HOWARD COUNTY: LEADERS IN CONSERVATION

PRESENTER:
Hunter Slifka
Howard SWCD
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ADDITIONAL PRESENTER(S):
Neil Shaffer

ABSTRACT:

Howard County has been a leader in conservation for many decades. In most recent years due to the implementation of watershed projects and extensive efforts the small agricultural county has put itself on a pedestal. Implementing conservation can be difficult at times but when successful is one of the most gratifying feelings. Howard County feels much gratitude these days. In 2022 over 40,000 acres of cover crops were seeded in Howard County. The county leads the state in EQIP, tallying the most active contracts, most contract dollars & total acres. Howard County also contracted the most contracts in 2022 with the most dollars as well. Along with EQIP, Howard County is a leader within the CSP program. Currently the County is #2 overall in total CSP contracts & contract dollars. The Conservation Reserve Program has been very popular in the county as well. In 2022 Howard County sits #5 in the state for most CRP contracts. These numbers speak for themselves as is a testament to hard work in the office and dedication in the fields by our local farmers. Two watershed projects in the county allow for an even tighter connection with farmers and more one on one connections. Silver Creek Watershed Project Coordinator Neil Shaffer and Turkey River Headwaters Project Coordinator Hunter Slifka have both cemented their watershed projects in Howard County and proven results. While both have received the Iowa Agriculture Water Alliance Watershed Coordinator of the Year award, that is not their greatest accomplishment, but working with farmers everyday to help them sustain a lifestyle is. Howard County has found a way to implement conservation at a large scale and it can be very simple.

SPEAKER BIO(S):

Neil has been working at the Howard SWCD in 2001 where he started promoting CRP Buffer Strips. Since then he has completed a successful watershed project on Staff & Beaver Creek in northern Howard County. He has been working in the Silver Creek Watershed since 2012 where he has completed maybe some of the most successful conservation work in the nation. Neil was the IAWA Watershed Coordinator of the Year in 2020.

Hunter completed his undergrad degree in 2018 at Upper Iowa University, majoring in Conservation Management. While attending college he was able to begin working at the Howard SWCD as a District Technician. In 2018 he began working on the Turkey River Headwaters Watershed Project in Howard County. In 2022 Hunter was awarded the IAWA Watershed Coordinator of the Year.

TRACKING DOWNSTREAM WATER QUALITY BENEFITS OF URBAN STREAM RESTORATION

PRESENTER:

Steven Hohman
Environmental Protection Agency
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ADDITIONAL PRESENTER(S):

ABSTRACT:

Nonpoint source pollution is often the most significant source of pollution in streams of concern to resource managers across states, tribes, territories, and federal regulators. Urbanization and impervious surface cover contribute to increased nonpoint sources of nitrogen, phosphorus, sediment, heavy metal, and base cation concentrations in runoff. Additionally, urban streams suffer from streambank erosion and hydrologic disconnection, further contributing to the degradation of water quality and stream health. Stream restoration best management practices (BMPs) are often implemented to mitigate the impacts of urbanization, reduce pollutant concentrations, and improve stream health and water quality. The Clean Water Act Section 319 nonpoint source management program (319 program) provides federal assistance to state and local efforts to combat nonpoint source pollution. In the 319 program, it is presumed that all load reductions and benefits of stream restoration BMPs propagate downstream of BMP implementation, however there is little research to validate this assumption. We sampled Paint Branch Creek, an urban stream in Maryland, USA, every two weeks using high spatial resolution longitudinal monitoring from the headwaters to the mouth to identify how stream water quality (dissolved oxygen, conductivity, total dissolved solids, nitrogen, carbon, base cations, heavy metals) change along an urban stream with different land use features and restoration activities. Additionally, we sampled three restored stream reaches (above the restored reach and 0, 100, and 200 meters below the restored reach) to characterize how far downstream the water quality benefits, or tradeoffs, of various stream restoration activities propagate. Initial results suggest that dissolved oxygen, conductivity, total dissolved solids, pH, and salinity increase while oxidation reduction potential decreases moving downstream. Correlations between stream characteristics suggest that land use influences water quality in these streams. Improving our understanding of the efficacy and downstream benefits of stream restoration activities will allow stream restoration managers and stakeholders to better design, select, and implement restoration activities to maximize pollutant load reductions, stream health, and water quality improvements on broader/larger watershed scales.

SPEAKER BIO(S):

Steve Hohman has been a Life Scientist in the Water Division, State and Watershed Partnership Section, at EPA since September 2020. Steve serves as the Project Officer for Clean Water Act section 319 nonpoint source pollution management program where he provides technical assistance and oversight to implement best management practices that mitigate nonpoint source pollution into surface waters in the Commonwealth of Pennsylvania. Additionally, Steve has partnered with EPA's Office of Research and Development and the University of Maryland's Biogeochemistry Laboratory to study the impacts of partial stream restoration on water quality. Before working at EPA, Steve received his master's degree in soil and water science from the University of Florida. Steve was a graduate researcher in the Urban Ecosystem Ecology laboratory and studied the internal and external drivers of nitrogen cycling in stormwater management systems, specifically within stormwater ponds.

From Forgotten to Critical Resource: Planning for the Future with Wetlands

PRESENTER:
Michaela Lambert
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ADDITIONAL PRESENTER(S):

ABSTRACT:

Natural wetlands compromise just 6% of the earth's surface but are disproportionate in their function and biodiversity. Wetlands provide ecologically and economically important services, such as water storage, flood regulation, ground and surface water recharge, contaminant filtration and absorption, nutrient cycling, carbon storage, and critical habitat that supports a diversity of aquatic and terrestrial life. Both natural and restored wetlands have been shown to improve water quality through the sequestration or transformation of nonpoint source pollutants by trapping and slowing potentially erosive stormwater. It's estimated that, on a per-hectare basis, estuaries and freshwater floodplains/swamps were the world's two most valuable ecosystem types. However, wetlands worldwide have been drained for human uses including urban and agricultural purposes, disease management, and water transport. More than 22 states have lost more than half of their wetlands in the last 22 years. In Kentucky alone, over 80% of the natural wetlands have been lost. Because of their potential services and values, wetlands should be incorporated in watershed planning but are frequently left out. The Kentucky Division of Water and partners have created two tools that can be used to incorporate wetlands in planning, the KY Wetlands Rapid Assessment Method and the Wetlands Prioritization Tool. Kentucky's Nonpoint Source Management Program is taking several steps to incorporate wetlands more formally into its watershed planning, including the use of these tools. This presentation will discuss the importance of incorporating wetland resources into watershed planning, how Kentucky's NPS program is taking the steps to formally incorporate wetlands into it's 319(h) and watershed planning processes, and showcase some success stories within the Commonwealth of Kentucky.

SPEAKER BIO(S):

Michaela Lambert is an experienced freshwater scientist and project manager with the Kentucky Division of Water who is passionate about advocating for mutually beneficial projects and partnerships that enhance and protect Kentucky's waterways. She is a graduate of the University of Kentucky whose two B.S. degrees and M.S. degree focused on Equine Science and Natural Resources. Her undergraduate and graduate research primarily focused on the impacts of human activities and restoration potential in freshwater ecosystems. Michaela is formerly a River Basin Coordinator for the Big Sandy River in Kentucky. As the Nonpoint Source and Basin Team Section Supervisor, Michaela oversees the implementation of Kentucky's Nonpoint Source program, including the Clean Water Act Section 319(h) Nonpoint Source Grant Program, education and outreach initiatives, and basin coordination efforts for Kentucky's major river basins.

HOMEOWNERS ASSISTANCE PROGRAM: CONNECTING HOMES TO IMPROVE WATER QUALITY

PRESENTER:
Joanna Ashford
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ADDITIONAL PRESENTER(S):

ABSTRACT:

For many years, the Kentucky Division of Water's Nonpoint Source Program has worked with communities in watershed planning areas to pump out septic systems, repair systems or install new systems with the goal of improving water quality. Although these programs are popular and successful, they do not guarantee success in the future. Those systems will continue to need maintenance and pump outs.

With that problem in mind, KY's NPS program developed the Homeowner Assistance Program (HAP). This program works in areas with new or extended sewer lines to encourage, promote and fund homeowner connections to the new line and decommissioning of the septic system.

This session will cover the details of the program, lessons learned from connecting over 500 homes to dedicated sewer lines and continued successes.

SPEAKER BIO(S):

Joanna Ashford serves as the Watershed Branch Manager for the Kentucky Division of Water. In that role, she oversees GIS & data analysis, groundwater, water quantity & source water protection and nonpoint source programs. She previously supervised the Nonpoint Source and Basin Team Section which manages and maintains the 319(h) grant program. Prior to management, she held the Basin Coordinator position for the Green River Basin for four years working to improve water quality with local communities. When not at work, you can find Joanna spending time with her husband and two sons.

THE CASE FOR INVESTING IN PEOPLE TO MEET NPS REDUCTION GOALS

PRESENTER:
Jenny Seifert
University of Wisconsin-Madison Division of Extension
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ADDITIONAL PRESENTER(S):
Catherine DeLong
Craig Ficenec

ABSTRACT:

When it comes to reducing agricultural nonpoint source pollution, science shows that the single greatest indicator of conservation practice adoption by farmers is sustained interaction with a conservation professional. People and relationships - human and social capital - are foundational to achieving water quality goals. Yet, investments in people lag behind investments in research, technology, and practices, often undermining success.

At the watershed scale, watershed coordinators and similar practitioners are critical connectors and implementers, whose fundamental role is relationship management. However, watershed practitioners often feel isolated in their roles, are undercompensated, and can get overwhelmed by the demands of the job, leading to high turnover, disrupted relationships, and thwarted success.

This presentation will make the case for investing in people to meet goals for reducing Nonpoint Source Pollution and explore the importance of peer learning and professional development. We will share how we are developing a community of practice through an online community and virtual meet-up series, both organized by The Confluence for Watershed Leaders, to help watershed practitioners feel better connected and supported. We will also share what we are learning about professional development needs, the value of network building, and the funding and employment landscape for watershed practitioners. These insights will come from our experiences with programs such as Leadership for Midwestern Watersheds and Iowa State University Extension and Outreach's Watershed Academy and Land Stewardship Leadership Academy.

SPEAKER BIO(S):

Jenny Seifert is the Watershed Outreach Specialist for the North Central Region Water Network, a branded program within the Natural Resources Institute of the University of Wisconsin-Madison Division of Extension. She leads multi-state work across the Midwest and Mid-South to build leadership capacity among conservation professionals and farmers to help them succeed in achieving soil and water conservation goals, particularly in a watershed management context. She approaches this work with a lens formed by her training and experience in environmental communications and behavior change. Jenny has a joint MS degree in science communication and environmental studies from the University of Wisconsin-Madison and a BA in German Language and Literature and a minor in Religious Studies from the University of Virginia.

Catherine DeLong is the Water Quality Program Manager for Iowa State University Extension and Outreach. She works statewide to bring people together to share resources, ideas and perspectives about water quality, and to help Iowans understand the role they can play in Iowa's water future. She has an MS degree in Soil Science from Iowa State University, and a BA in International Relations from the University of St. Andrews in Scotland. Catherine has experience at all levels of conservation, having

previously worked for the county-level Soil and Water Conservation Districts as well as an international non-profit serving conservation professionals.

Craig Ficenec is Senior Director for Agricultural Conservation at Sand County Foundation, where he develops projects to improve water quality and wildlife habitat on the agricultural landscape. This includes the Leadership for Midwestern Watersheds conference series and professional network. Previously, Craig held program management and agricultural engineering roles with the USDA Natural Resources Conservation Service, and he led conservation efforts for an organic farming business incubator program on the central coast of California. Beyond the USA, Craig developed domestic water projects as a Peace Corps volunteer in Honduras, and supported watershed-based development projects with non-governmental organizations in the Peruvian Andes. Craig has a B.S. in environmental engineering from Iowa State University, and a M.S in Land Resources for the Nelson Institute at the University of Wisconsin - Madison.

WATERSHED RESTORATION AND PROTECTION STRATEGIES (WRAPS) – WHAT HAS BEEN ACCOMPLISHED AND WHERE ARE WE GOING?

