

Minnesota Water Resources Conference

October 14-15, 2014

Saint Paul RiverCentre
175 West Kellogg Boulevard
Saint Paul, Minnesota



Final Program

Minnesota Water Resources Conference

October 14-15, 2014

Guidebook Mobile App

The Water Resources Conference has gone mobile! Attendees can plan their days with a personalized schedule and browse concurrent session and poster abstracts, presenter biographies, exhibitors, maps, and participate in the conference "backchannel" by posting on Twitter before and during the conference.

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We invite you to join the conversation about the Minnesota Water Resources Conference by tweeting about the symposium, or posting updates to your LinkedIn and Facebook pages. The conference hashtag is #mnwrc14. Type this hashtag in your tweet posts to continue the conference "backchannel," or you may also search Twitter for this hashtag to view the tweets online. These Social media efforts will help participants network and meet new colleagues prior to and during the conference.

Continuing Education Units (CEUs); Professional Development Hours (PDHs)

Conference attendees will receive .675 CEUs/PDHs for each day of the Minnesota Water Resources Conference. Participants who wish to receive full credit must attend all scheduled hours of the event.

Dinner Program:

Sponsored by American Society of Civil Engineers (ASCE) Minnesota Section

Thursday, October 16, 2014

"Mitigating Contaminant Vapor Intrusion into Buildings"

Check ASCE-MN website for details at www.ascemn.org.

NEW Features this year!

- Exhibitors
- Conference Mobile App for attendees
- Low Impact Development (LID) and Stormwater Management Workshop Track on Wednesday
- Extended session scheduled within program



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Minnesota Sea Grant College Program,
University of Minnesota
Natural Resources Research Institute,
University of Minnesota

Minnesota Water Resources Conference

October 14-15, 2014

Exhibitors

American Engineering Testing, Inc.....	10
American Society of Civil Engineers, Minnesota Section.....	24
Barr Engineering Company.....	4
Biobase-Navico.....	18
Bolton & Menk, Inc.....	1
Brock White Company.....	3
College of Continuing Education, University of Minnesota.....	25
Department of Civil, Environmental, and Geo- Engineering, University of Minnesota.....	23
Flexamat.....	5
HDR, Inc.....	16
Houston Engineering Inc.....	9
Hydro International.....	7
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Tech Sales Company.....	8
University of Minnesota Extension.....	19
University of Minnesota Extension (Water Resources Team).....	14
Upstream Technologies.....	6
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2014 Water Resources Planning Committee

John Baker, U.S. Department of Agriculture, and Department of Soil, Water, and Climate, University of Minnesota

Ann Banitt, U.S. Army Corps of Engineers

Jeff Berg, Minnesota Department of Agriculture

John Bilotta, MN Sea Grant and University of Minnesota Extension

Sue Borowick, College of Continuing Education, University of Minnesota

Tina Carstens, Ramsey-Washington Metro Watershed District

Heather Dorr, College of Continuing Education, University of Minnesota

Bill Douglass, Bolton & Menk, Inc.

Nicole Freese, College of Continuing Education, University of Minnesota

Lisa Goddard, SRF Consulting Group, Inc.

Lorin K. Hatch, HDR Engineering, Inc.

Andrea Hendrickson, Minnesota Department of Transportation

Kimberly Hill, St. Anthony Falls Laboratory, University of Minnesota

Karen Jensen, Metropolitan Council

Stephanie Johnson, Mississippi Watershed Management Organization

Ron Leaf, Short Elliott Hendrickson, Inc.

Salam Murtada, Department of Natural Resources, Division of Waters

Jodi Polzin, CDM Smith, Inc.

Randy Neprash, Minnesota Cities Stormwater Coalition and Stantec

Shawn Schottler, St. Croix Watershed Research Station

Wayne Sicora, Natural Resource Group

**Faye Sleeper*, Water Resources Center, University of Minnesota

Gene Soderbeck, Minnesota Pollution Control Agency

James Stark, U.S. Geological Survey

Deborah Swackhamer, Water Resources Center, University of Minnesota

Stew Thornley, Minnesota Department of Health

Rick Voigt, Voigt Consultants, LLC

Greg Wilson, Barr Engineering Company

**Brad Wozney*, Minnesota Board of Soil and Water Resources

** Committee Co-Chairs*

Program Schedule – Tuesday, October 14, 2014

8:00 – 8:10 **Welcome**
Faye Sleeper, Water Resources Center, University of Minnesota

8:10 – 8:20 **Dave Ford Water Resources Award**

8:20 – 9:30 **Plenary Session**
Research in the U.S. EPA
Janet Keough, Associate Director for Science, Environmental Protection Agency Mid-Continent Ecology Division

9:30 – 10:00 **Break**

10:00 – 11:30 Concurrent Sessions I

Track A Rooms 1–3

Hydrologic Methods

Moderator: *Ann Banitt*, U.S. Army Corps of Engineers

Co-Moderator: *Jodi Polzin*, CDM Smith, Inc.

