



# COMMUNICATION MEETS LEADERSHIP: THE FUTURE OF WATER



2017 Annual Conference  
September 19-22, 2017  
Beaver Run Resort & Conference Center  
Breckenridge, CO

## WELCOME TO THE 28TH ANNUAL CASFM CONFERENCE!

The CASFM Conference Committee has spent the past year planning instructive activities for conference attendees while also including time to socialize with old friends and to hopefully make new acquaintances in a beautiful mountain setting. It is our hope that everyone making the trek to Breckenridge gets to experience fantastic speakers, outstanding workshops, informative presentations, and time in the mountains to recharge.

Our theme this year - "Communication Meets Leadership: The Future of Water" - was inspired by Chris Warner, CEO, mountaineer, and instructor at the Wharton School of Business. Chris uses his gripping mountaineering stories and Emmy-nominated footage to illustrate the need for all of us to build better teams. Building on the leadership theme, the other featured speakers, technical track presenters, and project award nominees are representative of Colorado's outstanding leaders in the stormwater and floodplain management community. The conference program reflects the current state of the stormwater and floodplain management community in Colorado by highlighting the innovations in projects and programs located throughout the state.

The Conference Committee would like to thank the numerous presenters, sponsors, volunteers, and attendees that make the conference a success. We rely on you to guide CASFM and the annual conference.



Sarah Houghland  
Conference Chair  
Enginuity Engineering Solutions



### THANK YOU, ROBERT!

Robert Krehbiel was actually serious when he announced that he was stepping down as Conference Chair at the opening of last year's conference! There are few CASFM members that can remember a conference where Robert was not prominently involved in planning the event. He served as the Program Coordinator in 2001 & 2002, and he has been the Conference Chair since 2003. During this time, Robert also volunteered in other positions for the organization. The Conference Committee and the CASFM membership would like to extend our appreciation to Robert for his efforts to make the conference a success for all of these years and for his other contributions to CASFM. Robert will continue to help out with conference planning and to support CASFM, and we are fortunate that he has not completely retired from the group! Thanks again, Robert!



### 2017 CASFM CONFERENCE COMMITTEE

Conference Chair	Sarah Houghland, Enginuity Engineering Solutions
Facilities Coordinator	Stuart Gardner, CDOT
Registration Coordinator	Alan Turner, CH2M
Vendor & Sponsorship Coordinator	Deb Ohlinger, Olsson Associates
Program & Media	Emily Murphy & Danielle Lewis, Calibre Engineering
Awards Coordinator	Colin Wagoner, CALIBRE Systems
Golf Tournament	John Loranger, AMEC Foster Wheeler
Field Trip Coordinator	Julia Traylor, Wright Water Engineers
Mountain Bike Tour	Rich Ommert, RESPEC

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JOIN THE CONFERENCE CONVERSATION:  
#CASFM2017