PRESENTER:
Theresa Haugen
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ADDITIONAL PRESENTER(S):
Heather Johnson

ABSTRACT:

The Minnesota Pollution Control Agency (MPCA) has a long history of providing funding to and working with partners around the state to address water quality concerns. In the 1990s, the focus was through state Clean Water Partnership and federal Clean Water Act Section 319 projects, typically on a specific water body. With the passing of the Clean Water, Land and Legacy Amendment in 2008, increased funding allowed the MPCA to address water quality concerns on multiple fronts through watershed-wide work. To address the needs for the 80 major watersheds of the state, a comprehensive approach, which includes Watershed Restoration and Protection Strategies or WRAPS, was implemented. These reports pull together information on water quality monitoring, stressors, and modeling, as well as incorporate Total Maximum Daily Loads (TMDLs) findings for impaired waters, and strategies for non-impaired waters and impaired waters not addressed by TMDLs. This presentation will explain the WRAPS process, showcase several success stories and discuss what's next now that all initial 80 WRAPS have been completed.

SPEAKER BIO(S):

Theresa Haugen is currently the North Section Manager in the Watershed Division at the Minnesota Pollution Control Agency (MPCA). The North Section contains three units of staff located in the Detroit Lakes, Duluth, and Brainerd MPCA regional offices that provides for environmental problem solving with a focus on building local capacity to restore and improve the environment in the Red River Basin, Rainy River Basin, Upper Mississippi River Basin and the Lake Superior Basin. Theresa is a board member on the International Red River Watershed Board and the International Rainy-Lake of the Woods Watershed Board and an alternate board member on the Red River Basin Commission. Theresa has served in a variety of positions and leaderships roles over the last 15 years at the MPCA, including industrial and municipal wastewater permitting and Subsurface Sewage Treatment System compliance and enforcement. Theresa holds a Bachelor of Arts in Biology from the College of Saint Benedict and Masters in Public Administration and Environmental Studies from St. Cloud State University. She lives in central MN with her husband and two children. In her free time she enjoys reading, running, and anything outdoors with her family.

Heather Johnson is the South Watershed Section Manager at the Minnesota Pollution Control Agency (MPCA), she has been since 2022 . She manages staff who work on Watershed Restoration and Projection Strategies (WRAPS), Total Maximum Daily Load (TMDL) development, modeling, investigating biological stressors, managing Federal Section 319 grants and updating the Nutrient Reduction Strategy for Minnesota along with other work. She has over twenty years of experience in water quality and watershed work, including different position at local, state and federal offices. She has a BA in Environmental Studies from University of Minnesota-Duluth and a MS in Water Resources Science from the University of Minnesota-Twin Cities.

WATERSHED NUTRIENT REDUCTIONS FOR ACHIEVING GOALS DOWNSTREAM OF MINNESOTA

PRESENTER:
David Wall
Minnesota Pollution Control Agency
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ADDITIONAL PRESENTER(S):
Matt

ABSTRACT:

Minnesota has committed to work with other states and provinces to do its part to help reduce nutrient loads downstream of Minnesota, such as nutrients causing the large hypoxic zone in the Gulf of Mexico and eutrophication problems in Lake Winnipeg. To achieve downstream nutrient reduction, Minnesota's 2014 Nutrient Reduction Strategy (NRS) calls for each watershed (eight-digit Hydrologic Unit Code major watersheds (HUC8)) to do its part to cumulatively achieve goals for the Mississippi River, Red River and Lake Superior.

Since the 2014 NRS, Minnesota has improved its river monitoring and modeling information, enabling the State to recently develop estimates of nutrient load reduction planning targets for each HUC8 watershed outlet. The load reduction planning goals are intended to be one consideration for informing long-term Best Management Practice (BMP) implementation needs at the watershed scale. Each watershed can select a combination of nonpoint source BMPs to achieve the nutrient goals by using a simple on-line load reduction viewing tool.

The newly developed watershed outlet load reduction targets is part of a larger effort to update and improve Minnesota's NRS. This effort includes a re-assessment of BMP science and approaches to scale-up BMP adoption, and also aims to develop better ways to integrate the state-level strategy with watershed-scale planning and implementation. We will describe these efforts with an emphasis on the goals established for watershed outlets

SPEAKER BIO(S):

Dave works as an Environmental Research Scientist in the Watershed Division of the Minnesota Pollution Control Agency. Dave has spent much of his 35-year career working on rural nutrient-related issues, including work in the feedlot, nonpoint source, and watershed programs. He leads Minnesota's multi-agency Nutrient Reduction Strategy efforts to reduce nutrients in waters within Minnesota and those waters leaving the state. Dave is currently working to update and improve Minnesota's Nutrient Reduction Strategy, along with furthering the science of solutions to nutrient and hydrology-related concerns.

STREAMLINING AND INTEGRATING INFORMATION INTO NINE KEY ELEMENT PLANS IN MINNESOTA

PRESENTER:
Cindy Osborn, EdD
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ADDITIONAL PRESENTER(S):
Greg Johnson, MS

ABSTRACT:

Minnesota's federal Clean Water Act Section 319 Small Watersheds Grant Program was designed to provide long-term support to local units of government (LGU) to focus planning efforts on a small-scale watershed from problem identification to obtaining or protecting water quality standards. The NKE plan approaches the watershed as a complex system and multi-pronged efforts; the Small Watersheds Focus Program provides the funding and long-term support to continue forward momentum and progress.

The NKE provides the "stream map" from implementation to measuring this progress throughout the plan's goals, milestones, assessment criteria, and schedule. The specific goals and time-bound milestones of NKE planning will help the LGUs, citizens, and state agencies connect action to achievement. Focused planning and concentrated efforts optimizes time management, funding, and efforts to incorporate outcome measures that translates action into demonstratable progress. These smaller successes can be applied to larger goals, such as Minnesota's Nutrient Reduction Strategy and other state nonpoint source pollution (NPS) reduction goals. The achievements gained on a small scale are generalizable to larger and similar watersheds.

SPEAKER BIO(S):

Cindy Osborn, EdD, has almost 10 years of experience working for the Minnesota Pollution Control Agency. Since 2016, she has been the program administrator for the Section 319 grant and the Clean Water Partnership (CWSRF) Loan programs.

Greg Johnson, MS, has over 30 years of experience working as a research scientist for the Minnesota Pollution Control Agency. Since 2017 he has been the technical lead for the federal Clean Water Act Section 319 Small Watersheds Program.

THE AGRICULTURAL CONSERVATION PLANNING FRAMEWORK (ACPF): LEVERAGING PUBLICLY AVAILABLE DATA AND TOOLS FOR AGRICULTURAL WATERSHED PLANNING

PRESENTER:
Emily Zimmerman
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ADDITIONAL PRESENTER(S):
Richard Cruse
David James

ABSTRACT:

Spatial data and tools are increasingly used in agricultural watershed planning to identify practices for reducing nonpoint source nutrient loading of surface waters. The Agricultural Conservation Planning Framework (ACPF) is a science-based, data-driven approach to identifying site-specific opportunities to install BMPs across small watersheds. To do this, the ACPF leverages high-resolution, publicly available spatial data (e.g., terrain, soils, land use, field and watershed boundaries) and a publicly available ArcGIS toolbox to provide non-prescriptive menus of conservation options for landowners, farmers, and stakeholders. ACPF input data are available for over 12,200 small HUC-12 watersheds across 11 states in the US Cornbelt. The ArcGIS-based toolbox has several steps including terrain processing, development of stream network and catchments, field characterization, and BMP siting; presently, the tool identifies opportunities for ten different in-field, edge-of-field, and riparian BMPs. Results data from the ACPF can be visualized using maps to facilitate targeted conservation, support and encourage watershed planning, and promote stakeholder involvement.

The ACPF is supported by the ACPF National Hub, which is a multi-institutional collaboration funded by the USDA NRCS, to improve the agricultural watershed planning process to help agencies and communities achieve water quality goals. The ACPF National Hub supports ACPF and its users by maintaining a publicly available repository of input and results data and ArcGIS tools, providing training and outreach resources, collaborating on ACPF-related research, coordinating networks of ACPF users, and offering ACPF user support. The ACPF has been used by a variety of stakeholders, including federal and state agencies, counties and local governments, non-profit organizations, academic institutions, and consulting firms, to provide agricultural watershed planning and enhance BMP implementation to achieve nonpoint source nutrient reduction and water quality goals. More information about the ACPF and the ACPF National Hub is available online: https://acpf4watersheds.org/.

SPEAKER BIO(S):

Emily Zimmerman is an Assistant Professor in the Department of Natural Resource Ecology and Management and the Global Resource Systems Program in the Department of Horticulture at Iowa State University. Emily's research interests are focused on understanding the relationship between land use and ecosystem services in agricultural landscapes. Most recently, Emily's research has focused specifically on innovation and application of geospatial data and tools to identify opportunities for best management practices (BMPs) to enhance ecosystem services and estimate environmental and economic outcomes associated with those BMPs. Emily currently co-leads the ACPF National Hub and ACPF Financial and Nutrient Reduction Tool (FiNRT).

IMPROVING STREAMBANK STABILIZATION DESIGNS TO IMPROVE WATER QUALITY

PRESENTER:
Ethan Thies
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ADDITIONAL PRESENTER(S):

ABSTRACT:

The Black Hawk Lake watershed project has worked to reduce sediment transport to Black Hawk Lake in Sac County, Iowa since 2012. The most effective sediment reducing practice in the watershed has been stabilizing eroding streambanks along the main tributary, Carnarvon Creek. Over 20,300 feet of Carnarvon Creek streambanks have been stabilized, reducing sediment transport to the lake by over 2,400 tons per year. Stabilization projects in the watershed have used hard armoring techniques that armored banks with rock or concrete to the top of the bank and a two to one slope.

A recently completed 2,430-foot streambank stabilization project in the watershed utilized a new design for streambank stabilization from the Iowa DNR River Restoration Toolbox to stabilize eroding areas which uses a reduced rock height on a gentler slope. This change in design reduces rock quantity required, increases stream capacity, and provides a more natural appearance. Changing how stabilization in the watershed is done on such a large project created challenges to implementation. This presentation will discuss the partnerships that made this project possible and the challenges of implementing a new technique of streambank stabilization in the region.

SPEAKER BIO(S):

Ethan Thies is a Watershed Project Coordinator with the Iowa Department of Natural Resources working on the Black Hawk Lake and North Raccoon River watershed projects. Ethan has worked as a project coordinator since 2020 in West Central Iowa. Ethan is an Iowa State University alum with an undergraduate degree in Agricultural Systems Technology and a masters degree in Agricultural Education.

IOWA'S STATE LAND WATER QUALITY GRANTS

PRESENTER:

Steve Hopkins
Iowa Department of Natural Resources
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ADDITIONAL PRESENTER(S):

ABSTRACT:

Iowa ranks 49th in the country in the amount of public land and, in contrast to the large amounts of funding it has available for conservation on private land, it has limited funding for public land. To address the lack of funding for water quality work on public land in Iowa, in 2019 Iowa DNR's 319 Program created a "State Land Water Quality Grant" that funds water quality improvement or water quality demonstration projects applied for by DNR staff to be implemented on DNR-managed land, such as within state parks, wildlife management areas, state fish hatcheries, or state forests. Eligible projects are those that improve water quality within a DNR-managed area, or that a demonstrate an innovative water quality practice and effectively communicate water quality messages to Iowans. All projects must be linked to Iowa's Nonpoint Source Management Program plan, but are not required to be within a watershed plan area. Awarded projects have included trout stream restoration, wetland restoration, oak savannah restoration, invasive species removal, a bioretention cell, and informational signage. Completed projects are required to report on pollutant load reductions and to provide before and after photos at project sites.

SPEAKER BIO(S):

Steve Hopkins is the Nonpoint Source Coordinator with the Iowa Department of Natural Resources (DNR), where he manages the EPA Section 319 grant that funds watershed projects and other water quality projects to improve Iowa's lakes, rivers, and streams. Steve has been with Iowa DNR for 23 years, has served as the NPS Coordinator for 17 years, and has worked in natural resource protection for 39 years. Prior to working in the NPS program, he worked in the public drinking water, private water well, and onsite wastewater programs at Iowa DNR. He also operated one of the first dairy farms in Iowa to use prescribed rotational grazing practices. He has a B.A. in Human Ecology from Luther College in Decorah, Iowa, and an M.S. in Land Resources from the University of Wisconsin-Madison.

