

*The 30th Annual*  
**MARYLAND WATER MONITORING COUNCIL**  
*Conference*



**MWMC** CELEBRATING SUCCESSES &  
**@ 30:** TACKLING EMERGING CHALLENGES





## 2024 MWMC Annual Conference Sponsors and Exhibitors

The Maryland Water Monitoring Council would like to recognize the support of KCI, who again have sponsored the Student Poster Contest and the after-conference social at Heavy Seas Brewery.



Many thanks to our exhibitors for their support of the conference.



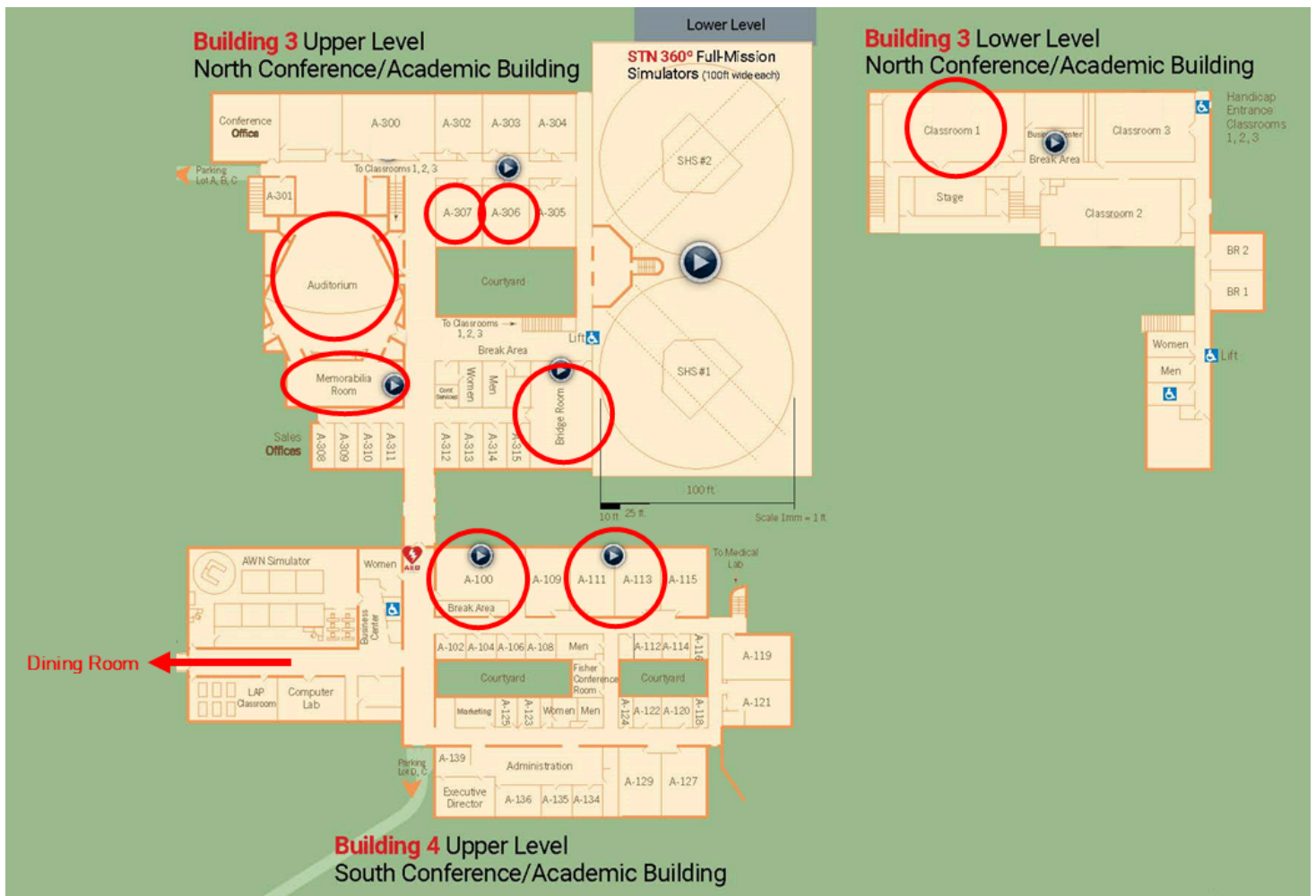
Be sure to stop by their tables and thank them for their support of the 30<sup>th</sup> annual conference!

