

# **Environmental Connection Conference 2017**

World's Largest Soil and Water Event

Atlanta, Georgia, USA  
21 - 24 February 2017

Volume 1 of 2

ISBN: 978-1-5108-4258-8

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2017) by International Erosion Control Association  
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact International Erosion Control Association  
at the address below.

International Erosion Control Association  
3401 Quebec St., Suite 3500  
Denver, CO 80207  
USA

Phone: (800) 455-4322  
Fax: (866) 308-3087

[ecinfo@iec.org](mailto:ecinfo@iec.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## VOLUME 1

### **EROSION AND SEDIMENT CONTROL**

<b>CONSTRUCTION SPENDING, LABOR &amp; MATERIALS OUTLOOK</b> .....	1
<i>K. Simonson</i>	
<b>DEVELOPING A STRONG ENVIRONMENTAL MANAGEMENT PROGRAM</b> .....	14
<i>C.A. Skanska</i>	
<b>FROM THE MOUNTAINS TO THE REEFS: WATERSHED REHABILITATION</b> .....	42
<i>C. Benson</i>	
<b>STREAM MANAGEMENT DURING PIPE AND CULVERT INSTALLATION</b> .....	86
<i>B. Blackburn</i>	
<b>PERFORMANCE EVALUATION OF SEDIMENT BARRIERS FOR CONSTRUCTION APPLICATIONS USING FULL SCALE TESTING METHODS</b> .....	113
<i>R.A. Bugg, W.N. Donald, W.C. Zech, M.A. Perez</i>	
<b>A STREAMLINED PROCESS IN SELECTING SOFT ARMORING FOR CONSTRUCTION SITES</b> .....	126
<i>A.E. Diehl</i>	
<b>RUSLE 2 FOR CONSTRUCTION AND MINING: NEW SCIENCE, NEW APPROACHES</b> .....	148
<i>D. Yoder, S. Dabney, D. Vieira</i>	
<b>FRAC OUT RESPONSE AND PREPAREDNESS</b> .....	161
<i>K. Wry, K. Giles-Lacy</i>	
<b>NATIVE PLANTS FOR POST CONSTRUCTION REVEGETATION: A COST/BENEFIT ANALYSIS</b> .....	181
<i>J.R. Turk</i>	
<b>ENHANCING SOIL BEGINS WITH SOIL BIOLOGY AND A STABLE SOIL MICROCLIMATE</b> .....	211
<i>J.L. Hatfield, K.M. Wacha, C. Dold, C.A. Cambardella, D.C. Olk, S.L. Trabue</i>	
<b>DESIGN &amp; CONSTRUCTION OF A VARIABLE INTENSITY RAINFALL SIMULATOR FOR LARGE-SCALE TESTING OF ROLLED EROSION CONTROL PRODUCTS</b> .....	224
<i>M.A. Horne, W.C. Zech, W.N. Donald, X. Fang</i>	
<b>NATURAL GAS PIPELINES: EROSIAN AND SEDIMENT CONTROLS - WHAT WORKS AND WHAT DOESN'T</b> .....	251
<i>K. Hurley</i>	
<b>EVALUATION OF ANCHOR SYSTEMS THROUGH FULL SCALE PULLOUT TESTING</b> .....	263
<i>J.E. Sprague, C.J. Sprague</i>	
<b>USE OF STEEL WIRE PRODUCTS IN SOIL BIOENGINEERING TECHNIQUES TO REDUCE CARBON FOOTPRINT</b> .....	270
<i>S. Mandavkar, M. Isola</i>	
<b>EFFECTIVE SKIMMER BASIN DESIGN</b> .....	280
<i>J. McCutchen</i>	
<b>DESIGN AND CONSTRUCTION EXAMPLES OF VEGETATED GEOSYNTHETIC-REINFORCED EARTH STRUCTURES</b> .....	312
<i>S. Miller</i>	
<b>NATURAL SOIL AMENDMENTS FOR BETTER ROOT GROWTH</b> .....	322
<i>T. Roess</i>	
<b>SEDSREAD: A SEDIMENT BASIN DESIGN TOOL FOR CONSTRUCTION SITES</b> .....	343
<i>M.A. Perez, W.C. Zech, W.N. Donald, X. Fang</i>	
<b>LARGE-SCALE PERFORMANCE ENHANCEMENT STUDY OF HIGH RATE SETTLERS IN SEDIMENT BASIN APPLICATIONS</b> .....	355
<i>M.A. Perez, W.C. Zech, X. Fang, J.G. Vasconcelos</i>	
<b>SEDIMENT CONTROL LOGS. WORKHORSE FOR CONSTRUCTION: WHAT DO WE THINK WE KNOW FOR DESIGN AND DURING FIELD IMPLEMENTATION. DO WE NEED TO KNOW MORE?</b> .....	369
<i>D. Stenlund</i>	
<b>THE SOLID STATE SKIMMER</b> .....	382
<i>J. Tyner, B. Pilon</i>	