PROTECTING RATHBUN LAKE: ONE APPROACH TO WATERSHED MANAGEMENT AND SOURCE WATER PROTECTION

PRESENTER:
Martin Braster
Rathbun Regional Water Association
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ADDITIONAL PRESENTER(S):
Velvet Buckingham
Brian DeMoss

ABSTRACT:

Since 1996, the Rathbun Land and Water Alliance together with many partners have worked with landowners to protect and improve water quality in Rathbun Lake. Rathbun Lake is the source water for Rathbun Regional Water Association, the largest rural water system in Iowa. Rathbun Lake also provides recreational opportunities for one million visitors annually and fish and wildlife habitat in the 11,000-acre lake and on surrounding public land. Water quality in Rathbun Lake is impacted by high loads of sediment and sediment-bound phosphorus carried in runoff primarily from land used for row crop production in the watershed. More than 500 landowners have been assisted by the Alliance and partners to install best management practices in the Rathbun Lake watershed. These practices have reduced sediment and phosphorus delivery to the lake and helped achieve a stable to improving trend in water quality. Representatives of the Alliance and partners will share experiences from the last 25 years of Rathbun Lake protection efforts.

SPEAKER BIO(S):

Velvet Buckingham, Environmental Specialist with the Iowa Department of Agriculture and Land Stewardship, Brian DeMoss, Environmental Specialist with the Lucas County Soil and Water Conservation District, and Martin Braster, Support Services Officer with Rathbun Regional Water Association, have more than fifty years of combined experience working together on efforts to protect Rathbun Lake.

STRATEGIC MONITORING FOR WATERSHED PLANNING AND PROJECT ASSESSMENT

PRESENTER:
Elbert Traylor
NE Dept. of Environment and Energy
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ADDITIONAL PRESENTER(S):
Brandon Beethe

ABSTRACT:

The Nebraska NPS Program uses a modified list of impaired streams to identify watersheds within the major river basins with potential for effective management of NPS runoff. A matrix weighing the competing needs for water quality data is then used to identify sites to be monitored on smaller streams through the Basin Rotation Monitoring Program. Streams with existing or potential implementation projects are significantly weighted in this matrix. Monitoring sites are selected to provide water quality data closer to where NPS projects are or will be implemented. A project-specific monitoring plan is then designed when an implementation plan is developed for a watershed and correlated to future basin rotation monitoring. This approach provides water quality data closer to potential project sites and improves the calibration of models and the accuracy of pollutant load estimates. The project-specific plan usually brackets the inflow and outflow of pollutants from the project areas to better assess the impact of BMPs implemented in the project area.

SPEAKER BIO(S):

Elbert Traylor has worked in the Nebraska NPS Program since 1991 and was instrumental in adapting Nebraska's program to the many changes as the Section 319 program has evolved. Elbert's current focus in on program development, watershed plan development and inter-agency programs coordination.

Brandon Beethe has worked in various areas of natural resources management through employment with Natural Resources Districts, Nebraska Game and Parks Commission, Nebraska Department of Natural Resources and Nebraska Department of Environment and Energy. Brandon currently serves as coordinator of Nebraska's Nonpoint Source Management Program.

AN IOWA CASE STUDY EVALUATING NUTRIENT AND SEDIMENT EXPORT FROM PAIRED CATCHMENTS WITH DIFFERENT BMP IMPLEMENTATION LEVELS.

PRESENTER:
Ji Yeow Law
Iowa State University
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ADDITIONAL PRESENTER(S):
Michelle Soupir

ABSTRACT:

Many plot-scale studies have demonstrated the effectiveness of individual best management practices (BMPs) in reducing agricultural pollutant export to surface water bodies, but the effectiveness of stacked BMPs at the catchment scale remains largely unexplored. This long-term (2016-2022) monitoring project compares nitrogen, phosphorus, and sediment export from paired agricultural-dominant catchments with varying levels of BMP implementation in the Black Hawk Lake Watershed, Iowa. These adjacent catchments had similar drainage areas (229 vs. 221 ha) and annual outflow volumes (1904 vs. 1879 m3/ha). However, the BMP coverage areas at the low-BMP (34%) and high-BMP (87%) catchments differed. The BMPs in these catchments include terraces, a grassed waterway, land retirement, nutrient management, reduced tillage, and a constructed wetland. We installed automated water samplers and flow sensors at each catchment outlet (first-order stream) to collect base and storm flow-weighted samples. We analyzed these samples for nitrate (NO_3-N), total nitrogen (TN), dissolved reactive phosphorus (DRP), total phosphorus (TP), and total suspended solids (TSS). In the low-BMP catchment, the 7-year annual average loads and flow-weighted concentrations were as follows: NO_3-N (44.2 kg N/ha-yr; 22.2 mg N/L), TN (52.6 kg N/ha-yr; 27.6 mg N/L), DRP (0.036 kg P/ha-yr; 0.019 mg P/L), TP (0.338 kg P/ha-yr; 0.177 mg P/L), and TSS (928 kg/ha-yr; 487.4 mg/L). Meanwhile, in the high-BMP catchment, the annual average loads and flow-weighted concentrations were: NO_3-N (16.1 kg N/ha-yr; 8.6 mg N/L), TN (20.3 kg N/ha-yr; 10.8 mg N/L), DRP (0.041 kg P/ha-yr; 0.022 mg P/L), TP (0.194 kg P/ha-yr; 0.103 mg P/L), and TSS (122.2 kg/ha-yr; 65.0 mg/L). Overall, the high-BMP catchment demonstrated 62%, 61%, 42%, and 87% lower cumulative NO_3-N, TN, TP, and TSS export, respectively, compared to the low-BMP catchment. The 7-year cumulative DRP export was 16% higher in the high-BMP catchment, even though the high-BMP catchment had lower annual DRP export in four of the seven monitored years. We also observed that most NO_3-N and TN export occurred during the base flow conditions, while storm events were responsible for the majority of DRP, TP, and TSS loading. This study successfully demonstrated the effectiveness of catchment-scale BMP implementation in mitigating nutrient and sediment export at the headwater source.

SPEAKER BIO(S):

Ji Yeow Law - a water quality engineer in the Department of Agricultural and Biosystems Engineering at Iowa State University. His work focuses on the fate and transport of nutrients and sediment, nonpoint source pollution control, and water quality monitoring in natural and engineered systems.

Michelle Soupir - a professor in the Department of Agricultural and Biosystems Engineering, and an interim associate dean for the Graduate College at Iowa State University. Her primary research program involves investigating the fate and transport of nutrients, microorganisms and emerging contaminants, nonpoint source pollution control, and water quality monitoring and modeling.

LOCAL WATER MANAGEMENT IN MINNESOTA: A WATERSHED APPROACH TO PLANNING AND IMPLEMENTATION

PRESENTER:

Julie Westerlund
Minnesota Board of Water and Soil
Resources
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ADDITIONAL PRESENTER(S):

ABSTRACT:

Since 2014, Minnesota has been transforming local water management through a program called "One Watershed, One Plan." Local water plans, previously developed for each county, are now being developed along watershed lines by multi-jurisdictional partnerships including counties, soil and water conservation districts, and watershed districts. Municipalities and tribal governments may also join these partnerships. The resulting 10-year plans benefit from watershed-scale compilations of water data along with local values to lay out priority issues and locations, set measurable goals, and describe a targeted implementation schedule for reaching the shared goals. When planning is complete, groups are eligible for non-competitive funding to implement the water quality actions in their plans. The state is currently on track to complete the transition to watershed-based planning by 2025.

SPEAKER BIO(S):

Julie Westerlund is the One Watershed, One Plan Program Coordinator for the Minnesota Board of Water and Soil Resources. She previously worked at the Minnesota Department of Natural Resources as a program coordinator, a watershed coordinator, and a fisheries research biologist.

She also worked at the Minnehaha Creek Watershed District where she managed the education and communications program where she helped lead regional efforts to promote low impact development and education for municipal officials.

COMMUNITY ENGAGEMENT TO RESTORE THE MILL RIVER WATERSHED

PRESENTER:

Marlene Krajewski
Connecticut Department of Energy and
Environmental Protection
marlene.krajewski@ct.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

Recognizing the need to increase support for Environmental Justice Communities (EJCs), the Connecticut Department of Energy and Environmental Protection (CT DEEP) established an Urban Waters Initiative (UWI) with EPA provided funds. The Mill River Watershed in southern Connecticut was selected not only because of environmental and public access issues due to its urbanized nature, but also because of the robust partnerships in the watershed.

A local steering committee was established to lead the UWI which included objectives to select community leaders, connect with community partners, and conduct community-based research in the EJCs. After a first year of progress, CT DEEP has designated additional federal funding for continued community outreach and to connect community science with the municipal representatives in the Mill River Watershed.

Restoration of the urbanized Mill River Watershed is no easy feat, and it will require decades of effort and an abundance of community support. However, the UWI has the potential to initiate a transformation of the watershed into a valuable natural resource for nearby communities.

SPEAKER BIO(S):

Marlene Krajewski is an Environmental Analyst in the Water Planning and Management Division at the Connecticut Department of Energy and Environmental Protection, where she manages the CWA 319 Grant and other projects related to the state's Nonpoint Source Program. She has a B.S. in Environmental Science and Policy from Marist College and M.S. in Hydrology and Water Management from the University of Oklahoma.

Engaging Residents in Watershed-scale Planning

PRESENTER:
Julie Wood
Charles River Watershed Association
jwood@crwa.org

ADDITIONAL PRESENTER(S):
Leigh Meunier

ABSTRACT:

Since November 2020, Charles River Watershed Association (CRWA) and Communities Responding to Extreme Weather (CREW) have joined forces with twenty communities in the Charles River Watershed to understand and address flooding across the region. Through this project, the team developed a flood forecasting model to predict where and when precipitation-based flooding will occur in various climate change scenarios. While municipal-scale flood models are becoming common, this project is unique in that residents, with a focus on climate vulnerable communities, were engaged at every step of the process. Residents were engaged in selecting climate modeling scenarios and flood mitigation practices, and all modeling results were made public via an interactive online map. The project study area covers multiple cities and towns and a highly developed area of nearly 300 square miles, including multiple environmental justice communities. Close to a dozen flood mitigation scenarios were identified and tested in the model. Most scenarios used nature-based solutions; for select scenarios, the team documented potential co-benefits, such as pollution reduction and groundwater recharge.

Over the past three years, our team found creative ways to engage people despite the challenges of the ongoing pandemic, and we successfully engaged hundreds of people in person and online and in multiple languages. In this presentation, project team members will discuss various tools and techniques used for engagement such as live translation, multi-lingual materials, and employing different formats and techniques to connect with various community groups that may not traditionally engage in flood management projects.

SPEAKER BIO(S):

Julie Wood is the Director of the Charles River Climate Compact at Charles River Watershed Association where she has worked, in a variety of roles, since 2007. Julie served as project manager for the development of the Charles River Flood Model and regularly gives presentations on the work of this unique regional partnership. Julie has a B.A. in Mathematics from Boston College and an M.S. in Environmental Science from the University of Massachusetts, Boston.

Leigh Meunier is a project coordinator with Communities Responding to Extreme Weather (CREW) and currently serves the Charles River Flood Model project by coordinating its community engagement efforts. With CREW, Leigh has also organized regional interfaith events and conducted social resilience research in Boston neighborhoods. Leigh has a B.A. in English from West Virginia University and a graduate certificate from Tufts University's Urban & Environmental Planning Program.

VOLUNTEERING FOR WATER QUALITY: COMMUNITY RAIN GARDENS IN ACTION

PRESENTER:
Josh Balk
Iowa Department of Natural Resources
josh.balk@dnr.iowa.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

Dry Run Creek is a 15,000 acre watershed in Black Hawk County, Iowa that faces two state designated water quality impairments. These include high levels of bacteria as well as low quantity and diversity of aquatic creatures. The causes are multifaceted but largely stem from stormwater runoff and the pollution carried within. For the last 18 years, the Dry Run Creek Watershed Improvement Project has actively worked with a wide variety of landowner in both urban and rural areas to implement beneficial conservation projects throughout the watershed. These efforts have been successful and the project remains on track to reach its targeted water quality improvement goals.