**CHAIR** DEB OHLINGER Olsson Associates



**VICE CHAIR** MORGAN LYNCH Urban Drainage & Flood Control District



**SECRETARY** STACEY THOMPSON SEMSWA



**TREASURER** MYLES GARDNER CH2M



**NE REGION REP** ANDREW FISHER City of Greeley



**NW REGION REP** JONATHAN KELLY Wright Water Engineers



**SE REGION REP** KEVIN BINKLEY MWH - Stantec



**SW REGION REP** STEVE WESTBAY City of Gunnison



**METRO REGION REP** DEBBIE FISHER Water Engineering Sol.



# 2017-2018 OFFICERS & REGIONAL REPS





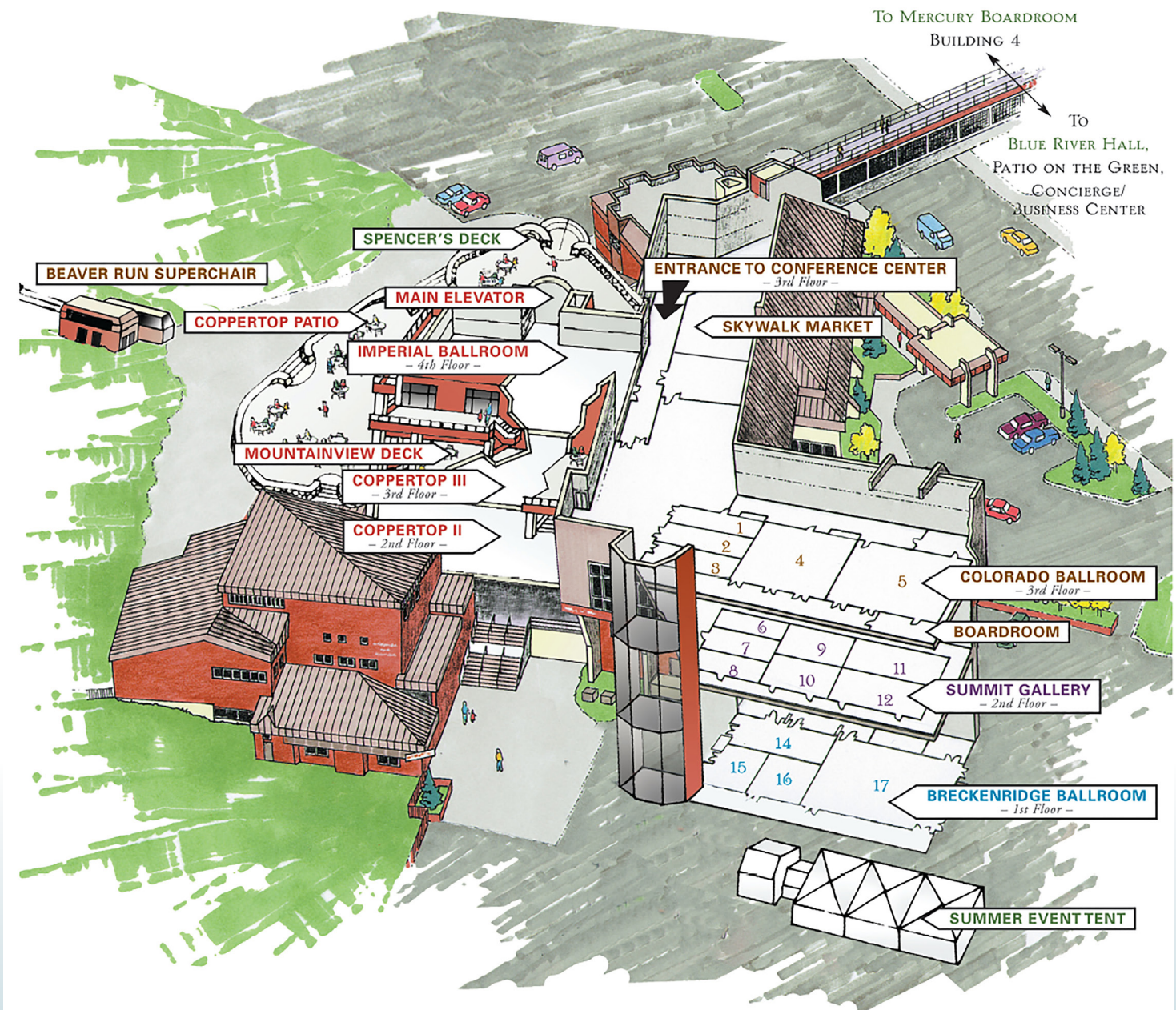
## BEAVER RUN SITE MAP



**\* ALL CONFERENCE ACTIVITIES WILL TAKE PLACE IN THE COMMONS BUILDING. PLEASE SEE NEXT PAGE FOR THE COMMONS BUILDING MAP.**



# COMMONS BUILDING MAP





## TUESDAY, SEPTEMBER 19, 2017

**8:00AM TO 5:00PM**

**Floodplain 101**

Location: Imperial Ballroom

**1:00PM TO 5:00PM**

**Workshop: Technical Bulletin 17C Updates** | David Sutley  
- FEMA Region VIII

Location: Coppertop II

**1:00PM TO 5:00PM**

**Workshop: Effective Community**

**Communication** | Kellie Mullen - Ogilvy/ Resilience Action Partners

Location: Coppertop III

**1:00PM TO 5:00PM**

**Workshop: Code Camp for Engineers - A Crash**

**Course in Python Programming** | David Delagarza & Mike  
Bannister - RESPEC

Location: Summit Gallery (2nd Floor)

**5:00PM**

**Dinner on Your Own**

**8:00PM TO 9:00PM**

**Ice Breaker Social**

Location: Vendor Area

Sponsored By: Contech



## WEDNESDAY, SEPTEMBER 20, 2017

**7:00AM TO 8:00AM**

**Yoga** | Susan Pearson - Town of Silverthorne

Location: Summit Gallery Peaks 6-8

**7:00AM TO 10:00AM**

**Certified Floodplain Manager Exam**

Location: Imperial Ballroom

**7:30AM TO 9:00AM**

**Registration and Breakfast**

Location: Vendor Area

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

**CASFM Chair Welcome Address** | Shea Thomas - UDFCD

Location: Colorado Ballroom (top floor)

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

**Asset or Liability** | Penn Gildersleeve and Invited Guests

Location: Colorado Ballroom (top floor)

**10:30AM TO 11:30AM**

**Keynote Address - "High Altitude Leadership: Lessons from the Death Zone"** | Chris Warner - Brooks Institute

Location: Colorado Ballroom (top floor)

**11:30AM TO 1:30PM**

**Lunch - Grant Award Winner Presentation & ASFPM Foundation Video**

Location: Breckenridge Ballroom (1st Floor)

**11:30AM TO 1:30PM**

**Board Member Meeting**

Location: To Be Announced

**1:30PM TO 5:00PM**

**Technical Sessions**

**3:00PM TO 3:30PM**

**Break**

**EMERGENCY PREPARATION & RISK MGMT.**

Location: Colorado Ballroom Peak 5 (top floor)

Moderator: Monica Bortolini - City of Longmont

**DEVELOPING A HOLISTIC FLOOD RISK INFORMATION SYSTEM (FRIS) FOR COLORADO 1:30PM**

Thuy Patton & Maddy Kelley - CWCB

A more holistic flood risk platform may help provide homeowners and local governments with a better understanding of individual flood risk so that they can take proper action. A pilot Flood Risk Information System has been developed in Boulder County.

**RISK EVALUATION OF SMALLER LEVEE SYSTEMS – A PROTOTYPE 2:00PM**

Mark Baker - NPS; Kayla Ranney - HDR

The National Park Service (NPS) has inherited or constructed smaller levee systems. Based on their risk-based dam safety program, NPS is prototyping a levee risk management program to evaluate levee conditions and determine action based on risk of levee failure.

**FLOOD RISKS FROM SPILLWAYS: MODELING AND COMMUNICATING NON-DAM-FAILURE IMPACTS TO NATIVE AMERICAN TRIBES 2:30PM**

Rinda Tisdale, Matt Young & Lee Mauney- US Bureau of Indian Affairs

The Bureau of Indian Affairs' Dam Safety Branch has recently produced a number of innovative methods of communicating flood risks below dams to Native American Tribes. This presentation explains each of these methods and their utilization during emergency preparedness.

**ASPEN MUD AND DEBRIS FLOW ASSESSMENT 3:30PM**

Andrew Earles- Wright Water Engineering; April Long - City of Aspen; Dai Thomas - Tetra Tech; Catherine Berg - Pitkin County

This presentation summarizes the Aspen mud and debris flow assessment. A team of engineers, geomorphologists, and geologists began work in 2016 to update mudflow and mudflood hazard mapping. The study included evaluation of risks, economic impacts, and mitigation.

**MONUMENT CREEK WATERSHED RESTORATION MASTER PLAN 4:00PM**

Graham Thompson & Drake Ludwig – Matrix Design Group; Richard Mulledy - City of Colorado Springs; Larry Small - Fountain Creek Watershed Flood Control & Greenway District

Matrix Design Group partnered with FCWFCGD, Colorado Springs, El Paso County, Colorado Springs Utilities, and USAFA to create the Monument Creek Watershed Restoration Master Plan, which identified strategies to mitigate post-fire effects and reduce flood damage within the watershed.

**SUMMARY OF 2013 FLOODING NEAR ARBOLES, COLORADO, WITH A COMPARISON TO MAXIMUM FLOODING FOR SMALL BASINS IN SOUTHWESTERN COLORADO 4:30PM**

Robert D. Jarrett

This presentation provides floodplain managers with a methodology to cost-effectively document the magnitude and estimate the frequency of ungaged 2013 flooding near Arboles, Colorado, using paleoflood hydrology, thereby improving the understanding of flood hazards.