Potential Pitfalls in Hydrologic Analysis

Daniel Reinartz, Minnesota Department of Natural Resources

Effects of Updating Rainfall to Atlas 14, Case Study of the Rice Creek Watershed District

Michael Lawrence, Houston Engineering, Inc.; *Phil Belfiori*, Rice Creek Watershed District; *Chris Ottermess*, Houston Engineering, Inc.

Development of New Methods to Quantify Effective Impervious Area in Urban Watersheds

Ali Ebrahimian and *John Gulliver*, St. Anthony Falls Laboratory, University of Minnesota; *Bruce Wilson*, University of Minnesota

Track B Rooms 4–6

Applied Hydraulic Design

Moderator: *Ron Leaf*, Short Elliot Hendrickson, Inc.

Co-Moderator: *William Douglass*, Bolton & Menk, Inc.

Modeling a Low-Head Dam Retrofit with a 2D Hydraulic Model (Adaptive Hydraulics)

Jeff Weiss, *Ron Koth*, and *Erik McCarthy*, Barr Engineering Company

Revisiting Tumbling Ring Design and Performance

William Douglass, Bolton & Menk, Inc.

Walls of Water, Transforming Rainwater into a Work of Art

Ron Leaf, Short Elliot Hendrickson, Inc.

Track C Ballroom C

Lakes

Moderator: *Lorin Hatch*, HDR Engineering, Inc.

Co-Moderator: *Gene Soderbeck*, Minnesota Pollution Control Agency

Minnesota's 2012 National Lakes Assessment: National, State, and Ecoregion-based Approach

Steven Heiskary, Minnesota Pollution Control Agency

Shallow Lake Management on a Shoestring Budget

Rebecca Kluckhohn and *Wes Boll*, Wenck Associates, Inc.; *Dennis Loewen*, Clearwater River Watershed District

Common Misconceptions Regarding the Use of Aluminum Sulfate (Alum) in Lakes

Joseph Bischoff and *Brian Beck*, Wenck Associates, Inc.

Track D Ballroom D

Assessment and Trends for Moving Water

Moderator: *Karen Jensen*, Metropolitan Council

Co-Moderator: *Brad Wozney*, Minnesota Board of Water and Soil Resources

Multiple Uses of Data from an Automated Monitoring Network in a Six-Mile Urban Stormwater Tunnel

Britta Suppes and *Bob Fossum*, Capitol Region Watershed District

Watershed Pollutant Load Monitoring Network: Data for Tracking and Determining Pollutant Sources, Source Contributions, and Delivery Dynamics

Patrick Baskfield, Minnesota Pollution Control Agency

Regional Progress in Water Quality: A Trend Analysis for Select Streams in the Twin-Cities Metro Area

Hong Wang, Metropolitan Council Environmental Services



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Program Schedule – Tuesday, October 14, 2014 (continued)

11:30 – 12:15 **Lunch**

12:15 – 1:00 **Luncheon Presentation**
Climate Impacts on Water Resources
Paul Douglas, Total Weather, LLC

1:15 – 2:45 Concurrent Sessions II

Track A Rooms 1–3

Using LiDAR and GIS Tools to Prioritize Conservation

Moderator: *Ann Lewandowski*, Water Resources Center, University of Minnesota

Co-Moderator: *Ann Banitt*, U.S. Army Corps of Engineers

Using Terrain Analysis to Implement a Watershed Restoration and Protection Strategy

Andrew Kessler, Mark Deutschman, Zach Herrmann, and Joe Lewis, Houston Engineering, Inc.

Identifying Priority Management Zones for Best Management Practice Implementation in Impaired Watersheds

Greg Wilson, Barr Engineering Company

Sub-Watershed Prioritization Tool

Tim Terrill, Mississippi Headwaters Board; *Mitch Brinks*, Crow Wing County Land Services

Track B Rooms 4–6

BMP Performance and Maintenance

Moderator: *Ron Leaf*, Short Elliot Hendrickson, Inc.

Co-Moderator: *Lisa Goddard*, SRF Consulting Group, Inc.

