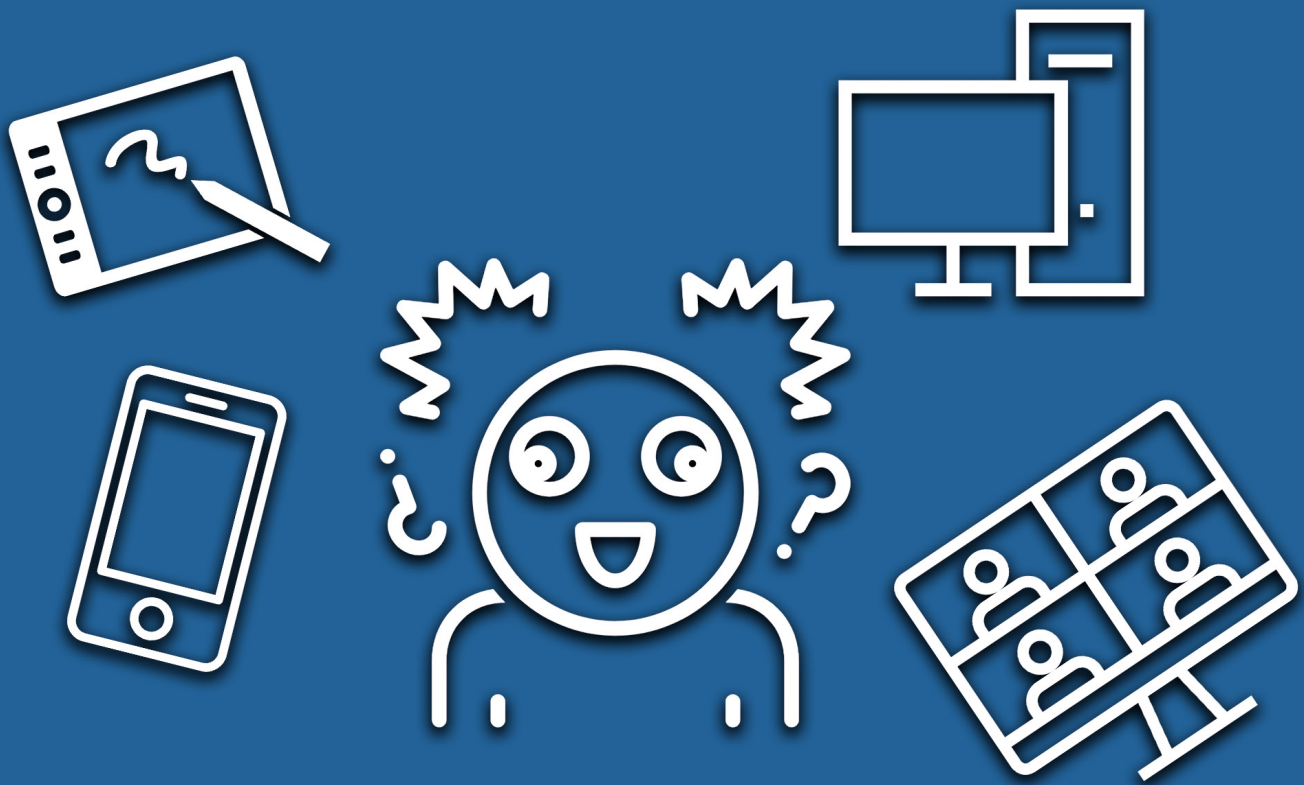


# VIRTUAL INSANITY



**2021 CASFM Virtual Annual Conference**  
**September 13th - 17th, 2021**



# WE MADE IT! WELCOME TO THE 32ND CASFM VIRTUAL CONFERENCE!

Welcome to the 32nd Annual CASFM Conference! Our goal as an organization is to share information, new technologies, and innovative ideas. The CASFM Board and Conference Committee have been working hard over the last year to organize our annual conference, and we are excited to share numerous technical tracks from around the State. The technical sessions will run in a similar fashion to the last CASFM conference with pre-recorded presentations followed by live Q&A.

Our theme this year, "Virtual Insanity," is a reflection of how some of us have felt over the last year. While the technical content shared at our virtual conference is meaningful, we miss seeing our members and attendees during networking opportunities. So, we decided to add several in-person activities at a regional level, including golf, water quality BMP tours, a bike tour, and multiple happy hours! Events take place from Friday, September 10th through Friday September 17th, so please keep that in mind when blocking out your calendar. We admit that it's still not the same as getting everyone together in one place, but we think it will bring back some of the fun that we usually get to have in the mountains!

We are honored to have a keynote speaker this year and welcome John Garrett – The Recovering CPA who will discuss his mission to create better workplaces by asking his audiences, "What's your And?" His research shows when leaders foster working environments that grant individuals permission to be unique amongst their peers, the organization achieves better business outcomes. You won't want to miss him.

Thanks to all of the volunteers that make this conference a reality! Just a glance at the overall schedule shows you how much work has gone into this event. Some of our in-person meetups are taking place before and after the main technical content, so you might get a little confused. There have been times we have felt a little crazy trying to coordinate all of the events. But we all agree that it is a welcome change from the virtual insanity we have all had over the last year.

Looking forward to seeing some of you at this year's live events! And we will see all of you in Steamboat Springs in 2022!



*Sarah Houghland*

Sarah Houghland  
Conference Chair  
Enginuity Engineering Solutions



*Jason Messamer*

Jason Messamer  
Co-Conference Chair  
Colorado Springs Utilities



*Morgan Lynch*

Morgan Lynch  
CASFM Chair  
Mile High Flood District (MHFD)

## 2021 CASFM CONFERENCE COMMITTEE!



Amy Gabor  
Vendors  
Olsson



Emily Villines  
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Jeff Battiste  
Awards, Moderator  
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John Loranger  
Metro Golf  
Wood PLC



Kate Klavon  
SE Golf; WQ Trip  
Stantec



Robert Moore  
NE Region BMP Tour  
HDR



Drake Ludwig  
Mesa County WQ Trip  
Wright Water (WWE)



Candice Owen  
Metro BMP WQ Tour  
City of Boulder



Drew Roberts  
Mountain Bike Tour  
MHFD



Dan Hill  
Scholarship  
MHFD



JOIN THE CONFERENCE CONVERSATION:  
**#CASFM2021**



## 2021 - 2022 OFFICERS & REGIONAL REPRESENTATIVES

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**JEREMY DEISCHER**

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## THANK YOU TO OUR OUTGOING OFFICERS!

Chair - Morgan Lynch, MHFD  
 Vice Chair - Drew Beck, Matrix Design Group  
 Secretary - Saman Mehdi, Atkins  
 Northeast Region Rep - Robert Moore, HDR  
 Northwest Region Rep - Drake Ludwig, Wright Water Engineers  
 Metro Region Rep - Adam Lacy, Silverbluff Companies

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## FRIDAY, SEPTEMBER 10, 2021

**7:30AM TO 4:30PM**

### Cherry Creek Stewardship Partners 23rd Annual Conference

Information and registration here: <https://www.tickettailor.com/events/coloradowatershedassembly/561630>

The Marina at Pelican Bay, 80111

**1:00PM TO 6:00PM**

### Mesa County Water Quality Field Trip (1-3 PM) &

### Happy Hour (3-6 PM)

Sponsored by: Dewberry

Grand Junction. Happy hour at Brewery to follow.