## STREAM RESTORATION

**Location: Colorado Ballroom Peak 1- 4 (top floor)**

**Moderator: Kevin Doyle - Michael Baker International**

### GRAND COUNTY, STREAM MANAGEMENT PLANNING, AND LEARNING BY DOING 1:30PM

**Peggy Bailey - Tetra Tech**

Colorado's Water Plan identifies stream management planning as a critical element for the protection and restoration of Colorado rivers and streams, with a goal of a Stream Management Plan being developed for 80% of Colorado's important rivers and streams. The Colorado Water Plan suggest these stream management plans include the identification of metrics for assessing river health and resiliency and develop a clear path of implementation to meet the plan objectives.

### NORTH DOUGLAS CREEK RESTORATION AND POST-FIRE MITIGATION 2:00PM

**Thomas Donahue & Jason Messamer - Matrix Design Group; Adam Cooper - Colorado Springs**

Through applying creative natural channel restoration techniques along North Douglas Creek, massive sediment flows resulting from the Waldo Canyon Fire were minimized while reducing downstream erosion and potential inundation risks to hundreds of Colorado Springs residents in this multi-phased project.

### THE GOOD, THE BAD, AND THE UGLY OF CREATING AND IMPLEMENTING A SHORT TIME-FRAME PLANT MATERIALS PROGRAM FOR COLORADO FLOOD RECOVERY 2:30PM

**Randel Mandel & Sara Copp Franz - Great Ecology**

This talk will discuss the specifics of creating a technically sound plant materials program in a short time-period, focusing on successes, challenges, and necessary compromises to meet the needs of 134 recovery projects over a two-year period. Propagule collection and increase, as well as the storage, provision, and implementation of seed, containerized stock, and cuttings, will be discussed in detail.

### USING ECOLOGICAL FUNCTIONS APPROACH TO MEASURE STREAM RESTORATION GOALS 3:30PM

**Moneka Worah - ERO Resources Corporation**

ERO created the Ecological Functions Approach as a method in determining ecological impacts and ecological lift from project activities where several sensitive resources occur. ERO believes this method is a valuable tool for designing and monitoring stream restoration projects.

### ENCOURAGING ST. VRAIN RESILIENCY THROUGH THE USACE SECTION 205 PROGRAM IN LONGMONT 4:00PM

**Jordan Williams - CDM Smith; Monica Bortolini - City of Longmont**

This presentation will cover the USACE Section 205 feasibility study on the St. Vrain Creek through the City of Longmont. We will cover key components of the process including: existing conditions evaluation, alternatives analyses, and selection of a recommended plan.

### REBUILDING ROADS AND CREEKS TOGETHER: OVERCOMING BARRIERS TO SUCCESSFUL INTEGRATION OF NATURAL ENVIRONMENT REHABILITATION WITH RECONSTRUCTION OF THE BUILT ENVIRONMENT 4:30PM

**Clarissa Hageman & Peter Reinhardt - Boulder County; John C. Sabo - Alfred Benesch & Company**

Boulder County Transportation Department will draw on their experiences with stream/road construction projects in five major drainages to describe how barriers to integration of transportation, flood risk reduction, and stream restoration practices can be successfully managed and overcome.

## GREEN INFRASTRUCTURE & LID

**Location: Summit Gallery Peaks 9 -12 (2nd Floor)**

**Moderator: Brent Kaslon - Valerian**

### DESIGN VERIFICATION OF MICROPOOL AT EDB 502L 1:30PM

**Saman Mehdi - Jacobs; Jeremy Deischer - ICON Engineering**

The current design process doesn't consider the effect that particle size and density of organic matter have on the design of a micropool. By collecting soil samples, the engineer can use the data to design a more effective micropool.

### SNIFF THIS! 2:00pm

**Saeed Farahmandi & Darren Mollendor - City and County of Denver**

Denver has gotten creative when it comes to infrastructure management and reducing E.coli in the South Platte River. As compliance deadlines loom, their remediation team has had to innovate and think outside of the box. Now they present "Sniff This" the newest tool in IDDE.

### STORMWATER QUALITY VS. SPACE 2:30PM

**Chad Cantrell & Cody Gratny - JVA, Inc.**

Incorporating water quality systems into building and campus designs without sacrificing aesthetics.

### IMPACT OF DEICERS ON CHLORIDE CONCENTRATIONS IN AN URBAN STREAM - A CASE STUDY IN FORT COLLINS 3:30PM

**Tyler Dell - Colorado Storm Water Center; Susan Strong - City of Fort Collins; Chris Olson, Innovyze**

A study evaluating the amount of chlorides from roadway deicing operations (RDO) delivered to an urban stream within Fort Collins and the potential impacts on water quality.

### LOW IMPACT DEVELOPMENT RETROFIT AFTER 20 YEARS AT BOULDER, CO OFFICE BUILDING 4:00PM

**William Wenk - Wenk Associates; Natalie Phares & Jonathan Jones -Wright Water Engineers**

Presentation of a long-term study on Low Impact Development techniques for stormwater management, including advancement in technologies, durability, operation and maintenance, and effectiveness.

### INFRASTRUCTURE IMPROVEMENTS USING LOW IMPACT DEVELOPMENT BEST MANAGEMENT PRACTICES 4:30PM

**Ajay Jain - HR Green, Inc.**

The application of Low Impact Development (LID) techniques in site development has matured over the last decade. The LID techniques used by HR Green in multiple types of projects in multiple geographies will be presented via three separate case studies.

**5:00PM TO 6:30PM**

**Happy Hour**

**Location: Vendor Area**

**Sponsored by: RESPEC**



## THURSDAY, SEPTEMBER 21, 2017

**7:00AM TO 8:00AM**

**Yoga | Susan Pearson - Town of Silverthorne**

**Location: Summit Gallery Peaks 6-8**

**7:30AM TO 9:00AM**

**Breakfast**

**Location: Breckenridge Ballroom (1st Floor)**

**Sponsored By: Triton Environmental**



**8:30AM TO 9:00AM**

**CASFM Committee Meet-and-Greet**

**Location: Breckenridge Ballroom (1st Floor)**

## 9:00AM TO 10:30AM

**2017 CASFM Award Finalists** | Moderated By: Colin Wagoner  
- Calibre Systems

Location: Colorado Ballroom (top floor)

## 10:30AM TO 11:30AM

**Lessons and Observations from the Middle of Major Stormwater Permit Litigation** | Travis Easton - City of

Colorado Springs; Alan Gilbert - Ryley, Carlock & Applewhite

Location: Colorado Ballroom (top floor)

## 11:30AM TO 1:00PM

**General Membership Lunch Meeting**

Location: Breckenridge Ballroom (1st Floor)

## 1:30PM TO 5:00PM

**Workshops and Sessions**

## 3:00PM TO 3:30PM

**Break**

### FLOODPLAIN MANAGEMENT

Location: Colorado Ballroom Peak 5 (top floor)

Moderator: Noelle Beegle - Alfred Benesch & Company

**LOCAL ADOPTION AND USE OF BEST AVAILABLE FLOODPLAIN INFORMATION: BOULDER COUNTY LESSONS LEARNED 1:30PM**

Harry Katz - Boulder County; Stephanie DiBetitto - CWCB

Boulder County has locally adopted CWCB/CHAMP floodplain mapping before publication on effective FEMA FIRMs. Boulder County now has more accurate representation of where flooding will likely occur and can more effectively manage floodplains to protect health, safety, and welfare, while increasing resiliency.