On the Cover – Original art by Claire Hirt (Carroll County Government)

**MARYLAND WATER MONITORING COUNCIL**  
**30th Annual Conference - Thursday, November 21, 2024**

**MWMC @ 30:**  
**Celebrating Successes and Tackling Emerging Challenges**

- 7:30 Registration/Poster Set-up/Continental Breakfast – Registration in Room A-100  
**Morning Plenary Session (8:30-10:00) in the Auditorium**
- 8:30 *MWMC Board Chair's Call to Order* – Matt Stover – Maryland Department of the Environment; Chair, MWMC Board of Directors
- 8:45 *Plenary Speakers*
- 9:45 *Carl S. Weber Award* – Clark Howells; Washington Suburban Sanitary Commission
- 10:00 Break/Poster Session – Authors Present



Thanks to the 2024 MWMC Annual Conference Planning Committee – Andy Becker (KCI), Megan Brosh (Balto. Co.), Lindsay DeMarzo (Howard Co.), Jason Dubow (MDP), Katherine Hanna (MDNR), Clark Howells (Balto. City), Ken Mack (Montgomery Co.), Mike McMahon (MDE), Becky Monahan (MDE), Mat Pajerowski (USGS), Nancy Roth (Tetra Tech), Mark Southerland (Tetra Tech), Matt Stover (MDE), and Mark Trice (MDNR).

Only the primary presenter is listed for oral and poster presentations. The online conference Program will contain the full list of authors, co-authors, contact information, and abstracts. Following the conference, this agenda will contain links to presentation files, if available.

*Concurrent Sessions - 10:30 –12:00*

**AUDITORIUM – Restoration I**

**TWO SAMPLING METHODS SHOW SIMILAR TRENDS IN THE BENTHIC COMMUNITY OF A RESTORED URBAN STREAM** - Dennis Genito, Baltimore County Department of Environmental Protection & Sustainability

**TRACKING THE CHANGES IN STREAM HEALTH FROM RESTORATION PRACTICES IN THE CHESAPEAKE BAY** - Maya Sterett, Alliance for the Chesapeake Bay

**WILD CELERY (*VALLISNERIA AMERICANA*) RESTORATION IN DEEP CREEK LAKE, MARYLAND** - Mike Naylor, Maryland DNR

**Classroom 1 - Emerging Concerns for Water Utilities**

**QUANTIFYING FOUR DECADES OF CHLORIDE INPUTS FROM DEICING SALT TO THE BALTIMORE CITY REGION DRINKING WATER RESERVOIRS** - Kyle Hurley, Towson University

**DEVELOPING AND EVALUATING OPERATIONAL HYDROLOGICAL DROUGHT ONSET, DURATION AND INTENSITY FORECASTS FOR THE EASTERN UNITED STATES** - John Hammond, U.S. Geological Survey, Maryland-Delaware-D.C. Water Science Center

**UNDERSTANDING THE FACTORS AFFECTING PFAS VARIABILITY IN THE POTOMAC RIVER WATERSHED** - Christina Davis, Loudoun Water

**Bridge Room - Pain in my PFAS**

**CURRENT STATUS OF USGS WATER MISSION AREA EFFORTS IN GW AND SW FIELD METHODS FOR PFAS** - Gerolamo (Jerry) Casile, U.S. Geological Survey, Maryland-Delaware-D.C. Water Science Center

**ENVIRONMENTAL AND MODELING APPROACHES TO ASSESS AND PREDICT PFAS FISH TISSUE CONCENTRATIONS IN VARIABLE ENVIRONMENTS** - Krista Kraskura, Towson University, Environmental Science & Studies Program

*TBD*

**Room A-111/A-113 - Bioassessment I: What's Bugging You?**

**SEASONAL VARIABILITY OF BENTHIC MACROINVERTEBRATE ASSEMBLAGES IN URBAN LANDSCAPES** - Chris Ruck, Fairfax County, VA, Watershed Assessment Branch

**BACK RIVER NUISANCE MIDGE CONTROL PROGRAM** - Kevin D Brittingham, Baltimore County Department of Environmental Protection & Sustainability

**AN ANALYSIS OF THE ADEQUACY OF THE MARYLAND BENTHIC INDEX OF BIOTIC INTEGRITY (BIBI) IN ASSESSING THE HEALTH OF SMALL STREAMS SELECTED FROM A FINER MAP SCALE** - Mary Genovese, Maryland DNR

**Room A-306 - Agriculture**

**HOW THE ENDANGERED SPECIES ACT COULD DRIVE THE IMPLEMENTATION OF AGRICULTURAL CONSERVATION MEASURES** - Niranjana Krishnan, University of Maryland, College Park