## CONTINUOUS MODELING WITH EPA SWMM IN COLORADO: WATERSHEDS & WATER RIGHTS

**10:00 TO 10:30AM**

Katie Knight & Andrew Earles - Wright Water Engineers

This presentation examines applications, benefits, challenges, and techniques of continuous modeling in EPA SWMM through discussion of representative projects including applications of water rights, low impact design and green infrastructure, watershed hydrology, and stormwater policy.

**10:30AM to 11:00AM**

### BREAK

**11:00AM TO 12:00PM**

### Technical Sessions

## HAVE YOU EVER SEEN THE RAIN?

Moderator - David Skuodas, MHFD

Sponsored by: JVA, Inc

### IS MY TRANSPORTATION INFRASTRUCTURE RESILIENT TO FLOODS UNDER CLIMATE CHANGE? PILOTING NEW NATIONAL GUIDELINES IN COLORADO AND ACROSS THE COUNTRY

**11:00 TO 11:30AM**

David Sutley & Dr. Dano Wilusz - Dewberry, Al Gross - CDOT

We present new national guidelines on how to forecast design rainfall and runoff under climate change at roads, bridges, and other transportation infrastructure. Colorado and seven other states are piloting the practice-oriented guidelines in transportation projects across the country.

### CASE STUDY: SMALL WATERSHED HYDROLOGY WITHIN THE SOUTH ST. VRAIN WATERSHED

**11:30 TO 12:00AM**

Michelle Morgan & E. Grace Schlager - Muller Engineering, Kalli Wegren - CDOT

Region 4

Muller conducted a hydrologic analysis for SH 7 existing culverts using traditional methods. This resulted in peak flows that required unrealistically large culvert sizes. Muller refined methodologies to arrive at flow rates for design and construction that were viewed as reasonable based on resiliency goals.

**12:00PM to 1:00PM**

### Lunch Break

**1:00PM TO 2:00PM**

### Keynote Address

Sponsored by: RESPEC, Valerian, and Stream Landscape Architecture

John Garrett—thought provoker, catalyst for change, and author—is on a mission to create better workplaces by asking his audiences, “What’s your And?” His research shows when leaders foster working environments that grant individuals permission to be unique amongst their peers, the organization achieves better business outcomes. Through hilarious stories and extensive research, the recovering CPA-turned-E Emmy-nominated-comedian-turned-culture-consultant encourages teams to share their hobbies and passions at work because they comprise the very heart of their organization’s culture.

**KEYNOTE MOVED DUE TO TECHNICAL DIFFICULTIES  
SEE THURSDAY 12:30-1:30**

**2:00PM TO 2:30PM**

### BREAK 2:00PM

## MONDAY, SEPTEMBER 13, 2021

**9:00AM**

### General Membership Meeting via Zoom

Moderator: Morgan Lynch, MHFD

**1:00PM TO 6:00PM**

### Metro BMP Water Quality Tour & Happy Hour

Sponsored by: Stream Landscape Architecture

Walking tour of BMPs and at brewery

A walking tour of the 39th Avenue Greenway project from Steele St. to Franklin St. (approximately two miles), followed by a visit to Globeville Landing Park and sponsored social and happy hour at Blue Moon Brewery.

Notes: Transportation is not provided by CASFM. Free parking is available at nearby locations. Walkers and bike riders will be able to see more stormwater facilities, as the trip starts at E. 39th Ave. & Steele and ends near Globeville Landing Park.

Details: Meet on 39th Avenue between York St. & Steele St. and walk along 39th Avenue Greenway to Franklin St. Presentations by design engineers and city staff, discuss stormwater quality in ultra-urban areas and lessons learned along the way. Then, travel to Globeville Landing Park for a social and happy hour.

Field trip is from 1-3 PM; Happy hour is from 3-6PM.

## TUESDAY, SEPTEMBER 14, 2021

Sponsored by: RESPEC

**9:00AM TO 4:00PM**

### Technical Sessions

## HYDROLOGY: HAVE YOU EVER SEEN THE RAIN?

Moderator - Kimberley Pirri, AECOM

Sponsored by: JVA, Inc

### MIXED POPULATION FLOOD RISK ANALYSIS

**9:00 TO 9:30AM**

Tim Clarkin - United States Bureau of Reclamation

The Rocky Mountains of Colorado experience flooding from multiple mechanisms. What happens when flood risks are estimated without accounting for these mixed populations? Failure to properly identify and analyze mixed populations can have major impacts on a community's flood zones.

### BEYOND REGULATORY FLOOD HAZARD: INCORPORATING BLE INTO MASTER PLANS

**9:30 TO 10:00AM**

Jon Villines -MHFD, Haley Heinemann & Danny Elsner- Dewberry

This presentation will give an overview of Englewood's ongoing city-wide pluvial flood hazard analysis and how rain-on-grid base level engineering can supplement the traditional stormwater master plan.





## 2:30PM TO 4:00 PM Technical Sessions

### FIRE: SMOKE ON THE WATER

Moderator - Drew Beck - Matrix Design Group  
Sponsored by: Ayres Associates

#### OPERATIONAL MODELING OF POST-FIRE AND GEOLOGICAL-PRONE LANDSLIDE AND FLOODING POTENTIAL IN THE BOULDER FOOTHILLS

2:30 TO 3:00PM

Ben Wostoupal - CDM Smith; Kelsey McDonough & Baxter Vieux - Vieux & Associates, Kevin Stewart - MHFD

This presentation will cover the framework in the Fluvial Hazard Protocol that helps users understand the role that context, setting, stressors, and geomorphic responses have on FHZ delineations. It will also provide an update on recommendations for FHZ implementation.

#### DETAILED RAIN-ON-MESH TO INFORM POST-FIRE EMERGENCY PREPAREDNESS

3:00 TO 3:30PM

Geoff Uhlemann - Michael Baker; & Kyle O'Neil - Boulder County

Following the CalWood fire, Baker conducted a detailed post-fire analysis for Boulder County using 2D rain-on-mesh modeling in HEC-RAS 6.0 to identify overtopping bridges for road closures and a community warning system, as well as informing recovery efforts.

#### POST-FIRE HILLSLOPE RUNOFF AND EROSION REDUCTION TREATMENT EFFECTIVENESS AND INTER- STUDY VARIABILITY

3:30AM TO 4:00 PM

Natalie Collar - Wright Water Engineers

This study evaluates post-fire hillslope runoff and erosion reduction treatment effectiveness over space and time. Findings can assist with BMP selection and urge land managers to carefully consider their unique landscape and post-fire recovery objectives during the selection process.

## BARR FARM CHANNEL RESTORATION ON FOUNTAIN CREEK 10:00AM TO 10:30AM

Dan Bare - Matrix Design Group

Matrix Design Group, Inc. has commonly employed large quarry rock to stabilize banks along Fountain Creek. In June, 2018, the Spring Creek fire provided an alternative source of material for bank stabilization at the Barr Farm project.

## 10:30AM TO 11:00 AM BREAK

## 11:00AM TO 12:00PM Technical Sessions

### SPECIAL INTEREST: COME SAIL AWAY

Moderator - Cassie Kaslon, Valerian  
Sponsored by: HR Green

#### CLIFF NOTES WITH DAVE AND EMILY 11:00 TO 11:30AM

David Skuodas - MHFD & Emily Villines - Calibre Engineering

Do you wish you could read more but don't have the time? Or, do you wish you had a powerful list of lessons learned in an easily digestible format? Dave and Emily to the rescue!

