

# ASTM STANDARDS RELATED TO ENVIRONMENTAL SITE CHARACTERIZATION



2006  
3rd Edition

ASTM Stock Number: ENVSIT06



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## Library of Congress Cataloging-in-Publication Data

ASTM standards related to environmental site characterization :  
p. cm.

"Stock #: ENV5IT06."

ISBN 0-8031-4475-X

ISBN 978-0-8031-4475-0

1. Environmental sampling--Standards--United States. 2. Pollution --Measurement--Standards--United States. 3. Hazardous waste sites--Evaluation--Standards--United States. 4. Atmospheric chemistry--Standards--United States. I. American Society for Testing and Materials.

GE45.S25A88 2006

628.50287--dc22

2006026849

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Printed in Lancaster, PA  
September 2006



# Foreword

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With the major environmental legislation passed in the 1970s and 1980s, environmental site characterization activities have increased dramatically. Although legislation initially focused on surface water and air quality, later actions, including the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response and Compensation Act (CERCLA), have provided protection for ground water. These laws frequently prescribe characterization of soil and ground water.

The U.S. Environmental Protection Agency (EPA) estimates there are more than 30,000 hazardous waste sites in the United States. Of these, 1,200 sites are on the U.S. EPA national priority list (CERCLA). There are also many thousands of underground storage tank sites where releases have been suspected. The cost of environmental site investigation and restoration is a very large domestic expenditure. The U.S. EPA will spend in excess of \$150 billion, and the U.S. Department of Defense and Energy will spend \$1 trillion on sites in the next 20-30 years. Standards have been one way to establish a consistent acceptable method of performing work.

To meet the industry and government need for evaluating environmental conditions at sites in the United States and internationally, ASTM Committee D18 on Soil and Rock created Subcommittee D18.21 on Ground Water and Vadose Zone Investigations, who worked closely with Subcommittee D18.01 on Surface and Subsurface Characterization. These two subcommittees have worked together to provide this valuable compilation of industry relevant standards for environmental site characterization and geophysics, which includes standards from other ASTM committees such as D19 on Water, D34 on Hazardous Waste, and E50 on Environmental Assessment.

When the earliest environmental legislation was being enacted, many old geotechnical or geohydrological testing methods were grandfathered as investigation methods in the first U.S. EPA guidance documents. As new methods were developed, they have been slow to be recognized. For example, many existing monitoring wells are sampled using the old three-well volume purge and bailer sampling techniques, while new technology requires low flow sampling and dedicated sampling pumps. New technologies, such as direct push investigation methods, have grown rapidly, and our ASTM committees are developing new standards continually. While the U.S. EPA provides guidance on proper ground water contamination sampling, the individual states have control over testing methods. In accordance with U.S. Office of Management and Budget guidelines, the U.S. EPA has begun to incorporate ASTM standards into their guidance documents.

ASTM offers another compilation of standards that complements this publication, *ASTM Standards on Environmental Sampling*. When performing environmental characterization, emphasis must be placed on preparing a thorough and detailed sampling plan, selecting the most technically correct sampling methods and equipment, and ensuring the accuracy of the sampling handling during shipment to laboratories. This publication should provide additional value and benefit to industry professionals involved in environmental sampling.

There are currently nearly 150 members in Subcommittees D18.01 and D18.21. Qualified professionals are always welcome to join ASTM in its standards developing activities.

Jeffrey Farrar, M.S., P.E.

Chairman, Subcommittee D18.21 on Ground Water and Vadose Zone Investigations

Joseph D. Ritchey, P.G., P.E.

Chairman, Subcommittee D18.01 on Surface and Subsurface Characterization

## RELATED PUBLICATIONS

ASTM has issued several publications that may be of interest to the users of this compilation of standards. These are listed as follows:

Adjunct to E 1528 Environmental Site Assessment Transaction Screen Questionnaire (Stock# ADJE1528)

ASTM Standards on Assessment and Remediation of Petroleum Release Sites (Stock# REMEDIATE)

ASTM Standards on Environmental Assessment (CD-ROM and print versions) (Stock# ENVASSESS)

ASTM Standards on Environmental Site Assessments for Commercial Real Estate, 5th Edition (Stock# E50COMP06/Print; E50CMP06CD/CD)

ASTM Standards on Environmental Sampling, 3rd Edition (CD-ROM and print versions) (Stock# ENVSAM06/Print; SAMP06/CD)

ASTM Standards on Identifying, Defining, and Disclosing Environmental Liabilities (Stock# ENVLIAB02)

ASTM Standards Related to the Phase II Environmental Site Assessment Process, 2nd Edition (CD-ROM and print versions) (Stock# PHASE201/Print; PHASE201CD/CD)

DS 64B Cleanup Criteria for Contaminated Soil and Groundwater, 2nd Edition

E 1903 Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process

E 2091 Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls

E 2247 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Farmland or Rural Property

Groundwater Natural Attenuation Calibration Tool Published by Groundwater Services, Inc.; distributed by ASTM (Stock# FATE5)

STP 1161 Leak Detection for Underground Storage Tanks

STP 1216 Environmental Toxicology and Risk Assessment, 2nd Volume

STP 1226 Lead in Paint, Soil and Dust: Health Risks, Exposure Studies, Control Measures, Measurement Methods, and Quality Assurance

STP 1333 Environmental Toxicology and Risk Assessment, 7th Volume

STP 1364 Environmental Toxicology and Risk Assessment: Standardization of Biomarkers for Endocrine Disruption and Environmental Assessment, 8th Volume

STP 1403 Environmental Toxicology and Risk Assessment: Science, Policy, and Standardization—Implications for Environmental Decisions, 10th Volume

STP 1470 Pesticide Formulations and Delivery Systems—Advances in Crop Protection Technologies, 25th Volume

**For further information on these publications, contact ASTM International Customer Service, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Phone: (610) 832-9585; email: [service@astm.org](mailto:service@astm.org); website: [www.astm.org](http://www.astm.org).**

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In the serial designations prefixed to the following titles, the number following the dash indicates the year of original issue, or in the case of revision, the year of last revision. Thus, standards adopted or revised during the year 2006 have as their final number 06. A letter following this number indicates more than one revision during that year, that is, 06a indicates the second revision in 2006, 06b the third revision, etc. Standards that have been reapproved without change are indicated by the year of last reapproval in parentheses as part of the designation number, for example, (2006). A superscript epsilon (<sup>ε</sup>) indicates an editorial change since the last revision or reapproval—<sup>ε1</sup> for the first change, <sup>ε2</sup> for the second change, etc.

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