

# 2022 CASFM Annual Conference



**September 13 - September 16, 2022**

The Steamboat Grand  
2300 Mount Werner Circle  
Steamboat Springs, CO 80487  
[www.steamboatgrand.com](http://www.steamboatgrand.com)



# WELCOME TO THE 33RD CASFM CONFERENCE!

Welcome to the 33rd Annual CASFM Conference! We are so happy to be back IN-PERSON this fall for our conference! Our goal as an organization is to connect professionals who keep Colorado's watersheds resilient, and our annual conference is one of the best places we carry out this mission. Come ready to share information, new technologies, and innovative ideas. Also come ready to reconnect with old friends, meet some new ones, and enjoy the mountain scenery!

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. Our overall format is similar to past in-person conferences. We have special workshops starting Tuesday afternoon and an ice-breaker social that night. Our official conference opening and keynote will be Wednesday morning, followed by two days of technical sessions offered in concurrent tracks on Wednesday and Thursday. There will also be a special wildfire session on Thursday morning, and we will present project awards and have some fun at dinner Thursday night! Those of you sticking around Friday can choose to take a field trip tour of the lower Burgess Creek watershed, participate in the golf tournament at Haymaker Golf Course, or join the mountain biking tour. Check out the "Schedule at a Glance" and get the Webex Events (formerly Socio) app to make sure you do not miss anything.

We are honored to have keynote speaker Nick Kittle this year who will discuss our conference theme "Coalition of the Willing." He has crafted a message that will sound familiar to anyone who has worked on a project with lots of interested stakeholders. He will describe the difference between consent vs. consensus, how to sell ideas, and how to establish urgency. Nick will explore how we can get creative, build momentum, and get others on our "Team Us" as we make these wildly creative ideas real! Attendees will leave empowered, inspired, and ready to tackle powerful challenges with new vigor. You will not want to miss him.

If any of you are on the fence about driving up Tuesday night, you will not want to miss our ice breaker social this year! Those who have attended the conference before know that we typically have a nice happy hour waiting for you on Tuesday night as a reward for driving up to the mountains. This year, our kick-off social is happy hour on steroids! We have doubled the time (6 PM-10 PM), will provide complimentary drinks and heavy hors d'oeuvres, and it is in the Champagne Powder room, which is on top of the mountain! You may be wondering, "Is this kick-off event extended because it's been two years since we all saw each other, because the conference committee wants to focus on network opportunities and fun in addition to all of the great technical content that will be presented, or because Jason really wanted a gondola ride more than anyone over the age of seven should ever want a gondola ride?" The answer is YES – All of the above.

Thanks to all 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. It is not hard for me to relate to the "Coalition of the Willing" when I think about the numerous volunteers that make this event a reality. A special thanks to all the sponsors too, who enable us to fund generous scholarships as an organization and keep our registration costs to a minimum.

Look forward to seeing you in Steamboat Springs! And we hope to see you in Keystone in 2023!



  
Jason Messamer  
Conference Chair  
Colorado Springs Utilities



  
Drew Beck  
CASFM Chair  
Matrix Design Group

## REGISTER FOR THE CONFERENCE:

<https://registration.socio.events/e/2022annualconference>

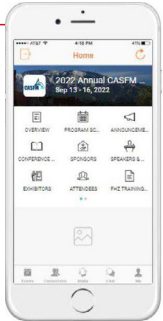


# ACCESS THE CONFERENCE APP!

We're so glad you're joining us for the **2022 Annual CASFM Conference**! It's time to log in to the Event App and set up your networking profile. If you've already downloaded and logged into the Mobile App, great! Simply use the app's event search to find and download the **2022 Annual CASFM Conference**.

## MOBILE APP INSTRUCTIONS:

1. Follow this link: [Promo Page](#)



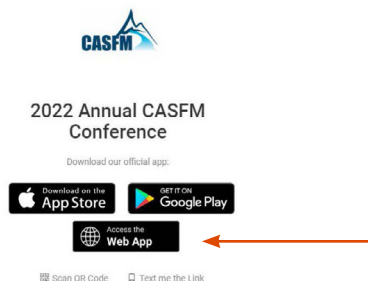
2. Select the correct app download button for your device and download the app.
3. Open the app and enter your preferred email address, or use one of the social sign-in options.
4. If you entered an email, create a password and click Sign Up.
5. Fill in your networking profile and click Continue. Your profile information will help you connect with other people during the event!
6. Now, browse for **2022 Annual CASFM Conference** or use the search bar to find it. Once you've found it, tap on it.
7. A pop-up will appear asking for an Access Code. Enter **STEAMBOAT** and tap SUBMIT.

You're in! Feel free to start exploring. If you have any questions about the Event App, or if you have trouble logging in, don't hesitate to reach out. Contact Stacey Thompson, [sthompson@mhfd.org](mailto:sthompson@mhfd.org) or 303.749.5451.

## WEB APP (DESKTOP/LAPTOP) INSTRUCTIONS:

We recommend using the Google Chrome browser for the best experience.

1. Follow this link: [Promo Page](#) and click the Web App option



2. Enter your preferred email address or use one of the social sign-in options.
3. If you entered an email, create a password and click Sign Up.
4. Enter this Access Code: **STEAMBOAT**
5. Fill in your networking profile and click Continue. Your profile information will help you connect with other people during the event.

You're in! Feel free to start exploring. If you have any questions about the Event App, or if you have trouble logging in, don't hesitate to reach out. Contact Stacey Thompson, [sthompson@mhfd.org](mailto:sthompson@mhfd.org) or 303.749.5451.



JOIN THE CONFERENCE CONVERSATION: #CASFM2022

## 2022 CASFM CONFERENCE COMMITTEE!



**Amy Gabor**  
Vendors  
Olsson



**Emily Villines**  
Program Coordinator  
Calibre Engineering



**Saman Mehdi**  
Technical Sessions  
Atkins



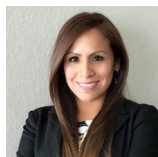
**Stacey Thompson**  
Registration | WebEx  
& Socio Admin.  
MHFD



**Dan Hill**  
Scholarships & Silent  
Auction  
MHFD



**John Loranger**  
Golf  
Wood PLC



**Erika Vega-Bazan**  
Moderator Coordinator  
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**Shea Thomas**  
Venue Coordination  
Providence Consulting



**Drew Roberts**  
Mountain Bike Tour  
MHFD



**Jeff Battiste**  
Awards  
MHFD

## 2022 - 2023 OFFICERS & REGIONAL REPRESENTATIVES

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ICON Engineering



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**MORGAN LYNCH**

City and County of Denver



# REGISTRATION INFORMATION

SEPTEMBER 13-16, 2022 - STEAMBOAT SPRINGS, CO

To register, please visit [www.casfm.org](http://www.casfm.org) and select the Annual Conference link. Or you can use this direct link: <https://registration.socio.events/e/2022annualconference>

If you have any questions, contact Stacey Thompson at [sthompson@mhfd.org](mailto:sthompson@mhfd.org), or 303.749.5451.

## BASIC CONFERENCE FEES

The basic registration fee includes all written materials, three continental breakfasts, two lunches, refreshment breaks, receptions, and the Thursday Banquet Dinner.

Please note that all presenters are required to be registered and paid conference attendees.

Single day registration is not available.

**EARLY DISCOUNT (THROUGH AUGUST 31) | \$325**

**REGULAR RATE (THROUGH SEPTEMBER 7) | \$365**

**LATE OR ONSITE REGISTRATION (AFTER SEPTEMBER 7) | \$405**

Checks will NOT be accepted for conference fees. Payment is via credit card only. Some important instructions:

- A representative from an organization may register multiple people during the same transaction.
- If you need to purchase any conference activities using a different credit card, you will need to create a second registration for the additional activities.
- If you want to add workshops and/or field trip after initial registration has been completed, you will need to create a second registration that includes only workshop(s) and/or field trip.
- Conference registration is a required purchase with initial registration. If you are creating a second registration for the purposes outlined above, simply leave the default number of "0" for conference registration.

## CANCELLATION INFORMATION

Canceled registrations will be refunded in full, minus a \$25 fee, through August 31, 2022. Registrations canceled between September 1, 2022 and September 7, 2022 will receive a 50% refund.