In this session, we will present our top lessons learned from recent reads. The powerful messages in this session range from tips on change management to building small talk skills and from links between innovation and progress to tactics for making better decisions. Leave this session motivated and energized, complete with an abbreviated list of actionable lessons to aide in your professional development (and maybe add to your networking topics for the CASFM 2021 Annual Conference Happy Hours!).

#### COVID-19 ALLOWED US TO LIVE THE REMOTE DREAM – BUT DID WE DO IT RIGHT? 11:30AM TO 12:00PM

Hanna Huling - Meshek & Associates

What happens when 2021 presents the unique opportunity for a combination of remote and onsite work? A water resources PE with 4 years of remote experience provides a toolkit of remote optimization for enhanced remote employee productivity, happiness, and revamped work life balance.

## 12:00PM TO 1:00 PM Lunch Break

## 1:00PM TO 2:30PM Technical Sessions

## WEDNESDAY, SEPTEMBER 15, 2021

Sponsored by: Valerian

## 9:00AM TO 4:00PM Technical Sessions

### STREAM RESTORATION: CRY ME A RIVER

Moderator - Mark Schutte, MHFD  
Sponsored by: HR Green

#### A CHANNEL RUNS THROUGH IT: HOW WE ADDRESSED THE CHALLENGES OF URBAN CREEK RESTORATION

9:00AM TO 9:30AM

T.C. Dinkins - Stantec; Kate Klavon - Stantec

Join us on an immersive, virtual walk-through of a recently completed urban stream restoration that utilized innovative approaches to addressing common challenges in flashy, sandy systems. Utilizing 360-degree video, we will transport you to the banks of Toll Gate Creek.

#### URBAN STREAM ASSESSMENT PROCEDURE: A FRAMEWORK FOR ASSESSING STREAM PHYSICAL CONDITION IN THE URBAN ENVIRONMENT

9:30AM TO 10:00AM

Brian Murphy - River Works, Tyler Rosburg - ICON, Jon Villines - MHFD

MHFD is developing an Urban Stream Assessment Procedure (USAP) to analyze function and maintenance data of streams. This presentation will offer an overview of USAP and highlight the results from a case study on Big Dry Creek in Arapahoe County.

## STORMWATER QUALITY: PURPLE RAIN

Moderator -Candice Owen, City of Boulder

Sponsored by: ICON Engineering

### STREAM RESTORATION AS A MS4 BMP – POLLUTANT LOADING REMOVAL RATES AND CREDITS

1:00 TO 1:30PM

Will Wilhelm - Kimley-Horn

This presentation will present the findings of multiple approved pollutant load reduction protocols for individual stream restoration projects in multiple states and regions across the county.

### ASBURY AND TEJON PARK/DETENTION BASIN

1:30 TO 2:00PM

Blake Russo-Nixon - City and County of Denver & Don Jacobs - Enginuity

Asbury and Tejon Park/Detention Basin reconfigures an existing park from a regional stormwater detention facility that leaned heavily towards drainage functionality to an integrated user experience that incorporates regional water quality enhancements & nature play, while maintaining stormwater detention functionality.

### A COMMUNITY APPROACH TO ENVIRONMENTAL CHALLENGES

2:00 TO 2:30PM

Swee Suen Tee & Theresa Centola - Colorado State University & Maggie Lewis -

Wright Water Engineers

This presentation will be made by two CSU Water Center Fellows, Swee Suen Tee and Theresa Centola, and Maggie Lewis of Wright Water Engineers to discuss their work with El Laboratorio in developing a community-based plan to address non-point sources of E. Coli in Segment 15 of the South Platte River.

2:30PM TO 3:00PM  
BREAK

3:00PM TO 4:00PM  
Technical Sessions

## STORMWATER QUALITY: PURPLE RAIN

Moderator -Katy Shaneyfelt - Muller Engineering

Sponsored by: ICON Engineering

### CORRIDOR OF OPPORTUNITY: TRANSFORMING A BROWN FIELD SITE INTO A COMMUNITY AMENITY AT PLATTE FARM OPEN SPACE IN DENVER, CO

3:00 TO 3:30PM

Lisa Froshaug - City and County of Denver

Platte Farm Open Space was a resident driven, brownfield to open-space project in Denver's Globeville Neighborhood. Completed in 2020, the 5.5 acre Platte Farm Open Space is now a unique and important example of how to re-purpose formerly contaminated land for community benefit and stormwater management.

### GONE TO THE DOGS: HOW A DEGRADED DOG PARK HAS RECOVERED USING TARGETED UPSTREAM RESTORATION DESIGN

3:30 TO 4:00PM

Brent Kaslon - Valerian & Tyler Rosburg - ICON Engineering

In 2017, JeffCo Open Space closed the Elk Meadow Dog Off Leash Area due to high e-coli concentrations, erosion, and degradation of the land and stream. Using minimal impact and on-site materials, new methods were developed for stream restoration in a high-foothills ecologically sensitive area.

## THURSDAY, SEPTEMBER 16, 2021

Sponsored by: Stream Landscape Architecture

9:00AM TO 12:00PM  
Technical Sessions

### TECHNICAL MODELING: FIVE FEET HIGH AND RISING

Moderator - Troy Carmann, ICON Engineering

Sponsored by: Bohannon Huston

### ALTERNATIVE 2D MODEL FORMULATION TO AID HYDRAULIC STRUCTURE DESIGN AND NO RISE ANALYSIS

9:00 TO 9:30AM

Kurt Smithgall - Alden Research Lab & Geoffrey Uhlemann - Michael Baker

Two dimensional (2D) hydraulic modeling is often assumed as depth averaged. However, for hydraulic structures, a 2D vertical slice model can determine a structure specific coefficient of discharge for increased accuracy in determining rating data and performing no-rise analyses.

### 7 COMMON MISTAKES USERS MAKE IN 2D MODELS (YES THIS IS CLICKBAIT)

9:30 TO 10:00AM

Kiersten Hines & Frans Lambrechtsen - Jacobs

As 2D modeling has become a desired hydraulic analysis approach, modelers should understand how the program works for applied model development. We will share 7 common mistakes in 2D modeling that lead to inaccurate models.

### "SOMEHOW I MANAGE" – MANAGING TO AND UNDERSTANDING STEADY AND UNSTEADY FLOW

10:00AM TO 10:30 PM

Griffin Cullen - AECOM

With increasing prevalence of 2D models, the implications of steady vs unsteady flow models are coming to the forefront. This presentation will introduce these terms and explore impacts on water surface elevation and regulatory process.

10:30AM TO 11:00AM  
BREAK

11:00AM TO 12:00PM  
Technical Sessions

### TECHNICAL MODELING: FIVE FEET HIGH AND RISING

Moderator - Jeff Battiste, Mile High Flood District

Sponsored by: Bohannon Huston, Inc

### DRONES AND ARTIFICIAL INTELLIGENCE: AUTOMATING STREAM MANAGEMENT

11:00 TO 11:30AM

Jon Villines - MHFD; Andy Cross - RESPEC

Stream characterization can be complicated and time-consuming. Using recent advances in AI, computing power and consumer drones, we researched a novel approach to stream characterization through computer vision and drone imagery.

