### WEDNESDAY – MARCH 14<sup>TH</sup>

7:30-8:45	MORNING LOGISTICS & MENTORSHIP PROGRAM ORIENTATION
Lobby	Registration and load PowerPoint presentations for concurrent sessions
Room 1D	Poster presenter and exhibitor set up Enjoy coffee and hot morning refreshments
Room 1B	Mentorship program breakfast and orientation – for pre-registered mentors and mentees only
8:45-10:00	OPENING SESSION
Room 1A	Conference Welcome Susan White & Nicole Wilkinson, NC Water Resources Research Institute Opening Keynote Robert Mirabal, Pueblo Traditional Farmer, Musician and Storyteller
10:00-10:20	NETWORKING BREAK
Room 1D	Networking, Refreshments, View Exhibits & Posters
10:20-11:40	CONCURRENT SESSION 1
Room 3	STORMWATER 1 Moderator: Rachel Taylor, NC State University
	10:20-10:40 Pushing the credited BMP design envelope in the Chesapeake Bay, Kevin Nunnery, Biohabitats Inc.
	10:40-11:00 Modeling alternative LID strategies in a nutrient sensitive watershed, Charles Stillwell, NC State University
	<b>11:00-11:20</b> NCDOT stormwater BMP monitoring to evaluate metals sampling methodologies, <b>Ryan Mullins</b> , NC DOT and <b>Maureen Harris</b> , Tetra Tech
	11:20-11:40 Coastal stormwater wet pond sediment nitrogen dynamics, Adam Gold, UNC-Chapel Hill

# Room 4 NUTRIENTS & WATER QUALITY 1 Moderator: John Fear, NC WRRI & NC Sea Grant 10:20-10:40 10:20-10:40 Probabilistic nitrogen source apportionment and loading trends in three North Carolina river basins, Hayden Strickling, NC State University 10:40-11:00 Organic nitrogen load sourcing in North Carolina coastal plain waters using stable nitrogen isotope analysis, Adam Chaffin, UNC Wilmington 11:00-11:20 Examining the link between laboratory-based microbial activity and field-scale water quality changes, Randall Etheridge, East Carolina University 11:20-11:40 Investigating precipitation and drawdown effects on nitrogen dynamics in waterfowl impoundments, Brian Hinckley, East Carolina University Room 5 STATEWIDE WATER RESOURCES PLANNING Moderator: Craig Caldwell, NC Division of Water Resources

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	10:20-10:40 Is water planning at the regional scale something NC should try (again)? Richard Whisnant, UNC-Chapel Hill
	10:40-11:00 Building regional water supply plans, Sydney Miller, City of Durham
	11:00-11:20 Water supply planning: current and future water demands, Linwood Peele and Klaus Albertin, NC Division of Water Resources
	<b>11:20-11:40</b> North Carolina's statewide water and wastewater infrastructure master plan: The Road to Viability <b>Francine Durso</b> , NC Division of Water Infrastructure
Room 6	WETLANDS 1
Session	Moderator: Rick Savage, Carolina Wetlands Association
Sponsored by:	<b>10:20-10:40</b> Letting the sun in - open canopy wetlands are critical to our amphibians, <b>Kristie Gianopulos</b> , NC Division of Water Resources
0	10:40-11:00 Macroinvertebrates in restored, re-established, and reference wetlands in North Carolina, Kristie Gianopulos, NC Division of Water Resources
	11:00-11:20 Background water quality of natural wetlands in North Carolina and the implications for wetland management, Jack Kurki-Fox, NC State University
	<b>11:20-11:40</b> Saltwater intrusion on the Albemarle-Pamlico Peninsula, <b>Matthew Stillwagon</b> , NC State University