Cancellations made after September 7, 2022 will not be refunded.

Cancellations must be made by contacting our registration coordinator Stacey Thompson at [sthompson@mhfd.org](mailto:sthompson@mhfd.org), or 303.749.5451. If you cancel your registration, remember to call your hotel to cancel your hotel accommodations.

## ADDITIONAL MEALS

The Conference Fee includes all meals listed above in the Basic Conference Fees Section. Meal tickets do not need to be purchased for the registered conference attendee. If desired, extra meal tickets may be purchased for the attendee's guest (spouse, children, etc.) by checking the appropriate boxes in this section of the online registration form.

**WEDNESDAY LUNCH | \$30 / THURSDAY LUNCH | \$30 / THURSDAY DINNER | \$60**

## FIELD TRIPS

**MOUNTAIN BIKE TOUR:** (Friday 9:30am - 12pm) | \$10 Fee

**GOLF TOURNAMENT:** (Friday 10am Shotgun Start) | \$90 per person

**STEAMBOAT SPRINGS WALKING TOUR OF LOWER BURGESS CREEK WATERSHED:** (Friday 10am-12pm) | No fee

## WORKSHOPS

**LUNCH WILL BE PROVIDED TO ALL REGISTERED WORKSHOP PARTICIPANTS | 11:30AM - 12:30PM**

**FLUVIAL HAZARD ZONE (FHZ) TRAINING:** (Tuesday 11am-4pm) | \$225 early, \$275 after Aug 1

Separate Registration Required here: <https://registration.socio.events/e/sept13fhztrainingmod1opt1>

**DENVER GREEN CONTINUUM:** (Tuesday 12:00pm - 1:30pm) | free

**FEMA BENEFIT-COST ANALYSIS BEST PRACTICES:** (Tuesday 2:00pm - 5:00pm) | free

**CDOT 2D MODELING APPLICATION & BEST PRACTICES:** (Tuesday 12:00pm - 4:00pm) | free



## KEYNOTE

### COALITION OF THE WILLING

NICK KITTLE | WEDNESDAY, SEPTEMBER 14, 10:15-11:30 AM | KORBEL GRAND BALLROOM

Sustainovation is the technique we use to build sustainable innovation into government. Award-winning civic innovator, coach, and author Nick Kittle will explain the nature of innovation in government and how to sustain it - and more importantly, the powerful role that we play in making Sustainovation a reality for our organizations. In this inspirational keynote, Nick will explore how we can get creative, build momentum, and get others on our "Team Us" as we make these wildly creative ideas real! Attendees will leave empowered, inspired, and ready to tackle powerful challenges with new vigor.

Nick will discuss consent versus consensus, how to sell ideas, how to establish urgency, and ultimately how to foster the "Coalition of the Willing."



#### ABOUT NICK

Nick is the author of the best-selling innovation book *Sustainovation: Building Sustainable Innovation in Government. One Wildly Creative Idea at a Time*, and spent the last 15 years in government, most recently as a Chief Innovation Officer. During his government career, Nick won 3 national awards for innovation, directed 17 different divisions, and developed over 65 unique or first-of-their-kind pilot projects while directly generating \$7.8M in savings and pioneering the concept of Innovation Value. Nick now keynotes and trains across the country on building Sustainovation in government and has visited over 80 different communities in 2019 to help them transform their mindset.

#### SPONSORED BY

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## GOLF TOURNAMENT

### FRIDAY, SEPTEMBER 16

10:00 AM SHOTGUN START | FORMAT: 4 PERSON SCRAMBLE | \$90 PER PERSON

Contact: John Loranger, Wood PLC; [john.loranger@woodplc.com](mailto:john.loranger@woodplc.com)

Ranked by Golfweek as the #6 public golf course in Colorado, Haymaker Golf Course is located in the Yampa Valley Region of Steamboat Springs and is a Championship Golf Course Gem. Snow-capped Mount Werner frames many of the holes, while the spectacular Flat Top Mountain Range serves as a picturesque backdrop. As your day begins, directly ahead of you is a challenging links-style course with native grasses and wetlands to enhance the wide open fairways. Created out of vast ranchland and rock piles, this Keith Foster design is home to where many elk, eagles, and blue herons roam.

**Who:** All conference participants, family members, sponsors, exhibitors

**Where:** Haymaker Golf Course, [www.haymakergolf.com](http://www.haymakergolf.com)  
34855 US-40 E, Steamboat Springs, CO 80487  
(970) 870-1846



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## SCHEDULE AT-A-GLANCE | TECHNICAL SESSIONS

WEDNESDAY, SEPTEMBER 14

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**AYRES**

**Bohannon**  **Huston**

  
**Matrix**  
Excellence by Design

	<b>PEOPLE</b> (Room: Burgess Creek) Moderators: Brent Kaslon - Valerian Jeff Battiste - MHFD	<b>STREAM RESTORATION</b> (Room: Korbel III) Moderators: Frans Lambrechtsen - Kimley Horn Jeremy Deischer - ICON Engineering	<b>FLOODPLAIN MGMT</b> (Room: Spring Creek) Moderators: Noelle Beegle - Benesch Kimberley Pirri - AECOM
1:30PM	The (Avocado) Toast of Modeling: Bridging the Generation Gap in 2D Hydraulics  <i>Caroline Ogg - Bohannon Huston</i>	Cherry Creek Stabilization at Denver Country Club  <i>Drew Beck and Mason Haycock - Matrix Design Group</i>	Colorado's "One-Stop Shop" for Flood Information, ColoradoHazardMapping.com has New Resources: LiDAR Download Portal and Floodplain Managers Page  <i>Tim Benenati &amp; Kim Pirri - AECOM; Marta Blanco Castano - State of Colorado</i>
2:00PM	Chasing Unicorns – Attracting and Retaining the Next Generation of STEM Professionals  <i>Christi Wisleder &amp; John Kuosman - Merrick</i>	The South Platte River Restoration Project  <i>Ben Murphy - Calibre Engineering; Scott Shipley - S2O</i>	Lost in Translation: Effective Communication for Permitting Success  <i>Angela Snyder - City of Evans; Matthew Hickox - Ayres Associates</i>
2:30PM	Establishing a Baseline: An Equity Review of Resource Allocation in FEMA Region 8  <i>Johanna Greenspan-Johnston - Dewberry; Christine Gaynes - FEMA</i>	Urban Stream Rehabilitation, the Past and Future - Where We've Been and Where We Need to Go Now  <i>Will Wilhelm - Kimley-Horn</i>	A Data-Driven Approach to Rapidly Predicting Flood Risk  <i>Keil Neff &amp; Assaad Mrad - Stantec</i>
3:30PM	Human Side of Engineering – Managing Upstream  <i>Brad Bettag - Wilson &amp; Co</i>	Where Rivers Meet Roads: Using Stream Restoration to Provide Resilience to Roadway Infrastructure  <i>Matt MacFarland and Kate Klavon - Stantec</i>	2D RoM Community Use  <i>Connor Johnson - AECOM; Marta Blanco Castano - State of Colorado</i>
4:00PM	Agencies Connecting to Manage the Urban Water Cycle: the Denver One Water Plan  <i>Dave Jula - City and County of Denver</i>	Habitat Boulder Toe as Alternative to Full Depth Revetment for Highways in the River Environment  <i>Dylan Armstrong - Ayres; Kalli Wegren - CDOT; Brad Florentin - The Flow Path</i>	Riverscape Health Principles and Integrated Floodplain Management  <i>Brian Murphy - RiverWorks; Mary Powell - MHFD</i>
4:30PM	Benefits of a Collaborative Approach to Floodplain Permitting  <i>Brendan Carroll - RS&amp;H; David Pizzi - Alden; Brian Varrella - CDOT; Heidi Hansen - Fort Collins Utilities</i>	St. Vrain Creek Passage Project: A Community-First Endeavor  <i>Sharla Benjamin - Boulder County Parks &amp; Open Space; Tracy Emmanuel - Otak</i>	State Floodplain and Stormwater Criteria Manual Update Summary and Brainstorm  <i>Kevin Houck - State of Colorado; Rigel Rucker - AECOM</i>



