

FINAL

**New York State
Standards and Specifications
for Erosion and Sediment Control**



November 2016



Department of
Environmental
Conservation

November 2016 Blue Book Corrections

Page Number	Change
3.19	Inserted missing language under item 7.D. “Mowing”, right-hand column.
3.42	Removed “R” values (Riprap size) from figures 3.16
3.43	Removed “R” values (Riprap size) from figures 3.17
4.52	The fourth sentence under Item 1 of the “Specification for Full Soil Restoration” section has been updated to state “The physical parameters of the compost shall meet the standards listed in Table 5.2 – Compost Standards Table, except for “Particle Size” 100% will pass the ½” sieve”.
5.8	The “Particle size” in Table 5.2 – Compost Standards Table now reads “100% passing a 1” screen”.

NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL

Prepared By:

Donald W. Lake Jr., P.E., CPESC, CPSWQ
Adjunct Visiting Professor, SUNY College of Environmental Science and Forestry
Former Engineering Specialist, NYS Soil and Water Conservation Committee
State Conservation Engineer, USDA-NRCS, Retired

And the

New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Contributing Agencies:

Center for Integrated Waste Management, Cornell University
New York State Conservation District Employees Association
New York State Department of Environmental Conservation
New York City Department of Environmental Protection
New York State Department of State
New York State Department of Transportation
New York State Soil & Water Conservation Committee
United States Department of Agriculture Natural Resources Conservation Service—formerly the Soil Conservation Service

General Disclaimer

The mention of trade names, products, proprietary processes, or companies does not constitute an endorsement by the New York State Department of Environmental Conservation. References are used for the purposes of information sources and alternative concepts. This manual is intended for periodic update and thus, sections may be changed or added as criteria for

Binder Copies Printed By:



Empire State Chapter
Soil and Water Conservation Society

For:



New York State
Department of Environmental
Conservation

DEDICATION

Since 1993 there has been a relatively small group of dedicated individuals within NYS DEC Division of Water who were charged with the responsibility to protect the state's surface waters from pollution from construction site runoff. Their environmental vision, passion and energy have led us to this advanced document. It is for this we thank and acknowledge the following individuals:

N. G. Kaul (deceased)
Philip DeGaetano
Robin Warrender (deceased)
William Morton
Kenneth Stevens
Angus Eaton
Shohreh Karimipour
Patrick Ferracane

ACKNOWLEDGEMENTS

The latest revisions and additions to the New York State Standards and Specification for Erosion and Sediment Control have been prepared through the efforts of many individuals and organizations. Their contributions have been numerous and detailed. Several key individuals in these organizations comprised the core team responsible for the completion of this updated book of standards.

- Carol Lamb-LaFay, PE, NYS DEC, provided overall project management, guidance, and provided dedicated staff resources to complete this document.
- David Gasper, PE, NYS DEC, coordinated all aspects of compiling these standards into a comprehensive document, including the incorporation of drawings, charts, graphs and correlation of the document to other DEC program areas. He was also responsible for the DEC, public agency and peer review process and led the resolution and incorporation of review comments.
- Ryan Waldron, PE, NYS DEC, is the logistical expert behind the document. He was responsible for developing new CADD drawings for the book as well as updating all of the older drawings to meet current criteria. He incorporated all of the design charts and specifications and put the entire document in its current publisher format.
- Ellen Hahn Kubek, CPESC, CPSWQ, NYS DOT, formerly a NYS DEC employee when this project began, she provided editorial review throughout the standards development process and provided many photos for the book that enhance the completed work. She also coordinated field visits to a number of different types of construction projects where we gathered valuable information for this book.
- Donald W. Lake Jr., PE, CPESC, CPSWQ, worked closely with NYS DEC staff to prepare new technical standards and revise and update existing standards. He was engaged in providing technical review throughout the process and participated in the evaluation of peer review comments and outside agency input.