**LARGE SCALE AUTOMATED ENGINEERING IN FEMA REGION VIII 2:00PM**

Brian Murphy - CDM Smith

Recent innovations and efficiencies in hydraulic modeling and floodplain mapping have allowed FEMA to improve the First Order Approximation processes, now known as Large Scale Automated Engineering (LSAE). 2-D modeling allows large areas to be modeled with increased accuracy and shorter durations to address current Risk MAP program challenges, including the validation of Zone A studies and the availability of flood risk data in the early stages of a Flood Risk Project.

**THE CHALLENGES OF UPDATING REGULATORY HYDROLOGY AND FLOODPLAIN MAPPING – A CASE STUDY OF ESTES PARK, COLORADO 2:30PM**

Andrew Earles - Wright Water Engineers; Kevin Houck - CWCB; Tina Kurtz - Estes Park; Rigel Rucker & Isaac Allen - AECOM

This presentation will include an overview of the technical aspects of updating the Town of Estes park regulatory hydrology, hydraulics, and floodplain mapping, as well as non-engineering aspects related to public involvement, public messaging, outreach, and working with multiple stakeholders.

### PROFESSIONAL DEVELOPMENT

Location: Colorado Ballroom Peak 5 (top floor)

Moderator: Noelle Beegle - Alfred Benesch & Company

**INCREASE PUBLIC ENGAGEMENT: VIRTUAL REALITY TO RELAY RACES 3:30PM**

Sandra Bratlie & Heidi Hansen - City of Fort Collins

From virtual reality to relay races, new technology and techniques are used to help educate and engage the public in the City of Fort Collins floodplain and stormwater outreach events.

### ENGINEERING MEETS SALES: THE PROCESS OF CULTIVATING LIKABILITY 4:00PM

Emily Murphy - Calibre Engineering, Inc.

In addition to your design role, you've been asked to meet with clients, find work, and represent the firm. Welcome to the Seller-Doer Model. People do business with people they like, and this session will focus on cultivating likability.

### EVERYTHING IS AWESOME WHEN YOU'RE PART OF A DESIGN BUILD TEAM 4:30PM

Amy Foreman, Ryan Crum, & Sam Stevens - City & County of Denver

Overview of the City & County of Denver's Platte to Park Hill Stormwater Systems Program. We will highlight the Design-Build process and discuss how teamwork and collaboration were keys to a successful project procurement.

### TECHNICAL MODELING

Location: Colorado Ballroom Peak 1- 4 (top floor)

Moderator: Michelle Iblings - Tretra Tech

**2D MODELING AS THE TOOL OF CHOICE: HYDRAULIC ANALYSIS OF LOWER MAIN STREET BRIDGE IN JAMESTOWN 1:30PM**

Anthony Alvarado & James Hitchman - Ayres Associates;

Jennifer Aieta - ACE Engineering

2D modeling is quickly replacing 1D modeling as the recommended tool for bridge hydraulics. For analyzing Lower Main Street over James Creek in Jamestown, 2D modeling provided more detailed and accurate insight while still being cost effective.

**SMOOTH TRANSITION - HOW TO ADJUST MANNING'S N VALUES FOR 2D MODELING 2:00PM**

Andrew Friend & Mark McBroom - Michael Baker International

Manning's n values should be different for 2D models than for 1D models. But by how much? This presentation will highlight our research on several case studies and discuss Manning's n selection for 2D models.

**TOOL OF CHOICE 2:30PM**

Dusty Robinson - Ayres Associates

What if you could predict where erosion will occur during a flood? What if you could have greater insight into the hydraulic conditions for your project? If you're a hydraulic geek, this session is for you.

**PREDICTING HABITAT RESTORATION SUCCESS WITH 2D HYDRAULIC MODELING 3:30PM**

Kevin Doyle & Russell Anderson - Michael Baker International

Improving in-stream habitat is a desirable end condition for stream restoration activities, but quantifying a design's potential benefit to in-stream habitat is not a part of most stream restoration budgets. In this talk, we will discuss how to co-opt the stream restoration design process to extract actionable information on in-stream habitat improvement using surveying, surface creation, H&H, and analysis to generate the inputs of an in-stream habitat model. The flood recovery efforts on the North St. Vrain outside of Lyons provides a case study of this process.

**EDUCATING A 1D DYNAMIC SWMM MODEL USING FLO-2D: A CASE STUDY OF THE OLD TOWN DRAINAGE BASIN IN FT. COLLINS 4:00PM**

Jeremy Deischer - ICON; Beck Anderson - FOCO

The Old Town Drainage Basin in Ft. Collins was recently converted from MODSWMM to EPA SWMM. To more accurately model flow diversions at individual intersections, FLO-2D was utilized to develop rating curves to calibrate the EPA SWMM model.

**SELECTING THE RIGHT MODEL 4:30PM**

Josh Hollon & Brinton Swift - HDR

With the wide range of hydraulic modeling software available, ranging from overly simplistic to unsteady and complex 3-dimensional, this presentation walks through a basic flow chart to support selection of



an appropriate hydraulic model for various project conditions.