## SCHEDULE AT-A-GLANCE | TECHNICAL SESSIONS

### THURSDAY, SEPTEMBER 15

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	<b>FEATURED SESSIONS</b> (Room: Korbel Grand Ballroom) Moderator: Andrew Earles - WWE
9:00AM	Wildfire Ready Watersheds <i>Chris Sturm - Colorado Water Conservation Board</i>
9:45AM	Regional Implementation of Customizable Data Dashboard for Post-Fire Water Quality and Precipitation Information <i>Paula Stepp - Middle Colorado Watershed Council; Christina Pearson - SGM Engineering</i>
10:00AM	The Calwood Fire Burn Area: Year Two of Post-Wildfire Hydrologic Monitoring <i>Kelsey McDonough - AEM/Vieux; Felix Zamora - AEM/OneRain Incorporated; Sharla Benjamin - Boulder County Parks and Open Space</i>
10:15AM	Challenges of and Strategies for Quantifying the Effects of Land Disturbance on Hydrologic Fluxes in the Intermountain West <i>Natalie Collar - Wright Water Engineers</i>
10:30AM	CASFM Toastmasters <i>Colin Haggerty - MHFD</i>
11:00AM	2022 CASFM Engineering Excellence Award Nominees See WebEx/Socio, Program, and CASFM Website for More Info



## SCHEDULE AT-A-GLANCE | TECHNICAL SESSIONS

### THURSDAY, SEPTEMBER 15

	<b>MODELING</b> (Room: Spring Creek) Moderators: Drew Kustusch - ERA Consultants Michelle Iblings - Drexel Barrell	<b>WATER QUALITY</b> (Room: Korbel III) Moderators: Candice Owen - City of Boulder Sara Johnson - Muller Engineering	<b>POTPOURRI</b> (Room: Burgess Creek) Moderators: Jeremy Deischer - ICON Engineering David Skuodas - MHFD
1:30PM	Calibration Conundrums: Rainfall-Runoff and Rain-on-Mesh Calibration Challenges, Strategies, and Solutions  <i>Josh Hill &amp; Liz Jefferson - Wood PLC</i>	City of Eden Prairie - Integrated Stormwater Management  <i>Hagen Kaczmarek - Stantec</i>	Urban Needs Assessment for Denver's Most Vital Resource - the South Platte River  <i>Jesse Clark - Stream; Dave Jula - City and County of Denver</i>
2:00PM	Applying Programming & Automation to Water Resources  <i>Geoff Uhlemann - Michael Baker; Jon Villines - MHFD</i>	Improving the World one Stormwater Control Measure at a Time: The Importance of Community Values in MHFD's Criteria Manual Update  <i>Paul Thomas - Stream; Sara DeGroot - MHFD</i>	Temporary Drainage: Let the Contractor Worry About That...  <i>Phil Drazek &amp; Josh Hollon - Kiewit</i>
2:30PM	Floodplain Studies as Elephants: A Method for Partitioning a 485-mile Long Study Reach  <i>Russ Anderson - Michael Baker</i>	Spring Canyon Park Bioretention Retrofit Using Biochar and Zeolite Media for E. coli Management  <i>Basil Hamdan - City of Fort Collins; Chris Olson - Wright Water; Scott Struck - NREL</i>	Two Roads Diverged in a Pipe... Balancing Risk, Cost, and Future Service for Existing CMP Pipelines  <i>Heather Seitz - ICON; Bo Botteicher - Lithos; Andrew Fisher - City of Greeley</i>
3:30PM	Integrating UAS and Wetlands – A case study of remote wetland identification.  <i>Blake Walter - FHU</i>	Stochastic Empirical Loading and Dilution Model (SELDL) on Colorado Department of Transportation's Floyd Hill  <i>Jordan Falzetti - Atkins; Josh Giovannetti - State of Colorado</i>	NDOT U.S. Highway 281 Emergency Repairs Over The Niobrara River Below Spencer Dam, Spencer, Nebraska  <i>William J. Spitz - Olsson</i>
4:00PM	1% Plus Event is Coming! Do You Know What It Is and How to Calculate It  <i>Haley Rogers, Andrew Earles, Sam Plaza - Wright Water; Brooke Seymour and Hung-Teng Ho - MHFD</i>	Stormwater Quality in a Post-Urban Wildfire Impacted Community  <i>Charles Beebe - Respec</i>	The Front Range Trail at Hanson Trailhead – Thanks to Flooding, You Can't Get There Without Our Project  <i>Craig Hoover and Rifka Wine - Bohannon Huston</i>
4:30PM	Old Meets New: Combining Tradition with Innovation to Catalyze Change  <i>Sam Acosta - HDR; Michael Lopes - Calibre Engineering; Jon Villines - MHFD</i>	What's New with Bioretention?  <i>Sara DeGroot and Brik Zivkovich - MHFD; Andrew Earles and Jane Clary - Wright Water</i>	Using Innovation to Drive Safety, Savings and Satisfaction One Fun Innovation At A Time!  <i>Darren Mollendor - City &amp; County of Denver</i>



## THANKS TO OUR MODERATORS!

Brent Kaslon - Valerian  
Frans Lambrechtsen - Kimley Horn  
Kimberley Pirri - AECOM  
Noelle Beegle - Benesch  
David Skuodas - MHFD  
Jeff Battiste - MHFD

Drew Kustusch - ERA Consultants  
Candice Owen - City of Boulder  
Sara R. Johnson - Muller Engineering  
Andrew Earles - Wright Water Engineers  
Michelle Iblings - Drexel Barrell  
Jeremy Deischer - ICON Engineering

## OPTIONAL WORKSHOPS TUESDAY, SEPTEMBER 13

### COLORADO FLUVIAL HAZARD ZONE MAPPING PROGRAM - MODULE 1 11:00AM - 4:00 PM (ROOM: KORBEL III)

Register here: <https://registration.socio.events/e/sept13fhztrainingmod1opt1>

Michael Blazewicz, Round River Design | Joel Sholtes, CMU

#### Module 1: Fluvial Geomorphic Processes, Hazards, and Opportunities in Stream Corridors

Streams are not lines, they are corridors! Stream corridors are naturally dynamic environments that bring together physical, biological, and chemical processes all while supporting a host of societal and ecological benefits. When streams and floodplains are treated as static lines on the landscape, stream health declines and risk to human-made infrastructure increases. Providing streams the space they need to accommodate and facilitate natural processes and functions is becoming a central tenet in land, water, and floodplain management practices. But how do we define the stream corridor and effectively communicate the importance of protecting and restoring the processes that define them? What tools are commonly used to protect and restore stream corridors and how well do they really accomplish this? How do we strategically focus watershed and community-level planning to protect stream corridor functions given limited funding and time?

#### What Will You Learn?

Participants will be introduced to stream corridor processes (physical and biological) and the various ways of defining them. You will explore more and less compatible management practices and opportunities within stream corridors. Participants will identify and understand the fundamental processes and components of Fluvial Hazard Zone maps and how the FHZ Mapping Program can be applied to manage the stream corridors under their purview.

#### Who Should Attend?

Anyone interested in stream corridors and functional floodplains—ecological, regulatory, and geomorphic. No prerequisites necessary! This includes (but is not limited to) municipal planners and staff or managers in public works, floodplains and stormwater departments; consultants; and state or federal agency staff with purview over stream corridor regulation, projects, permitting, or other forms of stream management.

For more information, see the full series brochure at the end of the program.

### DENVER GREEN CONTINUUM 12:00PM - 1:30 PM (ROOM: BURGESS CREEK)

Registration is a free option within the overall conference registration.

Brian Wethington, DOTI | Colin Bell, DOTI | Jesse Clark, Stream Landscape Architecture & Planning

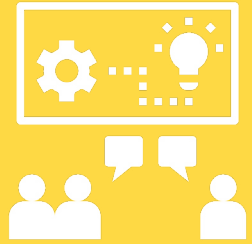
#### Description:

The Denver Green Continuum Streets Guidelines were developed to expand the toolbox for the design and implementation of green infrastructure (GI) to help manage both stormwater and urban heat in the public rights-of-way. The Continuum categorizes GI into five "Levels-of-Green" that range from simple vegetative solutions that can cool our urban environment to engineered control measures that meet regulatory water quality requirements. This presentation will outline the policy and climate drivers that inspired the development of the Continuum, the guidelines that make up the "Levels-of-Green", the engineering and analysis that validate the performance of the control measures, and case studies that demonstrate the application of the Continuum.