Transport of Urban Stormwater Derived Constituents Beneath Rain Gardens and Bioretention Areas in the Twin Cities Metro Area, Minnesota

Brian Davis, Metropolitan Council; *Caleb Arika, John Gulliver, Linse Lahti*, and *John Nieber*, University of Minnesota; *Peter Weiss*, Valparaiso University

Assessment of Bioretention Device Performance by Use of Water Level Recordings in Ontario, Canada

Michael Talbot, Emmons & Olivier Resources, Inc.; *Robb Lukes*, Credit Valley Conservation Authority

RWMWD Maintenance Program: Assessing BMP Maintenance

Paige Ahlborg, Ramsey-Washington Metro Watershed District

Track C Ballroom C

Sediment

Moderator: *Rick Voigt*, Voigt Consultants, LLC

Co-Moderator: *Jeff Berg*, Minnesota Department of Agriculture

From Field to Stream: Measuring Sediment and Nutrient Losses in Southeast Minnesota

Kevin Kuehner, Minnesota Department of Agriculture

Hydrologic Processes in Relation to Streambank Erosion in Three Rural Minnesota Watersheds

John Nieber, Kerry Holmberg, and *Christian Lenhart*, University of Minnesota

Characterizing Suspended-Sediment Concentrations and Sediment Transport Relations for Selected Rivers in Minnesota, 2007-2011

Christopher Ellison, U.S. Geological Survey; *Gregory Johnson*, Minnesota Pollution Control Agency; *Brett Savage*, U.S. Geological Survey

Track D Ballroom D

Sustainability

Moderator: *Wayne Sicora*, Natural Resource Group

Co-Moderator: *Randy Neprash*, Minnesota Cities Stormwater Coalition & Stantec

Minnesota Water Sustainability Framework: How Far Have We Come?

Deborah Swackhamer, Water Resources Center, University of Minnesota

Protecting Water Quality in Minnesota: Watershed-Based Strategies that are Moving the Needle

Michael Duval, Minnesota Department of Natural Resources; *Mitch Brinks*, Crow Wing County Land Services; *Timothy Cross*, Minnesota Department of Natural Resources; *Jeff Hrubes*, Minnesota Board of Water & Soil Resources; *Peter Jacobson*, Minnesota Department of Natural Resources; *Lindsey Ketchel*, Leech Lake Area Watershed Foundation; *Gary Michael*, Minnesota Department of Natural Resources; *Dan Steward*, Minnesota Board of Water & Soil Resources; *Paula West*, Leech Lake Area Watershed Foundation

Addressing TMDLs: Lessons Learned from the Perspective of MS4 Cities

Randy Neprash, Stantec, Inc. and Minnesota Cities Stormwater Coalition

Program Schedule – Tuesday, October 14, 2014 (continued)

2:45 – 3:15 Break

3:15 – 4:45 Concurrent Sessions III

Track A Rooms 1–3

LiDAR & Spatial Analysis

Moderator: *Stephanie Johnson*, Mississippi Watershed Management Organization

Co-Moderator: *Les Everett*, Water Resources Center, University of Minnesota

Using LIDAR to Assess Watershed Influence on In-channel Stream Condition for North Shore Tributaries

John Jereczek, Minnesota Department of Natural Resources

High-Resolution Maps of Forest-Urban Watersheds Present an Opportunity for Ecologists and Managers

Kirk Stueve, Natural Resources Research Institute, University of Minnesota, Duluth; *Tom Hollenhorst*, U.S. Environmental Protection Agency; *George Host* and *Lucinda Johnson*, Natural Resources Research Institute, University of Minnesota, Duluth; *John Kelly*, U.S. Environmental Protection Agency

Minnesota Statewide Potential Recharge Estimation (1997-2011) Utilizing the Soil-Water Balance Model

Erik Smith, *Melinda Erickson*, and *Stephen Westenbroek*, U.S. Geological Survey

Track B Rooms 4–6

Rethinking and Reinventing Water Infrastructure

Moderator: *Greg Wilson*, Barr Engineering Company

Co-Moderator: *Bill Douglass*, Bolton & Menk, Inc.

Reducing the Impacts of Extreme Precipitation Using Green Infrastructure: What's the Cost? An Economic Assessment

Hilarie Sorensen and *Brent Schleck*, Minnesota Sea Grant College Program, University of Minnesota

Reduce, Reuse, Replenish: The Three R's of Hugo's Stormwater Management Plan

Pete Willenbring, WSB & Associates, Inc.

Rainwater, Stormwater, Wastewater, and Industrial Water Reuse: Interdisciplinary Solutions to Water Management and Supply Problems

Erin Anderson Wenz, Barr Engineering Company

Track C Ballroom C

Nutrients

Moderator: *Jeff Berg*, Minnesota Department of Agriculture

Co-Moderator: *Lisa Goddard*, SRF Consulting Group, Inc.