<b>REVEGETATING CHALLENGING SITES</b> .....	400
<i>A. Zimmerman</i>	
<b>“DEVELOPMENT OF THE GEO-FIBER FILTER (GFF)<sup>TM</sup> - A GEOTECHNICALLY-ENGINEERED SEDIMENT CONTROL DRAIN INLET PROTECTOR (MADE FROM BIODEGRADABLE AFRICAN TROPICAL FIBER PLANTS)”</b> .....	438
<i>C.W. Adegoke, D.O. Olowokere</i>	
<b>SEDIMENT TRAPPING BY FIVE DIFFERENT SEDIMENT DETENTION DEVICES ON CONSTRUCTION SITES</b> .....	452
<i>M.M. McCaleb, R.A. McLaughlin</i>	
<b>SEDIMENT BASIN DESIGN: THE HOW TO'S</b> .....	461
<i>M. McCaleb</i>	
<b>BIOTIC SOIL TECHNOLOGY FOR SUSTAINABLE EROSION CONTROL AND REVEGETATION - SUCCESSFUL CASE STUDIES</b> .....	496
<i>M.S. Theisen</i>	
<b>USING TRM'S FOR HIGH PERFORMANCE APPLICATIONS</b> .....	545
<i>F. Barnes</i>	
<b>ESTABLISHING A CONSTRUCTION COMPLIANCE AUDIT PROGRAM FOR YOUR COMPANY</b> .....	584
<i>M. Goldsmith, G. Krishnan, A. Braga</i>	
<b>OMG-THE REGULATORS ARE HERE!</b> .....	615
<i>S. Yates, S. Garane</i>	
<b>HYGROSCOPIC HUMECTANTS INCREASE SEED GERMINATION, IMPROVE PLANT ESTABLISHMENT &amp; REDUCE DUST WITH LESS WATER</b> .....	636
<i>J. Spindler</i>	
<b>ABCS OF STORMWATER COMPLIANCE FOR CONSTRUCTION PROJECTS</b> .....	681
<i>J. Keyes</i>	

**MS4 MANAGEMENT**

<b>MS4 101: THE FIRST STEPS FOR A NEW PERMIT OR A NEW STAFF MEMBER</b> .....	702
<i>H. Buck</i>	
<b>MS4: TRACKING AND REPORTING</b> .....	724
<i>H. Buck</i>	
<b>MS4: MAINTAINING, IMPROVING AND ENHANCING OVERALL MS4 PROGRAMS</b> .....	740
<i>H. Buck</i>	
<b>THE ALABAMA DOT MS4 PROGRAM: A MID-TERM REPORT</b> .....	761
<i>S.W. Rogers</i>	
<b>CASE STUDIES: HOW LID CAN BE APPLIED IN THE REAL WORLD</b> .....	780
<i>S. Trinkaus</i>	

**STORMWATER MANAGEMENT**

<b>BUSINESS OPPORTUNITIES IN STORMWATER BMP INSPECTION AND MAINTENANCE</b> .....	850
<i>B. Lord</i>	

**VOLUME 2**

<b>INSPECTION AND MAINTENANCE PROGRAM DEVELOPMENT FOR THE CITY OF PHILADELPHIA'S GREEN STORMWATER INFRASTRUCTURE</b> .....	925
<i>C. Bergerson</i>	
<b>RAMSEY-WASHINGTON METRO WATERSHED DISTRICT</b> .....	930
<i>P. Ahlborg</i>	
<b>USING THE CLOUD TO CONTROL THE RAIN: HOW IOT IS TRANSFORMING STORMWATER MANAGEMENT IN BECKLEY, WV</b> .....	945
<i>M. Huffman</i>	
<b>STORMTANK: UNDERGROUND STORMWATER TREATMENT SYSTEM</b> .....	965
<i>N/A</i>	
<b>INTEGRATING ECOSYSTEM FUNCTION IN THE BUILT ENVIRONMENT</b> .....	980
<i>D. Baker, T. Hartsig</i>	

