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Management Practices for Control of Erosion and Sediment from Construction Activities

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AMERICAN SOCIETY OF CIVIL ENGINEERS

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PREFACE

From a brief assessment of the major areas for the control of erosion and sediment (ESR), this standard is written as summarized as follows.

In assembling the first draft of this document, Michael Clar reviewed a number of public guidance documents, from which he abstracted liberally from the best of the available information.

For example, Chapter 2, Background, borrows liberally from the Delaware Erosion and Sediment Control Handbook.

Chapter 6, Erosion and Sediment Control Plan, incorporates a substantial amount of information from the International Erosion and Sediment Control Association (IECA 2003).

Chapter 7 was also largely adapted from another document, from the Delaware Department of Natural Resources and Environmental Control (DNREC, 2013).

Chapter 8, Construction Inspection and Maintenance, was adapted from documents used by New Castle County in Delaware and the Delaware Construction Inspection program.

Chapter 9, Enforcement, was adapted from documents developed by New Castle County, Delaware.

The units in these guidelines are Système International (SI) units followed by customary units.

Major Resource Documents

The developers of these guidelines provide a special acknowledgment of the following documents, which served as valuable resources for the development of the standard.

Delaware Sediment and Stormwater Program, Division of Soil and Water Conservation, Department of Natural Resources and Environmental Control (DNREC). (2013). *Delaware erosion and sediment control handbook*, Dover, DE.

Department of Health, Environmental Health Administration, Bureau of Environmental Quality, Watershed Protection Division. (2003). "District of Columbia standards and specifications for soil erosion and sediment control." Government Printing Office, Washington, DC.

ICEA (International Erosion Control Association). (2001). "Workbook: How to select, install and inspect construction site erosion and sediment control BMPs for NPDES storm water permit compliance." Steamboat Springs, CO.

Maryland Department of the Environment, Natural Resources Conservation Service, and Maryland Association of Soil Conservation Districts. (2011). "Maryland standards and specifications for soil erosion and sediment control." Water Management Administration, Baltimore.

Michigan Infrastructure Services, Design and Construction Division, Department of Management and Budget. (2002). "Michigan soil erosion and sedimentation control guidebook." Grand Rapids, MI.

New York State Department of Environmental Conservation Soil and Water Conservation Committee. (2005). "New York State standards and specifications for erosion and sediment control." New York Dept. of State, New York.

Nonpoint Source Management Program, Department of Environmental Protection. (2003). "The Florida stormwater, erosion, and sediment control inspector's manual." Florida Dept. of Environmental Protection, Tallahassee, FL.

Pennsylvania Department of Environmental Protection, Bureau of Waterways Engineering and Wetlands. (2012). "Erosion and sediment pollution control program manual." Harrisburg, PA.

Virginia Department of Environmental Quality (VDEQ), Division of Soil and Water Conservation. (1992). *Virginia erosion and sediment control handbook*, 3rd Ed., Richmond, VA.

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These guidelines were developed by the Management Practice for the Control of Erosion and Sediment (MPCES) Standards Committee of the Standards Development Council of the Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers. The officers and members of the MPCES Standards Committee who balloted on the guidelines are listed as follows. The Development of the Design Guidebook (DDG) Subcommittee was involved with all revisions of the document. The Development of Regulatory Tools (DRT) Subcommittee was involved in the development of Appendix A.

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CHAPTER 1
INTRODUCTION AND SCOPE

The successful implementation of an erosion and sediment control (ESC) program is a multifaceted undertaking that includes a mix of administrative, legal, and technical issues. This standard provides guidelines for personnel involved in the implementation of erosion and sediment control programs. These affected industries include land development and construction, engineering and environmental services, regulatory including plan reviewers, field inspectors, and administrative personnel.

The guidelines are organized into nine chapters that address the following topics:

- Importance of clean water (background)
- Regulations and permitting
- Erosion and sediment processes and site planning concepts
- Erosion and sediment control practices and standards
- Erosion and sediment control plan
- Erosion and sediment control guidance for specific development types
- Construction inspection and maintenance
- Enforcement.

Chapter 2, Background, summarizes the importance of clean water. It includes a brief summary of the environmental and economic impacts of sediment pollution. It also provides an overview of the environmental and economic advantages of compliance with erosion and sediment control regulations.

Chapter 3, Regulations and Permitting, summarizes the erosion and sediment control laws and regulations at the federal, state, and local levels. This chapter also provides a summary of the recommended permitting procedures.

Chapter 4, Control Processes and Site Planning Concepts, provides an overview of a number of erosion and sediment control processes and site planning concepts. The erosion processes that are described include raindrop, sheet, rill, gully, and channel erosion. Factors influencing erosion that are described include climate/rainfall, soils, topography, vegetative cover, and management/conservation practices. Site planning concepts that are described include planning the development to fit the site, limits of clearing and grading, natural drainage areas, area and duration of exposure, perimeter control practices, preventing excessive on-site damage, runoff velocities and runoff retention, stabilizing disturbed areas, and maintenance and follow-up programs.

Chapter 5, Control Concepts, Practices, and Standards, provides an overview of erosion and sediment control practices and standards. The available control practices are organized into the following functional groupings:

- Erosion control for graded areas
- Erosion control for slopes
- Erosion control for drainage ways
- Sediment barriers
- Construction entrance
- Sediment traps
- Sediment basin.

Chapter 6, Erosion and Sediment Control Plan, provides guidance related to the preparation of an erosion and sediment control plan. This chapter describes the four main elements of an erosion and sediment control plan: narrative, map/site plan, construction details, and engineering calculations. Guidelines are provided on both the preparation and evaluation of an erosion and sediment control plan.

Chapter 7, Control Guidance for Specific Types of Development, provides guidelines for specific types of construction activities that include

- Road construction projects
- Utility construction
- Commercial / industrial development
- Residential development.

Chapter 8, Construction Inspection and Maintenance, provides guidance related to inspection and maintenance of erosion and sediment control practices. This chapter provides a summary of the standard operating procedures for inspection of soil erosion and sediment control. It provides guidance directed specifically at erosion control inspectors and addresses conduct, compliance, and handling violations. Guidance is also provided for conducting site inspections. The topics described here are the inspection, tolerances, preparation for an inspection, preconstruction conference, office preparation, site inspection, and causes of noncompliance. Guidelines are also provided on inspection of individual erosion and sediment control practices.

Chapter 9, Enforcement, provides a summary of the standard operating procedure on the enforcement of soil erosion and sedimentation control.

The units used in these guidelines are SI units followed by customary units in parenthesis, except for the Model Ordinance in Appendix A (only in customary units).

1.1 APPROPRIATE DOCUMENTS

The ASCE standards used in Appendix E are listed herein and can be obtained from ASCE, 1801 Alexander Bell Drive, Reston, VA:

ASCE. “Regulated riparian model water code.” ASCE/EWRI 40, Reston, VA.

ASCE. “Comprehensive transboundary water quality management agreement.” ASCE/EWRI 33, Reston, VA.

ASTM standards referenced herein are as follows:

ASTM. “Standard test method for deterioration of geotextiles by exposure to light, moisture and heat in a xenon arc type apparatus.” ASTM D4355, Developed by Subcommittee D35.02, Philadelphia, PA.

ASTM. “Standard test method for grab breaking load and elongation of geotextiles.” ASTM D4632, Developed by Subcommittee D35.01, Philadelphia, PA.

Appropriate documents other than the standards cited here are in Appendix E.