Evaluating Agricultural Pesticides and Nitrogen Fertilizer Use in Minnesota

Thomas Bolas, Minnesota Department of Agriculture

Minnesota's Nutrient Reduction Strategy

Wayne Anderson, Minnesota Pollution Control Agency; *Jennifer Olson*, Tetra Tech, Inc.; *David Wall*, Minnesota Pollution Control Agency

P Speciation in Sediments of the Minnesota River Basin

Ashley Grundtner and *Satish Gupta*, University of Minnesota

Track D Ballroom D

Understanding and Managing Contaminants in Water

Moderator: *Jim Stark*, U.S. Geological Survey

Co-Moderator: *Karen Jensen*, Metropolitan Council

Presence of Pharmaceuticals in Select St. Croix River Tributaries

Sarah Elliott, U.S. Geological Survey

Groundwater and Surface-Water Interactions Down-Gradient from a Decades Old Crude Oil Spill

Brent Mason, U.S. Geological Survey

Managing Chloride Sources to the Alexandria Area Sanitary District's Wastewater Treatment Facility

Ian Peterson, Wenck Associates, Inc.



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4:45 – 5:45 Reception and Poster Session

Program Schedule – Wednesday, October 15, 2014

8:00 – 8:10 **Welcome**
Brad Wozney, Minnesota Board of Water and Soil Resources

8:10 – 9:30 **Plenary Session**
Carp: Biology and Politics
Peter Sorensen, Professor, Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota

9:30 – 10:00 **Break**

10:00 – 11:30 Concurrent Sessions IV

Track A Rooms 1–3	Track B Rooms 4–6	Track C Ballroom C	Track D Ballroom D	Low Impact Development (LID) and Stormwater Management Workshop
<p>Wetlands Moderator: <i>Salam Murtada</i>, Minnesota Department of Transportation Co-Moderator: <i>Tina Carstens</i>, Ramsey-Washington Metro Watershed District</p> <p>Wetlands for Water Quality: Lessons from Field Studies and Mesocosm Experiments <i>Christian Lenhart</i>, University of Minnesota; <i>Ken Brooks</i>, emeritus, University of Minnesota; <i>Dean Current</i> and <i>Nikol Ross</i>, University of Minnesota</p> <p>Status and Trends of Wetlands in Minnesota: Statewide Vegetation Quality Baseline <i>Michael Bourdaghs</i>, <i>John Genet</i>, <i>Mark Gernes</i>, and <i>Emily Peters</i>, Minnesota Pollution Control</p> <p>Addressing the Nutrient Driver Paradigm for Dissolved Oxygen in Small, Low Gradient Streams <i>Jeffrey Strom</i> and <i>Joseph Bischoff</i>, Wenck Associates, Inc.; <i>Diane Sander</i>, Crow River Organization of Waters</p>	<p>Fish/Trout 1 Moderator: <i>Gene Soderbeck</i>, Minnesota Pollution Control Agency Co-Moderator: <i>Ron Leaf</i>, Short Elliot Hendrickson, Inc.</p> <p>Common Carp Removal in a Shallow Urban Lake <i>William Bartodziej</i>, Ramsey-Washington Metro Watershed District; <i>Justine Koch</i>, University of Minnesota; <i>Eric Korte</i>, Ramsey-Washington Metro Watershed District; <i>Peter Sorensen</i>, University of Minnesota</p> <p>Diagnostic Applications of a Fish Community-based Stressor Index <i>John Sandberg</i>, Minnesota Pollution Control Agency</p> <p>Minnesota Super-Sentinel Lakes Program: Using Predictive Modeling to Assess Habitat Shifts for Cold-Water Fish <i>Richard Kiesling</i>, U.S. Geological Survey</p>	<p>Making a Difference Through Education and Outreach Moderator: <i>Andrea Hendricksen</i>, Minnesota Department of Transportation Co-Moderator: <i>Juanita Voigt</i>, MnDOT</p> <p>Skills for Local Water Resource Management: The Watershed Specialist Training Program <i>Ann Lewandowski</i> and <i>Faye Sleeper</i>, Water Resources Center, University of Minnesota</p> <p>Master Water Stewards: Community Leadership for Clean Water <i>Peggy Knapp</i>, Freshwater Society</p> <p>Making Research More Accessible: Updates to the Minnesota Water Research Digital Library <i>Christine Yaeger</i>, Minnesota Department of Agriculture; <i>Erik Anderson</i>, Washington Conservation District; <i>Adam Birr</i>, Minnesota Corn Growers; <i>Ann Lewandowski</i>, Water Resources Center, University of Minnesota</p>	<p>WRAPS Moderator: <i>Stephanie Johnson</i>, Mississippi Watershed Management Organization Co-Moderator: <i>Greg Wilson</i>, Barr Engineering Company</p> <p>The Applicability of Using HSPF in WRAPS/TMDL Projects <i>Timothy Erickson</i>, Houston Engineering, Inc.</p> <p>Predicting Pollutant Reductions for Watershed Implementation Strategies with SAM, an HSPF User Interface <i>Emily Javens</i>, <i>Julie Blackburn</i>, and <i>Jason Love</i>, RESPEC Consulting and Services</p> <p>Evaluation of Resource Management and Climate Change Scenarios using HSPF Model Applications, Pine River and Leech Lake River WRAPS <i>Julie Blackburn</i>, <i>Seth Kenner</i>, and <i>Joe Pallardy</i>, RESPEC Consulting and Services</p>	<p>A Miscellany of Thoughts, Considerations, and Lessons Learned about Planning, Design, Construction, and Maintenance of LID Stormwater Control Measures <i>Scott Struck</i>, Senior Professional at Geosyntec Consultants Past-Chair of Urban Water Resources Research Council; ASCE-EWRI Governing Board</p>