# 11:40-1:00 NETWORKING & AWARDS LUNCHEON



Celebrate the 4<sup>th</sup> Annual Source Water Protection Awards

Hosted by Rebecca Sadosky and Julie Ventaloro, NC Division of Water Resources

### 1:00-2:40 CONCURRENT SESSION 2

Room 3	STORMWATER 2 Moderator: Dani Winter, NC State University
	1:00-1:20 The hidden impacts of phosphorus loading to streams and rivers, Michael Mallin, UNC Wilmington
	1:20-1:40 Bioswale design optimization for enhanced application and pollutant removal, Rebecca Purvis, NC State University
	<b>1:40-2:00</b> Evaluating the role of rain garden soils in nutrient processing of stormwater runoff in Charlotte, NC, <b>Cody Starnes</b> , UNC-Charlotte
	2:00-2:20 Stream and watershed responses to suburban development with green stormwater infrastructure, <b>Kristina Hopkins</b> , US Geological Survey
	2:20-2:40 Effect of visibility on maintenance investment and consequent performance of urban stormwater control measures, Sheida Moin, NC State University
Room 4	NUTRIENTS & WATER QUALITY 2
	Moderator: Kori Higgs, NC A&T University
	1:00-1:20 Integrated indicators: robust indicators for detection of water quality improvement, François Birgand, NC State University
	1:20-1:40 Alternatives to traditional SCMs for nutrient removal: an Algal Turf Scrubber®, Jonathan Baker, City of Durham
	1:40-2:00 Uncovering the sources of nutrient pollution to eutrophic Greenfield Lake, NC, Nick Iraola, UNC Wilmington

	2:00-2:20 Changing water quality in Falls Lake, the triangle's major potable source water, JoAnn Burkholder, NC State University
	2:20-2:40 Impact of urbanization on water quantity and quality – a live case study, Payal Bordia, UNC-Charlotte
Room 5	PLANNING AND PARTNERSHIPS FOR WATER AND WASTEWATER UTILITIES
	Moderator: Julie Leibach, NC Sea Grant
	1:00-1:20 Preliminary results from the North Carolina utility management survey, Carol Rosenfeld and Shadi Eskaf, UNC Environmental Finance Center
	<b>1:20-1:40</b> Preliminary analysis of the impact of long-term planning on utilities' financial resiliency and system performance, <b>Carol Rosenfeld</b> and <b>Shadi Eskaf</b> , UNC Environmental Finance Center
	1:40-2:00 An in-depth look at capital planning for water and wastewater utilities, Shadi Eskaf, UNC Environmental Finance Center
	2:00-2:20 Partnerships between water systems: Part 1, Jeff Hughes, Daniel Irvin, and Erin Riggs, UNC Environmental Finance Center
	2:20-2:40 Partnerships between water systems: Part 2, Jeff Hughes, Daniel Irvin, and Erin Riggs, UNC Environmental Finance Center
Room 6	WETLANDS 2
Session	Moderator: Kim Matthews, Carolina Wetlands Association
Sponsored by: Carolina Wetlands Association	1:00-1:20 Constructed wetlands to treat rural wastewater – another toll to improve watershed health in NC, Michael Burchell, NC State University
0	1:20-1:40 Efficacy of linear wetlands to treat agricultural drainage in the Little River watershed, Brock Kamrath, NC State University
	<b>1:40-2:00</b> Denitrification potential and greenhouse gas production in a constructed stormwater wetland, <b>Regina Bledsoe</b> , East Carolina University
	2:00-2:20 Converting dry detention basins to constructed stormwater wetlands for enhanced pollutant removal, Katy Mazer, NC State University
	2:20-2:40 Can floating treatment wetlands improve water quality in ponds? Bryan Maxwell, NC State University
2:40-3:10	NETWORKING BREAK
Room 1D	Networking, Refreshments, View Exhibits & Posters

### 3:10-5:00 **CONCURRENT SESSION 3**

### Room 1B CAREERS IN WATER RESOURCES

Session Sponsored by:

WRA

Are you a student or recent graduate interested in a career in the growing field of water resources? Are you a professional looking for a career change? Join this interactive session on careers in water resources. A variety of water resource sectors will be represented by over a dozen professionals who have diverse educational, professional, and personal backgrounds and who will share their experiences, knowledge, and advice about careers in this field. Participants will interact with and learn from our guests as they engage in a panel discussion, followed by a fun and fast-paced speed dating activity where participants will interact with professionals from each sector. Open networking in the session, followed by our poster session/evening reception will allow for additional follow up between participants and professionals.

See the end of the conference booklet for professional summaries of panelists to help participants choose who they might be most interested in meeting. Sample questions are provided if needed for the networking/speed-dating portion of this session.