## OPTIONAL WORKSHOPS

### TUESDAY, SEPTEMBER 13



#### FEMA BENEFIT-COST ANALYSIS BEST PRACTICES 2:00PM - 5:00 PM (ROOM: BURGESS CREEK)

Registration is a free option within the overall conference registration.

Jordan Williams and Kelsey Schill, CDM Smith

##### Description:

Applicants and subapplicants frequently identify the benefit cost analysis (BCA) tool and data requirements as a barrier to completing FEMA Hazard Mitigation Assistance grant applications. The goal of this session will be to help applicants and subapplicants better understand data and documentation requirements as well as common mistakes and resolutions. BCA experts who manage the BCA helpline and perform hundreds of BCA reviews every year will cover a variety of frequently asked questions to the BCA helpline, discuss common BCA mistakes, and provide recommendations and best practices to consider when preparing a BCA. The presentation will also provide recommendations on how to get started with your BCA, provide recommendations for when a benefit cost ratio is less than one, and discuss ways to incorporate climate change into a BCA. The session will conclude with a question and answer period where BCA experts will answer specific BCA questions from the audience.

#### CDOT 2D MODELING APPLICATION & BEST PRACTICES 12:00PM - 4:00 PM (ROOM: SPRING CREEK)

Registration is a free option within the overall conference registration.

Kalli Wegren, CDOT | Brian Varrella, CDOT | Sara Johnson, Muller Engineering

##### Description:

Two-dimensional (2D) hydraulic modeling is a great tool that reduces modeler assumption and risk. The Colorado Department of Transportation (CDOT) is utilizing Aquaveos's SMS/SRH-2D technology through 2D "quick checks" (2dQC) to value-engineer construction resources prior to design. This workshop will walk through how CDOT is leveraging 2dQC models and quantifying resiliency and risk opportunities identified through 2D modeling. CDOT will also share their best practices for reviewing a 2D hydraulic model. Participants will learn how CDOT identified \$22.4 million through 2dQCs and practice reviewing a 2D model utilizing Federal Highway Administration (FHWA) and CDOT reviewer checklists. Knowing how to review and apply a 2D model will help improve modeling capabilities.

The Workshop also includes a 30-minute introduction & overview of the CDOT 2D Quick Check process. From 2018 to 2022, the Colorado Department of Transportation (CDOT) received Federal Highway Administration (FHWA) State Transportation Innovation Council (STIC) and CDOT research funds to explore 2-dimensional (2D) hydraulic modeling as a tool to value-engineer projects. Recent evolutions in 2D hydraulic analysis tools supported by the FHWA have a high potential to reduce infrastructure design uncertainties in and near natural waterways. The outcome can result in infrastructure construction projects that are more efficient to deliver, safer, and more cost effective. CDOT can utilize this technology through 2D "quick checks" using SRH-2D and Aquaveo's SMS software interface. A 2D quick check (2dQC) value-engineers construction resources prior to design by improving infrastructure asset performance, optimizing project costs, and improving safety along transportation corridors. The 2D Quick Check Statewide Initiative explored the benefits of 2dQCs across Colorado and developed a research program to promote and improve its use and utility in transportation project design.

##### Software:

The workshop will be 4-hours long and participants will need a laptop with SMS/SRH-2D software to participate. A SMS/SRH-2D community version license is available for free for anyone at <https://www.aquaveo.com/software/sms-community>.

##### Who Should Attend:

While this workshop is more technical in nature and geared toward those having a base knowledge of two-dimensional modeling, all skill levels are welcome to attend or audit this workshop. The proposed hands-on exercise will require more presenter interaction with attendees.



## TUESDAY WELCOME CONFERENCE KICK-OFF SOCIAL

WE'RE BACK BABY!!!!

6 PM TO 10 PM

Take the free Gondola up to the  
Champagne Powder Room and Sundeck.

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## WEDNESDAY EVENTS

### CFM EXAM

7 AM TO 10 AM

Room: Burgess Creek

This year, the Certified Floodplain Manager (CFM) exam will be offered in-person at the CASFM Annual Conference. The exam will be proctored by the CASFM Floodplain Committee in the Burgess Creek Room.



### BREAKFAST & REGISTRATION

7:30AM TO 9AM

Room: Korbel Foyer

Don't forget to sign up to track your CFM credits at registration!

SPONSORED BY:



### GENERAL MEMBERSHIP MEETING & LUNCH

11:30 AM TO 1 PM

Room: Tent

Join us to hear about CASFM's progress and initiatives over the last year.

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## WEDNESDAY EVENTS

### HAPPY HOUR

5:00 PM TO 6:30 PM

Room: Tent

Toast and cheers with your CASFM friends at this sponsored Tuesday happy hour!

SPONSORED BY:



## THURSDAY EVENTS

### BREAKFAST & COMMITTEE MEETINGS

8 AM TO 9 AM

Room: Korbel Foyer & Korbel Grand Ballroom

At breakfast, attendees will have the opportunity to meet with various CASFM Committees to learn about getting involved!

### LUNCH\*

12 PM TO 1 PM

Room: Korbel Foyer

Pick up your boxed lunch and join us for a casual meal or find a nice spot outside!

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\*CASFM Board Meeting is at the same time in the Saddle Creek Room.



### BANQUET

Thursday is a night for celebration! The Awards Banquet gives CASFM an opportunity to thank our volunteers and member organizations with a night of great food, camaraderie, and entertainment. At Thursday's award ceremony, we will announce the CASFM Project Award Recipient, present awards to out-going officers, and raffle items to benefit the Scholarship Committee.

Options for Thursday night entertainment include karaoke or trivia! Join us in the Korbel Grand Ballroom for the Thursday Night Banquet, followed by the Korbel Grand Ballroom for karaoke or the Burgess Creek Room for trivia. Show off your dance moves, singing voice, and brain power!

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HAPPY HOUR  
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BANQUET RAFFLE  
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# FRIDAY EVENTS

## MOUNTAIN BIKE TOUR

FRIDAY, SEPTEMBER 16

9:30 AM | \$10 PER PERSON

Mountain Bike Tour will be coordinated by me, Drew Roberts, MHFD, [droberts@mhfd.org](mailto:droberts@mhfd.org).

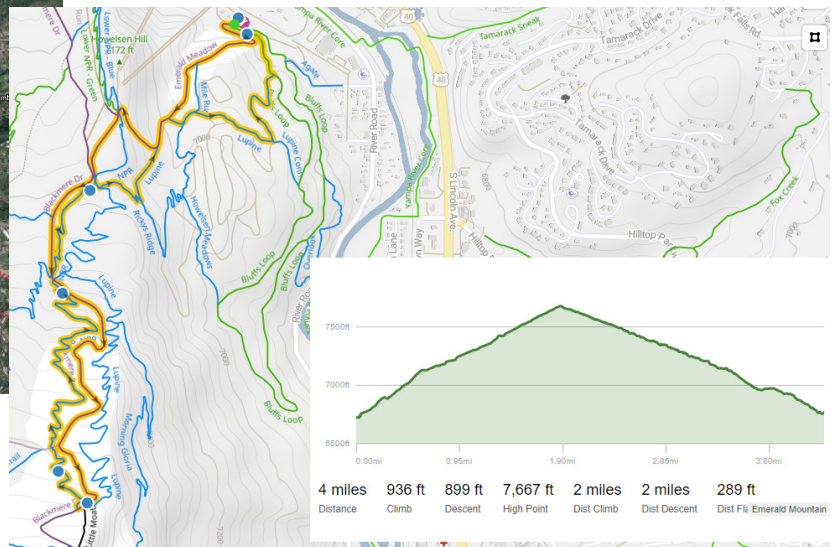
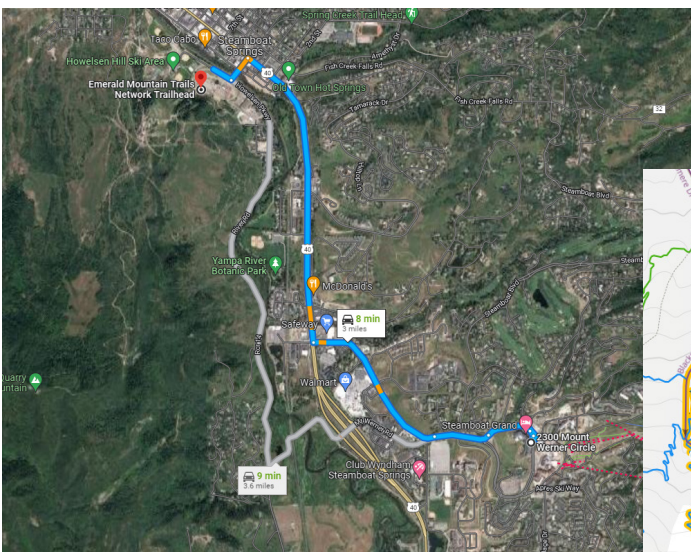
I'm very excited to meet up with everyone and ride bikes at the CASFM Annual Conference! **We will be riding at Emerald Mountain**, which is located near downtown Steamboat Springs. Steamboat Bike Park is currently undergoing renovations, which is why we were unable to book lift-accessed riding, maybe next year.