**AGRICULTURE, DEVELOPMENT, AND LOCAL FISH HABITAT CONDITIONS IN CHESAPEAKE BAY** - Jim Uphoff, Maryland DNR, Fishing & Boating Services

**MARYLAND AGRICULTURE AND WATERSHED RESTORATION – LOOKING BEYOND 2025** - Elizabeth Hoffman, Maryland Department of Agriculture

*Concurrent Sessions - 10:30 –12:00 ctd.*

<b>Room A-307 – Data Management &amp; Modeling</b>
<b>ENSURING DATA QUALITY AND INTEGRITY IN ENVIRONMENTAL MONITORING - Najma Khokhar, TechZone MD LLC</b>
<b>RELATING MANAGEMENT PRACTICE IMPLEMENTATION AND MODELED LOAD REDUCTIONS IN THE CHESAPEAKE BAY WATERSHED - Helen Golimowski, Devereux Consulting</b>
<b>VISUALIZING AND COMMUNICATING MONITORING DATA FOR POSITIVE CHANGE - Alexandra Fries, University of Maryland Center for Environmental Science</b>

**Lunch A - 12:00 – 12:45**

**Lunch B - 12:45 – 1:30**

**Poster Session – 1:00 – 1:30**

**Student Posters to present to judges at 1:00 in the Memorabilia Room**

*Concurrent Sessions – 1:30 –3:00*

<b>AUDITORIUM – Restoration II</b>
<b>"BUT THE STREAM LOOKS FINE TO ME." EFFORTS TOWARD COMMUNICATING AN UNDERSTANDING OF STREAM HEALTH AND WATERSHED FUNCTION - Adam Nabors, Maryland Stream Restoration Association</b>
<b>MAPPING EROSION: USING DEM DIFFERENCING TO GUIDE RESTORATION EFFORTS - Brennan Smith, Anne Arundel County Bureau of Watershed Protection &amp; Restoration</b>
<b>A TALE OF TWO WATERSHEDS: WATER QUALITY IN FOSTER BRANCH AND PLUMTREE RUN, HARFORD COUNTY, MD - Alex Soroka and Jennifer Olszewski, U.S. Geological Survey</b>

<b>Classroom 1 - Stormwater I</b>
<b>LONG-TERM MONITORING OF SUBURBAN DEVELOPMENT AND STORMWATER MANAGEMENT IN CLARKSBURG, MONTGOMERY COUNTY, MARYLAND - Marina Metes, U.S. Geological Survey</b>
<b>QUANTIFYING IMPACTS OF SUMMER STORMS ON THE THERMAL REGIME OF AN URBAN STREAM SYSTEM AT THE WATERSHED SCALE - Claire Welty, University of Maryland, Baltimore County</b>
<b>STORMWATER AND BIORETENTION: PAST, PRESENT, AND FUTURE? - Allen P. Davis, University of Maryland, College Park</b>

<b>Bridge Room - Community Science</b>
<b>CONNECTING COMMUNITIES TO ACCESSIBLE WATER MONITORING - Matthew Kierce, Izaak Walton League of America</b>
<b>PERFECTING PARTNERSHIPS FOR SMART SALT SUCCESSES - Abby Hileman, Izaak Walton League of America</b>
<b>ASSESSING WATER QUALITY CONDITIONS IN VULNERABLE COMMUNITIES IN THE CHESAPEAKE BAY WATERSHED - Leah Staub, U.S. Geological Survey</b>

*Concurrent Sessions – 1:30 –3:00 ctd.*

<b>Room A-111/A-113 - Bioassessment II: Critters (and MBSS) in the Creeks</b>
<b>MARYLAND BIOLOGICAL STREAM SURVEY ROUND FOUR RESULTS INVESTIGATING POTENTIAL CHANGES OVER TIME IN STREAM CONDITIONS - Kyle Hodgson, Maryland DNR</b>
<b>STONECAT: USING MARYLAND BIOLOGICAL STREAM SURVEY DATA TO IMPROVE OUR UNDERSTANDING - Tomas Ivasauskas, Maryland DNR</b>
<b>MBSS COMPLETES SIXTEEN YEARS OF BIOLOGICAL MONITORING ON THE PATAPSCO RIVER COINCIDENT WITH DAM REMOVALS - William Harbold, Maryland DNR</b>