Program Schedule – Wednesday, October 15, 2014 (continued)

11:30 – 12:15 Lunch

12:15 – 1:00 Luncheon Presentation
Farming and Clean Water: Still Such a Long Way to Go

Craig Cox, Senior Vice President of the Environmental Working Group

1:15 – 2:45 Concurrent Sessions V

Track A Rooms 1–3	Track B Rooms 4–6	Track C Ballroom C	Track D Ballroom D	LID/Stormwater Management
<p>EXTENDED SESSION</p> <p><i>NOTE: TIMING FOR THESE PRESENTATIONS WILL NOT FOLLOW STANDARD TIMING.</i></p> <p>Sulfate, Mercury, and Wild Rice</p> <p>Moderator: <i>Shawn Schottler</i>, St. Croix Watershed Research Station</p> <p>Co-Moderator: <i>Dan Engstrom</i>, St. Croix Watershed Research Station</p> <p>Sulfate Enrichment and Water-Level Fluctuations Increase Methylmercury Production in a Northern Minnesota Peatland</p> <p><i>Jill Coleman Wasik</i>, University of Wisconsin River Falls; <i>Daniel Engstrom</i>, St. Croix Watershed Research Station; <i>Carl Mitchell</i>, University of Toronto Scarborough; <i>Edward Swain</i> and <i>Bruce Monson</i>, Minnesota Pollution Control Agency; <i>Steve Balogh</i>, Metropolitan Council Environmental Services; <i>Jeff Jeremiason</i>, Gustavus Adolphus College</p> <p>The Impact of Sulfate Releases on Methylmercury in the St. Louis River Watershed</p> <p><i>Jeff Jeremiason</i>, <i>Theresa Reiser</i>, and <i>Rachel Weitz</i>, Gustavus Adolphus College; <i>Mike Berndt</i>, <i>Megan Kelly</i>, and <i>Travis Bavin</i>, Minnesota Department of Natural Resources</p>	<p>Fish/Trout 2</p> <p>Moderator: <i>John Baker</i>, U.S. Department of Agriculture</p> <p>Co-Moderator: <i>Lorin Hatch</i>, HDR Engineering, Inc.</p> <p>Overwinter Invertebrate Community Dynamics in Groundwater-Fed Streams of Southeastern Minnesota</p> <p><i>Jane Mazack</i> and <i>Leonard Ferrington</i>, University of Minnesota; <i>Bruce Vondracek</i>, U.S. Geological Survey & Minnesota Cooperative Fish and Wildlife Research Unit</p> <p>Evaluation of Trout Stream Standards: Preserving and Enhancing the Vermillion River</p> <p><i>Bruce Wilson</i>, Emmons and Olivier Resources, Inc.</p> <p>Recruitment Dynamics of the Invasive Common Carp at a Watershed Scale</p> <p><i>Justine Koch</i>, University of Minnesota; <i>Loren Miller</i>, Minnesota Department of Natural Resources; <i>Peter Sorensen</i>, University of Minnesota</p>	<p>Stormwater Management</p> <p>Moderator: <i>Ron Leaf</i>, Short Elliot Hendrickson, Inc.</p> <p>Co-Moderator: <i>Wayne Sicora</i>, Natural Resource Group</p> <p>Re-creating Trout Brook</p> <p><i>Kathleen Anglo</i>, City of Saint Paul; <i>Bob Fossum</i>, Capitol Region Watershed District</p> <p>Implementation of Floating Weir System for Surface Skimming of Temporary Stormwater Ponds</p> <p><i>Dwayne Stenlund</i>, Minnesota Department of Transportation</p> <p>Webber Natural Swimming Pool - First Public Natural Swimming Pool in North America</p> <p><i>Robert G. Schunicht</i> and <i>Reid Schultz</i>, Landform Professional Services, LLC</p>	<p>Stormwater 2</p> <p>Moderator: <i>Bill Douglass</i>, Bolton & Menk, Inc.</p> <p>Co-Moderator: <i>Kimberly Hill</i>, St. Anthony Falls Laboratory, University of Minnesota</p> <p>A 10-Year Commitment to Water Quality: Adopting Stormwater Techniques into a Linear Roadway Project</p> <p><i>Chantill Kahler Royer</i>, <i>Lani Leichty</i>, Bolton & Menk, Inc. <i>Pete Young</i>, City of Prior Lake</p> <p>Life-Cycle Assessment (LCA) for Lower-Impact Infrastructure Design in Minnesota</p> <p><i>Matt Metzger</i> and <i>Louise Segroves</i>, Barr Engineering Company</p> <p>Targeting Properties of Stormwater BMP Retrofits</p> <p><i>Matt Kumka</i>, Barr Engineering Company</p>	<p>1:15-2:00</p> <p>Case Study #1 Riverside Avenue Project</p> <p>LID and Stormwater BMP Implementation for Streets and Highways</p> <p><i>Kurt Leuthold</i> and <i>Greg Wilson</i>, Barr Engineering Company and the City of Minneapolis</p> <p>2:00-2:45</p> <p>Current and Unfolding LID and Stormwater BMP Research</p> <p><i>Andy Erickson</i> and <i>John Gulliver</i>, St. Anthony Falls Laboratory, University of Minnesota</p>
	<p>Track A continued</p> <p>Methylmercury Production and Transport in Sulfate-impacted Lakes and Wetlands</p> <p><i>Nathan Johnson</i> and <i>Logan Bailey</i>, University of Minnesota, Duluth; <i>Daniel Engstrom</i>, St. Croix Watershed Research Station; <i>Carl Mitchell</i>, University of Toronto; <i>Jill Coleman-Wasik</i>, St. Croix Watershed Research Station; <i>Michael Berndt</i>, Minnesota Department of Natural Resources</p> <p>Hydroponic and Mesocosm Studies on the Effects of Sulfate and Sulfide on Wild Rice Growth and Seed Production</p> <p><i>John Pastor</i>, <i>Brad Dewey</i>, and <i>Nathan Johnson</i>, University of Minnesota Duluth; <i>Phil Monson</i>, <i>Edward Swain</i> and <i>Emily Peters</i>, Minnesota Pollution Control Agency</p>			