### WOLF CREEK MASTER DRAINAGE PLAN

11:30AM TO 12:00PM

Rifka Wine, Madeline Olivas & Craig Hoover - Bohannon Huston

The Wolf Creek Master Drainage Plan (MDP) is focused on the portion of Wolf Creek and its tributaries within Arapahoe County (approx. 37 sq mi). The project's overarching objectives were to evaluate and recommend improvements for numerous roadway crossing culverts and to establish flow patterns and floodplains using HEC-RAS for 18 miles of Wolf Creek and 20 miles of tributaries. The team worked together to develop realistic drainage management recommendations to guide future development and use of property. This MDP provided the County with a dataset and adaptive recommendations to plan for, assess, and prioritize future expansion in this rural but emerging area.

## LUNCH BREAK 12:00PM TO 12:30PM

**KEYNOTE MOVED DUE TO TECHNICAL DIFFICULTIES  
SEE BELOW**

## 12:30PM TO 1:30PM

### Keynote Address

*Sponsored by: RESPEC, Valerian, and Stream Landscape Architecture*

John Garrett—thought provoker, catalyst for change, and author—is on a mission to create better workplaces by asking his audiences, “What’s your And?” His research shows when leaders foster working environments that grant individuals permission to be unique amongst their peers, the organization achieves better business outcomes. Through hilarious stories and extensive research, the recovering CPA-turned-Emmy-nominated-comedian-turned-culture-consultant encourages teams to share their hobbies and passions at work because they comprise the very heart of their organization’s culture.

## PROJECT AWARD PRESENTATIONS

*Sponsored by: Ayres Associates*

### Upper Clear Creek Pre-Wildfire Planning Study 1:30 TO 2:00PM

*Drew Beck, Matrix Design Group; Anne Beierle, City of Golden*

The Upper Clear Creek Watershed Pre-Wildfire Planning Study identified and assessed sustainability and resiliency of the Upper Clear Creek Watershed in pre and post fire scenarios. The study produced actionable projects focused on enhancing resiliency in regard to the hydrology, hydraulics, and ecology of the watershed. These actionable projects were then prioritized based on input from the communities that live in and depend on the Upper Clear Creek Watershed. The study provides creative and innovative solutions and a framework for other communities to follow to enhance their own watershed’s protection and functionality and, in turn, public health, safety, and welfare.

### Globeville Stormwater Systems Study 2:00PM TO 2:30PM

*Dave Jula, City and County of Denver*

In Spring 2018, the City and County of Denver Department of Transportation and Infrastructure launched the Globeville to evaluate the Globeville basin and explore solutions to the South Platte River and local stormwater flooding. The Study was a partnership with the community, project team members, city staff, elected officials, stakeholders and community members. Through participatory basin tours and educational workshops, this group studied basin topography, historical industrial development and key land use patterns that influence today’s physical conditions, runoff patterns and flooding. Developing a keen understanding of the historical and current physical constraints and conditions was fundamental to the community conversation around future improvements to address flooding and ensure integrated community benefits. This approach recognized the importance of utilizing previous drainage infrastructure studies within the basin while conveying complex, technical drainage information through easy-to-understand graphics and educational materials. “Community-centric” neighborhood-level discussions of green and gray infrastructure, integrated aspects of stormwater management and innovative solutions that address local flooding concerns as well as neighborhood needs were critical aspects of building a stronger, more resilient Globeville community.

## 2:30PM to 3:00PM

### Engineering Award Presentation, Raffle, and Closing Remarks

*Moderator: Morgan Lynch, Drew Beck, Jason Messamer, Dan Hill*  
Closing remarks, virtual raffle, project award winner announcement.

## 4:30PM

### YMG Happy Hour

*RiNo Beer Garden*

## FRIDAY, SEPTEMBER 17, 2021

## 10:00AM TO 12:00PM

### RISK RATING 2.0 WORKSHOP: HOW IT WILL AFFECT YOUR COMMUNITY

*Diana Herrera, Sr. Regional Flood Insurance Liaison, Mitigation Division, FEMA Region 8*

[CLICK HERE TO GO TO ZOOM](#)

FEMA’s Diana Herrera will provide a review of how flood insurance relates to floodplain management, how to better serve your community’s flood insurance needs and most importantly showcase how the NFIP’s Risk Rating will change the rating process for policyholders. The methodology of Risk Rating 2.0 will be included in the presentation along with how you as a floodplain manager can utilize the existing FEMA messaging materials to get the word out to your community regarding these changes. Topics will include such items as the elimination of the Preferred Risk Policy (PRP), grandfathering and discuss in more detail how rating will now be based on distance from a water source along with other rating factors. The presentation will also explain how the new rates will be implemented to policyholders in phases and the timing of those phases. This workshop will be a must-see event as floodplain managers respond to calls from their communities.

## METRO REGION SOCIALS

### NORTHERN DENVER GOLF TOURNAMENT AT RIVERDALE DUNES GOLF COURSE

*Sponsored by: Calibre Engineering*

#### TEE TIMES 9:00AM TO 11:00AM

*Lunch and happy hour to follow.*

*Contact: John Loranger, john.loranger@woodplc.com*

### METRO REGION BIKE TOUR - GREEN MOUNTAIN AND/OR NORTH TABLE MOUNTAIN

#### Start at 4:00PM

*6 mi loop. Total time 3 hours.*

*Contact: Drew Roberts, droberts@mhfd.org*

## NORTHEAST REGION SOCIALS

### FORT COLLINS GREEN INFRASTRUCTURE TOUR AND HAPPY HOUR

*Sponsored by: Ayres Associates*

#### 3:00PM TO 6:00PM

*Contact: Robert Moore, robert.moore@hdrinc.com*

## SOUTHEAST REGION SOCIALS

### PINE CREEK GOLF TOURNAMENT IN COLORADO SPRINGS

*Sponsored by: HR Green*

#### TEE TIMES START AT 9:00AM

*Contact: Kate Klavon, kate.klavon@stantec.com*

### PINE CREEK STREAM RESTORATION TOUR AND HAPPY HOUR

#### START AT 4:00PM

*Contact: Kate Klavon, kate.klavon@stantec.com*



## SCHEDULE AT A GLANCE - TECHNICAL SESSIONS

**TUESDAY, SEPTEMBER 14**

SPONSORED BY: RESPEC

	<b>HAVE YOU EVER SEEN THE RAIN?</b> Sponsored By: JVA  Moderators: Kimberley Pirri (AECOM) Dave Skuodas (MHFD)		<b>SMOKE ON THE WATER</b> Sponsored By: Ayres Associates  Moderator: Drew Beck (Matrix Design Group)
9:00AM	Mixed Population Flood Risk Analysis  Tim Clarkin - United States Bureau of Reclamation	1:00PM	<b>Keynote Address</b> Sponsored By: RESPEC, Valerian, and Stream Landscape Architecture  John Garrett - The Recovering CPA, Author of "What's Your And?" <b>KEYNOTE MOVED DUE TO TECHNICAL DIFFICULTIES; SEE THURSDAY</b>
10:00AM	Beyond Regulatory Flood Hazard: Incorporating BLE into Master Plans  Jon Villines - MHFD; Haley Heinemann & Danny Elsner - Dewberry	2:30PM	Operational modeling of post-fire and geological-prone landslide and flooding potential in the Boulder Foothills  Ben Wostoupal - CDM Smith; Kelsey McDonough & Baxter Vieux - Vieux & Associates; Kevin Stewart - Mile High Flood District
10:30AM	Continuous modeling with EPA SWMM in Colorado: Watersheds & Water Rights  David Sutley & Dr. Dano Wilusz - Dewberry; Al Gross - CDOT	3:00PM	Detailed Rain-on-Mesh to Inform Post-Fire Emergency Preparedness  Geoff Uhlemann - Michael Baker & Kyle O'Neil - Boulder County
11:00AM	Is my transportation infrastructure resilient to floods under climate change? Piloting new national guidelines in Colorado and across the country  David Sutley & Siamak Esfandiary - Dewberry Maggie Lewis - Wright Water Engineers	3:30PM	Post-Fire Hillslope Runoff and Erosion Reduction Treatment Effectiveness and Inter-Study Variability  Natalie Collar - Wright Water Engineers
11:30AM	Case Study: Small Watershed Hydrology within the South St. Vrain Watershed  Michelle Morgan & E. Grace Schlager - Muller Engineering; Kalli Wegren - CDOT		