## STORMWATER MGMT. & MASTER PLANNING

**Location: Summit Gallery Peaks 9 -12 (2nd Floor)**

**Moderator: Drew Beck - Matrix Design Group**

### THE REDEVELOPMENT OF ORIGINAL AURORA: WHERE STORMWATER AND URBAN PLANNING MEET 1:30PM

**Jon Villines - City of Aurora; Benjamin Murphy - Calibre Engineering, Inc.**

From the wildly popular Stanley Marketplace to the bustling Fitzsimons Medical Campus and the brand new RTD R-Line Light Rail, Original Aurora (the oldest part of Aurora) is the City's next frontier for urban redevelopment. The location, age, and density of this area has required drainage engineers and planners to work side-by-side as the area redevelops. This presentation will discuss the unique challenges of urban redevelopment, including widespread use of LID BMPs, applying modern MS4 and floodplain regulations to redevelopment areas, multi-use stormwater, parking, and parks facilities.

### DEVELOPING A PRIORITY MATRIX FOR CAPITAL PLANNING 2:00PM

**David Van Dellen - Town of Castle Rock**

Castle Rock has over 70 miles of drainageways and \$88 million in planned improvements. Setting priorities is challenging given our highly erosive soils, steep terrain, and rapid growth. Presented is a decision-making tool to objectively rank improvements based on seven guiding principles.

### A NEW ERA OF STORMWATER MANAGEMENT 2:30PM

**Richard Mulledy - City of Colorado Springs**

In April of 2016, Colorado Springs entered into a historic intergovernmental agreement committing to invest \$460 million dollars over two decades on stormwater management activities. This presentation will explore the future of stormwater management in the City and Southern Colorado.

### DO YOU KNOW YOUR OUTFALL FROM A HOLE IN THE GROUND? PLACE-MAKING CONSIDERATIONS FOR URBAN DRAINAGE INFRASTRUCTURE THAT CONNECTS TO NATURAL WATERWAYS AND PONDS 3:30PM

**Paul Thomas & Jesse Clark - Stream Design Landscape Architecture; Chris Kroeger - Muller Engineering**

As city stream corridors continue to be restored and developed into important amenities for urban dwellers, drainage infrastructure—especially culvert outfalls—are popping up in some very high-profile places. Standard flared wingwalls and riprap solutions in these locations are probably not going to be what city leaders are envisioning. This presentation discusses approaches and case studies of how major drainage outfalls can be designed to be attractive and functional features that fit their sensitive contexts.

### PUTTING "ONE WATER" INTO STORMWATER EDUCATION 4:00PM

**Donny Roush & Darren Mollendor - Denver Public Works**

"One Water" continues to drive integration across water sectors professionally. Not much has been done to introduce this concept to wider audiences. But within Denver's MS4, we are trying. Come hear how.

### GEOSPATIAL TECHNOLOGY: A PLATFORM FOR SUCCESSFUL STORMWATER MANAGEMENT 4:30PM

**Jim Kelly - Ayres Associates**

Geospatial data and technology is a critical tool for effective stormwater and floodplain managers. We'll not only discuss the LiDAR and mapping technology essential to stormwater management, but also ways promote regional cooperation and cost sharing initiatives.

## 5:00PM TO 6:30PM

### Happy Hour

**Location: Vendor Area**

**Sponsored By: ERO Resources Corporation**



## 7:00PM TO 9:00PM

### CASFM Dinner & Awards Ceremony

**Location: Breckenridge Ballroom (1st Floor)**

**Sponsored By: Stream Design**



## 9:00PM TO 11:30PM

### Casino Night!

**Location: Imperial Ballroom**

**Sponsored By: Muller Engineering**



## FRIDAY, SEPTEMBER 22, 2017

## 7:00AM TO 8:00AM

**Yoga | Susan Pearson - Town of Silverthorne**

**Location: Summit Gallery Peaks 6-8**

## 7:30AM TO 8:30AM

### Breakfast

**Location: Breckenridge Ballroom (1st Floor)**

## 8:30AM TO 9:00AM

**CASFM Chair Closing | Deb Ohlinger**

**Location: Breckenridge Ballroom (1st Floor)**

## 9:00AM TO 12:00PM

### Field Trips

### MOUNTAIN BIKE TOUR

Meet at the BreckConnect Gondola at 9:00 AM.

### DILLON RESERVOIR

Meet at the power plant entrance below Dillon Dam. The drive time from Beaver Run to the dam is approximately 30 minutes. The tour will start between 9:30 AM to 9:45 AM. Attendees must have registered & completed the waiver to participate.

### SWAN RIVER RESTORATION

Meet at the Breckenridge Ballroom (1st floor) at 9:00 AM for a brief presentation before heading out to the site.

## 9:00AM TO 3:00PM

### Golf Tournament

**Location: Breckenridge Golf Club**

Registration is at 9:00am.

Tee Times begin at 10:00am.



## THANKS TO OUR MODERATORS!

Monica Bortolini, City of Longmont  
Kevin Doyle, Michael Baker International  
Brent Kaslon, Valerian  
Noelle Beegle, Alfred Benesch & Company  
Michelle Iblings, Tetra Tech  
Drew Beck, Matrix Design Group



# TECHNICAL SESSION SCHEDULE AT A GLANCE

## WEDNESDAY

	Emergency Preparation & Risk Management <b>Location: Colorado Ballroom Peak 5 (top floor)</b> <i>Moderator: Monica Bortolini</i>	Stream Restoration <b>Location: Colorado Ballroom Peak 1-4 (top floor)</b> <i>Moderator: Kevin Doyle</i>	Green Infrastructure & LID/Stormwater Quality & Treatment <b>Location: Summit Gallery Peak 9-12 (2nd floor)</b> <i>Moderator: Brent Kaslon</i>
1:30PM	Developing a Holistic Flood Risk Information System (FRIS) for Colorado <i>Thuy Patton &amp; Maddy Kelley</i>	Grand County, Stream Management Plan and Learning by Doing <i>Peggy Bailey</i>	Design Verification of Micropool at EDB 502L <i>Saman Mehdi &amp; Jeremy Deischer</i>
2:00PM	Risk Evaluation of Smaller Levee Systems – A Prototype <i>Mark Baker &amp; Kayla Ranney</i>	North Douglas Creek Restoration and Post-Fire Mitigation <i>Thomas Donahue, Jason Messamer &amp; Adam Cooper</i>	Sniff This! <i>Saeed Farahmandi &amp; Darren Mollendor</i>
2:30PM	Flood Risks from Spillways: Modeling and Communicating Non-Dam-Failure Impacts to Native American Tribes <i>Rinda Tisdale, Matt Young &amp; Lee Mauney</i>	The Good, the Bad, and the Ugly of Creating and Implementing a Short Time-Frame Plant Materials Program for Colorado Flood Recovery <i>Randel Mandel &amp; Sara Copp Franz</i>	Stormwater Quality vs. Space <i>Chad Cantrell &amp; Cody Gratny</i>
3:30PM	Aspen Mud and Debris Flow Assessment <i>Andrew Earles, April Long, Dai Thomas &amp; Catherine Berg</i>	Using Ecological Functions Approach to Measure Stream Restoration Goals <i>Moneka Worah</i>	Impact of Deicers on Chloride Concentrations in an Urban Stream - A Case Study in Fort Collins <i>Tyler Dell, Susan Strong &amp; Chris Olson</i>
4:00PM	Monument Creek Watershed Restoration Master Plan <i>Graham Thompson, Drake Ludwig, Richard Mulledy &amp; Larry Small</i>	Encouraging St. Vrain Resiliency through the USACE Section 205 Program in Longmont <i>Jordan Williams &amp; Monica Bortolini</i>	Low Impact Development Retrofit After 20 Years at Boulder, CO Office Building <i>William Wenk, Natalie Phares &amp; Jonathan Jones</i>
4:30PM	Summary of 2013 Flooding near Arboles, Colorado, with a Comparison to Maximum Flooding for Small Basins in Southwestern Colorado <i>Robert D. Jarrett</i>	Rebuilding Roads & Creeks Together <i>Clarrisa Hageman, Peter Reinhardt &amp; John C. Sabo</i>	Infrastructure Improvements Using Low Impact Development Best Management Practices <i>Ajay Jain</i>