### Room 3 **GREEN INFRASTRUCTURE IN SCHOOLS**

	Moderator: Christy Perrin, NC WRRI & NC Sea Grant
	<b>3:10-3:30</b> How a community came together to retrofit an existing playground for improved stormwater management and playability, <b>Robert Meehan</b> , Ellerbe Creek Watershed Association
	<b>3:30-3:50</b> Reaching beyond the stormwater benefits of school retrofits in Black Creek Watershed, Wake County, <b>Christy Perrin</b> , Water Resources Research Institute/NC Sea Grant, Black Creek Watershed Association
	<b>3:50-4:10</b> From the underground up: new construction with stormwater in mind, <b>Dan Schnitzer</b> , Chapel Hill-Carrboro City Schools
	4:10-5:00 Panel Discussion
Room 4	HARMFUL ALGAL BLOOMS
	Moderator: Gloria Putnam, NC Sea Grant
	3:10-3:30 On the Hunt for cyanotoxins in North Carolina waters, Astrid Schnetzer, NC State University
	3:30-3:50 Understanding the effectiveness of artificial mixing for harmful algal bloom control, Tarek Aziz, NC State University
	<b>3:50-4:10</b> A tale of two waterbodies: theories on SAV declines and cyanotoxin presence in Lake Mattamuskeet and the Currituck Sound, NC, <b>Michelle Moorman</b> , US Fish and Wildlife Service
	<b>4:10-5:00</b> Small Group Discussions: Closing the gaps in HAB research and collaboration in NC – pre-planning for statewide HAB symposium
Room 5	ONSITE WASTEWATER TREATMENT
	Moderator: Steven Berkowitz, NC Department of Health and Human Services
	<b>3:10-3:30</b> Development and application of a nutrient attenuation assessment methodology for Chesapeake Bay watershed onsite wastewater treatment systems, <b>Victor D'Amato</b> , Tetra Tech
	<b>3:30-3:50</b> Modeling onsite wastewater systems (OWSs) for nutrient fate and transport: the case of Lick Creek watershed, North Carolina, <b>Tewodros Assefa</b> , NC A&T State University
	<b>3:50-4:10</b> Controls on onsite wastewater nitrogen inputs to coastal watersheds: identifying risk factors for systems or regions with high potential for nutrient loading, <b>Michael O'Driscoll</b> , Duke University
	<b>4:10-4:30</b> Jordan Lake nutrient management study and associated septic system contributions – an update from the UNC Collaboratory, <b>Joseph Delesantro</b> , UNC-Chapel Hill
	4:10-5:00 Biochemistry of groundwater beneath three large on-site wastewater treatment systems in eastern North Carolina, Charlie Humphrey, East Carolina University
Room 6	WETLANDS 3
Session Sponsored by:	Moderator: Rick Savage, Carolina Wetlands Association
	3:10-3:30 The North Carolina Aquatic Data Hub, Paul Clark, NC Division of Water Resources
Carolina Wetlands Association	3:30-3:50 What's it worth? An ecosystem services valuation for wetland forests in the U.S. South, Sam Davis, Dogwood Alliance
	3:50-4:10 What's in the name? CarWa's Wetland Treasures Program, Amin Davis, Carolina Wetlands Association
	<b>4:10-5:00</b> Panel Discussion: Exploring tools and methods for communicating the value of wetlands to community leaders.

### Sign up for PDH/CEU credits for day 1 and turn in sponsor evaluation form at registration desk

5:00-7:00 POSTER SESSION & NETWORKING RECEPTION

Room 1D

Join us for poster presentations and to meet poster authors, and to network with conference participants and exhibitors. Enjoy heavy hors d'ouvres, beer from NC State University's Fermentation Science Program and musical entertainment by Doug Sours.