The following individuals greatly assisted in the development of this revised book of standards by arranging, coordinating and conducting field visits to a variety of active construction site:

- Kyle Buelow, CPESC, CPSWQ, O'Brien & Gere Engineers
- David Graves, CPESC, CPSWQ, NYS Department of Transportation
- Janine Shepherd, NYS Department of Transportation
- Patrick Ferracane, NYS, Department of Environmental Conservation
- Matt Gianetta, CPSWQ, NYC Department of Environmental Protection

- Joseph Damrath, CPESC, CPSWQ, PWS, NYC Department of Environmental Protection
- Blue Neils, CPESC, CPMSM, Cornell Cooperative Extension, Saratoga County
- Ken Barber, PE, Barber Engineering

A number of NYS DEC staff from different divisions assisted with the revisions to this document by providing review, comments, suggestions, sketches, and details. We acknowledge the following individuals for their contributions: Kathy Czajkowski, Carrie Buetow, Tom Lincoln, Dave Adams, Leslie Surprenant, Gary Feinland, Sally Rowland, Josh Thiel, Roy Jacobson, Karen Gaidasz, Thomas Noll, Peter Briggs, Chris Monaco, Eric Rodriguez, Holly Kneeshaw, and Scott Dietzel.

There were also a number of individuals from other agencies that assisted by reviewing and commenting on the different drafts of the document. We acknowledge the following individuals for their contribution: Mary Galasso (NYC DEP), Matt Giannetta (NYC DEP), Joseph Damrath (NYC DEP), Peter Wright (USDA NRCS), Tim Clark (NYS SWCC), James Austin (NYS DPS), Andrew Davis (NYS DPS), Jeremy Flaum (NYS DPS), Andrew Dangler, (ACOE); Kelly Emerick (Monroe County SWCD), Jo-Anne Humphreys (Oneida County SWCD) and Daniel Hitt, RLA (NYS DOT).

A special thanks to Britt Faucette, Filtrexx International, for his assistance with details on the compost filter sock standard and providing guidance on the compost material specifications.

Another special thanks to the Washington State, Whatcom Soil and Water Conservation District for providing photographic documentation for percentages of ground cover by grasses.

Also our thanks to the following individuals for their comments during the public/peer review process: John Dunkle, PE, CPESC, CPMSM; Kimberly Boyd, CPESC, CPMSM; Kevin Franke; Tom Jarret, PE; John Ellis; Philip Kozoil, PE; William Buetow; Maryann Ashworth, Andrew Fetherston, PE; Kurt Kelsey, Margaret Holden, Esquire; Karl Schoeberl; and Karen Morrison, PE.

In addition, a special acknowledgement to the developers of the following documents which served as valuable resources for the revisions and updates to this book of standards, and from which some related material was used with permission:

- Delaware Erosion and Sediment Control Handbook
- Pennsylvania Erosion & Sediment Pollution Control Program Manual
- Maryland Standards and Specifications for Soil Erosion and Sediment Control
- Environmental Management and Construction Standards and Practices for Underground Transmission and Distribution Facilities in New York State

PREFACE

The parent document, “Guidelines for Erosion and Sediment Control in Urban Areas of New York State,” was originally published by the USDA Soil Conservation Service in 1972 to provide information on minimizing erosion and sediment problems on land undergoing development. These guidelines were used by soil and water conservation districts, planning boards, property owners, land developers, contractors, and consultants.

Based upon the experience gained in the use of this document, a committee was formed in 1978 to update this guide. This committee contained specialists and representatives from government, academia and the private sector.

This committee completed their draft document, “Sediment and Erosion Control for Developing Areas,” in May 1980. Before this document could be finalized, technological advances and increased demand for natural resource planning due to increased urban pressure on rural areas, caused an additional need for revision and expansion of the technical chapters.

In March 1985, work resumed on the guide to expand the standards and specifications to include temporary and permanent structural measures for erosion and water control, update the discipline vocabulary, incorporate the most recent methods and procedures available, and to provide local planners and legislators with examples of public administration. This guidance document was completed and published in February 1987. The guide was again revised in mid-1991 to incorporate general updates, a chapter on calculating runoff, a chapter on bio-engineering, the addition of temporary and permanent practices and a site-specific example demonstrating the planning and design process.

