

# 2024 NATIONAL HYDRAULIC ENGINEERING CONFERENCE

## RIDING THE WAVES OF INNOVATION

Sustainable Solutions in Hydraulic  
Engineering for a Dynamic Future



AUGUST 27-30, 2024  
BEAU RIVAGE  
BILOXI, MISSISSIPPI

## AGENDA

### Tuesday, August 27

**8:00 AM - Noon**     **Workshop A - Bentley Workshop**  
Bentley

**Workshop B - FEMA 2D Model  
Permitting Workshop**  
Scott Hogan & Susan Jones

**12:00 - 1:00 PM**     **Break**

**1:00 - 5:00 PM**     **Commencement**

Opening remarks  
Welcome  
Keynote Speech

Break

FHWA Update  
AASHTO Update  
TRB Update

**5:00 - 7:00 PM**     **Ice Breaker**



8:00 - 10:00 AM

## River Morphology & Countermeasures

A Century on the Wolf River: Urbanization and Migration in Memphis, TN

Wesley Peck

Real-Time Bridge Scour Monitoring in South Carolina

Tim Lanier

Scour and Stream Stability at U.S. 98 over the Pearl River

Katie Wimberly

Exciting Components of the New Edition of HEC-23

Laura Girard

## Advanced Stormwater Modeling

Evaluation of Screen Performance for Filtering Debris from Stormwater Inlets

Troy Lyons

Computational Modeling and Analysis of the Inlet No. 3 Single Slope Barrier Hydraulic Efficiency

Marta Sitek

Computational Modeling of Infiltration from Ditches into Roadway Embankments

Marta Sitek

Storm Sewer Geysering – An Exercise in Risk and Resiliency with Stormwater Infrastructure in Urban Environments

Erik Carlson

Tentative:  
AOP Panel  
Discussion  
Casey Cramer

10:00 - 10:30 AM | Break

10:30 AM - 12:30 PM

## Aquatic Organism Passage (AOP)

Design and Resilience of Waterway Crossing for Aquatic Organism Passage in the Coastal Plains of Maryland

Art Parola

Reconnecting the Bayou Darter: A One of its Kind Partnership in the Southeast

Sarah McEwen

Challenges in Meeting Local Community Floodplain Management Requirements for Fish Passage and Stream Restoration Projects

Henry Hu and Julie Heilman

A GIS-based hydraulic modeling tool for Massachusetts stream crossing replacement projects in USGS

StreamStats

Gardner Bent

## Advanced Hydraulic Modeling

Determination of Shear Amplification between Approach Flow and Bridge Foundation Obstructions using CFD and a 5000 Case Matrix

Steven Lottes

Selection and Application of Manning's Roughness Values in Two-Dimensional Hydraulic Models: Results from NCHRP 24-49

Xiaofeng Liu

Automated Meshing and 3D Visualizations for 2D Bridges and Culverts in SMS/SRH-2D

Scott Hogan

Understanding the role of bank vegetation in hydraulic modeling and scour – insights gleaned from CFD simulations for a bridge over the American River

Kevin Flora

Tentative:  
Deck Drainage  
Discussion  
Ryan Lizewski

12:30 - 1:30 PM | Lunch

1:30 - 3:10 PM

**Lightning Sessions 1**

Future River Analysis & Management Evaluation (FRAME): A new forecasting tool for long-term morphological response in river channels  
[Charlie Little](#)

Impact to infrastructure of the January and March 2023 Flooding  
[Cathy Avila](#)

Scour calculations using HEC-RAS 2D: Comparison of Modeling and Parameterization Alternatives for Bridges  
[Shams Al-Amin](#)

Two Dimensional Modeling of the Lower Wolf River in Memphis, TN  
[Wesley Peck](#)

The US Coastal Research Program and How it Can Help Our Coastal Roads  
[Daniel Sharar-Salgado](#)

Bridge Scour Mitigation using Concrete Armor Units - 25-years of Performance  
[Daniel Priest](#)

The Mississippi River Basin Model – A Triumph in Hydraulic Engineering  
[Don Hendon](#) and [Sarah McEwen](#)

Flood Monitoring for South Carolina Bridges  
[Beatrice Hunt](#), [Ellen Newman](#), [Thomas Knight](#), [Amy Hearing](#)

1:30 - 4:30 PM

**Panel Discussion - Resilience**

Adapting to Climate Change in Maryland: Highway Drainage Manual Updates and the St. George Island Coastal Resiliency Project  
[Ryan Doheny](#)

Building MnDOT's Road to (Hydraulic) Resiliency  
[Nick Olson](#)

Update on FHWA's Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program  
[Robert Kafalenos](#)

1:30 - 6:30 PM

**Ship Island Tour with USACE Research Needs**

3:10 - 3:30 PM | **Break**

3:30 - 4:30 PM

**Panel Discussion**

FHWA Metric 18 under the National Bridge Inspection Program  
[John Hunt](#) and [Will deRosset](#)

4:30 - 5:30 PM

**Research Needs Discussion**

[Brad McManus](#)



# Thursday, August 29

8:00 - 10:00 AM

## Scour

A New Scour Tool: NextScour Shear Decay Method  
[Kornel Kerenyi](#)

Into the Blackbox: Research of NextScour Shear Decay Method  
[Haoyin Shan](#)

Enhancing Bridge Resilience: Hydrodynamic Modeling for Scour Evaluation  
[Donald Lynn Hendon](#)