## THURSDAY – MARCH 15<sup>TH</sup>

8:00-8:40	MORNING LOGISTICS & MENTORSHIP PROGRAM BREAKFAST
Lobby	Registration, Load PowerPoint presentations for concurrent sessions
Room 1D	View posters, exhibits and enjoy coffee and morning refreshments
Room 1B	Mentorship program breakfast and discussion – for pre-registered mentors and mentees only

### 8:40-10:20 CONCURRENT SESSION 4

Room 3	STAKEHOLDER ENGAGEMENT AND CONSENSUS BUILDING Moderator: Paul Clark, NC Department of Environmental Quality
	8:40-9:00 Catalyzing collaboration with Strategic Doing <sup>™</sup> , Jane Harrison and Gloria Putnam, NC Sea Grant
	<b>9:00-9:20</b> GIS mapping of volunteer cleanups at Jordan Lake to remove trash and tire loadings from stormwater, <b>Susan King</b> , NC State University
	9:20-9:40 Forums on the future of the Cape Fear river, Tom Hoban, Cape Fear River Assembly
	<b>9:40-10:00</b> Understanding community values and perceptions on wastewater reuse and chemical contaminants of concern, <b>Melanie Hedgespeth</b> , NC State University
Room 4	AGRICULTURE AND WATER QUALITY
	Moderator: Susan White, NC WRRI & NC Sea Grant
	8:40-9:00 Changes in agricultural best management practice performance under potential future climate, Michelle Schmidt, Tetra Tech
	9:00-9:20 DRAINMOD-P Model: Current and future modifications, Manal Askar, NC State University
	<b>9:20-9:40</b> Impact of drying-rewetting cycles on nitrate removal rates in woodchip bioreactors, <b>Bryan Maxwell</b> , NC State University
	<b>9:40-10:00</b> Landscape-scale watershed study of the effect of swine CAFOs on concentrations of antibiotic-resistant <i>E. coli</i> and swine-specific fecal bacteria, <b>Elizabeth Christenson</b> , UNC-Chapel Hill
Room 5	TRIANGLE AREA WATER SUPPLY MONITORING PROJECT: 30 YEARS OF WATER QUALITY TRENDS IN THE REGION
	Moderator: Jen Schmitz, Triangle J Council of Governments
	<b>8:40-9:00</b> History, development, structure, and evolving objectives of the project from 1988 into the future, <b>Jen Schmitz</b> , TJCOG
	<b>9:00-9:20</b> Trends in population, land cover, streamflow, and water-quality at selected project sites during a 25-year period: Part 1, <b>Mary Giorgino</b> , USGS
	<b>9:20-9:40</b> Trends in population, land cover, streamflow, and water-quality at selected project sites during a 25-year period: Part 2, <b>Mary Giorgino</b> , USGS

	9:40-10:00 Uses and benefits of project data and specialized investigations at the local, regional, and state level, Sydney Miller, City of Durham
Room 6	STREAM IMPACTS AND RESTORATION
	Moderator: Barbara Doll, NC Sea Grant
	<b>8:40-9:00</b> Assessing drivers of ecological health in NC piedmont streams and quantifying variations in macroinvertebrate sampling using Bayesian hierarchical modeling, <b>Jonathan Miller</b> , NC State University
	9:00-9:20 The presence of human and veterinary antibiotics in urban and rural streams of North Carolina, Austin Gray, UNC Greensboro
	<b>9:20-9:40</b> Effect of stream restoration on water quality and quantity in the coastal plain of North Carolina, <b>Cyrus Belenky</b> , NC State University
	<b>9:40-10:00</b> Comparison of pre-restoration and post-restoration in-stream solute transport and treatment in a restored coastal plain stream, <b>Dani Winter</b> , NC State University