A few pieces of housekeeping, here's a quick bullet list of important items:

- If you signed up for a bike rental, **you will have to pick out a bike that you like and rent it yourself**. CASFM will then reimburse you up to \$75 for that rental. There are a lot of great bikes in the area that you can rent under that amount, including: Steamboat Ski and Bike Kare: <https://www.steamboatskiandbike.com/about/bike-rentals-summer-2022-pg164.htm> or Steamboat Wheels: <https://www.steamboatwheels.com/rentals-1>
- Bike rental sponsorships are available and limited to the first 10 participants who require bike rental.
- **We will meet at the Emerald Mountain Trailhead (see map below) at 9:30am**. See Google Maps here: <https://goo.gl/maps/9xxdBYZQAoVEzVst8>
- We will split into small groups based on level of comfort. Each group will be assigned a "team lead" who will be responsible for the map.
- When your group is done riding, or at 12:00 pm, we will meet back at the trailhead for snacks and a small happy hour.

Below are a map to the trail head and an image showing trail options, distance, and elevation. I would highly recommend that groups stick to the NPR trail. That being said, if everyone involved in your group is interested in another trail option, you may choose a different route.

If you have any questions please let me know!



# FIELD TRIPS

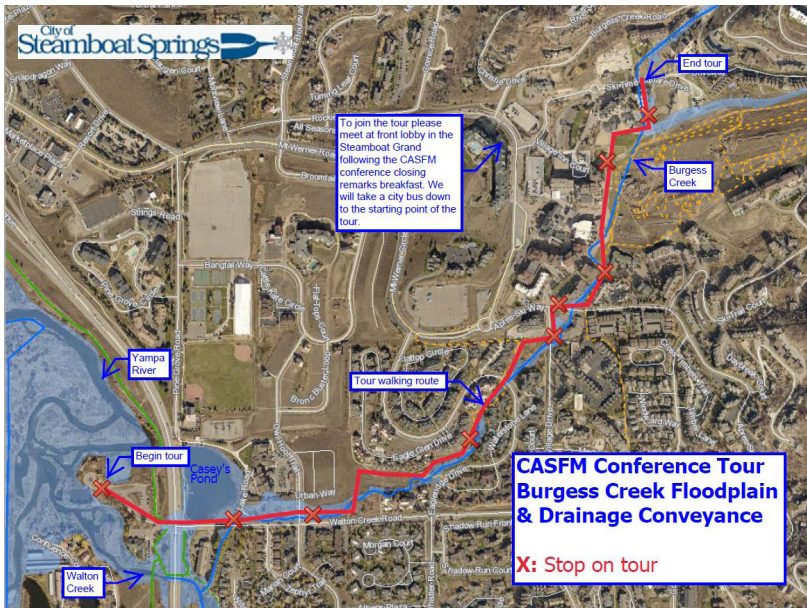
## FRIDAY FIELD TRIP:

### THE CITY OF STEAMBOAT SPRINGS WALKING TOUR OF THE LOWER BURGESS CREEK WATERSHED

Coordinated by: Danny Paul (Steamboat Springs), dpaul@steamboatsprings.net

10 AM - 12 PM

The City of Steamboat Springs will lead a walking tour of the lower Burgess Creek basin watershed. Over the past decade, the City has implemented a series of stormwater conveyance projects to improve resiliency to flooding events. The tour will begin at River Creek Park, where the City and several partners are planning a multi-objective restoration project around the confluence of Burgess and Walton Creeks with the Yampa River, which encompasses the stream channel, riparian areas, and floodplain. The project will reduce northern pike breeding habitat, improve floodplain connectivity and river function, restore wetlands and riparian vegetation, and protect infrastructure from flooding and stream migration. The tour will progress upstream with visits to Casey's Pond, which serves as a regional flood attenuation facility, and a number of culvert replacement projects, one of which will be under construction at the time of the tour. Participants will learn about the complex hydrology of the Burgess Creek basin and how recent infrastructure projects have been designed beyond minimum regulatory requirements. The tour will wrap up near the Steamboat ski area with a stop at the Burgess Creek Daylighting and Promenade project, which was built in 2008-2010 and includes a subsurface culvert for winter months and a diversion structure for summer months, to allow water to be daylighted to a surface channel with water features for public enjoyment.



#### Tour Information:

- The tour will wrap up near the Steamboat ski area where participants are welcome to enjoy lunch on their own.
- **Participants should meet at the lobby of the Steamboat Grand following the conference closing remarks at 9:45 AM.** A bus will transport everyone to the starting point of the tour and will leave promptly, so do not be late.
- The tour will finish within a short walking distance back to the Grand.
- The total walking distance is approximately 1.4 miles and will be on paved and accessible routes.
- Participants are encouraged to wear comfortable walking shoes and bring a water bottle. Disposable water will be available at the start of the tour. There will be refilling stations.
- Hard hats and safety vests are not necessary.
- Participants should check out of their hotel room following closing remarks and before joining the tour.

#### Tour Presenters:

- Julie Baxter, AICP, CFM – City of Steamboat Springs Water Resources Manager
- Bob Keenan, AICP, CFM – City of Steamboat Springs Planning & Community Development
- Danny Paul, EIT – City of Steamboat Springs Engineering
- Scott Slamal, City of Steamboat Springs Stormwater Specialist & Engineering Inspector
- Michelle Iblings, MSCE, PE, PH, CFM – Drexel, Barrell & Co.



## MORNING YOGA

Led by the Yoga Center of Steamboat, morning yoga will be offered in the Peak View Room on Wednesday, Thursday, and Friday from 7AM -8AM.

All practice levels are welcome. Please bring your own mat. A few extra mats will be provided by the Yoga Center for those who don't have one.

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## SILENT AUCTION

The CASFM Silent Auction is being held here: <https://app.bidbeacon.com/#/auction/CASFM2022/details>

The Silent Auction 'Go Live' is September 12. Check back for new items being added to the auction.

We are now accepting donations for our Silent Auction! Proceeds from the CASFM Silent Auction fund our CASFM Family Scholarships, delineated below. Since we began our scholarship program in 2002, CASFM has awarded more than \$70,000 in scholarship funds to students in Colorado. If you are interested in donating, please contact Dan Hill:

Dan Hill, PE, CFM | MHFD | (303) 455-6277 | [DHill@mhfd.org](mailto:DHill@mhfd.org)

### BEN URBONAS SCHOLARSHIP:

Awarded to a graduate level student studying in a field related to the goals of CASFM. The purpose of this scholarship is to promote interest among students and the engineering community in CASFM and to promote the goals of the organization.

### FAMILY SCHOLARSHIP:

Awarded to an accredited undergraduate student (Sophomore level or above) or a graduate student whose parent or legal guardian is a current member of CASFM. The purpose is to assist members of CASFM and their immediate offspring in paying for the cost of higher education and to promote interest in the goals of the organization.