Recognizably, implementing conservation isn't free and can be a challenge for landowners, even with incentives and cost share. In an effort to reduce this burden and allow for people of all backgrounds and financial standings to get involved with conservation, a local volunteer rain garden program was created in 2016. Since then, over 300 volunteers have been trained on the benefits of rain gardens, the design process, steps for successful installation, and then dedicated time towards the construction of rain gardens. This has significantly increased rain garden adoption rates throughout the watershed and substantially reduced cost to landowners by eliminating labor expenses while utilizing the volunteer time as match, helping to stretch limited grant dollars even further. The public reception to this program has been well received and the intent is to continue it into the coming years. This presentation will highlight the benefits, challenges, and process related to this program.

SPEAKER BIO(S):

Josh Balk is a Watershed and Source Water Coordinator with the Iowa Department of Natural Resources. For the last 8 years, Josh has focused primarily on conservation efforts associated with the Dry Run Creek Watershed Improvement Project in Cedar Falls, Iowa. Josh is a University of Northern Iowa alumnus with a bachelor's degree in Earth Science.

FARMERS PROTECTING RICE CREEK- A NATIVE BROOK TROUT STREAM ALMOST ENTIRELY SURROUNDED BY ROW CROP AGRICULTURE

PRESENTER:
Kristen Dieterman
MN Pollution Control Agency
Kristen.Dieterman@state.mn.us

ADDITIONAL PRESENTER(S):
TBD
TBD

ABSTRACT:

Rice Creek is Minnesota's westernmost trout stream with a self-sustaining population of brook trout, a member of the salmon family that inhabits small spring-fed streams and requires cool, clear water. Like many streams in Minnesota, Rice Creek has several impairments including excessive E. coli bacteria, turbidity, nitrate, and a benthic macroinvertebrate community showing signs of stress. There are no point sources in Rice Creek's watershed and 85% of the land is used to produce corn and soybeans, with a significant amount of agricultural tile drainage.

In 2009 the Rice Creek Concerned Citizens Group called for collaboration among stakeholders to improve and protect Rice Creek, as a result Bridgewater Township partnered with several government, non-profit, and academic stakeholders to investigate Rice Creek and create a plan of action. Since then, more than 10 farmers have implemented cover crops on roughly 30% of the watershed's row crop acres, some also switching their operations to reduced or no-till methods. Using a large group of collaborators, including the State of Minnesota, Rice County Soil and Water Conservation District, Fishers & Farmers Partnership, the McKnight Foundation, Compeer Financial, and many others, Clean River Partners has supported the farmers' cover crop implementation through cost share payments that incorporate the cost of seed, planting, and termination of the cover crop.

Along with uniting the effort for land use change, Clean River Partners has also helped to complete and coordinate the monitoring effort to track the impact to Rice Creek. In partnership with the farmers, Clean River Partners staff have collected agricultural drain tile water quality samples along with stream water quality samples. Minnesota Department of Natural Resources- Fisheries staff have collected fish community data, and St. Olaf College faculty and students have collected benthic macroinvertebrate community data. Preliminary data shows lower nitrate concentrations in water drained from fields where cover crops have been implemented, as well as lower nitrate concentrations in Rice Creek. This presentation will highlight the stories of farmers and resource managers as well as the land use and water quality data of the Rice Creek watershed, showing the impact of cover crop implementation on the community in and out of the stream.

SPEAKER BIO(S):

Kristen Dieterman is a Watershed Project Manager at the MN Pollution Control Agency. As a watershed project manager she coordinates and writes Total Maximum Daily Load and Watershed Restoration and Protection Strategy Reports, manages contracts and grants, including several 319 Small Watershed Focus grants, and works closely with local government units, other state and federal agencies, tribal nations, and community organizations to protect and improve our natural resources and equity.

WATERSHED PRIORITIZATION AND AGENCY-DIRECTED FUNDING WITH STRONG PARTNERSHIPS CLEANS UP STREAMS FASTER, BETTER IN ARIZONA

PRESENTER:

Natalie Muilenberg
Arizona Department of Environmental Quality
muilenberg.natalie@azdeq.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

Beginning in 2018, the Arizona Department of Environmental Quality (ADEQ) transitioned from traditional nonpoint source (NPS) funding methods, such as sub-awarding grant funds, to a direct-funding approach within prioritized watersheds. Historically, sub-awarded projects tended to be scattered across the state and lacked a comprehensive strategy for achieving significant pollutant load reductions to delist impaired waterbodies. Compounding this issue was the 40 percent non-federal match requirement of the nonpoint source program, which many grantees were unable to provide. The direct-funding approach leverages important partnerships with federal and state agencies, universities, and non-governmental organizations to identify strategic suites of projects to deliver greater pollutant load reductions within Section 303(d) listed waters. These vital partnerships also provide an opportunity for ADEQ to proactively secure funds to meet the 40 percent match requirement.

Monitoring data identify heavy metals and E. coli as the top causes of water quality impairments in Arizona. ADEQ identified nonpoint sources as the cause for these impairments in many watersheds. In order to address these leading nonpoint sources, five watersheds were targeted for projects - the Santa Cruz, the Verde - Oak Creek, the Middle Gila - Bradshaw Mountains, the Salt - Pinto Creek, and the San Pedro. Factors considered when prioritizing watersheds included public and ecological health concerns, the existence of TMDLs and watershed plans, and the level of community engagement.

Since direct-funding watershed improvement projects in prioritized watersheds, ADEQ has provisionally delisted a total of 53 waterbodies within five years that are directly contributed to watershed improvement projects (official delistings need to be approved by EPA). Prior to direct-funding, ADEQ provisionally delisted 47 waterbodies between 2012 and 2016, and only eight waterbodies between 2002 and 2010.

Direct-funded improvement projects have remediated abandoned mines discharging metals like cadmium and copper into streams. For instance, the clean-up of Hillside Mine near Bagdad, AZ, reduced 90 percent of zinc and 74 percent of copper pollution in Boulder Creek. ADEQ provisionally delisted Boulder Creek for beryllium, copper, manganese, and pH in 2022.

The prioritization of a heavily recreated stream near Sedona, AZ has also yielded significant water quality improvements. Oak Creek is impaired for E.coli. Federal and state agencies, watershed groups, and a university have been collaborating over five years to implement improvement projects totaling close to $1,630,000. This significant dedication in time, money, and resources has reduced E.coli exceedances by 65 percent.

Flexibility is key in any effort to reduce nonpoint source pollution. There are pros and cons to each funding approach. This discussion will cover the benefits of the direct-funding approach, the power of establishing strong partnerships, and dig deeper into those successes achieved using the direct-

funding approach. The discussion will also explore how direct-funding can be used in conjunction with sub-awarding funds to make significant and lasting impacts within prioritized watersheds. Both approaches demonstrate that nonpoint source pollution needs greater monetary and resource investments in order to accelerate the restoration and protection of our waters.

SPEAKER BIO(S):

Natalie Muilenberg, PMP, CAPM is the Watershed Improvement Unit Manager at the Arizona Department of Environmental Quality, where she leads a team of hydrogeologists and scientists in delivering impactful projects that reduce contamination in Arizona's rivers and streams. She oversees the state's efforts to remediate abandoned mine lands, mitigate nonpoint source pollution, and engage community scientists. With a background in biology, creative writing, and sustainability, she enjoys finding interdisciplinary solutions to Arizona's most pressing environmental and public health challenges. When she isn't in the field for work, she's outside enjoying Arizona's mountains and surface waters.

USING EPA'S SEPTEMBER 2022 ENVIRONMENTAL JUSTICE MEMO TO PROVIDE §319(H) GRANT FUNDING TO A DISADVANTAGED COMMUNITY IN MARYLAND

PRESENTER:
Jacey Brooks
Maryland Department of the Environment
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ADDITIONAL PRESENTER(S):
Gregorio Sandi

ABSTRACT:

In September 2022, the US Environmental Protection Agency (EPA) released a memo regarding "Continued Actions in FY23 to Increase Equity and Environmental Justice in the Nonpoint Source Program." This memo highlighted efforts to identify barriers to disadvantaged communities (DACs) and ways to offer assistance to DACs through the §319(h) Grant program. One of the provisions was additional flexibility to the eligibility requirements of projects that may use §319(h) watershed project funds. Typically, an implementation project must be within an area with an accepted nine-element watershed-based plan (WBP) in order to fund the project with watershed project funds. The September 2022 EJ memo provided an exception to this requirement if a project supported WBP development, capacity building, or implementation projects in a DAC.

The state of Maryland's §319(h) Grant program was able to leverage this new guidance to provide assistance to a DAC on Maryland's Eastern Shore that would typically not be eligible for watershed project funding. This presentation will focus on the process of obtaining the exemption through discussions with EPA Region 3 and EPA Headquarters, a unique partnership between many different organizations that made this effort a success, and some lessons learned.

SPEAKER BIO(S):

Jacey Brooks is the Team Lead for the CWA 319(h) Grant Administration Team that is in the Watershed Protection, Restoration, and Planning Program at Maryland Department of the Environment (MDE). Jacey has been at MDE for a little over a year and has a background in grant management, environmental education, and stream restoration research.

Gregorio Sandi is the Division Chief of the Watershed Restoration Planning Division in the Watershed Protection, Restoration, and Planning Program at Maryland Department of the Environment. Greg has been with MDE for 15 years working on many different programs, such as the Chesapeake Assessment and Scenario Tool (CAST), 319(h) grant, Maryland Water Quality Trading Program, Chesapeake Bay Regulatory and Accountability grant, and Maryland's new Smart Salting program.

TOOL FOR INCREASING ACCESSIBILITY OF 319(H) NONPOINT SOURCE FUNDING IN THE COMMONWEALTH OF KENTUCKY

PRESENTER:
Michaela Lambert
Kentucky Division of Water
mmlambert9@gmail.com

ADDITIONAL PRESENTER(S):

ABSTRACT:

A lack of technical expertise and access to information can be a barrier to small or rural communities and groups entering the 319(h) application and watershed planning processes. In Kentucky, the watershed planning or implementation applications ask for information such as HUC 12 number, river basin, the presence of a TMDL or other special designations, known or potential impairments within the watershed, and attach a watershed map. To ensure that all applicants can easily access this information, Kentucky created a 319 Grant Application Reporter Tool. The 319 Grant Reporter is an online mapping and report generating tool that allows users to search for their watershed of interest and identify information that is necessary for submitting 319(h) Clean Water Act Nonpoint Source Funding applications. Once the correct watershed is selected, users will know what major river basin it's in, whether it has been assessed to meet its designated uses, has a Total Maximum Daily Load Allocation, if it is in a Source Water Protection Zone, and if it has any assigned special designations such as an Outstanding State Resource Water or Division of Water Priority Watershed. Users can download and print a copy of the report and attach it to their 319(h) application or use it for any other uses they see fit. This tool will help applicants identify the necessary watershed information for their 319(h) application that may have previously been a barrier to potential applicants choosing to apply for funding. This presentation will introduce the 319(h) reporter, describe how it's first year in use went, and discuss other tools and ideas to make 319(h) funding more accessible to a wider range of communities.

SPEAKER BIO(S):

Michaela Lambert is an experienced freshwater scientist and project manager with the Kentucky Division of Water who is passionate about advocating for mutually beneficial projects and partnerships that enhance and protect Kentucky's waterways. She is a graduate of the University of Kentucky whose two B.S. degrees and M.S. degree focused on Equine Science and Natural Resources. Her undergraduate and graduate research primarily focused on the impacts of human activities and restoration potential in freshwater ecosystems. Michaela is formerly a River Basin Coordinator for the Big Sandy River in Kentucky. As the Nonpoint Source and Basin Team Section Supervisor, Michaela oversees the implementation of Kentucky's Nonpoint Source program, including the Clean Water Act Section 319(h) Nonpoint Source Grant Program, education and outreach initiatives, and basin coordination efforts for Kentucky's major river basins.