## THURSDAY

	<b>Floodplain Management</b> <b>Location: Colorado Ballroom Peak 5 (top floor)</b> <i>Moderator: Noelle Beegle</i>	<b>Professional Develop.</b> <b>Location: Colorado Ballroom Peak 5 (top floor)</b> <i>Moderator: Noelle Beegle</i>	<b>Technical Modeling</b> <b>Location: Colorado Ballroom Peak 1-4 (top floor)</b> <i>Moderator: Michelle Iblings</i>	<b>Stormwater Mgmt. &amp; Master Planning</b> <b>Location: Summit Gallery Peaks 9-12 (2nd floor)</b> <i>Moderator: Drew Beck</i>
1:30PM	Local Adoption and Use of Best Available Floodplain Information: Boulder County Lessons Learned <b>Harry Katz &amp; Stephanie DiBetitto</b>	-	2D Modeling as the Tool of Choice: Hydraulic Analysis of Lower Main Street Bridge in Jamestown <b>Anthony Alvarado, James Hitchman &amp; Jennifer Aieta</b>	The Redevelopment of Original Aurora: Where Stormwater and Urban Planning Meet <b>Jon Villines &amp; Benjamin Murphy</b>
2:00PM	Large Scale Automated Engineering in FEMA Region VIII <b>Brian Murphy</b>	-	Smooth Transition - How to adjust Manning's n values for 2D Modeling <b>Andrew Friend &amp; Mark McBroom</b>	Developing a Priority Matrix for Capital Planning <b>David Van Dellen</b>
2:30PM	The Challenges of Updating Regulatory Hydrology and Floodplain Mapping – A Case Study of Estes Park, Colorado <b>Andrew Earles, Kevin Houck, Tina Kurtz, Rigel Rucker &amp; Isaac Allen</b>	-	Tool of Choice <b>Dusty Robinson</b>	A New Era of Stormwater Management <b>Richard Mulledy</b>
3:30PM	-	Increase Public Engagement: Virtual Reality to Relay Races <b>Sandra Bratile &amp; Heidi Hansen</b>	Predicting Habitat Restoration Success with 2D Hydraulic Modeling <b>Kevin Doyle &amp; Russell Anderson</b>	Do You Know Your Outfall from a Hole in the Ground? <b>Paul Thomas, Jesse Clark &amp; Chris Kroeger</b>
4:00PM	-	Engineering Meets Sales: The Process of Cultivating Likability <b>Emily Murphy</b>	Educating a 1D Dynamic SWMM Model using FLO-2D: A Case Study of the Old Town Drainage Basin in Ft. Collins <b>Jeremy Deischer &amp; Beck Anderson</b>	Putting "One Water" into Stormwater Education <b>Donny Roush &amp; Darren Mollendor</b>
4:30PM	-	Everything is Awesome when You're part of a Design Build Teams <b>Amy Foreman, Ryan Crum &amp; Sam Stevens</b>	Selecting the Right Model <b>Josh Hollon &amp; Brinton Swift</b>	Geospatial Technology: A Platform for Successful Stormwater Management <b>Jim Kelly</b>





## WEDNESDAY FEATURED SPEAKERS

### CHRIS WARNER - KEYNOTE SPEAKER



Combining his passion for climbing with an entrepreneurial spirit, Chris founded Earth Treks, Inc. in 1990. With over 30 years of experience guiding people to the top, Chris has led teams up Everest, K2 and Kilimanjaro - nearly 200 international mountaineering expeditions. He's given keynote speeches to teams who are striving to ignite sales, overcome challenges, explore new ideas, heal from tragedy, and celebrate successes. His audiences have included CEOs, senior executives, sales teams, Fortune 500 companies, MBA classes, counter-terrorism experts, military officers, NFL coaches, nurses, pilots, and entrepreneurs. Chris knows how to inspire, educate, and entertain.

"As an educator, you have to open people's minds before you can fill them," Chris says. "Epic stories of summiting Everest and surviving K2, have proven to be the perfect mind openers. We can then explore what it takes to create and lead a team that will be successful when failure is not an option." Chris will be sharing an epic story about a team reaching their peak. Our hope is that this extreme story of survival will give us the tools needed to guide our team to our next summit.

### ASSET OR LIABILITY

With the recent emphasis in encouraging kids to get out and enjoy nature in unstructured settings, designers and owners may face expanded liability particularly with parks involving drainageways. Risk management should be considered in all stages from planning through construction and long afterwards. This panel discussion is presented by a wide range of folks with expertise in this critical topic:

#### PENN GILDERSLEEVE, PE



After 42-years of consulting engineering, Penn retired from practice and for the past two years has attempted to maintain some sort of relevancy within the profession. His last paying job was as a founding principal and president of ICON Engineering. In his career, Penn specialized in planning, design, and construction of drainage and flood control projects, including many detention and water storage ponds; miles of drainageway improvements, and dozens of parks. He has been an active member of CASFM since its founding, presenting on a wide range of topics.