# VIRTUAL INSANITY

## SCHEDULE AT A GLANCE - TECHNICAL SESSIONS

WEDNESDAY, SEPTEMBER 15

SPONSORED BY: VALERIAN

	<b>STREAM RESTORATION: CRY ME A RIVER</b> <b>Sponsored By: HR Green</b>  <b>Moderators:</b> <i>Mark Schutte (MHFD)</i> <i>Cassie Kaslon (Valerian)</i>		<b>STORMWATER QUALITY: PURPLE RAIN</b> <b>Sponsored By: ICON Engineering</b>  <b>Moderators:</b> <i>Lisa Froshaug (City and County of Denver)</i> <i>Sara Johnson &amp; Katy Shaneyfelt (Muller Engineering)</i>
9:00AM	A Channel Runs Through It: How We Addressed the Challenges of Urban Creek Restoration  <i>T.C. Dinkins - Stantec; Kate Klavon - Stantec</i>	1:00PM	Stream Restoration as a MS4 BMP – Pollutant Loading Removal Rates and Credits  <i>Will Wilhelm - Kimley-Horn</i>
9:30AM	Urban Stream Assessment Procedure: A framework for assessing stream physical condition in the urban environment  <i>Brian Murphy - River Works; Tyler Rosburg - ICON ; Jon Villines - MHFD</i>	1:30PM	Asbury and Tejon Park/Detention Basin  <i>Blake Russo-Nixon - City and County of Denver; Don Jacobs - Enginuity</i>
10:00AM	Barr Farm Channel Restoration on Fountain Creek  <i>Dan Bare - Matrix Design Group</i>	2:00PM	A Community Approach to Environmental Challenges  <i>Swee Suen Tee &amp; Theresa Centola - Colorado State University; Maggie Lewis - Wright Water Engineers</i>
11:00AM	Partnering with Development: A Sterling Gulch Example  <i>Emily Villines - Calibre Engineering; David Skuodas - Mile High Flood District</i>	3:00PM	Corridor of Opportunity: Transforming a Brown Field Site into a Community Amenity at Platte Farm Open Space in Denver, CO  <i>Lisa Froshaug - City and County of Denver</i>
11:30AM	Covid-19 Allowed Us to Live the Remote Dream – But Did We Do It Right?  <i>Hanna Huling - Meshek &amp; Associates</i>	3:30PM	Gone to the Dogs: How a degraded dog park has recovered using Targeted Upstream Restoration Design  <i>Brent Kaslon - Valerian; Tyler Rosburg - ICON Engineering</i>



**VALERIAN**  
LANDSCAPE ARCHITECTURE | PLANNING | IRRIGATION

## SCHEDULE AT A GLANCE - TECHNICAL SESSIONS

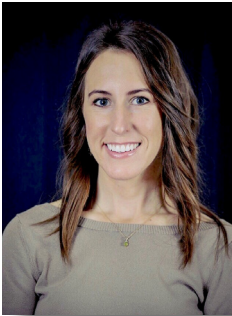
**THURSDAY, SEPTEMBER 16**

SPONSORED BY: STREAM LANDSCAPE ARCHITECTURE

	<b>TECHNICAL MODELING: FIVE FEET HIGH AND RISING</b> <b>Sponsored By: Bohannon Huston</b>  <i>Moderator:</i> <i>Troy Carmann (ICON Engineering)</i> <i>Jeff Battiste (MHFD)</i>
9:00AM	Alternative 2D Model Formulation to Aid Hydraulic Structure Design and No Rise Analysis  <i>Kurt Smithgall - Alden Research Lab</i>
9:30AM	7 Common Mistakes Users Make in 2D Models (Yes this is clickbait)  <i>Kiersten Hines &amp; Frans Lambrechtsen - Jacobs</i>
10:00AM	"Somehow I Manage" – Managing to and Understanding Steady and Unsteady Flow  <i>Griffin Cullen - AECOM</i>
11:00AM	Drones and Artificial Intelligence: Automating Stream Management  <i>Jon Villines - Mile High Flood District; Andy Cross - RESPEC</i>
11:30AM	Wolf Creek Master Drainage Plan  <i>Rifka Wine, Madeline Olivas &amp; Craig Hoover - Bohannon Huston</i>
12:30PM	<b>Keynote Address</b> Sponsored By: RESPEC, Valerian, and Stream Landscape Architecture  <i>John Garrett - The Recovering CPA, Author of "What's Your And?"</i> <b>KEYNOTE MOVED DUE TO TECHNICAL DIFFICULTIES</b>
1:30PM	Project Award Presentations, Closing Remarks, Virtual Raffle and Project Award Winner  <i>Project Awards Sponsored by Ayres Associates</i>

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# THANKS TO OUR MODERATORS!



**Lisa Froshaug** is a project manager for the City and County of Denver, where she supports efforts related to stormwater master planning, project prioritization, and the design of green and gray infrastructure. She completed her master's at the Colorado School of Mines in Environmental Engineering Science, working as a Research Associate with the ReNUWIt research center, an interdisciplinary, multi-institution engineering research center, focused on changing the ways we manage urban water. In her spare time, she enjoys mountain biking, skiing, and camping.



**Kimberley Pirri** is a Senior Consultant in AECOM's Colorado Surface Water Practice. She really enjoys applying her 21 years of experience to support the floodplain and stormwater management needs of external and internal clients across local, state, and private sectors. Recent projects have included rain-on-grid analyses, probabilistic hydrology, rain-on-snow hydrology, hazard mitigation planning, Community Rating System support, flood risk studies, and urban stormwater design. Kim spends her off-hours hanging out with her dogs, Lola and Diesel, as well as motoring on the roadways of Colorado with multiple Mini Cooper car clubs.



**Mark Schutte** is proudly a Project Engineer for the Mile High Flood District. He moved to Boulder in 2013 a month before the flood. The flood gave him the opportunity to study a new field, geomorphology, while completing his master's degree at CU Boulder. These coincidental events, along with a love for the outdoors, set him on the path to helping improve the way we interact with streams. He is fortunate to have the opportunity to work towards these goals at the District, and even luckier to appreciate all that Colorado has to offer alongside his wife, Xandra. If not working, you might find Mark climbing rocks, hiking trails, completing woodworking projects, or lounging with his cats.



**Dave Skuodas** works as a Watershed Manager at the Mile High Flood District. Dave participates in master planning, design, construction, maintenance and development review for waterways in the northern area of metro Denver. He has worked at MHFD since 2010, prior to that he was an engineering consultant for 9 years in Kansas, Nebraska, and Colorado. Dave received a BS in Civil Engineering from the University of Florida in 2000, is a registered Professional Engineer, a Certified Floodplain Manager, a LEED AP, and a Toastmasters Competent Communicator. He is also the author of book *The Effective Client: Why Being a Good Client is Smart Business in the Architecture, Engineering, and Construction Industries*.