<b>Room A-306 - Microplastics</b>
<b>FRAMEWORK FOR MONITORING PLASTIC POLLUTION IN THE CHESAPEAKE BAY - Mark Southerland, Tetra Tech</b>
<b>A COMPARISON OF CHESAPEAKE BAY MICROPLASTIC CONCENTRATIONS, MORPHOLOGIES AND TYPES IN FOUR MARYLAND AQUATIC ENVIRONMENTS - Mark Trice, Maryland DNR</b>
<b>ASSESSING BIOLOGICAL EFFECTS OF PLASTIC ON STRIPED BASS - Bob Murphy, Tetra Tech</b>

<b>Room A-307 – E(ww) coli and other Water Management Problems</b>
<b>COMMUNITY SCIENCE RECREATIONAL WATER QUALITY MONITORING IN ANACOSTIA TRIBUTARIES - Maureen Mitchell, Anacostia Riverkeeper</b>
<b>SOURCING E. COLI IN THE ANACOSTIA WATERSHED: USING WATER QUALITY MEASUREMENTS AND MORE AS A PROXY INDICATOR - Jessie Ribera, Smithsonian Environmental Research Center</b>
<b>IMPACTS OF CLIMATE CHANGE ON LAKE ECOLOGY - Michael Hartshorne, Princeton Hydro, LLC</b>

**3:00 – 3:30 Break/Poster Session – Authors Present**

**3:00 Announcement of Student Poster Award Winners in the Auditorium**

*Concurrent Sessions – 3:30 –4:30*

<b>AUDITORIUM – Restoration III: Biochar-ging Ahead</b>
<b>BIOCHAR FOR CLEAN WATER, HEALTHY SOILS AND CLIMATE RESILIENCY - Lori Lilly, Howard EcoWorks</b>
<b>BIOCHAR: A MULTIFACETED TOOL FOR ENHANCING CHESAPEAKE BAY WATER QUALITY AND CLIMATE RESILIENCY - Charles Hegberg, Scaling Up Biochar &amp; Infinite Solutions</b>

<b>Classroom 1 - Pending</b>
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<b>Bridge Room - Water Quality</b>
<b>SALTIER RIVERS IN NATIONAL PARKS ARE A GROWING CONCERN - Dan Myers, Stroud Water Research Center</b>
<b>CHLORIDE AND HEAVY METALS IN HCC'S STREAM SYSTEMS - Dr. Rebecca Carmody, Howard Community College</b>

*Concurrent Sessions – 3:30 –4:30 ctd.*

**Room A-111/A-113 - Bioassessment III: Fishing for Results**

**ASSESSING MARYLAND'S LIVE BAIT TRADE AS AN AQUATIC INVASIVE SPECIES PATHWAY - Gregory Mathews, Maryland DNR**

**CHANGES IN THE TIMING OF MARYLAND STRIPED BASS SPAWNING RUNS - Angela Giuliano, Maryland DNR**

**Room A-306 - Student Lightning Talks**

**USING STABLE ISOTOPES ( $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ ,  $\Delta^{17}\text{O}$ ) TO EVALUATE SOURCES AND CYCLING OF NITRATE IN SUBURBAN MARYLAND WATERSHEDS - Grace O'Hara, University of Maryland Center for Environmental Science**

**CHARGED WITH CONTAMINATION: UNPACKING PFAS POLLUTION IN LITHIUM-ION BATTERIES - Neal Goturi, River Hill High School**

**MICROBIAL CONTAMINATION IN THE GUNPOWDER RIVER WATERSHED: ASSESSING WATER QUALITY AND PUBLIC HEALTH RISKS - Chichedo Duru, Morgan State University**

**BIOMIMICRY TECHNIQUES IN DESIGN OF STORMWATER MANAGEMENT WITHIN FOUR CRITICAL AREAS OF THE CHESAPEAKE BAY - Clara McKnight, River Hill High School**

**Room A-307 – Monitoring Water from the Depths**

**DESCRIPTION OF THE USGS GW MONITORING NETWORK IN MARYLAND, DELAWARE, AND THE DISTRICT OF COLUMBIA - Samantha Woomer, U.S. Geological Survey**

**EVALUATING AND MITIGATING THERMAL IMPACTS OF SMALL PONDS IN MARYLAND TROUT WATERSHEDS - Jason Cessna, Maryland DNR**

4:30 Adjourn –



**SOCIAL AT HEAVY SEAS BREWERY STARTING AT 5:00 (registration required)**

## *Posters*

AN ANALYSIS OF BEAVER DAM ANALOGS ON FISH COMMUNITIES AT LITTLE GUNPOWDER FALLS - Katherine Chase, Maryland DNR

<STUDENT POSTER> MICROBIAL CONTAMINATION IN THE GUNPOWDER RIVER WATERSHED: ASSESSING WATER QUALITY AND PUBLIC HEALTH RISKS - Chichedo Duru, Morgan State University