#### PHILIP B. CARDI



Phil is an attorney and managing member of Cardi, Schulte & Ford, LLC. His practice emphasizes civil trial work, including defense of architects and engineers, construction litigation including mechanic's liens, and commercial litigation. In addition, Phil advises clients in the drafting and negotiation of construction and other contracts. Phil has tried numerous cases to the bench, to juries, to arbitrators, and has also served as an arbitrator in construction cases.

#### CASSIE KASLON, PLA



Cassie is a new Principal and member of Valerian LLC, a full service landscape architecture firm. She co-authored the City and County of Denver design guidelines for Nature Play Parks and has been actively involved with the design of several parks and drainageway improvements.

#### BOB STRINE



Bob Strine brings a unique perspective to the Professional Liability Insurance and Risk Management industry for Architects and Engineers, as his background is in accounting and finance. Bob has more than 40 years of industry experience, 22 of which were spent working for an ENR top 150 multi-disciplined design firm. His knowledge of the industry enables him to grasp quickly the concerns, risks, and exposures that are unique to design professionals including environmental and foreign exposures.





## THURSDAY FEATURED SPEAKERS

### ***TRAVIS EASTON & ALAN GILBERT - LESSONS & OBSERVATIONS FROM THE MIDDLE OF MAJOR STORMWATER PERMIT LITIGATION***

The City of Colorado Springs is unfortunately in the midst of major, ongoing stormwater permit litigation in federal district court in Denver. Four other governments - the United States, the State of Colorado, Pueblo County, and a downstream water conservancy district - are suing the City to enforce its MS4 permit. The suing agencies are seeking an array of penalties and other relief. Travis Easton and Alan Gilbert have been defending the City in this case for years. They will offer management and legal perspectives drawn from this ongoing matter. They will present observations that might benefit other permit holders and even regulators. They will describe some hard program lessons learned in this difficult stormwater proceeding.



Travis Easton is a Professional Engineer who serves as the Public Works Director for the City of Colorado Springs, CO. In his current role, Travis oversees the City's transit system, traffic engineering division, operation and maintenance functions, road and bridge division, development review division, and water resources division. The Public Works Department has 236 employees with an annual budget of approximately \$170 million dollars.



Alan Gilbert is a shareholder in the Denver law office of Ryley, Carlock & Applewhite. He represents companies, municipalities, and individuals facing government issues of various types. His practice focuses on environmental, natural resources, and government law. Intermixed with his past state and federal government service, Alan has worked for more than 25 years in private legal practice in Denver, Colorado. Throughout these years, he has specialized in environmental and natural resources law generally, appellate and administrative law, trial litigation, and aspects of commercial practice.



## OPTIONAL WORKSHOPS

### FLOODPLAIN 101 (TUESDAY) 8:00AM-5:00PM

The Floodplain 101 workshop will cover subjects including overall floodplain management, floodplain maps and Flood Insurance Studies, key National Flood Insurance Program (NFIP) regulatory and non-regulatory standards, flood insurance, and flood hazard mitigation, among other topics. If you need a refresher, this is a course you don't want to miss.

	TOPIC	INSTRUCTOR
8-12 AM	Unit 1: Introduction	Stephanie DiBetitto, CWCB
	Unit 2: Overview of NFIP	Stephanie DiBetitto, CWCB
	Unit 3: Flood Insurance Studies & Maps	Natalie Phares, WWE
	Unit 4: Map Revisions & Elevation Certifications	Natalie Phares, WWE
	Unit 5: Floodplain Management Requirements	Kimberly Pirri, AECOM
1-5 PM	Unit 6: Additional Regulations & Higher Standards	Robert Jacobs, Summit County
	Unit 7: Ordinance Administration	Robert Jacobs, Summit County
	Unit 8: Substantial Improvement & Damage	Carrie Gudof, Mesa County
	Unit 9: Flood Insurance	Carrie Gudof, Mesa County
	Unit 10: Disaster Operations & Hazard Mitigation	Christine Shepherd, Boulder County

### TECHNICAL BULLETIN 17C UPDATES WORKSHOP (TUESDAY) 1:00PM-5:00PM

*Led by: David Sutley - FEMA Region VIII*

David Sutley, FEMA Region VIII, will lead a workshop to highlight the effect Bulletin 17C, Guidelines for Determining Flood Flow Frequency, will have on future hydrologic analyses. The recommended draft of Bulletin 17C was released in April 2017, and CASFM is fortunate to have David, who served on the subcommittee tasked with the update, present at the annual conference. The workshop will lead participants through the changes in methodologies and analysis as a result of the update.

### EFFECTIVE COMMUNITY COMMUNICATIONS WORKSHOP (TUESDAY) 1:00PM-5:00PM

*Led by: Kellie Mullen - Ogilvy/Resilience Action Partners*

As stormwater and floodplain managers assess and mitigate risks in their local community, effective communication is critical. This workshop will focus on the best practices and tools to effectively communicate with multiple stakeholders – from county council members to elected officials to individual property owners. In this fast-paced, interactive session, attendees will learn: effective ways to make a complex message simple, how to build a bridge with contentious audiences, and new techniques for addressing tough questions. This workshop will be led by Kellie Mullen with Ogilvy/ Resilience Action Partners.

### CODE CAMP FOR ENGINEERS - A CRASH COURSE IN PYTHON PROGRAMMING WORKSHOP (TUESDAY) 1:00PM-5:00PM

*Led by: David Delagarza & Mike Bannister - RESPEC*

Led by David Delagarza and Mike Bannister, RESPEC, this workshop will cover the fundamentals of Python programming for water engineers. Topics will include python setup, coding basics, and interfacing with HECRAS, CUHP, and SWMM. Prior exposure to programming is recommended but not required. Laptop recommended. This workshop will be limited to the first 25 that are registered.





## FIELD TRIPS

### SWAN RIVER FIELD TRIP (FRIDAY)

*Troy Thompson - Ecological Resource Consultants, Inc. & Jason Lederer - Summit County*

Some of you may have participated in the Swan River field trip as part of the 2015 conference in Vail that showed the site before restoration work commenced. This field trip is a follow-up to the work completed as part of the restoration project.

In 2016, the first phase of restoration work was completed on the Swan River near Breckenridge, CO. The work was a demonstration project showing a riverine system that had been lost due to placer mining and subsequently impacted by tailings deposition could be restored to approximate pre-mining conditions.