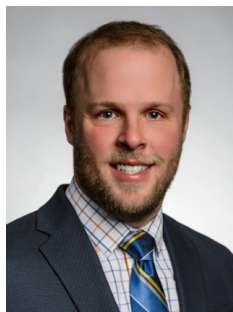
**Cassie Kaslon** is the principal and owner of Valerian LLC, a WBE certified landscape architecture and urban planning firm focused on the design of waterways and natural areas in Colorado. Cassie has a deep understanding of the connection between water, vegetation, and the people who engage with these spaces and strives to strengthen those connections through her designs. She sees the importance in creating unique designs and ensuring resiliency. Her desire is to connect individuals with the natural environment with designs that are accessible and ecologically, socially, and fiscally sustainable. Cassie was the lead landscape architect for last year's CASFM Engineering Excellence Grand Award-winning project Sanderson Gulch - Reach 1 Improvements.



**Drew Beck** is a deputy director and project manager for the Matrix Design Group water resources group and has over 20 years of engineering experience. He has a bachelor's degree in civil engineering from Santa Clara University and a master's degree in hydrology from the Colorado School of Mines. Drew was a graduate of the first Stream Academy class and currently serves on the Technical Advisory Committee as CASFM's liaison ensuring that members can become ambassadors to their watersheds and embrace design approaches that are resilient and sustainable. He is also the incoming Vice Chair.



**Troy Carmann** Engineering found Mr. Carmann at a young age courtesy of an old bag of legos and a neighborhood creek that drained the county dump. Spending junior high lunch hours in the library established social patterns that would persist through most of his higher education. A scout team role on the football team at Iowa State kept him in school, where he earned a degree in Civil Engineering. One summer included over 3500 miles of roadway inspections and another was spent as a survey intern for ICON Engineering, which led to a full time job. Over 20 years later, Mr. Carmann is honored his career with ICON has allowed him to serve the people and projects all over the state of Colorado.



**Jeff Battiste** recently started a new position with the Mile High Flood District. Prior to joining MHFD, he worked in Colorado Springs, focusing on stream stabilization and rehabilitation within the Fountain Creek watershed. His work included habitat restoration on the Air Force Academy, challenging stabilization projects within Colorado Springs, and large realignment and rehabilitation projects on Fountain Creek down to Pueblo. Jeff has been the design lead on many channel projects and has extensive field experience with stream assessment and construction management.



**Katy Shaneyfelt** Katy is a water resources Project Engineer with Muller Engineering. She has experience in stream stabilization and restoration design, watershed scale hydrologic and hydraulic studies, and stormwater management planning and design.



# CASFM ENGINEERING EXCELLENCE PROJECT AWARD

## 2020 CASFM AWARD RECIPIENT: SANDERSON GULCH CHANNEL IMPROVEMENTS

In the past, Sanderson Gulch flowed through undersized culverts and a channel within a narrow urban corridor that had insufficient capacity for major storms. Peak flows associated with the 100-year storm event overtopped roadways and railroad tracks and spilled out from the channel.

Design of the Sanderson Gulch improvements included an innovative design approach to increase capacity for stormwater conveyance. The new unconventional channel and box culvert system now safely conveys the 100-year storm flows and has an additional 1,200 cfs capacity. The project includes a 12' x 4' box culvert and a geomorphic channel with flood terrace for low flows; two 14' x 8' and four 16' x 4' box culverts to convey high flows below the channel, roadways and railroad crossing; complex and decorative boulder structures at the inlet and outfall to South Platte River; a comprehensive restoration effort for long term health and stability of the stream and habitat; trail connections and increased safety for pedestrians.



### PREVIOUS CASFM AWARD RECIPIENTS (LAST 5 YEARS)

Year	Winning Project	Companies & Agencies
2020	Sanderson Gulch Channel Improvements	ICON Engineering, City and County of Denver DOTI, MHFD, Valerian, Great Ecology, San Engineering
2019	US 34 Big Thompson Canyon Flood Recovery	Jacobs, Ayres, Kiewit, Muller, State of Colorado, CDOT
2018	Colorado Emergency Watershed Protection Program	Colorado Water Conservation Board
2017	Little Dry Creek Park	City of Westminster, MHFD, Adams County, State of Colorado, Muller, Matrix
2016	South Platte River Vision Implementation Program: Grant- Frontier Park to Overland Pond Park	The Greenway Foundation, City and County of Denver Parks and Recreation Department, CDM Smith
2015	Cherry Creek Bailey Ecological Park	Arapahoe County Open Space, SEMSWA, MHFD, Cherry Creek Basin Water Quality Authority, Muller, Valerian
2014	To Move a River- Saving Loveland's Water Supply	City of Loveland, Ayres Associates, and Tetra Tech
2013	Lefthand Creek Flood Control Project	City of Longmont, Muller, Went, ERO, Naranjo
2012	Canal Importation Pond and Outfall Design	City of Fort Collins, Ayres Associates, and Anderson Consulting

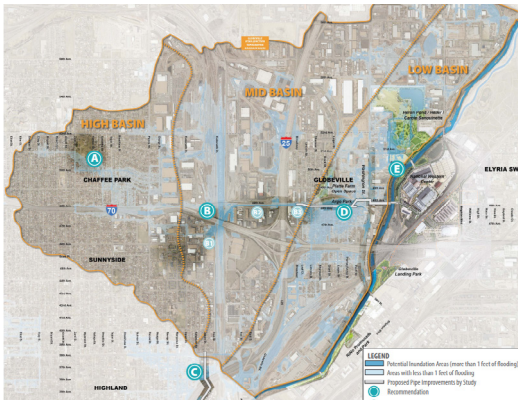


# 2021 ENGINEERING EXCELLENCE AWARD NOMINEES

Beginning in 2020, the Engineering Excellence award was divided into two main categories: Construction and Non-Construction projects. The awards will be given in alternating years. For 2021, the Engineering Excellence Award will be given to a Non-Construction project. The following entries have been selected to present during the conference, and members will have the opportunity to vote for their favorite in real time during the presentations. The results will be announced during the closing session of the conference.

## GLOBEVILLE STORMWATER SYSTEMS STUDY

SUBMITTED BY: MERRICK & COMPANY, CITY AND COUNTY OF DENVER DOTI



[VIEW THE FULL SUBMISSION HERE](#)

The Globeville basin is located along the west bank of the South Platte River, downstream of downtown Denver. The basin is four square miles and the majority of the basin lies within the City and County of Denver while the northern section sits in Adams County. The eastern boundary of the basin is defined by the South Platte River and the western boundary is the highpoint near Federal Boulevard and I-70.

The Globeville basin is subject to flooding risk from two sources: stormwater runoff and riverine flooding from the South Platte River. Additionally, the existing levee along the South Platte River no longer meets FEMA criteria, which risks remapping the entire Globeville neighborhood back into the FEMA regulated floodplain.

## UPPER CLEAR CREEK PRE-WILDFIRE PLANNING STUDY

SUBMITTED BY: MATRIX DESIGN GROUP



[VIEW THE FULL SUBMISSION HERE](#)

The Upper Clear Creek Watershed Pre-Wildfire Planning Study identified and assessed sustainability and resiliency of the Upper Clear Creek Watershed in pre and post fire scenarios. The study produced actionable projects focused on enhancing resiliency in regard to the hydrology, hydraulics, and ecology of the watershed. These actionable projects were then prioritized based on input from the communities that live in and depend on the Upper Clear Creek Watershed. The study provides creative and innovative solutions and a framework for other communities to follow to enhance their own watershed's protection and functionality and, in turn, public health, safety, and welfare.