Program Schedule – Wednesday, October 15, 2014 (continued)

2:45 – 3:00 Break

3:00 – 4:30 Concurrent Sessions VI

Track A Rooms 1–3

EXTENDED SESSION - continued

NOTE: TIMING FOR THESE PRESENTATIONS WILL NOT FOLLOW STANDARD TIMING.

Sulfate, Mercury, and Wild Rice

Moderator: *Shawn Schottler*, St. Croix Watershed Research Station

Co-Moderator: *Dan Engstrom*, St. Croix Watershed Research Station

Field Studies of Physical and Chemical Characteristics of Wild Rice Habitat in Minnesota

Edward Swain, Minnesota Pollution Control Agency; *Amy Myrba*, Department of Earth Sciences, University of Minnesota; *Daniel Engstrom*, St. Croix Watershed Research Station

Control of Hypolimnetic Mercury Methylation by Liquid Calcium Nitrate Amendment: Redox Thresholds for Sulfide Mobilization of Iron, Manganese, Phosphate, and Methylmercury

David Austin, CH2M HILL

Synthesis: Sulfate, Mercury, and Wild Rice

Panel Discussion

Track B Rooms 4–6

Chlorides on the Move

Moderator: *Jodi Polzin*, CDM Smith, Inc.

Co-Moderator: *Andrea Hendrickson*, Minnesota Department of Transportation

Chlorides in Minnesota's Groundwater

Sharon Kroening, Minnesota Pollution Control Agency

Twin Cities Metropolitan Area Chloride Management Plan

Brooke Asleson, Minnesota Pollution Control Agency

Winter Maintenance Assessment Tool: An Innovative Planning Tool for Public Works to Manage Salt Use

Connie Fortin, Fortin Consulting, Inc.

Track C Ballroom C

Innovative Technology

Moderator: *Gene Soderbeck*, Minnesota Pollution Control Agency

Co-Moderator: *Rick Voigt*, Voigt Consultants, LLC

Lessons Learned During Woodchip Bioreactor Design and Install, Including First-Year Monitoring Results

Lisa Odens, Houston Engineering, Inc.

High Performance Green Infrastructure: Distributed Real-Time Monitoring and Control

Charlene Harper and *Marcus Quigley*, Geosyntec Consultants, Inc.