PROMOTING ADVANCES IN HYDROLOGICAL MODELING THROUGH DEVELOPMENT OF THE OPEN-SOURCE, TIME-VARIANT WATER QUALITY MODELING SYSTEM RSPARROW 2.0 - Lillian Gorman Sanisaca, U.S. Geological Survey

DEVELOPING NEW IMAGING TECHNOLOGY PROCEDURES AT MARYLAND DNR'S PHYTOPLANKTON LABORATORY - Amy Hamilton, Maryland DNR

BIODEGRADATION OF PFOS WITH A DEHALOGENATING CULTURE - Michelle M. Lorah, U.S. Geological Survey

IS SALINIZATION OF FRESHWATER A DRIVER OF INVASIVE CRAYFISH SUCCESS IN MARYLAND? - Faith Matthews, Towson University

<STUDENT POSTER> BIOMIMICRY TECHNIQUES IN DESIGN OF STORMWATER MANAGEMENT WITHIN FOUR CRITICAL AREAS OF THE CHESAPEAKE BAY - Clara McKnight, River Hill High School

HIGH-FREQUENCY WATER QUALITY OBSERVATIONS ALONG AN URBAN TO RURAL GRADIENT IN BALTIMORE: AN UPDATE - Mary McWilliams, University of Maryland, Baltimore County

LEVERAGING THE BENEFITS OF LONG-TERM HYDROLOGIC MONITORING OF SENSITIVE WETLANDS - Kelley Moxley, WSP

GREY TO GREEN; INCREASED URBANIZATION SUGGESTS AN ELEVATION IN PHOSPHORUS PRESENCE AND GREATER ALGAE GROWTH IN THE CHESAPEAKE BAY WATERSHED - August Mullican, Hood College

ECOLOGICAL INDICATORS: EXPLORING THE USE OF ENVIRONMENTAL DNA TO ENHANCE BROOK TROUT CONSERVATION IN MARYLAND - Patience Odeh, Towson University

THE MARYLAND SAFE DRINKING WATER STUDY: AN INITIATIVE TO PROTECT MARYLAND'S WATER - Georgia Parolski, University of Maryland, School of Public Health

CHLORIDE AND HEAVY METALS IN HCC'S STREAM SYSTEMS - Dr. Hannah Pie, Howard Community College

CHLAMYDOMONAS AND MICROCYSTIS GROWTH AND COMPETITION WITH TRACE AMOUNTS OF MOLYBDENUM - Callie Polanka, Mount St. Mary's University

AN AGE AND GROWTH STUDY OF BLUE CATFISH POPULATIONS IN MD TRIBUTARIES - Evangeline Sawyers, Maryland DNR

DOES THE TYPE OF DESIGN FIRM DRIVE ECOSYSTEM SERVICE BUNDLES IN STORMWATER GREEN INFRASTRUCTURE? - Rahat Sharif, University of Maryland, College Park

CHESAPEAKE WATER WATCH: VOLUNTEERS ENHANCING SATELLITE REMOTE SENSING OF WATER QUALITY - Tara Sill, Smithsonian Environmental Research Center

INNOVATIVE APPROACH FOR BIOREMEDIATION OF NITRATE-CONTAMINATED BRINE USING HALOPHILIC DENITRIFIERS FOR WATER QUALITY RESTORATION - Leonardo Soto, Institute of Marine and Environmental Technology, University System of Maryland

<STUDENT POSTER> INVESTIGATING THE IMPACT OF INCREASED FLOODING & GROUNDWATER TABLE RISE ON PATHOGEN REMOVAL IN THE SOIL TREATMENT AREA OF COASTAL SEPTIC SYSTEMS - Emily Speierman, University of Maryland

SUSQUEHANNA RIVER BASIN COMMISSION – NEW AND CONTINUING ACTIVITIES IN MARYLAND - Luanne Steffy, Susquehanna River Basin Commission

A NOVEL AQUATIC INVERTEBRATE MODEL: USING JUVENILE ODONATES TO BETTER UNDERSTAND SALINITY AND PFAS STRESSORS - Talia Tanner, Towson University

HIDDEN NEUROTOXINS IN BENTHIC CYANOBACTERIA MATS - Catherine Wazniak, Maryland DNR

THE ROLE OF UNMANNED AERIAL VEHICLES IN CHARACTERIZING STREAM FLOW DYNAMICS - Gregory Zuknick, EA Engineering, Science, and Technology, Inc., PBC