Lake Superior Water Level Impacts on Bridge Scour  
[Steve Neary](#)

## Hydrology

An Introduction to SRH-W  
[Megan Frye](#)

Neptune Close Upon Vulcan's Heels: Post-Wildfire Bulked Runoff Analysis of a Burned Watershed Using Multiple First-Response Methods  
[Steven Griffin](#)

Drainage Area Limitations for NRCS Methods  
[Rollin H. Hotchkiss](#)

Watershed Surface and Channel Runoff Coefficient Assessment with Unified Runoff Time Implications  
[Ken Kagy](#)

Lightning Presentation 1  
Poster Sessions  
(and additional posters)

10:00 - 10:30 AM | **Break**

10:30 AM - 12:30 PM

## Water Quality Analysis and Stormwater Design

Uncertainty in stormflow-quality estimates at unmonitored sites can confound efforts to determine if infrastructure projects will have an adverse effect on water quality.  
[Gregory E. Granato](#)

Updates to the USGS-FHWA Highway-Runoff Database to support highway-stormwater practitioners  
[Alana Spaetzel](#)

Effects of Impoundments on Selected Flood-Frequency and Daily Mean Streamflow Characteristics in Georgia, South Carolina, and North Carolina  
[Toby D Feaster](#)

FDOT Water Quality BMP Research Updates  
[Jennifer Green](#)

## Hydraulic Modeling Case Studies

Aquatic Algorithms: A Comparative Analysis of 2D Modeling Methods  
[Abigail Richardson](#)

A Comparison of Complex Hydraulic Modeling along Crabtree Creek using HEC-RAS 2D and SRH-2D  
[Emma Bones](#)

Improving West Memphis Port Hydraulics  
[Andy McCoy](#)

Salt Creek Boardwalk: Water and Life in Death Valley National Park  
[Amanda Peters](#)

Tentative:  
Culvert Asset Management Discussion  
[Dave Claman](#)

12:30 - 1:30 PM | **Lunch**

1:30 - 3:30 PM

### Lightning Sessions 2

Comparison of 1D and 2D Hydraulic Models Applications for Maryland SHA Stream Crossings

[Pawel Mizgalewicz](#)

The KISS Method – Keep It Simple and Sustainable – for Hydraulic Engineers

[Rachel Westerfield](#)

Navigating CLOMR Complexity: Moving a Project with Over a Mile of Natural Stream Design & 9 New Structures Through FEMA's CLOMR Process

[David Spinks](#)

Highway Embankments that Function as Dams, Integrating Dam Safety with Roadway Management

[Erman Caudill](#)

Beyond the FEMA Model: Innovations in Flood Assessment

[Colin McKernan](#)

Taking on River Woes: The Whitewater Bridge's Battle with Bed Degradation in California's High Desert Amid Climate Challenges

[Oscar Suaznabar and Kevin Flora](#)

Coastal Strategies for Drainage Resilience and Permitting in Florida

[Carl Spirio](#)

Programmatic Discussion of FHWA's Floodplain Program

[Susan Jones](#)

### Innovation

Developing a New Generation of Hydraulic Engineers

[Megan Frye](#)

Rewrite of the AASHTO Drainage Manual

[James Schall](#)

New tools to support rapid assessment and response in remote areas

[Michael Knapp](#)

A Tidal Wave of Innovation – Washington State Department of Transportation Hydraulics Office

[Julie Heilman and Casey Kramer](#)

Tentative:

**SELDM Workshop**

[Greg Granato](#)

3:30 - 4:00 PM | **Break**

## Thursday, August 29 *Continued*

4:00 - 6:00 PM

### Aquatic Organism Passage (AOP) 2

Nationwide Practices in Aquatic Organism Passage Design, Construction and Monitoring, Preliminary Findings of NCHRP 55-18

[Casey Cramer](#)

Bedform Evolution in Aquatic Organism Passage Culverts

[Haoyin Shan](#)

National Culvert Removal, Replacement and Restoration Grants Program

[Abhishek Kapoor](#)

Evolution of Best Practices for Aquatic Organism Passage at Waterway-Roadway Crossings

[Justin Lennon](#)

### Coastal

A framework for evaluating pavement vulnerability to shallow groundwater rise in coastal Alabama.

[Bruno J. O. Sousa](#)

Innovative Culvert Hydraulics for Coastal Climate Resilience

[Timothy S. Mallette](#)

Sea Level Rise Adaptation in SCDOT's Coastal Design

[Roberto G Ruiz](#)

Using Cumulative Celerity to Predict Damage and Mitigate Risks for Coastal

[Garland Pennison](#)

### Hydroplaning Workshop

[Matt Lauffer](#)

6:00 - 8:00 PM | **Maritime and Seafood Industry Museum Tour and Reception**

## Friday, August 30

8:00 - 10:00 AM

### Climate

Climate change altering geomorphic processes in New England

[Nicole Buck](#)

NCDOT Interstate 95 Flood Resiliency

[Tyler Longberry](#) [& [David Markwood](#)]

The effect of climate change on flood peaks: A panel-quantile regression approach

[Thomas Over](#)

New Inland Flooding Design Standards and Procedures for Resilience and Sustainability in the Face of Climate Change

[Roger Kilgore](#)

### DB Contract Peer Exchange

[Daniel Sharar-Salgado](#)

Lightning Presentation 2  
Poster Sessions

10:00 - 10:15 AM | **Break**

10:15 - 11:30 AM | **Closing Session Remarks**