PATHWAY TO PRIORITIZATION – PRESENTING COMPLEX INFORMATION TO LOCAL ELECTED DECISION MAKERS

PRESENTER:
Cindy Osborn, EdD
Saint Mary's University of Minnesota
cmpenn13@smumn.edu

ADDITIONAL PRESENTER(S):
Paul E. Kotz, PhD

ABSTRACT:

Local elected officials are expected to make decisions about a wide breadth of subject matter that no one person can be expected to master. They must address expansive needs with limited funding. When we ask them to support planning, projects, and/or staff, we need to provide them with the knowledge, help address concerns and barriers, and support their understanding so they can communicate their decisions to their communities. I developed a grounded theory by working with a sample of county commissioners in the Rainy River and Lake Superior Basins, Minnesota, U.S. The analysis of those data blossomed into a more generalizable theory than anticipated. This grounded theory is generalizable beyond watershed and environmental science and to other local elected officials. Complex and data-driven decisions in the natural and ever-changing watershed stretch the limits of understanding of science, trust, time, and challenge personally held beliefs and anecdotal evidence.

Time and trust are two significant barriers to gaining the knowledge needed to make their decisions. As watershed professionals, we can assist by providing information that commissioners (and other elected officials) can verify, explore further if desired, and at the correct time to be most effective. The Pathway to Prioritization explores the knowledge, barriers, and communication considerations of the elected officials. The watershed model is a way of comparing the flow of knowledge to the flow of water in the watershed. As information meets the various barriers, best management practices can help information infiltrate to the body of knowledge needed to decide, just as BMPs in the watershed can help water infiltrate and flow in a healthy system.

SPEAKER BIO(S):

Cindy Osborn is a recent graduate of Saint Mary's University of Minnesota Doctorate in Leadership program and defended a dissertation titled "How County Commissioners in the Rainy River and Lake Superior Basin Prioritize Nonpoint Source Pollution in Watershed Work: A Grounded Theory." Dr. Osborn is employed by a Minnesota state agency and is a program administrator for a federal nonpoint source grant program. This study was funded by Dr. Osborn and is not supported or funded by that state agency.

Paul E. Kotz, PhD, is the director of School of Business at Saint Mary's University of Minnesota and a professor in the School of Education Doctorate of Leadership. Dr. Kotz was the chair and advisor of Dr. Osborn's dissertation committee.

CAN WE IMAGINE A HEALTHY RIVER IN IOWA?

PRESENTER:
Jacqueline Comito
Iowa State University
jcomito@iastate.edu

ADDITIONAL PRESENTER(S):

ABSTRACT:

In 2011, the Iowa Department of Natural Resources (IDNR) commissioned the administration of four citizen-focused listening sessions, three rural and one urban, to gather input for the development of Iowa's Nonpoint Source Management Plan. The resulting report, Water Quality Matters to Us All, detailed the listening session outcomes and represented the diverse understandings of water quality at the time. The report also explored how these voices could change the discourse about water quality and nonpoint source pollution in Iowa. A decade later, as the IDNR was planning for their revision of Iowa's Nonpoint Source Management Plan, they determined that it was important to revisit the themes of that influential report to explore the extent to which the human and sociological dimensions of solving the state's water quality challenges have changed. Iowa State University's Conservation Learning Group (CLG), under the leadership of Dr. Jacqueline Comito, was contracted to conduct a statewide, multi-method evaluation project designed to explore current perceptions of water quality, shed light on the changing voices in conservation and water quality leadership, and gather input from Iowans in all walks of life. In this presentation, Comito will draw on insights gathered from university students during a recent survey and round of interviews to focus on the science of imagination. Elevating the voices of some 2800 survey respondents and 60 who were interviewed in person, she will speak about how imagination could be integrated into environmental work and engage the audience in discussing concrete steps each can take to tap their imagination for change. Comito will also highlight the generational challenge of helping young people imagine healthy waterways when they have never experienced anything but the currently compromised ecosystems they have grown up with. The survey and conversations with these college students made it clear that there is interest in the environment and natural surroundings, but it is important to inspire them to begin to think differently about the world around them - empowering and challenging them to use their imaginations to change the world—even when it seems like real change is elusive. Comito will also discuss at the end how they applied what they learned from students and the public to shape some elements of the 2023 Nonpoint Source Management Plan revision.

SPEAKER BIO(S):

Dr. Comito, anthropologist, is actively involved in research and extension and outreach activities in the area of water, watershed-based community activities, conservation and environmental attitudes. One focus area is farmers' understanding of water quality issues, soil health and their willingness to adopt conservation practices on their farms. This includes work listening to farmers in a variety of venues: field days, workshops, listening sessions and one-on-one conversations. Another area of focus is youth education. Helping raise youth awareness about water issues locally and globally requires the use of many different approaches: hands-on activities, videos, music, enhanced learning activities, etc. Dr. Comito interacts with a variety of stakeholders including farmers, interested citizens, teachers, youth, environmental groups and agency personnel.

Make a Splash with Youth Water Education

Presenter:
Ann Staudt
Iowa State University
astaudt@iastate.edu

Additional Presenter(s):

Abstract:

Today's students are tomorrow's teachers, farmers, scientists, extension professionals, doctors, lawyers, and legislators … how can we inspire them to care and to act, so when they're the decision-makers, they have a solid foundational understanding of water and the natural world around them? Dive in to high energy, interactive, impactful, and FUN approaches to youth water education with the award-winning Water Rocks! program at Iowa State University! Integrating STEM (science, technology, engineering, and mathematics) with music and the arts, Water Rocks! is built on the premise of inspiring youth to learn about and care about the natural world around them—from water, to land, and wildlife—and the many ways our natural world is intricately interconnected. The Water Rocks! team will showcase its multi-faceted approach to youth water education, including classroom presentations, Rock Your Watershed! computer game, teacher training workshops, internship program, video series, and Water Rocks!: The Musical.

Speaker Bio(s):

Ann Staudt is an environmental engineer who actively blends scientific knowledge and creative expression through water-focused extension work and teaching, from high-impact presentations with youth, to farmer field days, teacher training workshops, and a fleet of four Conservation Station trailers. Staudt is one of the founders (and now director) of the award-winning Water Rocks! youth water education program at Iowa State University. Combining STEM (science, technology, engineering, and mathematics) with music and the arts, Water Rocks! is centered around inspiring youth to learn and care about the natural world around them, with science, stewardship, and fun at the heart of Water Rocks!.

THE IOWA LEARNING FARMS FIELD DAY SUCCESS LOOP: HOW TO HOST A MORE EFFECTIVE FIELD DAY

PRESENTER:
Elizabeth Ripley
Iowa State University
ejuchems@iastate.edu

ADDITIONAL PRESENTER(S):

ABSTRACT:

It is well recognized that field days are one of the most effective means of communicating with farmers because of their preference to learn about new land management practices through one- on-one conversations with experts and other farmers. Field days continue to be useful for watershed coordinators and conservation professionals conducting outreach with farmers, so long as those events incorporate an interpersonal, farmer-led instructional style and are followed up with an evaluation strategy that documents the long-term influences field day attendees have on their peers. At Iowa Learning Farms, we have formulated a successful method for conducting field days that has led to a set of progressive impacts we refer to as the "field day success loop." This presentation will introduce audiences to the Field Day Success Loop and go over our approach to hosting successful field days. We will have copies of the Iowa Learning Farms Field Day Toolkit for each participant. By implementing this approach to field days and this multi-faceted approach to evaluation, you will tap into the ability of field days to inspire farmers to change their practices. Established in 2004, Iowa Learning Farms (ILF) is building a Culture of Conservation by encouraging adoption of conservation practices. Farmers, researchers and team members are working together to identify and implement the best management practices that improve water quality and soil health while remaining profitable. Partners of Iowa Learning Farms include the Iowa Department of Agriculture and Land Stewardship, Iowa State University Extension and Outreach, Leopold Center for Sustainable Agriculture, Iowa Natural Resources Conservation Service, and Iowa Department of Natural Resources (USEPA Section 319).

SPEAKER BIO(S):

Elizabeth Ripley is a Conservation and Cover Crop Outreach Specialists with the award-winning Iowa State University Extension and Outreach program Iowa Learning Farms. Ripley has been with the program for ten years and plans, coordinates, executes, and evaluates 30+ field day and workshop education events for farmers, landowners, local and state agency personnel annually. As a part of her position, she helped develop the nationally recognized Whole Farm Conservation Best Practices Manual and Field Crop Production Handbook. Ripley is the lead author and the Iowa Learning Farms Field Day Toolkit. Ripley has a B.S. and M.S. in Agricultural Economics.

WHICH SOCIAL MEDIA MESSAGES ABOUT CONSERVATION RESONATE BEST WITH FARMERS?

PRESENTER:
Jacqueline Comito
Iowa State University
jcomito@iastate.edu

ADDITIONAL PRESENTER(S):
Laura Witzling
Elizabeth Ripley

ABSTRACT:

We tested the performance of social media messages that promoted conservation events and were rooted in different aspects of farmer identity. This work extended knowledge about farmer identity by considering how farmer identity would perform in the context of Facebook ads. We ran the ads through a real agricultural organization - Iowa Learning Farms - to enhance external validity. We ran four eight-day campaigns that each promoted relevant events or materials (e.g., a cover crop field day). Each of the four campaigns consisted of four ads representing the identity frames (Steward, Business, Hero, and Science). Overall, ads framed to address Business as a farmer identity were the most cost effective relative to obtaining clicks. But, relative to the Business frame, ads using the Science or Steward frames were more effective at engaging women. Among younger users, the Hero ads received fewer clicks per reach compared to the Steward or Science ads. Consequently, the "best" frame is relative to the goal of the communicator. Furthermore, though some prior research found evidence that frames did not impact interest in messages about conservation agriculture, our work found that in the space of social media, message frames mattered, possibly because our approach facilitated peripheral processing. This exploratory work offers a point of departure for future collaborations between practitioners and research.

SPEAKER BIO(S):

Dr. Comito, anthropologist, is actively involved in research and extension and outreach activities in the area of water, watershed-based community activities, conservation and environmental attitudes. One focus area is farmers' understanding of water quality issues, soil health and their willingness to adopt conservation practices on their farms. This includes work listening to farmers in a variety of venues: field days, workshops, listening sessions and one-on-one conversations. Another area of focus is youth education. Helping raise youth awareness about water issues locally and globally requires the use of many different approaches: hands-on activities, videos, music, enhanced learning activities, etc. Dr. Comito interacts with a variety of stakeholders including farmers, interested citizens, teachers, youth, environmental groups and agency personnel.

Dr. Witzling has been conducting research at the intersection of communication and food systems for over a decade. Her Ph.D. in Mass Communications is from the University of Wisconsin-Madison. Her enthusiasm for food systems research began as an M.S. student at the University of Illinois at Urbana-Champaign where studied strategies for communicating about soil lead risks with urban gardeners.

Elizabeth Ripley is a Conservation and Cover Crop Outreach Specialists with the award-winning Iowa State University Extension and Outreach program Iowa Learning Farms. Ripley has been with the program for ten years and plans, coordinates, executes, and evaluates 30+ field day and workshop education events for farmers, landowners, local and state agency personnel annually. As a part of her position, she helped develop the nationally recognized Whole Farm Conservation Best Practices Manual and Field Crop Production Handbook. Ripley is the lead author and the Iowa Learning Farms Field Day Toolkit. Ripley has a B.S. and M.S. in Agricultural Economics.