Matrix Riprap (aka Partially Grouted Riprap) for Spill-Through Bridge Abutments

Rita Weaver, University of Minnesota; *Nicole Bartelt*, Minnesota Department of Transportation

Track D Ballroom D

Water Resource Evaluation and Innovation

Moderator: *Jeff Berg*, Minnesota Department of Agriculture

Co-Moderator: *Tina Carstens*, Ramsey-Washington Metro Watershed

South Washington Conservation Corridor: Re-establishing Historic Watershed Connections

John Loomis and *Matt Moore*, South Washington Watershed District

Laying the Foundation for Characterizing the Long-Term Environmental Impact of Converting Pine Plantations to Modern Irrigated Cropping Systems

Luke Stuewe, Minnesota Department of Agriculture

Toward Effective Indicators of Animal Feeding Operation Contamination of Surface Water

Edwin Brands, University of Minnesota, Morris

LID/Stormwater Management

3:00-3:15

Continuation of Current and Unfolding LID and Stormwater BMP Research

3:15-4:15

Case Study #2 Cross Plains Wisconsin: A 38 Acre Private Residential LID Development

LID and Stormwater BMP Implementation for Private Property Development

James Bachhuber and *Caroline Burger*, Brown & Caldwell; *Roger Bannerman*, retired, Wisconsin Department of Natural Resources

4:00-4:30

Panel Q&A

4:30 Adjourn

Poster Display

The following posters will be displayed during the breaks and Tuesday reception.

1. Bald Eagle Lake Watershed Stormwater Re-use/Phosphorus Reduction Project

Kyle Axtell, Rice Creek Watershed District; Pete Willenbring, WSB & Associates, Inc.

2. Improving the Sediment Budgets of Minnesota River Tributaries with Statistical Analyses of Reach-Averaged Variables

Martin Bevis and Karen Gran, Department of Geological Sciences, University of Minnesota, Duluth

3. Understanding Land-Use Land Cover Effects on Water Quality in Human Dominated Watersheds

Evelyn Boardman and Jacques Finlay, University of Minnesota

4. Conservation Drainage for Agriculture

Chuck Brandel, ISG; Craig Austinson, Blue Earth County

5. Quantifying PAH Bioavailability During Habitat Restoration with Navigational Dredged Materials

Amanda Brennan, University of Minnesota Duluth

6. Lacustrine Responses to Decreasing Wet Mercury Deposition Rates: Results from a Case Study in Voyageurs National Park, Northern Minnesota

Mark Brigham, U.S. Geological Survey; David Gay, Illinois Water Survey and National Park Service; David Krabbenhoft, U.S. Geological Survey; Mark Sandheinrich and James Wiener, University of Wisconsin-LaCrosse

7. Watershed Education in the Red River Basin, A Multi-State Analysis

David Demuth, Jr. and Gregory D. Carlson, Valley City State University; Karen L. Terry, University of Minnesota Extension

8. A Watershed Management Framework for Minnesota Lakes

Michael Duval, Timothy Cross, and Peter Jacobson, Minnesota Department of Natural Resources

9. Applying a Targeted Watershed Approach to Land-Use Planning in North-Central Minnesota

Michael Duval, Minnesota Department of Natural Resources; Mitch Brinks, Crow Wing County Land Services Department

10. Applying a Targeted Watershed Approach to Protecting Water Quality and Other Priority Conservation Features in North-Central Minnesota

Michael Duval, Minnesota Department of Natural Resources; Lindsey Ketchel and Paula West, Leech Lake Area Watershed Foundation

11. Applying a Watershed Framework to Clean Water Program Implementation

Michael Duval, Minnesota Department of Natural Resources; Jeff Hrubec and Dan Steward, Minnesota Board of Water and Soil Resources

12. Applying Established Forest Stewardship Approaches to Private Forest Land on Targeted Lakesheds of North-Central Minnesota.

Michael Duval and Gary Michael, Minnesota Department of Natural Resources

13. The Presence of Contaminants of Emerging Concern in Minnesota Lakes Receiving Groundwater Influenced by Septic System Effluent

Sarah Elliott and Richard Kiesling, U.S. Geological Survey; Heiko Schoenfuss, Saint Cloud State University

14. Prioritizing Wetland Restoration and Conservation in Minnesota Using an Interactive GIS Web Tool: Phase II

Jeremy Erickson, Valerie Brady, and Terry Brown, Natural Resources Research Institute, University of Minnesota Duluth; Mark Gernes, Minnesota Pollution Control Agency; Lucinda Johnson, Natural Resources Research Institute, University of Minnesota, Duluth

15. The Southeast Lake Huron Rural Stormwater Management Model

Ryan Fleming, Cecilio Olivier, and Michael Talbot, Emmons and Olivier Resources, Inc.

16. A Long-Term Biological Monitoring Network for Understanding Variability of Aquatic Communities in Minnesota's Rivers and Streams

John Genet and John Sandberg, Minnesota Pollution Control Agency

17. Smart Bioremediation Technology to Achieve High-Sulfate Reduction in Mining Waters of Northeast Minnesota

David Hendrickson, Natural Resources Research Institute, University of Minnesota, Duluth

18. Conditioning Digital Elevation Models (DEM) in the Red River Basin - Methods and Lessons Learned

Zach Herrmann, Houston Engineering, Inc.; Grit May, International Water Institute; Henry Van Offelen, Minnesota Department of Natural Resources

19. Climate Change Effects on Coldwater Fisheries and Water Quality of Northern Minnesota Lakes

Meghan Jacobson, Emmons and Olivier Resources, Inc.