The 2021 Nominees are listed in no particular order.

## 2020-2021 CASFM SCHOLARSHIP RECIPIENTS



### BEN URBONAS SCHOLARSHIP BRENNA SHUTTLEWORTH

The 2020-2021 CASFM Ben Urbonas Scholarship recipient is Brenna Shuttleworth. Brenna is a full-time graduate student at the University of Colorado Denver, studying Environmental Science with a specialization in Water Systems. Her time at the Mile High Flood District has fostered interests in fluvial geomorphology and environmental management of fluvial systems in Colorado. She hopes to provide environmental education and guidance to other professionals in order to promote adaptive and holistic floodplain and stormwater management.

### FAMILY SCHOLARSHIP TIM HUNT



The 2020-2021 CASFM Family Scholarship award recipient is Tim Hunt, son of CASFM member and former officer John Hunt.

Tim graduated in 2017 from Liberty Common High School in Fort Collins, and is currently a sophomore studying mechanical engineering at Colorado State University. Tim is earning funds for his education as an automotive technician, and has a full schedule of work and school. This award will significantly offset the cost of tuition, allowing him more time to focus on studies. Tim has an interest in the machines used to produce sustainable energy, and he plans to use his career to help Colorado move toward a fully sustainable power grid.



### UNDERGRADUATE SCHOLARSHIP JOSIE STEFFENS

The 2020–2021 Undergraduate Scholarship recipient is Josie Steffens. Josie is an Environmental Engineering student at the Colorado School of Mines, graduating in Spring 2022. While studying environmental topics at the school, she became interested in hydrology, more specifically, dams and their environmental impact. In the future she wishes to pursue this field with the hope of making a positive impact on the planet and our waterways. In her free time she likes to ski and backpack.

## 2021 DISASTER GRANT



As stewards of stormwater principles and practices, CASFM supports Colorado citizens, agencies, and public servants in response to flooding and flood related disasters. This year, we offered a disaster grant donation to help our communities, members, agencies, and citizens who were affected by natural disasters. Through an application and review process, CASFM awarded the grant to the Grand County Wildfire Council.

[According to SkyhiNews \(credit for images and article\):](#)

"The \$5,000 award will help with post wildfire emergency watershed protection priorities. The grant was used to match funding with the Natural Resources Conservation Service Emergency Watershed Program.

The money will assist with removal of debris from stream channels, road culverts and bridges, reshaping and protecting eroded streambanks, repairing damaged drainage facilities, and reseeding damaged areas.

The Grand County Wildfire Council endorsed the check over to Grand County to use as matching funds. The Grand County Wildfire Council is an all-volunteer organization that relies on grants and donations to accomplish its work."

## 2021 RESEARCH GRANTS



### Amanda Guedes Salerno

Amanda's graduate program is being funded and advised by Mile High Flood District. Her research will be located on the rooftop of the HYDRO building at the upcoming CSU Spur campus, which will begin to open in January 2022. The stormwater monitoring equipment (i.e. trapezoidal flume, bubbler flow meter) have been designed into the plans of the building, and this project will connect with the stormwater research planned for the HYRDO backyard.

### Natalie Collar

Natalie is researching the post-fire evapotranspiration response and recovery timeline. Understanding the post-fire evapotranspiration (ET) response and recovery timeline is critical for portending the effect of wildfire on runoff rates and volumes, baseflow, and downstream water supply. The study is geared towards the Upper Colorado River Basin (UCOL) source water area specifically.

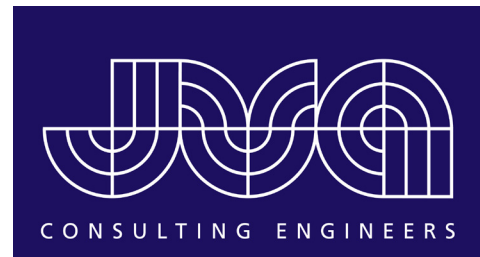
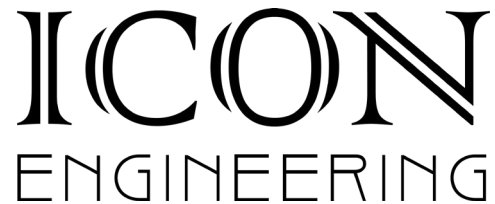
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<b>Bohannon Huston, Inc.</b>	Craig Hoover choover@bhinc.com	9785 Maroon Circle, Suite 140 Englewood, CO 80112	303-799-5103 www.bhinc.com
<b>Calibre Engineering</b>	Emily Villines evillines@calibre-engineering.com	9090 S Ridgeline Blvd, Suite 105 Highlands Ranch, CO 80129	303-730-0434 www.calibre-engineering.com
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<b>ICON Engineering, Inc.</b>	Troy Carmann tcarmann@iconeng.com	7000 S. Yosemite St., Suite 120 Centennial, CO 80112	303-221-0802 www.iconeng.com
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<b>Michael Baker International</b>	Kevin Doyle kdoyle@mbakerintl.com	165 S. Union Blvd, Suite 1000 Lakewood, CO 80228	720-514-1102 www.mbakerintl.com
<b>Muller Engineering Company</b>	Amber Gregg agregg@mullereng.com	777 S. Wadsworth Blvd., Suite 4-100 Lakewood, CO 80226	303-988-4939 www.mullereng.com
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<b>Stream Landscape Architecture</b>	Jesse Clark jclark@streamla.com	899 Logan St., Suite 500 Denver, CO 80203	720-663-7352 www.streamla.com
<b>Valerian, LLC</b>	Cassie Kaslon cassie@valerianllc.com	970 Yuma Street, Suite 130 Denver, CO 80204	303-347-1200 www.valerianllc.com