### 10:00-10:30 NETWORKING BREAK

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Room 1D There

Networking, Refreshments, View Exhibits & Posters

## 10:30-11:50 CONCURRENT SESSION 5

Room 3	ENGAGING UNDERSERVED COMMUNITIES Moderator: Louie Rivers, NC State University
	<b>10:30-10:50</b> Stormwater management, green infrastructure, and social trust in African-American communities: a case study from southeast Raleigh, <b>Dresden McGregor</b> , NC State University
	10:50-11:10 Engaging eastern NC's Native American communities in discussions about water, energy and climate, <b>Ryan</b> Emanuel, NC State University
	11:10-11:30 Community engagement to determine influences on well water testing: a mental models approach, Frank Stillo, UNC-Chapel Hill
	<b>11:30-11:50</b> Assessing resilience among vulnerable populations impacted by flooding in eastern North Carolina: a mixed-methods approach, <b>Jasmine Hayes</b> , East Carolina University
Room 4	FORESTRY AND WATER QUALITY
	Moderator: Jobi Cook, NC Space Grant
	<b>10:30-10:50</b> An assessment of forestry best management practices in North Carolina, 2012-2016, <b>Alan Coats</b> , NC Forest Service
	<b>10:50-11:10</b> Effects of species conversion on transpiration and streamflow in the piedmont of North Carolina, <b>Johnny Boggs</b> , USDA Forest Service
	<b>11:10-11:30</b> Effect of fertilizer application to switchgrass intercropped coastal pine forest on drainage water quality, <b>Augustine Muwamba</b> , College of Charleston
	<b>11:30-11:50</b> Stream temperature and riparian forest management practices under a changing climate: Lookout Creek, Oregon, USA, <b>Hillary Nicholas</b> , Tetra Tech
Room 5	GROUNDWATER IN NORTH CAROLINA
	Moderator: Craig Caldwell, NC Division of Water Resources

	10:30-10:50 Title TBA Richard Spruill, East Carolina University
	10:50-11:10 What's the use? Tracking groundwater withdrawals in North Carolina, Michael O'Driscoll, Duke University
	<b>11:10-11:30</b> Private drinking water wells in NC: a tale of regulated-unregulated water, <b>Crystal Lee-Pow Jackson</b> , NC Department of Health and Human Services
	11:30-11:50 A survey of North Carolina's groundwater quality, Craig Caldwell, NC Division of Water Resources
Room 6	GEOMORPHIC ANALYSES AND PROCESS-BASED MODELING IN STREAM REHABILITATION
	Moderator: Kayla Kassa, NC State University
	<b>10:30-10:50</b> The development of a modeling framework for evaluating bank erosion stabilization practices for reach- scale sediment reduction, <b>Garey Fox</b> , NC State University
	<b>10:50-11:10</b> Recent advances in predicting cohesive soil detachment with the jet erosion test (JET), <b>Lucie Guertault</b> , NC State University
	<b>11:10-11:30</b> The application of a process-based methodology for evaluating bank erosion and sediment transport in restoration sites across streams in the North Carolina piedmont region, <b>Celso Castro-Bolinaga</b> , NC State University
	<b>11:30-11:50</b> The results of a stream rehabilitation project of four unstable streams in Henderson County, North Carolina as part of a mitigation plan, <b>Grant Ginn</b> , Stantec
11:50-1:00	NETWORKING LUNCH
Room 2	Lunch & Celebrate the Winners of the NCWRA-WRRI Student Poster Competition

# 1:00-2:20 CONCURRENT SESSION 6

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Room 3	INTERSECTION OF AMBIENT MONITORING, PRIVATE WELLS AND PUBLIC HEALTH Moderator: Amy Keyworth, Wake County Department of Environmental Services
	<b>1:00-1:20</b> Statewide groundwater quality monitoring in North Carolina: it's not rocket science but it is a big deal, <b>Christina Davis</b> , NC Division of Water Resources
	<b>1:20-1:40</b> A spatially explicit database of private wells for the monitoring of water quality in Gaston County, NC, <b>Eric Delmelle</b> , UNC Charlotte
	<b>1:40-2:00</b> The myth and reality of hexavalent chromium in drinking water wells in North Carolina and the connection to coal ash contamination, <b>Avner Vengosh</b> , Duke University
	<b>2:00-2:20</b> Private well water contamination: novel health risk assessment methods, <b>Jacqueline MacDonald-Gibson</b> , UNC Chapel Hill
Room 4	COASTAL PROCESSES AND WATER QUALITY
	Moderator: Alice Alonso, NC State University
	<b>1:00-1:20</b> What's salt got to do with it? Responses, barriers, and opportunities for agricultural adaptation to soil salinization in Hyde County, NC, <b>Eleanor Davis</b> , University of South Carolina
	1:20-1:40 The curious case of tidal creek dissolved oxygen variability, Natalie Nelson, NC State University
	<b>1:40-2:00</b> The role of storm-related discharge events on dissolved organic carbon quality and quantity in the Neuse River Estuary, NC, <b>Alexandria Hounshell</b> , UNC Chapel Hill