20. Subsurface Filtration Fish Barriers as an Innovative Carp Management Tool: Bone Lake Case Study

Meghan Jacobson and Greg Graska, Emmons and Olivier Resources, Inc.

21. Neighborhood Drainage Infrastructure Improvements Using Green Initiatives in the Village of Hinsdale, Illinois

Ajay Jain, HR Green, Inc.

22. Empire Wastewater Treatment Plant Volume Reduction System: A Tour of On-Site Best Management Practices

Karen Jensen, Metropolitan Council Environmental Services

23. A Method to Quantify the Impact of Seepage on River Bank Erosion

Andrew Kessler, Houston Engineering, Inc.

24. Economic Comparison of Borehole and River Sourced Water Supply System Through Life-Cycle Costing: Case Study of Ethiopia

Atekel Abebe Ketema, Institute of Sanitary Engineering and Water Pollution Control

25. Empire Wastewater Treatment Plant Green Roof: A Study to Determine Performance Efficiency of a Small Green Roof

Jennifer Kostrzewski, Karen Jensen, Cammy Johnson, and Kent Johnson, Metropolitan Council Environmental Services; Stephen Labuz, University of Minnesota; Scott Schellhaass, Metropolitan Council

26. South Washington Conservation Corridor: Stabilizing East Ravine

Michael Lawrence, Houston Engineering, Inc.

Poster Display—Continued

27. Comparison of In-Stream and Laboratory Procedures to Establish Relation Between Turbidity and Suspended-Sediment Concentration

Gustavo Merten, Department of Civil Engineering, University of Minnesota

28. Wind Farms and Water

Tom Miller, Luke Arnquist, and Chad Grismer, Westwood Professional Services

29. Modeling the Hydrological Effects of Wetland Restoration in the Le Sueur Watershed with SWAT

Nathaniel Mitchell, Department of Geological Sciences, University of Minnesota, Duluth

30. Robart's Creek Box Culvert Repair Within a Detailed Flood Insurance Study Area

Scott Morgan, Nicole Bartelet, and Shanna Kent, Minnesota Department of Transportation

31. Southern Minnesota Stream Bank Repairs

Scott Morgan, Nicole Bartelet, and Shanna Kent, Minnesota Department of Transportation

32. Developing the Framework for the One Watershed, One Plan

Rachel Olim, University of Minnesota; *Melissa Lewis*, Minnesota Board of Water and Soil Resources; *Joseph Magner*, University of Minnesota; *Doug Thomas*, Minnesota Board of Water and Soil Resources

33. Statewide Riparian Buffer Inventory of Minnesota's Rivers and Streams

Andrew Petersen, Minnesota Pollution Control Agency

34. South Washington Conservation Corridor Project: Design and Construction of a Storm Sewer Pipeline with 40+ foot Bury Depths

Matt Redington, HDR Engineering, Inc.

35. Results of a Comprehensive Water Quality Assessment of Select Metropolitan Area Streams

Emily Resseger, Metropolitan Council Environmental Services

36. The Legacy of Civil Engineering on Riverine Management and Restoration

Marty Rye, Superior National Forest

37. Contribution-Based Fees for Water Management Units in the Sauk River Watershed District

Paul Senne, RESPEC Consulting & Services; *Tara Ostendorf*, Sauk River Watershed District; *Emily Javens* and *Seth Kenner*, RESPEC Consulting & Services

38. Iowa Watersheds Project: Planning and Assessment of Distributed Flood Mitigation Strategies in Agricultural Watersheds

Nicholas Thomas, IIHR - Hydroscience & Engineering, University of Iowa

39. Comprehensive Natural Resource Planning in Red River Basin Watersheds – Simplifying a Complex Process to Essential Objectives and Strategies Needed to Improve Watershed Health

Henry Van Offelen, Minnesota Department of Natural Resources

40. Red River Basin Watershed Planning Tool - Applying Light Detecting and Ranging (LiDAR) Data, Emerging GIS Technologies, and Established Practices to Strategically Plan Projects to Improve Watershed Health

Henry Van Offelen, Minnesota Department of Natural Resources; *Charles Fritz* and *Grit May*, International Water Institute

41. Water Quality Trading Considering Flow Pollution and Stock Pollution

Zhiyu Wang, University of Minnesota

42. Mapping Undocumented Levees Using LiDAR Data and GIS

Terry Zien, U.S. Army Corps of Engineers