### UNDERGRADUATE SCHOLARSHIP:

Originally funded by UWRI and is awarded to an undergraduate student in a field related to CASFM in Colorado. The purpose is to promote interest among students and the engineering community and in CASFM and its goals

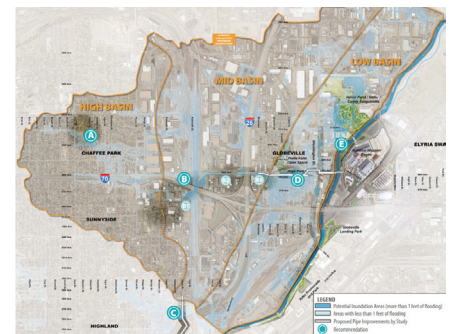
Donations can be made to the CASFM Scholarship fund by reaching out to Dan at the contact information above.

## CASFM ENGINEERING EXCELLENCE PROJECT AWARD

### 2021 CASFM AWARD RECIPIENT: GLOBEVILLE STORMWATER SYSTEMS STUDY

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 no longer meets FEMA criteria, which risks remapping the entire Globeville neighborhood back into the FEMA regulated floodplain.



### PREVIOUS CASFM AWARD RECIPIENTS

Year	Winning Project	Companies & Agencies
2021	Globeville Stormwater Systems Study	Merrick & Co.; City and County of Denver; OV
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

## 2022 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 2022, the Engineering Excellence Award will be given to a 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.

### 39TH AVENUE GREENWAY DESIGN-BUILD

SUBMITTED BY: FHU



[VIEW THE FULL SUBMISSION HERE](#)

The 39th Avenue Greenway Design-Build project, a transformative drainage and multimodal improvement project for the City of Denver, converted an abandoned railroad spur to an engaging linear park and stormwater conveyance feature. The project added vital drainage and water quality features in the Cole & Clayton neighborhoods while also providing a new 12-acre recreational greenway along 39th Avenue. This project was a vital part of the City's Platte to Park Hill program, which focused on transformational change to the collection and conveyance of stormwater in one of Denver's oldest neighborhoods. It brought together the culmination of years of work by the City of Denver and their partners to analyze, route and plan hydraulic improvements in the Montclair and Park Hill basins.

Plagued by regular flooding from storm events, this neighborhood was long overdue for an upgraded system to ensure neighborhood resiliency and quality of life. Coupling this significant drainage improvement with park amenities was the perfect combination for the shared buy-in from stakeholders to ensure project success. The 39th Avenue Greenway project provided the full suite of drainage upgrades for a neighborhood, including water quality through custom-designed trash vaults and forebays, water quality planters, conventional inlets and storm sewer systems and open channel conveyance. These improvements, designed with Mile High Flood District maintenance eligibility and approval, optimized the complex network of drainage solutions into a historic neighborhood.

### CHERRY CREEK (QUEBEC TO ILIFF) CORRIDOR IMPROVEMENTS

SUBMITTED BY: MULLER AND STREAM



[VIEW THE FULL SUBMISSION HERE](#)

In 2014, MHFD and CCD DOTI set out to provide channel stabilization on a severely eroded reach of Cherry Creek. By the time construction started five years later, a total of eight public agencies had invested in the project to help transform this reach of Cherry Creek from a public and environmental hazard into a 40-acre open space that not only improves channel stability and flood conveyance, but also provides huge benefits in recreation, ecological health, and water quality. Increased runoff caused by urbanization in the surrounding watershed, coupled with an extremely erodible sandy channel, resulted in up to 20 feet of vertical down-cutting and over 50 feet of lateral migration in several locations. The rate of erosion was exacerbated by the location of this reach being downstream of Cherry Creek Dam, bringing about lower sediment loads and annual dam gate flushes. As the project progressed, the team took a step back to look at the entire reach between Holly and Iliff, resulting in a bigger picture vision plan that looked holistically at the corridor. Fundraising, public partnerships, and a CWCB grant helped the design and construction team focus on remediating erosion and solve problems along the Creek that posed the biggest threat to properties and infrastructure. A partnership with Denver Water added open spaces, giving the project one continuous open space that stretches over 5.3 miles.

The 2022 Nominees are listed in no particular order.

## 2021-2022 CASFM SCHOLARSHIP RECIPIENTS



### BEN URBONAS SCHOLARSHIP HEAVEN MCKINLEY

The 2021-2022 CASFM Ben Urbonas Scholarship recipient is Heaven McKinley. Heaven is a full-time graduate student at Colorado School of Mines, studying Hydrology. Her interests include watershed modeling in support of flood risk mitigation and investigating the hydrologic impacts of climate change. In her coursework and internship experience, she has enjoyed creating hydrologic models using a variety of different programs, and finding ways to incorporate her commitment to social responsibility.

### FAMILY SCHOLARSHIP MIRA HOUCK

The 2021-2022 Family Scholarship recipient is Mira Houck. Mira graduated from Jefferson Academy in 2019. She currently attends Colorado Mesa University in Grand Junction, where she plays soccer and is pursuing a bachelor's degree in both sociology and elementary education. Her hope is to become a 3rd or 4th grade teacher with an emphasis on diversity and inclusion.



### UNDERGRADUATE SCHOLARSHIP JACKSON WINTERROWD

The 2021-2022 Undergraduate Scholarship recipient is Jackson Winterrowd. Jackson is from Olympia, Washington. He is a senior civil engineering student at CU Denver graduating in Spring 2022. He plans on completing a master's degree in Hydrologic, Environmental, and Sustainability Engineering in the Spring of 2023 also at CU Denver. After school, he plans on working in the private sector designing stormwater infrastructure and stream restoration projects that will protect communities from flood damage.

## 2022 DISASTER GRANT



As stewards of stormwater principles and practices, the CASFM supports Colorado citizens, agencies, and public servants in response to flooding and flood related disasters. In 2022, we made two \$5,000 donations to help the stormwater community that was affected by flooding, wildfire disasters, or flood related natural disasters.

### Middle Colorado Watershed Council (MCWC)

Since early 2021, the MCWC has coordinated post-Grizzly Creek Fire water quality (WQ) monitoring activities. In 2022-2024, they are expanding data collection and analysis by adding soil moisture sensors and additional in-channel water quality monitors. This will provide data for flood mitigation decision-making and early-notification of debris flow. The CASFM funds will support expansion efforts to work with USGS for placing equipment and monitoring.

### Terry Clingan

Flooding that resulted from the Cameron Park fire washed out most of Terry's private road (Deer Path St) and left a large debris field upstream. The CASFM funds will be used to remove the large debris field upstream from the culverts.

## 2022 RESEARCH GRANTS



### Danny White and Ryan Morrison

Alongside the Department of Civil and Environmental Engineering at Colorado State University, Danny and Ryan are currently conducting physical flume modeling experiments in a meandering compound channel with a range of floodplain vegetation densities. The funded project will conduct additional experiments of various flood depths and would contribute to an impressive dataset describing the nature of flow and geomorphic channel response to a range of floodplain vegetation densities and flood depths.

### Riley Lynch

The goal of Riley's project is to determine if rain gardens can be utilized at the residential scale to mitigate flooding and to reduce the total amount of stormwater that needs to be treated and managed by stormwater control measures. The project seeks to quantify the change in stormwater storage capacity of residential properties' landscapes after installing rain gardens in six cities along the Colorado Front Range. The research will be in collaboration with the Colorado Stormwater Center.

THANK YOU TO THE SPONSORS AND EXHIBITORS!