<b>STORMWATER SECRETS TO SUCCESS</b> .....	1006
<i>E. Brantley</i>	
<b>PREPARING STORMWATER TRAINING</b> .....	1060
<i>S.M. Daly, S.E. Haler</i>	
<b>LESSONS LEARNED FROM DEVELOPING AND IMPLEMENTING A FREE SIMPLE LID DESIGN TOOL IN TENNESSEE</b> .....	1079
<i>D. Yoder, J. Buchanan, T. Gangaware, A. Ludwig, J. Tyner</i>	
<b>THE PROBLEM AND SOLUTION: CONDUCTING ENVIRONMENTAL WORK WITH ARC GIS AND AN ANTENNA</b> .....	1092
<i>N/A</i>	
<b>PERVIOUS CONCRETE AND STORMWATER INFILTRATION IN PIEDMONT CLAY SOILS</b> .....	1104
<i>C. Estes</i>	
<b>EPA'S NEW 2017 CONSTRUCTION GENERAL PERMIT (CGP)</b> .....	1143
<i>E. Halter</i>	
<b>TREATMENT SYSTEM SELECTION PROCESS FOR AND INDUSTRIAL FACILITY ON A SUPERFUND SITE: CASE STUDY</b> .....	1154
<i>K. Sommer</i>	
<b>USING POLYMER ENHANCED BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND ENHANCE WATER QUALITY</b> .....	1170
<i>K. Iwinski, S. Iwinski</i>	
<b>POLYMER ENHANCED BEST MANAGEMENT PRACTICES USED PASSIVELY IN REMOTE AND EXTREME LOCATIONS</b> .....	1229
<i>E. Snell, J.J. Iwinski</i>	
<b>SUSTAINABLE WATERSHED MANAGEMENT AND LOW IMPACT DEVELOPMENT DESIGN IN A HIGHLY URBANIZED ENVIRONMENT</b> .....	1237
<i>N. Shapiro</i>	
<b>TIME OF CONCENTRATION FOR STORM WATER RUNOFF: AN EVALUATION OF ESTIMATING TIME TO DETERMINE PEAK RUNOFF FLOWS OF SMALL WATERSHED BASINS</b> .....	1291
<i>K. Kagy</i>	
<b>STORMWATER COMPLIANCE: A CONTRACTORS PERSPECTIVE</b> .....	1325
<i>J. Koepke</i>	
<b>WHO'S RESPONSIBLE FOR AMERICAS WATER QUALITY?</b> .....	1353
<i>T.L. Owen</i>	
<b>RELINING A TROUBLED CORRUGATED METAL CULVERT WITH CONCRETE CLOTH THREE YEARS IN SERVICE</b> .....	1371
<i>J. Paulson</i>	
<b>PREPARE FOR CHANGES TO STORMWATER PERMITTING &amp; ENFORCEMENT CONSTRUCTION INDUSTRY PERSPECTIVE</b> .....	1407
<i>L. Pilconis, M. Tomaino</i>	
<b>FLOOD-CON: REAL SOLUTIONS FOR RESPONSIBLE URBAN DEVELOPMENT</b> .....	1425
<i>J.E. Rasmussen, C.J. Wilder</i>	
<b>BUILDING GREEN: ATLANTA'S GREEN INFRASTRUCTURE APPROACH</b> .....	1455
<i>C. Rayburn</i>	
<b>CHANGING STORMWATER STRATEGIES FOR A CHANGING CLIMATE?</b> .....	1497
<i>P. Reagin</i>	
<b>TRANSITIONING FROM CONSTRUCTION TO POST CONSTRUCTION - SUCCESSFULLY!</b> .....	1523
<i>B. McLaughlin</i>	
<b>PROCESS WASHWATER MANAGEMENT</b> .....	1540
<i>D. Stenlund</i>	
<b>DEVELOPMENT OF A NATIONAL ASCE STANDARD FOR PERMEABLE INTERLOCKING CONCRETE PAVEMENT</b> .....	1559
<i>R.D. Bowers, D.R. Smith, D.K. Hein</i>	
<b>"BLUE BOOK 2.0" WHAT YOU'VE ALWAYS WANTED TO KNOW ABOUT THE 2016 EDITION OF THE GEORGIA STORMWATER MANAGEMENT MANUAL</b> .....	1576
<i>C. Faulkner</i>	
<b>MANUAL FOR EROSION &amp; SEDIMENT CONTROL IN GEORGIA</b> .....	1595
<i>N/A</i>	

**WETLAND, STREAM BANK, AND SHORELINE RESTORATION**

**A FLOW DURATION AND FLOOD FREQUENCY ANALYSIS FOR HABITAT RESTORATION  
IN THE SACRAMENTO RIVER, CALIFORNIA, USA**..... 1622  
*A. Aljafri, E. Berntsen, J. McCullah*

**DAM SEDIMENTS: OVER, UNDER, AROUND OR THROUGH**..... 1633  
*C. Benson*

**WHY AND HOW SHOULD PRE-QUALIFICATION BE IMPLEMENTED FOR STREAM  
RESTORATION CONSTRUCTION PROJECTS?** ..... 1668  
*N/A*

**TACOMA SPILLWAY REPLACEMENT CONSTRUCTION PROJECT** ..... 1674  
*R. Sturgeon*

**INNOVATIVE NATURE FRIENDLY STREAMBANK AND SHORELINE RESTORATION  
TECHNIQUES**..... 1691  
*U. Santha, L. Santha*

**DESIGN OF EROSION BANK PROTECTION APPLYING NUMERICAL MODELS**..... 1704  
*A.N. Menendez, G. Salerno, P.E. Garcia, D.M. Aran, E.A. Lecertua, J.D. Barrientos, C. Campos, C. Cruz*

**BIO-TECHNICAL BANK STABILIZATION** ..... 1721  
*N/A*

**RIVERBANK EROSION PROTECTION USING DURABLE ENGINEERED GEOSYNTHETIC  
MATERIALS**..... 1779  
*C. Timpson, T. Stephens, A.H. Diaz Jr., J. Ascencio*

**OTHER**

**OUT-EARN, OUT-LEARN & OUT-PROFIT: 2X CASH-FLOW + 3X PROFITS + 10X  
VALUATION**..... 1788  
*J.M. Guido*

**ALL EYES ARE ON YOU!**..... 1830  
*D. Salsinger, N. Schumm*

**Author Index**