ENVIRONMENTAL JUSTICE ENVIRONMENTAL JUSTICE AND THE RECOVERY POTENTIAL SCREENING (RPS) SCREENING TOOL

PRESENTER:
Jeanie Mascia
State of California, State Water
Resources Control Board
jeanie.mascia@waterboards.ca.gov

ADDITIONAL PRESENTER(S):
Alex Rosado

ABSTRACT:

Environmental justice has become a high priority for many federal and state government programs, including the California State Water Resources Control Board (SWRCB). The SWRCB put together a Racial Equity Action Plan, which includes a goal of "removing barriers for community access and participation in decision-making by providing resources for capacity building, including funding, training and education." Identifying areas that have been historically underserved and overburdened is a vital step in determining what resources, funding and education is needed, as well as an opportunity to learn from those on the ground about what work has been and needs to be done. The Nonpoint Source (NPS) Unit at SWRCB worked with the USEPA and their contractor Cadmus on a pilot project utilizing the Recovery Potential Screening (RPS) tool to learn how the tool could be used to identify a selection of watersheds in the state that are underserved or disadvantaged and affected by nonpoint source pollution. The resultant chosen indicators and filters narrowed the list from over four thousand watersheds to 65 watersheds across the state. The SWRCB aims to use this tool in conjunction with input from the Regional Water Boards to target these watersheds for NPS grant funding and create a workgroup to continue discussing and revising the selected indicators to achieve more accurate results.

SPEAKER BIO(S):

Jeanie Mascia has worked on water quality issues in California for over 15 years. She has managed the Clean Water Act section 319 grant program for the last 7 years. She has a master's in environmental management from University of San Francisco, and an undergraduate degree in biology from the University of Puget Sound.

SECOND CREEK SOCIOECONOMIC SURVEY ON CONSERVATION PRACTICE COST-SHARE PROGRAMS

PRESENTER:
Tim Craddock
WV Department of Environmental Protection
timothy.d.craddock@wv.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

Second Creek, located on the Appalachian Plateau in southeastern West Virginia, is a tributary of the Greenbrier River, which has been listed as impaired since 2008 due to high concentrations of fecal coliform bacteria. Since 2009, the West Virginia Conservation Agency, the West Virginia Department of Environmental Protection, Greenbrier Valley Conservation District, the U.S. Department of Agriculture, Natural Resources Conservation Service, and other partners have worked with over 120 farmers to install conservation practices that reduce bacteria and other pollutant runoff from livestock operations, achieving measurable load reductions for fecal coliform, sediment, and nutrients. Conservation practices included fencing to restrict stream access, alternative water source development, armored stream crossings for livestock, heavy use protection area gravel pads, vegetated riparian buffers, nutrient management plans, and prescribed grazing strategies, among others.

During late 2021, local and state project partners commissioned a survey of the participating farmers to gauge their views on the environmental, financial, and other results of the project, and to seek their suggestions on how to improve the distribution of limited cost-share funding for conservation practices. The U.S. Environmental Protection Agency provided contractor technical support for the development, deployment assistance, and analysis of the survey. Project partners cooperated to produce draft and final versions of the survey during the Fall of 2021. Tetra Tech (US EPA contractor) facilitated these discussions and produced the final formatted paper and online versions of the survey, which were distributed by mail in September 2021 to 122 participating producers—all of whom received financial and/or technical assistance between 2009 and 2021. State and federal conservation agencies followed up with producers to prompt them to complete the surveys, resulting in a 43% participation rate. The results strongly confirmed the environmental and socio-economic benefits of the conservation practices installed.

SPEAKER BIO(S):

Timothy Craddock is the NPS Program Coordinator for West Virginia Department of Environmental Protection (WVDEP). This is his 13th year in the position. Prior, Tim worked as the WV Save Our Streams Program Coordinator. Tim holds a bachelors of science with a marine science focus from WV State University and Old Dominion University, and masters in environmental science from Marshall University Graduate College.

You have got to be sheeting me! I know there used to be a river here…The Suncook River Avulsion and Stabilization Project Saga, Solutions and Sheet-pile – Epsom, New Hampshire

PRESENTER:
Stephen Landry
New Hampshire Department of
Environmental Services
stephen.c.landry@des.nh.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

May 2006 was the second wettest month on record in New Hampshire. A sustained rain event from May 10-15 contributed up to 17 inches of precipitation in southern New Hampshire and northeastern Massachusetts (National Climatic Data Center, 2006). The "Mother's Day Flood" triggered the Suncook River avulsion in Epsom, New Hampshire and was the highest profile geologic event occurring in the state since the collapse of the Old Man of the Mountain in 2003 (e.g., Zezima, 2006). Rivers commonly change course in the form of meander cutoffs and small-scale avulsions within floodplains of braided systems, but the Suncook avulsion was unusual because the new channel cut through an area outside the documented 100- and 500-year floodplains (National Flood Insurance Program, 1978).

This avulsion caused the abandonment of the primary and secondary channels and created a new channel and catastrophic flood damages upstream and downstream of the avulsion site. Since 2006, the Suncook River continued to adjust to its shorter channel length by migrating laterally and incising, destroying acres of working farmlands, causing side tributaries to down-cut in their channels to adjust to the new elevation of the Suncook River, and threatening to undermine the footings of the U.S. Route 4 Bridges over the Suncook River. A Section 319 Watershed Assistance Grant awarded to the Town of Epsom, NH studied the avulsion aftermath and produced a river corridor management alternatives analysis that allowed federal, state, municipal, private, and public decision makers options to reduce the risk of failure to the U.S. Route 4 Bridges and other assets impacted by the ongoing channel evolution triggered by the avulsion. The selected alternative stabilized the impacted reach of Leighton Brook and the Suncook River main channel in two key locations that halted further loss of wetland habitat, residential property, and homes, working, agricultural fields, and secured the structural integrity of the Route 4 Bridges and the safety of the traveling public.

The Suncook River stabilization project was completed in 2019 and required $1 million in design, engineering, and construction oversight and another $3 million for construction. Another $4 million in federal home buyouts within the impacted, downstream river corridor was also a significant component to the overall project response. This presentation will review the triggers of the avulsion, the alternatives analyses and selected response to stabilize the river in place, ongoing post-construction assessments as recent as summer 2023 and why this project scope decision was appropriate given the fiscal, infrastructure, and public perception interests at play over the last seventeen years. Sometimes NPS seed funding does not blossom into natural channel design, lush riparian buffers, and NPS Success Stories but driving 40-foot sections of sheet pile under an entire floodplain was pretty cool…

SPEAKER BIO(S):

Steve started his career at NHDES as a biologist before transitioning to the Nonpoint Source (NPS) Management Program. Steve was the agency lead on two of the largest river restoration and stabilization projects in New Hampshire, and proudly co-coordinated three dam removal and stream restoration projects that all led to NPS Success Stories. Today, as the NPS Management Program Coordinator for New Hampshire, Steve works alongside his tireless colleagues on stormwater management, NWQI partnerships, 604(b) and Section 319 grants management, Clean Water State Revolving Fund loan allocations for stormwater and watershed planning, SOAK up the Rain New Hampshire, and the Green Snow Pro Salt Reduction Program. Outside of work, Steve can be found training for or recovering from competitive athletic events that he should have given up years ago, enjoying terrestrial, subterranean, and aquatic realms with his wife, and managing the NPS pollution generated by their cats.

TOOLS AND LEVERS FOR ACCELERATING CONSERVATION PRACTICE ADOPTION IN THE UPPER MISSISSIPPI RIVER BASIN

PRESENTER:

Lauren Salvato
Upper Mississippi River Basin Association
lsalvato@umrba.org

ADDITIONAL PRESENTER(S):

ABSTRACT:

The Upper Mississippi River Basin Association (UMRBA) is the Governor's interstate water quality entity for the Upper Mississippi River. Under the direction of representatives from its member states (Minnesota, Missouri, Iowa, Illinois, and Wisconsin) as well as input from partnering federal agencies, UMRBA hosted Multi-Benefit Conservation Practice Workshops in November 2022 and October 2023 to enhance the collaborative nature of conservation practice implementation and accelerate nutrient reduction in the Upper Mississippi River Basin. The workshops focused on innovative tools and financial, technical, and policy levers to acceleration multi-benefit conservation practice adoption. UMRBA staff will share findings and next steps to replicate the tools and levers across the Upper Mississippi River Basin.

SPEAKER BIO(S):

Lauren Salvato (she/her) has been the Water Quality Policy and Program's Director for the Upper Mississippi River Basin Association since 2017. The Association is a five-state interstate organization formed by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to coordinate the states' river-related programs and policies and work with federal agencies that have river responsibilities. Lauren has undergraduate and graduate degrees in water resources and public policy from the University of New Mexico and Indiana University, respectively.

Lauren lives two blocks from the Minnesota River and volunteers as a Board member for the Lower Minnesota River Watershed District. In her spare time, Lauren likes to spend time outdoors and cook with her husband and young son.

GRASSLAND HEALTH TO DRIVE WATER QUALITY IMPROVEMENTS

PRESENTER:
Matt Jones
Regrow Ag
matt.jones@regrow.ag

ADDITIONAL PRESENTER(S):
Janet Smith

ABSTRACT:

Federal, State, and Tribal forests and grasslands capture and filter a vast majority of the US water supply, with national forests and grasslands filtering over half of the US population's potable water. Rapid grassland conversion and degradation are threatening the availability of these natural filtration systems. Cultivation of grasslands, invasive species and the cascading effects on fire scale and intensity, and the impact of widespread woody encroachment on soil water storage and groundwater recharge represent large-scale alterations to US grasslands and the national water supply.

In order to preserve and rehabilitate these robust systems, the ability to monitor land use change, composition of plant functional types, grassland productivity and ecosystem health over time is paramount. Regrow is working with nonprofit and government partners to characterize the health and function of grasslands at a range of scales (watershed to continental) using remote sensing-derived data products. These products evaluate multiple elements of the landscape, including continuous changes in plant functional type composition, net primary production, and grassland conversion or cultivation, since 1999 across CONUS. This initiative enables the identification of the most vulnerable grasslands, targeting opportunities and programs that will have the greatest impact and return on investment, ultimately mitigating soil carbon loss and negative water quality impacts. This project is actively monitoring 1.2 billion acres across the US, Canada, and Europe, representing nearly 10% of the agricultural land on Earth. The innovative design and functionality of these tools will be displayed and illuminate how these data can help both public and private sector initiatives to restore and preserve our nation's natural filter.

SPEAKER BIO(S):

Matthew Jones is a Sr. Staff Scientist and remote sensing specialist leading Regrow's grasslands and grazing lands research, monitoring, and MRV development. He holds an MS in Resource Conservation and PhD in Systems Ecology and has served on the NASA MODIS Land Science Team & CEOS Working Group on Calibration and Validation, NEON Technical Working Groups, Western Governors Association Western Invasive Species Council, and the USDA NRCS Working Lands for Wildlife Science Team. He is co-developer of the Rangeland Analysis Platform and lead author or co-author on over 20 peer-reviewed rangeland monitoring publications in the last six years.

HOLD THE SALT. PASS THE LIMITED LIABILITY PROTECTION, PLEASE!

THE NEW HAMPSHIRE GREEN SNOWPRO CERTIFIED SALT APPLICATOR PROGRAM

PRESENTER:
Stephen Landry
New Hampshire Department of
Environmental Services
stephen.c.landry@des.nh.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

Rising concentrations of sodium and chloride from winter salt applications impact New Hampshire surface water and groundwater resources and mirror trends in colder regions of the United States and Canada due to the application of de-icing chemicals. With an estimated 400,000 tons (800 million pounds) of road salt (sodium chloride) applied in the state each year, New Hampshire currently has over 50 chloride-impaired waterbodies that do not meet water quality standards under the United States Environmental Protection Agency (EPA) Clean Water Act. Additionally, sodium and chloride in New Hampshire water supply wells has increased by 150 percent over the last three decades. In 2013, the New Hampshire Department of Environmental Services (NHDES) initiated the Voluntary Commercial Salt Applicator Certification Program (Green SnowPro) to partner with commercial snow and ice management contractors to reduce their salt application rates by adopting best practices relative to the efficient, economical, and effective use of de-icing products. As an incentive to pay for training and annual certification by NHDES, salt applicators certified as Green SnowPro professionals and the property owners or tenants who hire them receive limited liability protection against damages arising from slip and fall claims. The purpose of Green SnowPro is to improve efficiency in salt use, such that the least amount of salt is used to ensure safe conditions on surfaces traveled by pedestrians and vehicles in winter. Since its inception, the program has certified over 1,800 commercial salt applicators and there were over 500 certified, for the 2022-2023 winter season. This presentation will review the history of the New Hampshire Green SnowPro Program, mechanisms that sustain it, recent legislation that allows municipalities to partner and become certified, a hallmark legal victory, measures of success, work with other states tackling similar issues, and future goals and resource constraints as the Green SnowPro program continues to expand.