## PLATINUM

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## SPONSOR CONTACT LIST

<i>FIRM</i>	<i>CONTACT</i>	<i>PHONE</i>
<b>Advanced Drainage Systems</b>	Evan Fischgrund	720-250-8047
<b>Anderson Consulting Engineers, Inc.</b>	Leah Fiske	970-226-0120
<b>AquaShield, Inc.</b>	John Santos	916-850-9879
<b>Ayres Associates</b>	Mandy Hahn	612-618-2233
<b>Bohannon Huston, Inc.</b>	Craig Hoover	303-799-5103
<b>Bowman Construction Supply</b>	Lee Seaman	303-588-2418
<b>Calibre Engineering</b>	Emily Villines	303-730-0434
<b>Contech Engineered Solutions, LLC</b>	Jaimee O'Dea	720-413-3493
<b>Corvus Environmental Consulting</b>	Tim DeMasters	303-250-2118
<b>Dewberry</b>	Danny Elsner	303-951-0639
<b>ERO Resources Corporation</b>	Moneka Worah	303-830-1188
<b>Felsburg Holt Ullevig</b>	Patrick Stein	303-877-7687
<b>Galloway &amp; Company, Inc.</b>	Chris Pauley	719-900-7220
<b>Granite Seed</b>	Daniel Bradley	720-496-0600
<b>Hanes Geo Components</b>	Jack Knaub	303-514-2652
<b>HR Green, Inc.</b>	Greg Panza	720-602-4939
<b>ICON Engineering</b>	Jennifer Green	303-221-0802
<b>Kiewit</b>	Josh Hollon	303-478-4981
<b>Matrix Design Group</b>	Drew Beck	303-572-0200
<b>Merrick &amp; Company</b>	Dan Shea	303-800-9066
<b>Michael Baker International</b>	Kevin Doyle	303-503-9871
<b>Muller Engineering Company</b>	Jim Wulliman	303-988-4939
<b>Nilex, Inc.</b>	Richard Nelson	303-951-5764
<b>Olsson</b>	Deb Ohlinger	300-374-3104
<b>RESPEC</b>	Rebecca Moser	720-775-6416
<b>StormTrap</b>	Stephen Jackson	303-913-0607
<b>Stream Landscape Architecture</b>	Jesse Clark	720-663-7352
<b>Triton - Powered by Ferguson</b>	Dean Lamanna	720-587-7748
<b>US Flood Control Corp.</b>	Cheri Zimmerman	303-921-5566
<b>Valerian, LLC</b>	Cassie Kaslon	303-905-8483



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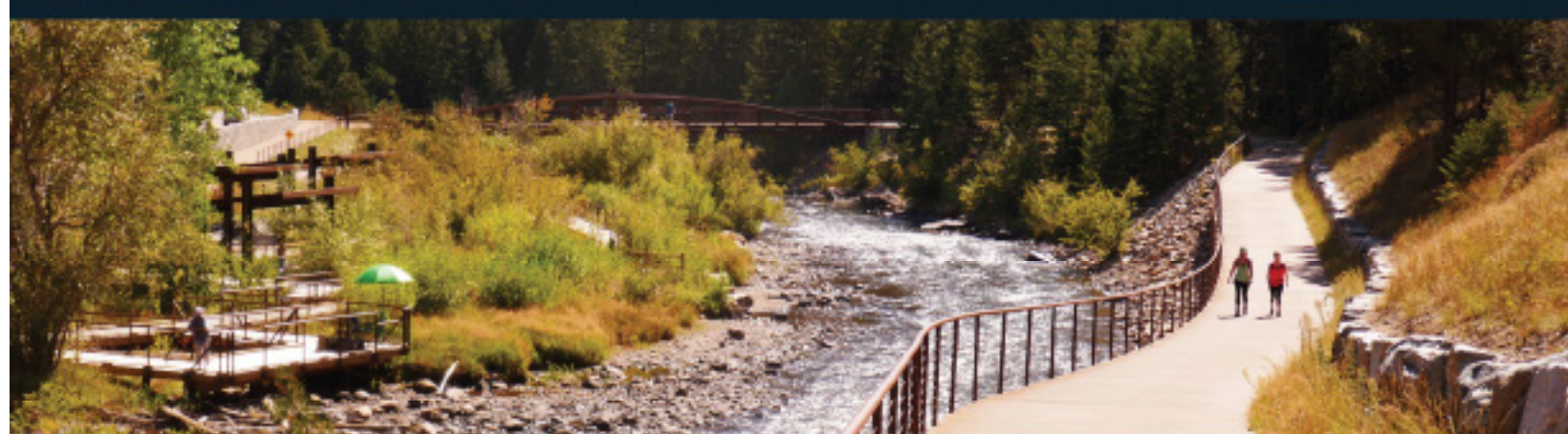
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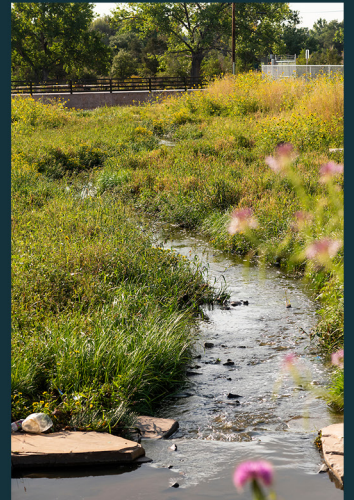


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# COLORADO FLUVIAL HAZARD ZONE

## **IN-PERSON Colorado Fluvial Hazard Mapping Program**

### **Module 1 | Option 1**

**September 13, 2022 | 11:00am—4:00pm**

In Association with the Annual  
CASFM Conference—Steamboat Springs, CO  
Capacity: 30 | 4 CEC's

Early Bird Registration: \$225 (register by 08/01/22)

Late Registration Fee: \$275 (08/02/22—09/12/22)

## **VIRTUAL Colorado Fluvial Hazard Mapping Program**

### **Module 1 | Option 2**

**October 7, 2022 | 9:30am—2:00pm**

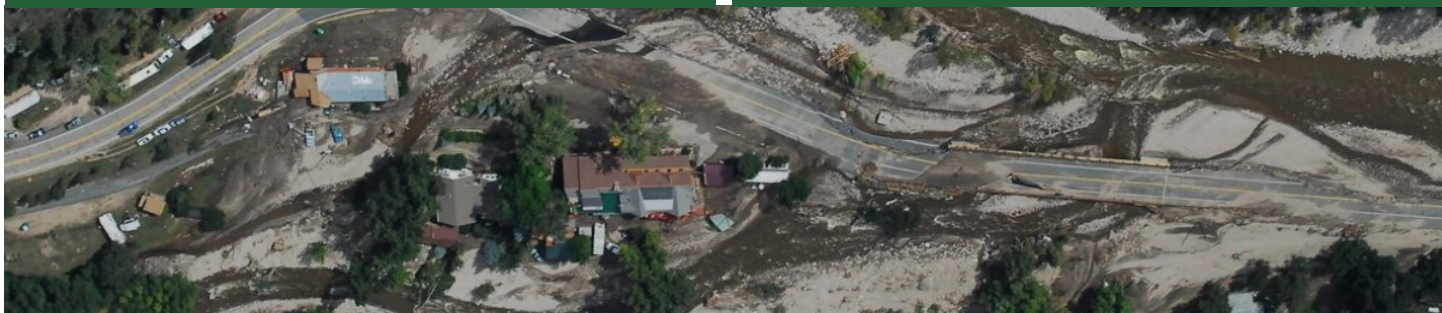
Via Zoom (link to be provided)  
Capacity: 100 | 4 CEC's

Early Bird Registration: \$150 (register by 08/01/22)

Late Registration Fee: \$200 (08/02/22—10/06/22)

<https://registration.socio.events/e/sept13fhztrainingmod1opt1>

<https://registration.socio.events/e/oct7fhztrainingmod1opt2>



## **MODULE 1: Fluvial Geomorphic Processes, Hazards, and Opportunities in Stream Corridors**

**Instructors: Michael Blazewicz | Katie Jagt, PE, CFM | Joel Sholtes, PhD, PE**

Streams are not lines, they are corridors! Stream corridors are naturally dynamic environments that bring together physical, biological, and chemical processes all while supporting a host of societal and ecological benefits. When streams and floodplains are treated as static lines on the landscape, stream health declines and risk to human-made infrastructure increases. Providing streams the space they need to accommodate and facilitate natural processes and functions is becoming a central tenet in land, water, and floodplain management practices. But how do we define the stream corridor and effectively communicate the importance of protecting and restoring the processes that define them? What tools are commonly used to protect and restore stream corridors and how well do they really accomplish this? How do we strategically focus watershed and community-level planning to protect stream corridor functions given limited funding and time?