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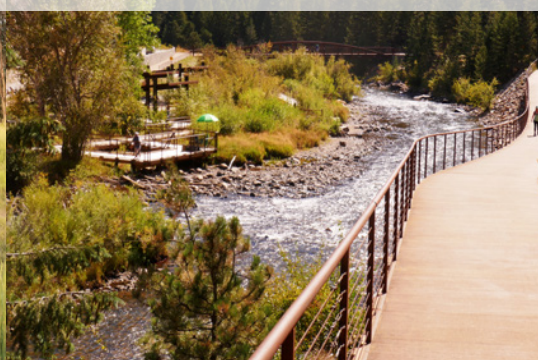
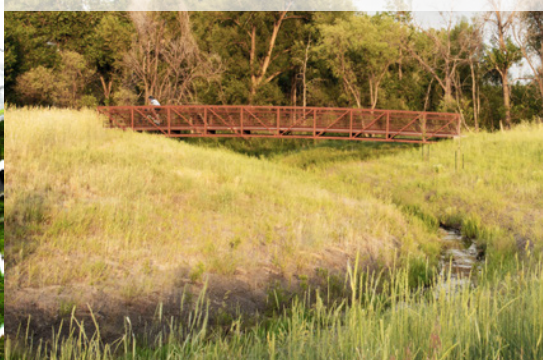
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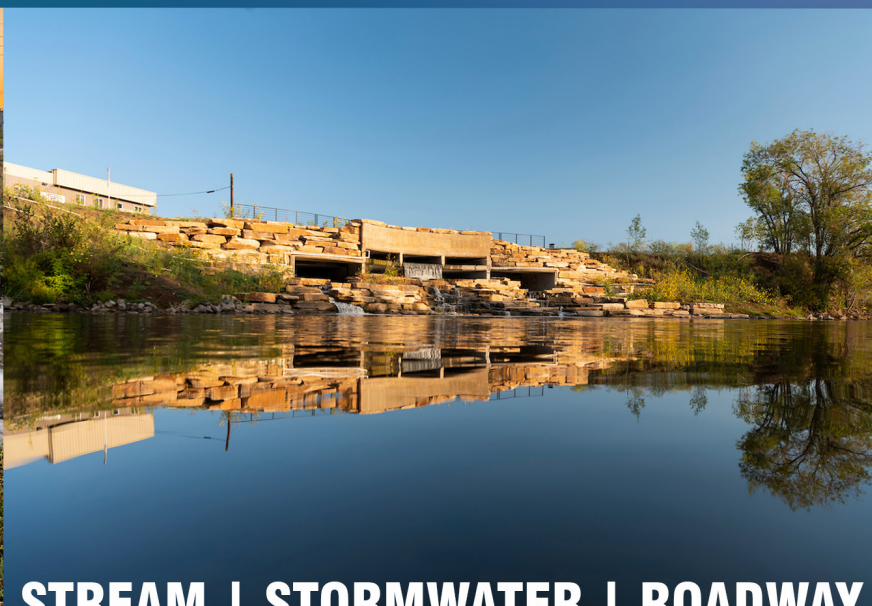
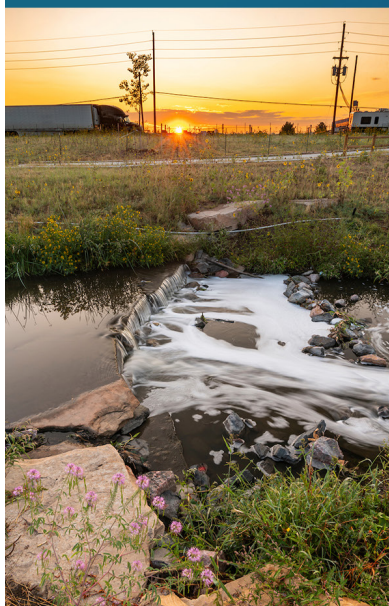
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# 2021 SCHEDULE AT A GLANCE

Friday, September 10, 2021		
7:30 AM		
8:00 AM		
8:30 AM		
9:00 AM		
9:30 AM		
10:00 AM		
10:30 AM		
11:00 AM	Cherry Creek Stewardship Partners 23rd Annual Conference	
11:30 AM		
12:00 PM		
12:30 PM		
1:00 PM		
1:30 PM		
2:00 PM		
2:30 PM		Mesa County Water Quality Field Trip SPONSORED BY DEWBERRY
3:00 PM		
3:30 PM		Mesa County Water Quality Field Trip Happy Hour SPONSORED BY DEWBERRY
4:00 PM		
4:30 PM		
5:00 PM		
5:30 PM		
6:00 PM		

Monday, September 13, 2021		
9:00 AM		
9:30 AM	General Membership Meeting	
10:00 AM		
10:30 AM		
11:00 AM		
11:30 AM		
12:00 PM		
12:30 PM		
1:00 PM	Metro BMP Water Quality SPONSORED BY STREAM LANDSCAPE ARCHITECTURE	
1:30 PM		
2:00 PM		
2:30 PM		
3:00 PM	Metro BMP Water Quality Tour Happy Hour SPONSORED BY STREAM LANDSCAPE ARCHITECTURE	
3:30 PM		
4:00 PM		
4:30 PM		
5:00 PM		
5:30 PM		
6:00 PM		

Tuesday, September 14, 2021		
SPONSORED BY RESPEC		
9:00 AM	Technical Sessions: Hydrology SPONSORED BY JVA	
9:30 AM		
10:00 AM		
10:30 AM	BREAK	
11:00 AM	Technical Sessions: Hydrology SPONSORED BY JVA	
11:30 AM		
12:00 PM	BREAK	
12:30 PM		
1:00 PM	Key Note Address: John Garrett SPONSORED BY RESPEC, VALERIAN, AND STREAM LANDSCAPE ARCHITECTURE <b>MOVED TO THURSDAY</b>	
1:30 PM		
2:00 PM	BREAK	
2:30 PM	Technical Sessions: Fire SPONSORED BY AYRES ASSOCIATES	
3:00 PM		
3:30 PM		
4:00 PM		

Wednesday, September 15, 2021		
SPONSORED BY RESPEC		
9:00 AM	Technical Sessions: Stream Restoration SPONSORED BY HR GREEN	
9:30 AM		
10:00 AM		
10:30 AM	BREAK	
11:00 AM	Technical Sessions: Special Interest SPONSORED BY HR GREEN	
11:30 AM		
12:00 PM	BREAK	
12:30 PM		
1:00 PM	Technical Sessions: Stormwater Quality SPONSORED BY ICON ENGINEERING	
1:30 PM		
2:00 PM		
2:30 PM	BREAK	
3:00 PM	Technical Sessions: Stormwater Quality SPONSORED BY ICON ENGINEERING	
3:30 PM		

Thursday, September 16, 2021		
SPONSORED BY STREAM LANDSCAPE ARCHITECTURE		
9:00 AM	Technical Sessions: Technical Modeling SPONSORED BY BOHANNAN HUSTON	
9:30 AM		
10:00 AM		
10:30 AM	BREAK	
11:00 AM	Technical Sessions: Technical Modeling SPONSORED BY BOHANNAN HUSTON	
11:30 AM		
12:00 PM	BREAK	
12:30 PM	Key Note Address: John Garrett SPONSORED BY RESPEC, VALERIAN, AND STREAM LANDSCAPE ARCHITECTURE <b>MOVED TO THURSDAY</b>	
1:00 PM		
1:30 PM	Project Award Presentations, Closing Remarks, Virtual Raffle, Project Award Winner SPONSORED BY AYRES ASSOCIATES	
2:00 PM		
2:30 PM		
3:00 PM		
3:30 PM		
4:00 PM		
4:30 PM	YMGC Happy Hour at RiNo Beer Garden	
5:00 PM		
5:30 PM		
6:00 PM		

Friday, September 17, 2021			
9:00 AM	Northern Denver Golf Tournament at		Pine Creek Golf Tournament in Colorado Springs SPONSORED BY HR GREEN
9:30 AM	Riverdale Dunes		
10:00 AM	Golf Course	Risk Rating 2.0 Workshop: How It Will Affect Your Community	
10:30 AM	SPONSORED BY		
11:00 AM	CALIBRE ENGINEERING		
11:30 AM			
12:00 PM			
12:30 PM			
1:00 PM			
1:30 PM			
2:00 PM			
2:30 PM			
3:00 PM		Fort Collins Green Infrastructure Tour and Happy Hour SPONSORED BY AYRES ASSOCIATES	Pine Creek Stream Restoration Tour and Happy Hour
3:30 PM			
4:00 PM	Metro Region Bike Tour: Green Mountain and/or North Table Mountain		
4:30 PM			
5:00 PM			
5:30 PM			
6:00 PM			
6:30 PM			
7:00 PM			

	Technical Sessions
	Social Events
	Keynote
	Non-CASFM Event