SPEAKER BIO(S):

Steve started his career at NHDES as a biologist before transitioning to the Nonpoint Source (NPS) Management Program. Steve was the agency lead on two of the largest river restoration and stabilization projects in New Hampshire, and proudly co-coordinated three dam removal and stream restoration projects that all led to NPS Success Stories. Today, as the NPS Management Program Coordinator for New Hampshire, Steve works alongside his tireless colleagues on stormwater management, NWQI partnerships, 604(b) and Section 319 grants management, Clean Water State Revolving Fund loan allocations for stormwater and watershed planning, SOAK up the Rain New Hampshire, and the Green Snow Pro Salt Reduction Program. Outside of work, Steve can be found training for or recovering from competitive athletic events that he should have given up years ago, enjoying terrestrial, subterranean, and aquatic realms with his wife, and managing the NPS pollution generated by their cats.

Moving Towards a Better Understanding of Bacterial Impairments at Public Beaches in Iowa

Presenter:

Jason Palmer
Iowa Department of Natural Resources
jason.palmer@dnr.iowa.gov

Additional Presenter(s):

Abstract:

Elevated E. coli levels in swimming recreational areas impact a significant number of public lakes across Iowa. In the past these impairments were handled with the traditional approach of whole watershed modeling, TMDL development, and watershed planning for TMDL/319 implementation. This long and expensive process creates delays and limits the number of systems a state can address over time. Recently completed studies and a review of Iowa's ambient water monitoring data indicated that many of Iowa's swimming beach E. coli impairments may not be related to larger watershed processes but instead could be driven by beach zone specific conditions.

In response to these issues the Iowa DNR implemented a monitoring strategy on three lake systems designed to characterize the E. coli concentrations of the beach environment and show the level of association/disassociation with E. coli concentrations in other areas of the lake system. Sampling transects that ran perpendicular to the water line were established along three swimming beaches with sampling points along both the terrestrial (sand) and lake portion of the beach environment. Additional sampling points were established around the lake representing near shore, open lake and watershed inlet locations.

Analysis of these data sets showed a near to far shore gradient in both the lake and terrestrial portion of the beach system and an association between terrestrial sand and lake swimming area E. coli concentrations. Data collected also showed a strong disconnection between E. coli concentrations in the lake swimming area and alternate sampling locations representing both the open water and near shore environment.

Results of this study indicate that many of Iowa's swimming beach bacteria based impairments may be driven by factors that disassociate with larger watershed loading and that conditions in the near shore beach environment are serving as the primary source for E. coli bacteria concentration spikes in the swimming zone. Gaining an understanding of where this is happening and how best to address it will allow state resource managers to save time and money on modeling and watershed planning by directly targeting the driving mechanisms of the impairment.

Speaker Bio(s):

Jason Palmer has been a Natural Resources Biologist with the Iowa Department of Natural Resources since 2007 working with Section 319 and TMDL related programs serving as the lead project manager on numerous long-term water quality and biological projects.

INFLUENCES OF CLIMATIC VARIABILITY ON HYDROLOGY AND WATER QUALITY IN AN AGRICULTURAL BASIN

PRESENTER:

Taufique Mahmood
University of North Dakota
taufique.mahmood@engr.und.edu

ADDITIONAL PRESENTER(S):

ABSTRACT:

The cold region plains with seasonally frozen conditions, across the world, have experienced a net wetting condition over last three decades after a century long drought. Recent wetting via net increase in precipitation with embedded cooling and warming phase exert strong control on hydrology, nutrient exports, and watershed storage in many cold region plains such as Northern Great Plains. In addition to climate, land management practices such as tillage practice, installation of drain tile and headwater reservoir and wetland drainage influence cold region hydrological and biogeochemical cycles. Here, we conducted a detailed investigation using field observations, remote sensing and physically based hydrological model to detect the impacts of recent wetting on the change in streamflow, nutrient export and open water area in the Devils Lake Basin. Our findings indicate there are two wet periods (W1:1990-1999 and W2: 2005-2013) separated by one mild drought period in this novel wet continuum. We report the substantial increase in streamflow during these two periods and the increment is influenced by contributing area, storage change, snow processes and frozen soil status during the spring seasons. Further, wet period experiences high SWE, snowfall, maximum frozen soil conditions and a thick basal ice layer resulting in high snowmelt streamflow, while the dry period had lower SWE and absence of frozen soil/basal ice causing very little streamflow. Thus, lower mean nutrient concentrations are observed during the wet period compared to the dry period due to the dilution and presence of frozen soil/basal ice during melt period.

SPEAKER BIO(S):

Dr. Taufique Mahmood is an associate professor (University of North Dakota (UND) Harold Hamm Geology and Geological Engineering) and founding director of North Dakota Center for Water Research (NDCWR). Since 2015, Dr. Mahmood and his research group, has been investigating the impacts of recent wetting and land management practices on hydrology and water quality in the agricultural basins of the North Dakota (Devils Lake Basin), Minnesota (Red Lake River Basin) and headwater basins of the Missouri River. Dr. Mahmood collaborates with Native American communities across North Dakota and Minnesota and has extensive experience supervising Native American graduate students and tribal college students (NATURE summer camps) at UND. In particular, the collaboration with Three Affiliated Tribes and Turtle Mountain Band of Chippewa Indians through NSF CAREER grants is noteworthy. He recently received the NSF CAREER award (Hydrologic Science) and other grants from USGS and North Dakota Department of Water Resources. One of our recent highlights was cold region hydrology workshop for the high school student of the White Shield School of the Three Affiliated Tribes. In addition, Dr. Mahmood teaches Groundwater Monitoring and Remediation, Hydrogeology, Cold Region Hydrologic Modeling, Introduction to Geology, Water Sampling and Analyses and Conservation and Environmental Hydrology courses at the UND.

PARTNERSHIPS PROVIDE UNIQUE OPPORTUNITIES TO ADDRESS SOURCE WATER CONTAMINATION FOR COMMUNITIES IN THE BAZILE GROUNDWATER MANAGEMENT AREA

PRESENTER:
Tara Anderson
Nebraska Department of Environment and Energy
Tara.L.Anderson@nebraska.gov

ADDITIONAL PRESENTER(S):
Elbert Traylor

ABSTRACT:

The Bazile Groundwater Management Area (BGMA, 756 sq. mi.) in northeast Nebraska transects 3 river basins, 21 townships and 4 Natural Resources Districts. It encompasses 8 public water supply systems serving 7 communities. Nitrate concentration in groundwater ranges from moderately low and rising to very high, exceeding the MCL for drinking water in many area. Communities in the BGMA will face significant hardship in supplying safe drinking water to constituents in the future. One community already has been forced to install a reverse osmosis system to supply safe water.

The diverse interests in the areas offer both obstacles and opportunities for various agencies, organizations, communities and non-governmental groups to collaborate on reversing the rise of nitrate pollution of groundwater threatening local drinking water supplies.

Today, USDA Natural Resources Conservation Service and Nebraska Department of Environment and Energy provide planning and financial assistance through National Water Quality Initiative and Section 319 funds, Nebraska Extension provides outreach and research activities, the Natural Resources Districts provide funding and local project coordination, and communities provide outreach to constituents. The diverse interest speaking with one voice has helped accelerate the adoption of nutrient and irrigation management practice in the area to leaching of nitrate to groundwater.

SPEAKER BIO(S):

Tara Anderson holds a BS degree in Natural resources Management and MS degree in Aquatic Ecology from the University of Nebraska - Lincoln. Her past work experience includes studying Chinook salmon for the USFWS in northern California, classifying streams in New Mexico with the US Forest Service, teaching fishing programs with Minnesota DNR's MinnAqua program, and serving as a Peace Corps volunteer in El Salvador. At Nebraska Department of Environment and Energy, Tara has worked in the State Revolving Fund section and currently serves as the State Water Quality Standards Coordinator. Tara assist in coordinating water quality standards with the NPS Program activities.

Elbert Traylor has worked in the Nebraska NPS Program since 1991 and was

instrumental in adapting Nebraska's program to the many changes as the Section

319 program has evolved. Elbert's current focus in on program development,

watershed plan development and inter-agency programs coordination.

The Next Generation of Nonpoint Progress: Buying Water Quality Outcomes

PRESENTER:

Harry Huntley
Sand County Foundation/Environmental
Policy Innovation Center
hhuntley@policyinnovation.org

ADDITIONAL PRESENTER(S):

ABSTRACT:

This presentation will discuss three new water quality outcomes purchasing programs in the Chesapeake Bay watershed that have obligated close to $100 million. These first-of-their-kind, multi-million-dollar programs use Pay for Success contracts to directly purchase the most cost-effective guaranteed pollution reductions. The Environmental Policy Innovation Center's Senior Agriculture Policy Analyst will discuss the potential of outcomes-based programs to achieve nonpoint reduction goals faster and cheaper, walk through exactly how these programs work, suggest opportunities to fund them in your state, and envision how outcomes purchasing could be a model for the world in addressing the pernicious problem of nonpoint source pollution.

SPEAKER BIO(S):

Despite growing up in urban Baltimore, Harry has had a love of agriculture from a young age. His degrees in agricultural science and economics from UMD and varied professional experiences give him a unique perspective on how to make environmental policy work within the gritty realities of farming. Now at the Environmental Policy Innovation Center, Harry creates policy solutions that dramatically increase the speed and scale of nutrient pollution reductions in the Chesapeake and Mississippi watersheds while supporting farm families.

USING A SHINY APP TO SHARE WATER QUALITY MONITORING DATA WITH THE PUBLIC

PRESENTER:

Greg Kloxin
Oklahoma Conservation Commission
greg.kloxin@conservation.ok.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

The Oklahoma Conservation Commission (OCC) is the state lead for non-point source pollution prevention and monitoring in wadeable streams. Historically, our focus has been the collection and analysis of monitoring data for assessment and implementation, but given staff time constraints, public data-sharing is often an afterthought. To streamline dissemination of our data to the public, we have created a Shiny App. Shiny allows for easily update our data as it becomes available so data-sharing can be prioritized without straining employee time. Additionally, a customizable data interface can be designed to appeal to different levels interest including stakeholders, researchers, and citizens. The OCC web application is presented through multiple pages, the first of which provides a broad overview of the fish, macroinvertebrate, habitat, and water quality conditions across the state. Popups associated with mapped site locations provide a link to summaries of specific streams. A secondary page allows the user to filter and download the unprocessed and processed data used in our assessments. Because of its flexibility, Shiny helps facilitate our goal to make our data available for all users, in the format that best suits their application.

SPEAKER BIO(S):

Greg is OCC's Water Quality Division Assistant Director and Director of Soil Health Programming. He is a graduate of Oklahoma State University with a Bachelor of Science in Wildlife Ecology and a Master of Science in Zoology. Prior to breaking an inner vow and becoming the agency administrator he is today, Greg served for seven years as a Fish and Wildlife Biologist for a private ranch in east Texas. Greg currently resides in Guthrie with his wife and two sons on their 19 acre farmstead where they raise chickens, turkeys, bees, vegetables, and Labradors.

UPDATING IOWA'S NONPOINT SOURCE MANAGEMENT PLAN: A VISION FOR HEALTHIER WATERS

PRESENTER:
Steve Hopkins
Iowa Department of Natural Resources
stephen.hopkins@dnr.iowa.gov

ADDITIONAL PRESENTER(S):
Dr. Jacqueline Comito
Steve Konrady

ABSTRACT:

Iowa's Nonpoint Source Management Program Plan (NPSMP, or Plan) articulates the state's approach to addressing nonpoint source (NPS) pollution in Iowa's surface and groundwater. Iowa's NPSMP represents Iowa's vision, goals, objectives, and potential action steps to reduce NPS pollution and improve water quality. To remain eligible for US EPA Section 319 funding, the state must update the Plan every five years to incorporate lessons learned, changing circumstances, and new priorities and opportunities. Iowa's original NPSMP assessment dates to 1990, with major Plan updates completed subsequently in 2000 and 2012, and minor updates completed in between. This presentation will introduce the 2023 major update to Iowa's Plan. The new plan has a clear vision for healthier waters in Iowa and identifies four primary goals, including addressing impaired waters, improving waters affecting public health, collaborating to improve waters for native fish and aquatic life, and to continue supporting Iowa's 10-year old Nutrient Reduction Strategy. Iowa's Plan will also address new issues, including underserved communities and climate resilience, which are being incorporated into EPA's Section 319 Nonpoint Source Programming. The new NPSMP is was submitted for EPA review in the summer of 2023, and is proposed to begin in January of 2024.

