin and flexible nature of the rod strings will limit the depths of penetrating and sampling.

### 7. Apparatus

7.1 *Graduated Steel Rods*—Penetration is achieved with graduated steel rods of  $9.5 \pm 1.0$ -mm diameter and 1.0 or 1.2-m length,<sup>3</sup> which can be threaded together to penetrate a range of thickness. The rods are ringed at 200-mm intervals for easy estimation of depth. A ring with a short threaded end is screwed into the last section and another rod or stick inserted horizontally to facilitate pulling out the rod.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.18 on Peats and Related Materials.

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<sup>2</sup> Available from the National Research Council of Canada, Publications Section, Building R-88, Ottawa, Ontario, Canada K1A 0R6.

<sup>3</sup> For further information, see Jeglum, J. K., "Method for Measurement of Peat Thickness," *Peat Testing Manual*, Technical Memorandum No. 125, NRC Canada, May 1979, pp. 33–34.