A General State Pollution Discharge Elimination System (SPDES) permit for construction activities was approved for New York State by the Environmental Protection Agency (USEPA) on August 1, 1993.

A General SPDES permit was required for any construction site that disturbed five or more acres. It required that a Stormwater Pollution Prevention Plan (SWPPP) be prepared for each specific site. The SWPPP was required to address erosion and sediment control and stormwater management.

The General SPDES permit was revised in January, 2003 to incorporate the USEPA’s - National Pollutant Discharge Elimination System (NPDES) Phase 2 requirements. These required construction sites disturbing one or more acres to have an erosion and sediment control plan. The guidance document was re-written to incorporate the most recent developments in the discipline at that time and became the New York State Standards and

Specifications for Erosion and Sediment Control, August 2005.

Since the 2005 New York Standards and Specifications were published, the Construction General Permit has been re-issued twice. In 2008 the General Permit incorporated regulations for construction on slopes steeper than 25% with limits for over-lot and linear construction. It also excluded coverage from construction that impacted sites that were on national or state Historic Registers; and included a requirement that any disturbance that exceeded five (5) acres at one time had to have a letter from NYSDEC accepting the proposed work plan. The 2008 revision also provided standards for three watersheds that required the use of enhanced phosphorous removal techniques.

The 2010 version of the Construction General Permit added an additional phosphorous-impaired watershed as well as incorporated additional SWPPP requirements. Items incorporated in the SWPPP by reference to the New York State Stormwater Management Design Manual include soil restoration of over compacted construction areas and source control green infrastructure practices to promote runoff reduction and water quality maintenance.

The 2015 version of the Construction General Permit added EPA’s Construction and Development Effluent Limit Guidelines (ELGs) as required by 40 CFR 450.21. The ELGs apply primarily to the selection, design, and implementation of erosion and sediment controls (i.e. during-construction controls) to be used on a construction site. ELGs are technology-based effluent limitations that represent the degree of reduction attainable by the application of best practicable technology currently available. These non-numeric effluent limits require an owner or operator to ensure that water quality standards are being met and the discharge of pollutants are minimized through the selection, design and implementation of erosion and sediment control measures.

The purpose of this book of standards and specifications is to provide site developers with the minimum design standards for erosion and sediment control to protect water quality from adverse impacts due to construction activity and reduce sediment damage and associated maintenance costs of road ditches, storm sewers, streams, lakes, and flood control structures. It is distributed by the Empire State Chapter of the Soil and Water Conservation Society and also available on the New York State Department of Environmental Conservation’s stormwater web site.

This book of standards and specifications should be used by site developers in preparing their erosion and sediment control plans, and by local municipalities in preparing and

implementing their soil erosion and sediment control programs, reviewing proposed site development plans, establishing or encouraging uniformity through standards in applying erosion control techniques, and helping developers, private engineers, and planners make maximum use of potential development sites by proper management of their natural resources.

This book of standards and specifications was prepared with and under the direction of, the New York State Department of Environmental Conservation, Division of Water. It is issued by the New York State Department of Environmental Conservation as minimum standards for erosion and sediment control plans prepared for state permits.

TABLE OF CONTENTS

SECTION 1: INTRODUCTION

Purpose and Scope	1.1
Authority	1.1
Erosion and Sediment Hazards Associated with Construction	1.1
How to Use This Book of Standards	1.2
Basic Principles of Erosion and Sediment Control	1.4
Predicting Soil Losses	1.5
Estimating Sediment Yield.....	1.5
Determining Stormwater Runoff.....	1.5
Professional Certification.....	1.5
ESC Ordinances and Subdivision Regulation	1.5
Supplemental Standards	1.5