	2:00-2:20 Could seasonal mean sea level variations explain long-reported nutrient outwelling in the southeast coastal ocean? François Birgand, NC State University
Room 5	THE CHATHAM PARK WATERSHED PROTECTION PROGRAM
	Moderators/Co-Presenters: Hunter Freeman, Withers & Ravenel and Mike "Muddy" Schlegel, Whiteboard Academy
	1:00-1:20 The Chatham Park Watershed Protection Program Part 1: introduction and overview
	1:20-1:40 The Chatham Park Watershed Protection Program Part 2: methodology and goals of scoring system
	1:40-2:00 The Chatham Park Watershed Protection Program Part 3: incorporation of program into permitting processes
	<b>2:00-2:20</b> The Chatham Park Watershed Protection Program Part 4: elevating the character of development through the Chatham Park vision
Room 6	DAM REMOVAL AND THE IMPACTS ON STREAM CORRIDORS
	Moderator: Celso Castro-Bolinaga, NC State University
	<b>1:00-1:20</b> Milburnie dam removed as a privately financed stream mitigation bank, <b>George Howard</b> , Restoration Systems LLC
	1:20-1:40 Saving a private high hazard HOA dam from failure and lessons learned, Holly Miller, Town of Wake Forest
	<b>1:40-2:00</b> Propagation of sediment pulses after dam removal: opportunities and challenges, <b>Celso Castro-Bolinaga</b> , NC State University
	2:00-2:20 Additional presentation pending
2:20-2:45	NETWORKING BREAK
Room 1D	Networking, Refreshments, View Exhibits & Posters
2:45-4:45	PARTICIPATORY SESSIONS (See descriptions on next page)
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Room 3	GEN X AND EMERGING CONTAMINANTS OF CONCERN
Room 3	GEN X AND EMERGING CONTAMINANTS OF CONCERN Moderator: Katy May, NC State University Center for Human Health and the Environment
Room 3 Room 4	Moderator: Katy May, NC State University Center for Human Health and the Environment MANAGING NORTH CAROLINA'S WATER RESOURCES FROM THE BASIN UP
	Moderator: Katy May, NC State University Center for Human Health and the Environment
Room 4	Moderator: Katy May, NC State University Center for Human Health and the Environment         MANAGING NORTH CAROLINA'S WATER RESOURCES FROM THE BASIN UP         Moderator: Warren Miller, Fountainworks and Jordan Lake Partnership
Room 4 Room 5	Moderator: Katy May, NC State University Center for Human Health and the Environment         MANAGING NORTH CAROLINA'S WATER RESOURCES FROM THE BASIN UP         Moderator: Warren Miller, Fountainworks and Jordan Lake Partnership         CREATING EXCEPTIONAL PLACES: REFINING A NEW INNOVATIVE RANKING SYSTEM
Room 4	Moderator: Katy May, NC State University Center for Human Health and the Environment         MANAGING NORTH CAROLINA'S WATER RESOURCES FROM THE BASIN UP         Moderator: Warren Miller, Fountainworks and Jordan Lake Partnership         CREATING EXCEPTIONAL PLACES: REFINING A NEW INNOVATIVE RANKING SYSTEM         Moderator: Hunter Freeman, Withers & Ravenel and Mike "Muddy" Schlegel, Whiteboard Academy         SHOW AND SHARE SCIENCE: TIPS AND TOOLS FOR EFFECTIVE VISUALIZATION, DESIGN AND
Room 4 Room 5	Moderator: Katy May, NC State University Center for Human Health and the Environment         MANAGING NORTH CAROLINA'S WATER RESOURCES FROM THE BASIN UP         Moderator: Warren Miller, Fountainworks and Jordan Lake Partnership         CREATING EXCEPTIONAL PLACES: REFINING A NEW INNOVATIVE RANKING SYSTEM         Moderator: Hunter Freeman, Withers & Ravenel and Mike "Muddy" Schlegel, Whiteboard Academy         SHOW AND SHARE SCIENCE: TIPS AND TOOLS FOR EFFECTIVE VISUALIZATION, DESIGN AND COMMUNICATION OF YOUR RESEARCH

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