### **What Will You Learn?**

Participants will be introduced to stream corridor processes (physical and biological) and the various ways of defining them. You will explore more and less compatible management practices and opportunities within stream corridors. Participants will identify and understand the fundamental processes and components of Fluvial Hazard Zone maps and how the FHZ Mapping Program can be applied to manage the stream corridors under their purview.

### **Who Should Attend?**

Anyone interested in stream corridors and functional floodplains—ecological, regulatory, and geomorphic. No prerequisites necessary! This includes (but is not limited to) municipal planners and staff or managers in public works, floodplains and stormwater departments; consultants; and state or federal agency staff with purview over stream corridor regulation, projects, permitting, or other forms of stream management.

*\*A second, full-day technical module will follow this for those interested in mapping techniques, hands-on learning, and applications.\**



# COLORADO FLUVIAL HAZARD ZONE

## IN-PERSON Colorado Fluvial Hazard Mapping Program

### Module 2 | Option 1

**October 19, 2022 | 8:30am—5:00pm**

includes lunch & afternoon field component

**Colorado Mesa University—Grand Junction, CO**  
(University Center—Room UC 221)

Capacity: 30 | 7 CEC's | see equipment requirements below

Early Bird Registration: \$310 (register by 09/01/22)

Late Registration Fee: \$375 (09/02/22—10/18/22)

<https://registration.socio.events/e/oct19fhztrainingmod2opt1>

## IN-PERSON Colorado Fluvial Hazard Mapping Program

### Module 2 | Option 2

**November 10, 2022 | 8:30am—5:00pm**

includes lunch & afternoon field component

**Longmont Museum—Longmont, CO**  
(Kaiser Meeting Room C)

Capacity: 30 | 7 CEC's | see equipment requirements below

Early Bird Registration: \$310 (register by 09/01/22)

Late Registration Fee: \$375 (09/02/22—11/09/22)

<https://registration.socio.events/e/nov10fhztrainingmod2opt2>

## MODULE 2: Mapping the Fluvial Hazard Zone: Field and Desktop Methods and Tools

**Instructors: Michael Blazewicz | Katie Jagt, PE, CFM | Joel Sholtes, PhD, PE**

Mapping Fluvial Hazard Zones (FHZs) involves knowledge and interpretation of a wide variety of field and remotely-sensed data pertaining to geology, landform evolution, stream evolution, watershed processes, soils, valley-scale river processes, riparian vegetation, human interventions and hydraulics. As such, the FHZ mapper's understanding of process-based fluvial geomorphology, especially as it applies to the progressive or acute changes to channels, hillslopes, and flood-plains, is critical for FHZ map development. Join us for this one-day, hands-on FHZ mapping short course designed for technical experts seeking to create and/or apply FHZ maps. We will learn more about the components of FHZ maps, decision-making, and documentation during the mapping process as guided by background research, desktop GIS applications, and field observations.

### **What Will You Learn?**

Building off of Module 1 we will apply an understanding of the hydrologic, geomorphic, and biotic context of a stream corridor system to determine geomorphic trajectory and sensitivity. We will then apply this context to delineating FHZ mapping components based on the methods outlined in the Colorado Water Conservation Board FHZ Mapping Protocol (v1.0). We will learn and apply GIS tools for mapping the FHZ and also conduct a field trip in which we will make and integrate field based observations into our FHZ delineations.

### **Who Should Attend?**

Our target audience are technical experts in river corridor management who will be creating or reviewing, interpreting, and applying FHZ maps for stream corridor management. For those without backgrounds in surface hydrology and fluvial geomorphology, attending the Colorado Fluvial Hazard Zone Mapping Program - **Module 1 is a strongly recommended prerequisite.** Additionally, attendees should be proficient with ESRI's ArcGIS (ArcMap or ArcGIS Pro).

### **Equipment Requirements**

Laptop with ERSI ArcMap version 10.7 or higher (basic license or above) or ArcGIS Pro. Spatial and 3D Analyst are required for use of the FHZ tools—however, if you do not have these extensions, we can provide a demonstration and the output from the tools for the class example(s).

**QUESTIONS? Contact Michael Blazewicz: [michael@roundriverdesign.com](mailto:michael@roundriverdesign.com)**



# SCHEDULE AT-A-GLANCE

Tuesday, September 13, 2022				
11:00 AM	WORKSHOP: Fluvial Hazard Training			
11:30 AM				
12:00 PM			Lunch	WORKSHOP: Denver Green Continuum
12:30 PM				
1:00 PM				
1:30 PM		WORKSHOP: CDOT 2D Modeling Application & Best Practices		WORKSHOP: FEMA Benefit-Cost Analysis Best Practices
2:00 PM				
2:30 PM				
3:00 PM				
3:30 PM				
4:00 PM				
4:30 PM				
5:00 PM	Dinner on your own			
5:30 PM				
6:00 PM	Conference Kick-Off Social We're Back Baby!!!			
6:30 PM				
7:00 PM				
7:30 PM				
8:00 PM				
8:30 PM				
9:00 PM				
9:30 PM				

Thursday, September 15, 2022			
7:00 AM	Morning Yoga		
7:30 AM			
8:00 AM	Breakfast & Committee Meetings		
8:30 AM			
9:00 AM			
9:30 AM			
10:00 AM	Colorado Wildfire Special Session: Regional Implementation of Customizable Data Dashboard for Post-Fire Water Quality and Precipitation Informationm   Featured Session: The Calwood Burn Area, Year Two of Post Wildfire Hydrologic Monitoring   Challenges of Strategies for Quantifying the Effects of Land Disturbance on Hydrologic Fluxes in the Intermountain West		
10:30 AM	CASFM Toastmasters		
11:00 AM	2022 CASFM Award Finalists		
11:30 AM			
12:00 PM	Lunch		CASFM Board Meeting
12:30 PM			
1:00 PM			
1:30 PM	Technical Sessions: Modeling	Technical Sessions: Water Quality	Technical Sessions: Potpourri
2:00 PM			
2:30 PM			
3:00 PM			
3:30 PM	Technical Sessions: Modeling	Technical Sessions: Water Quality	Technical Sessions: Potpourri
4:00 PM			
4:30 PM			
5:00 PM	Happy Hour		
5:30 PM			
6:00 PM			
6:30 PM			
7:00 PM	CASFM Dinner & Awards Ceremony		
7:30 PM			
8:00 PM			
8:30 PM			
9:00 PM	Entertainment		
9:30 PM			
10:00 PM			
10:30 PM			
11:00 PM			
11:30 PM			
12:00 AM			

Wednesday, September 14, 2022			
7:00 AM	Morning Yoga	CFM Exam	
7:30 AM			
8:00 AM			Registration and Breakfast
8:30 AM			
9:00 AM			
9:30 AM			
10:00 AM	CASFM Chair Welcoming Remarks & Keynote Address "Coalition of the Willing" by Nick Kittle		
10:30 AM			
11:00 AM			
11:30 AM	General Membership Meeting & Lunch		
12:00 PM			
12:30 PM			
1:00 PM			
1:30 PM	Technical Sessions: People	Technical Sessions: Stream Restoration	Technical Sessions: Floodplain Management
2:00 PM			
2:30 PM			
3:00 PM			
3:30 PM	Technical Sessions: People	Technical Sessions: Stream Restoration	Technical Sessions: Floodplain Management
4:00 PM			
4:30 PM			
5:00 PM	Happy Hour		
5:30 PM			
6:00 PM			
6:30 PM	Dinner on your own		

Friday, September 16, 2022			
7:00 AM	Morning Yoga	Breakfast	
7:30 AM			
8:00 AM			
8:30 AM	CASFM Chair Closing Remarks		
9:00 AM			
9:30 AM	Mountain Bike Tour		
10:00 AM		Field Trip: Lower Burgess Creek Walking Tour	Golf Tournament Haymaker Golf Course
10:30 AM			
11:00 AM			
11:30 AM			
12:00 PM			
12:30 PM			
1:00 PM			
1:30 PM			
2:00 PM			

	CFM Exam
	Workshops & Sessions
	Meals
	Social Events

**SEE YOU NEXT  
YEAR AT THE 34th ANNUAL  
CASFM CONFERENCE!**  
**#CASFM2023**

**September 18 - 20, 2023**

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