SECTION 2: EROSION CONTROL PLANNING AND SITE MANAGEMENT

Natural Resource and Watershed Planning	2.1
Environmental Site Design Plan	2.1
Erosion and Sediment Control Plan Components	2.1
Technical Data Requirements	2.1
General Design Process	2.2
Construction of ESCs	2.3
Inspection & Maintenance	2.4
Construction Activities.....	2.4
Linear Projects	2.5
Residential Development Projects	2.9
Commercial and Industrial Development	2.10
Institutional Development Projects	2.11
Water Resources Projects.....	2.12
Large Bulk Overlot Grading Projects.....	2.12
Design Process for Erosion and Sediment Control Plans.....	2.13
Erosion and Sediment Control Practices Matrix	2.15
Section Standards	
Construction Road Stabilization	2.23
Concrete Truck Washout	2.24
Dust Control	2.25
Protecting Vegetation During Construction	2.26
Site Pollution Prevention	2.29
Stabilized Construction Access	2.30
Temporary Access Waterway Crossing	2.32
Winter Stabilization	2.38

SECTION 3: EROSION CONTROL PART 1 - RUNOFF CONTROL

Scope and Discussion	3.1
Check Dam	3.2
Construction Ditch	3.4
Dewatering Sump Pit	3.7
Diversion.....	3.9
Earth Dike	3.14
Flow Diffuser	3.16
Flow Spreader	3.19
Grade Stabilization Structure	3.21
Grassed Waterway	3.23
Lined Waterway	3.27
Paved Flume	3.31
Perimeter Dike/Swale	3.35
Pipe Slope Drain	3.37
Rock Outlet Protection	3.39
Storm Drain Diversion	3.47
Subsurface Drain.....	3.48
Water Bar	3.52

TABLE OF CONTENTS

SECTION 4: EROSION CONTROL PART 2 - SOIL STABILIZATION

Scope and Discussion	4.1
Principles of Biotechnical Practices	4.1
Planning Considerations	4.3
Plant Materials	4.3
Anchored Stabilization Matting	4.5
Armored Slope and Channel Stabilization.....	4.7
Branch Packing	4.15
Brush Layer	4.17
Brush Mattress	4.19
Fertilizer Application	4.21
Fiber Roll	4.22
Landgrading	4.24
Lime Application	4.29
Live Crib Wall	4.30
Live Fascines	4.32
Live Stakes.....	4.34
Loose Stabilization Blankets	4.37
Mulching	4.39
Permanent Construction Area Planting	4.42
Recreation Area Seeding	4.45
Retaining Walls	4.48
Soil Restoration	4.52
Stabilization With Sod	4.54
Surface Roughening	4.56
Temporary Construction Area Seeding	4.58
Topsoiling	4.59
Tree Revetment	4.61
Trees, Shrubs, and Vines	4.63
Vegetated Rock Gabions	4.66
Vegetating Sand and Gravel Borrow Areas	4.68
Vegetating Sand Dunes and Tidal Banks	4.70
Vegetating Waterways	4.78

SECTION 5: SEDIMENT CONTROL

Scope and Discussion	5.1
Chemical Treatment	5.1
Buffer Filter Strip	5.3
Cofferdam Structure	5.5
Compost Filter Sock	5.7
Dewatering Device	5.10
Geotextile Filter Bag	5.16
Rock Dam	5.17
Sediment Basin	5.19
Sediment Dike	5.42
Sediment Tank - Portable.....	5.44
Sediment Trap.....	5.46
Silt Fence	5.54
Storm Drain Inlet Protection	5.57
Straw Bale Dike	5.63
Turbidity Curtain	5.65

TABLE OF CONTENTS

APPENDICIES

Appendix A: Revised Universal Soil Loss Equation	A.1
Appendix B: Design Process for Erosion & Sediment Control Practices	B.1
Appendix C: Cost Analysis of Erosion & Sediment Control Practices	C.1
Appendix D: Erosion Control for Small Residential Sites	D.1
Appendix E: Sample Checklist for Reviewing Erosion and Sediment Control Plans	E.1
Appendix F: Construction Site Inspection & Maintenance Site Log Book	F.1
Appendix G: Tree Species for New York State	G.1
Appendix H: Glossary	H.1
Appendix I: Directories	I.1