SPEAKER BIO(S):

Dr. Jacqueline Comito is a leader of the Conservation Learning Group with Iowa State University. Steve Hopkins is Nonpoint Source Coordinator with the Iowa Department of Natural Resources (DNR). Steve Konrady is Western Iowa Basin Coordinator with Iowa DNR.

WATER QUALITY

PRESENTER:
    James Gilchrist Jr.
    Colorado River Indian Tribes
    james.gilchrist@crit-nsn.gov

ADDITIONAL PRESENTER(S):

ABSTRACT:

How much of an effect climate change has done?

SPEAKER BIO(S):

James Gilchrist Jr., I work for the Colorado River Indian Tribes (CRIT) as a Water Quality Specialist (WQS).

I sample for harmful algae and e.coli all along the CRIT Reservation. I also rehabilitate wetlands, vegetation, trees, and monitoring them throughout the year.

I've been with CRIT for 6 ½ half years. I love doing my job because I get to demonstrate to the kids in our community on how beautiful our reservation truly is.

The Colorado River Indian Reservation (CRIR) has a severe issue with invasive species.

I want my children to experience the pure beauty of what I used to see around my reservation.

SMALL BUT MIGHTY: A WATERSHED-SCALE IMPLEMENTATION OF CATCH BASIN RETROFITS AS COST-EFFECTIVE GREEN INFRASTRUCTURE IN URBAN LANDSCAPES OF MASSACHUSETTS

ALL AUTHORS: ANDREW HRYCYNA, MALCOLM M. HARPER; JUDITH C. RONDEAU; PADMINI DAS; AND RICHARD O. CAREY

PRESENTER:
Andrew Hrycyna
Mystic River Watershed Association
Andrew.Hrycyna@mysticriver.org

ADDITIONAL PRESENTER(S):
Malcolm Harper
Judith Rondeau

ABSTRACT:

Opportunities for implementing large-scale best management practices (BMPs) to mitigate nonpoint source (NPS) pollution are limited in highly urbanized landscapes, where poor water quality often disproportionately impacts disadvantaged communities (DACs).   The Mystic River watershed in metropolitan Boston, perhaps the most highly urbanized watershed in New England, is subject to the many pollution pressures common in urban areas. Winner of a 2023 "Stormy Award" from the New England Water Environment Association (NEWEA) for innovations in stormwater management, the street-trench model was a collaboration between the Town of Arlington and the University of New Hampshire Stormwater Center to design and evaluate small-scale, cost-effective green infrastructure that can be replicated easily and widely in urban communities. Multiple municipalities have implemented this approach by using a 604(b) water quality management and planning grant, 319 NPS implementation project funds, and MA Office of Coastal Zone Management programs. In collaboration with the Mystic River Watershed Association (MyRWA), more than ten urban municipalities with multiple MA Environmental Justice (EJ) communities are currently engaged in projects to install more than two hundred of these structures across the region to remove phosphorus and bacteria. This presentation will include the design of the model, strategy of deployment at a regional scale, active and inclusive community engagement, and lessons learned to maximize cost-effectiveness. The discussion will also include a MassDEP-funded education campaign that uses these stormwater trenches as a window into urban infrastructure and associated benefits. This youth engagement initiative for high school students includes designing models for classroom use and creating curriculum content, such as engineering to abate NPS pollution. A professionally produced video about this project is also underway showing the potential of using this project as a pioneering example of "innovation meeting equity" to make it a common urban stormwater management practice in the Commonwealth.

SPEAKER BIO(S):

Andy Hrycyna is MyRWA's Watershed Scientist. In this role, Any leads the water quality monitoring programs—including the successful baseline program—as well as manages multiple green infrastructure efforts to address stormwater pollution. He joined MyRWA in April 2014. Andy comes to MyRWA from the Sustainability and Environmental Management Program at Harvard Extension School, where he received a master's in ecological management. Andy discovered a passion for ecology and environmental protection mid-career, after many years in non-profit book publishing. He now leads MyRWA's water quality monitoring program and restoration efforts across the watershed.

Malcolm Harper is the Program Coordinator for the Section 319 Nonpoint Source Pollution Grant Program, for the Nonpoint Source Section of the Watershed Planning Program at the Massachusetts Department of Environmental Protection.

In this position, he provides guidance and support to optimize the removal of NPS-related pollutants in an effort restore waterbodies' designated uses and to protect healthy watersheds. He applies his extensive experience with stormwater management to help develop, implement, and manage results-driven efforts that network local, state, and federal agencies, and meet their programmatic objectives to mitigate NPS pollution.

Prior, Malcolm coordinated the MassDEP's Water Conservation Grant Program annually saving billions of gallons of drinking water. Malcolm was previously employed as the Director of Environmental Programs for Rural Community Assistance Program. Malcolm holds a BA in History from the University of Massachusetts-Amherst and a MS in Water Resource Management from Antioch University.

Judy Rondeau is the NPS Watershed Specialist & Outreach Coordinator for the Nonpoint Source Section of the Watershed Planning Program at the Massachusetts Department of Environmental Protection. In this position, she applies her extensive experience with NPS and watershed management to assist with watershed planning to protect and restore watersheds, provide technical assistance to partners with planning for NPS pollution control measures and best management practices, and conducts outreach to strengthen collaborative efforts among local, state and federal partners to mitigate NPS pollution.

Prior to joining MassDEP in 2021, Judy was the Assistant Director of the Eastern Connecticut Conservation District, where she specialized in urban stormwater management, and coordinated the Niantic River Watershed Committee and the Eastern CT Stormwater Collaborative, Connecticut's first municipal stormwater coalition. Judy was previously employed as an environmental educator in the Parks and Recreation Division at the Connecticut Department of Energy and Environmental Protection, and as the wetland enforcement officer for the Town of Thompson, CT. Judy holds a BA in Geology/Geophysics and an MS in Water Resource Management from the University of Connecticut.

MassDEP's Journey to Identifying the Biggest Equity Barrier in the 319 Grant Program and Overcoming it to Meet the Justice40 Goal

PRESENTER:
Dr. Padmini Das
MassDEP
padmini.das@mass.gov

ADDITIONAL PRESENTER(S):
Dr. Richard O. Carey, Director, Watershed Planning Program, MassDEP

ABSTRACT:

To achieve the goal of meeting communities where they are, the Nonpoint Source (NPS) program of the Massachusetts Department of Environmental Protection (MassDEP) conducted assessments through a series of internal and external Strength, Weakness, Opportunity, and Threat (SWOT) analyses to identify short- and long-term initiatives leading to improved accessibility of §319 funds. The SWOT assessments identified gaps and equity needs, as well as nine new initiatives to enhance Environmental Justice in the §319 grant program. Five short-term initiatives will be incorporated into the upcoming request for response (RFR), and four long-term initiatives will be incorporated into future RFRs. The 40% non-federal match requirement that historically grantees needed to gather was identified as the biggest barrier for the communities with lesser capacity. The NPS program currently needs to receive more proposals from Disadvantaged or Environmental Justice (DAC/EJ) communities to meet the Justice40 requirement. To overcome this barrier, MassDEP's Watershed Planning Program (WPP) has pursued multiple avenues to establish innovative partnerships to collect sufficient match at the State level to potentially waive the match requirement completely for identified EJ communities and reduce the match for other communities. This presentation will shed light on the numerous interim obstacles and achievements through which MassDEP was able to secure the match for the FFY2022 §319 allocation, which enabled us to obligate the FFY2022 funds to meet the Justice40 goal. The discussion will also include unique scenarios we encountered, what worked, what could have worked better, and lessons we learned that would be helpful for other States planning to embrace a similar journey.

SPEAKER BIO(S):

Dr. Padmini Das oversees MassDEP's Nonpoint Source Management Program as the NPS Section Chief in the Watershed Planning Program. Her responsibilities include the development and implementation of the NPS Management Program Plan through Clean Water Act Section 604(b) Water Quality Management Planning Grants, and the Clean Water Act Section 319 NPS Competitive Grants Program. Dr. Das was previously the Chair of the Department of Biology at Nazareth College of Rochester, where she was also an Associate Professor, Director of the Environmental Science and Sustainability Program, and Director of the Environmental Quality and Remediation Research Group. She has research expertise in soil and water quality monitoring and assessment and the design and implementation of sustainable best management practices to remediate a wide array of soil and water contaminants, notably lead, arsenic, plastic degradants, nutrients, TNT, RDX, PCBs, and emerging contaminants. Through these community-driven environmental projects, she has worked for the benefit of disadvantaged communities, engaging community youth as an integral part of these projects. Dr. Das has a Ph.D. in Environmental Management from Montclair State University, two Master of Science degrees in Environmental Science from the University of Texas at San Antonio and the University of Pune (India), and a Bachelor of Science degree in Microbiology from the University of Pune.

Dr. Richard Carey is the Director of the Watershed Planning Program at the Massachusetts Department of Environmental Protection. He oversees activities to restore, enhance, and protect the Commonwealth's water resources under the Clean Water Act. The Watershed Planning Program manages statewide activities pertaining to five programmatic operations: surface water quality standards, surface water quality monitoring, data management and water quality assessment, total maximum daily loads, and nonpoint source management. Dr. Carey's water resources experience includes leading research projects focused on quantitative data analyses involving anthropogenic influences on aquatic biogeochemistry. He earned his Ph.D. in Interdisciplinary Ecology from the University of Florida.

BUILDING ROBUST COMMUNITY PARTNERSHIPS THROUGH THE GREEN INFRASTRUCTURE CHAMPIONS PROGRAM

PRESENTER:

Chris Obropta
Rutgers Cooperative Extension
obropta@envsci.rutgers.edu

ADDITIONAL PRESENTER(S):

ABSTRACT:

In urban communities, stormwater runoff causes localized flooding and creates water quality problems. When many of these older communities were built, stormwater management was not required, which resulted in stormwater runoff from most streets, parking lots, roads, and rooftops to be quickly conveyed to local waterways without any treatment. If localized flooding and improved health of local waterways is a goal to a better quality of life, these communities must be retrofitted with green stormwater infrastructure. To achieve this goal, local leadership is needed.

Green Infrastructure Champions is an Extension program that was created to empower local stakeholders to play a dominant role in encouraging municipalities and other property owners to implement green stormwater infrastructure practices. They are provided with a series of training opportunities to increase their knowledge about stormwater issues and green stormwater infrastructure solutions. After participating in five workshops, these individuals are certified as Green Infrastructure Champions and become key players in implementing green infrastructure as a stormwater management approach in their community. Once certified, the Green Infrastructure Champion has access to technical support from the Rutgers Cooperative Extension (RCE) Water Resources Program staff.

This presentation will share the results of the five three years of this the Green Infrastructure Champions Program linking the certified Champions to green infrastructure planning and implementation that they were directly responsible for initiating in their communities. Currently, the program is being offered virtually with a geographic target area of New Jersey, but this upcoming year the program is expanding to other states in the Northeast.

SPEAKER BIO(S):

Christopher C. Obropta, Ph.D., P.E is the Director of the New Jersey Water Resources Research Institute, an Extension Specialist in Water Resources with Rutgers Cooperative Extension, and a Professor with the Department of Environmental Sciences at the School of Environmental and Biological Sciences, Rutgers University. Dr. Obropta leads a highly specialized staff from the Rutgers Cooperative Extension Water Resources Program to identify and address water resources issues by engaging and empowering communities to employ practical science-based solutions to help create a more equitable and sustainable New Jersey. Over the last twenty years, he and his staff have been working with communities to implement green infrastructure practices throughout New Jersey to help these communities increase their climate resilience.