Troy Thompson, Ecological Resource Consultants, Inc. (with Jason Lederer, Summit County) will present "Swan River - Reclaiming a River After a Century of Mining Impacts" at the Beaver Run Resort in the Breckenridge Ballroom (1st Floor) at 9:00am prior to meeting with everyone on-site.



### DILLON RESERVOIR FIELD TRIP (FRIDAY)

*Steve Snyder - Denver Water*

The Dillon Reservoir, owned and operated by Denver Water, has an earth-filled dam approximately 5,600 feet long and roughly 230 feet above the Blue River streambed. The reservoir has a capacity of approximately 260,000 acre-feet of water and is the 7th largest reservoir in Colorado. Dillon Reservoir water is diverted from the Blue River Basin through an almost 25-mile tunnel under the Continental Divide into the South Platte River Basin.

The tour will explore the power plant below Dillon Dam and visit the glory hole where the dam caretakers will give a detailed explanation and Q&A about how Denver Water operates the facility. A visitor waiver was required to be submitted by September 8 for participation in this field trip.







## MOUNTAIN BIKE TOUR

Join us on a morning bike tour through Breckenridge to learn more about on-going improvements being made to Blue River. We will meet as a group in front of the BreckConnect Gondola and then head north along the Blue River via the Blue River Bikeway. Along the way, we will stop to look at some key points of interest, including a point at the end of the trail where ESCO Construction recently did restoration on the river last year. We will walk along the river a bit as the contractor for this development explains some key points of the project. This will be an out-and-back trip, with approximately 200ft of elevation gain and loss over the course of 4.5 miles. Bikers of all abilities are welcome to join. Please be sure to bring water, sun protection, and a small snack with you – we will be out from 9am to noon.

**Date:** Friday, September 22, 2017  
**Time:** 9:00am - 12:00pm  
**Led By:** Rich Ommert, RESPEC  
**Meet:** In front of BreckConnect Gondola



## GOLF TOURNAMENT

This year's golf tournament will be held at Breckenridge Golf Club. All three nines are Jack Nicklaus Signature courses. There will be give-away pin prizes and a raffle to benefit the Scholarship Fund. This is an incredible opportunity to play magnificent and challenging course while bonding with fellow conference participants. Here's what you need to know:

**Who:** All conference participants, family members, sponsors & exhibitors  
**Where:** Breckenridge Golf Club, 200 Clubhouse Drive  
**When:** Friday, September 22, 2017 at 9:00am - 3:00pm  
Registration at 9:00am. Tee Times begin at 10am  
**Cost:** \$79 entry fee per person  
**Format:** 4-person scramble  
**Led By:** John Loranger, AMEC Foster Wheeler

**Michael Baker**  
INTERNATIONAL







## ADDITIONAL EVENT INFORMATION

### YOGA WITH SUSAN PEARSON

Susan Pearson, with The Town of Silverthorne, will lead a group of up to 20 yogis through a meditative, relaxing morning yoga flow. The class will be held at the Summit Gallery Peaks 6-8 room from 7:00 AM – 8:00 AM. The class will be held Wednesday, Thursday & Friday mornings. Susan will have some extra mats, participants are encouraged to bring their own mats. Do not forget to bring your water. All practice levels are welcome.

### SILENT AUCTION

If you like passive-aggressive competition, the Silent Auction is for you! The auction will start Wednesday and end prior to the Award Banquet on Thursday. Proceeds from the CASFM Silent Auction go to support the Scholarship Committee. The CASFM scholarships help students who are pursuing degrees that fit with the aims and goals of the CASFM association. Since 2002, we have awarded more than \$70,000 in scholarship funds to students in Colorado through our Ben Urbonas Scholarship, our Family Scholarship, and our Undergraduate Scholarship.

### GRANT AWARD WINNER

The CASFM research grant supports CASFM's goal to be stewards of stormwater principles and practices, support engineers, academics, and friends, and to advance stormwater practice. For the 2017 year, CASFM awarded an annual research grant to Planning for Hazards, an organization that provides guidance and assistance to counties and municipalities to prepare for, and mitigate, the effects of natural hazards. Join us at lunch on Wednesday to hear more about the program and to hear updates from the program's sponsor, Andrew Rumbach.

### ASFPM FOUNDATION VIDEO

The ASFPM Foundation shares ASFPM's mission to promote public policy through select strategic initiatives and serve as an incubator for long-term policy development that promotes sustainable floodplain and watershed management. The ASFPM Foundation is the recognized leader in developing and advancing knowledge that promotes sound floodplain management policy and practice. The Foundation has prepared a video that explains the mission and goals of the group as told by Foundation members. Our own Brad Anderson, Anderson Consulting Engineers, has a starring role!

### THURSDAY AWARD 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, comradery, 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. Following the banquet, our members are invited to participate in a night of casino-themed frivolity. Casino Night is back by popular demand! Join your fellow stormwater and floodplain managers for Craps, Roulette, Black Jack & Texas Hold'em!



## 2017 CASFM AWARD FINALISTS

### LAFAYETTE-LOUISVILLE BOUNDARY AREA DRAINAGE IMPROVEMENTS



Louisville, Colorado has appeared on Money Magazine's "Top 10 Best Places to Live" list several times, with a #1 appearance in 2011. Development and redevelopment in the ever more vibrant downtown was hindered by an existing floodplain caused by a railroad embankment that backed up Drainageway A-2 flow on its upstream (west) side. The City of Louisville undertook the Lafayette-Louisville Boundary Area Drainage Improvements Project with the objectives of reducing the regulatory floodplain to the maximum extent practicable, protecting public and private property, including the City's wastewater treatment plant (WWTP), and allowing eager developers to implement their plans.

#### Main project components included:

- 1.3 miles of new and enhanced open channels with a mixture of stepped grouted boulder drop structures and ungrouted keystone boulder, void-filled riprap grade control structures.
- Three pedestrian bridges, enhanced regional trail connections, and integrated passive recreation amenities adjacent to the channels.
- Park planning and integrated planting and landscape design.
- 3,200 linear feet of 100-year storm drain, manholes, inlets, and culverts.
- Design and installation of a 72-inch diameter steel pipe under the railroad via trenchless methods.
- Design and construction of the lowering of a Northern Colorado Water Conservancy District 16-inch raw water line that was the primary source of water for two neighboring towns. The construction had to be completed in less than one week.
- 404 permitting and floodplain permitting through several entities, along with a LOMR.

#### The project involved many moving parts. A sample of the significant project challenges included:

- Drainage issues in this area were contentious in the past.
- Two concurrent project design phases, and two construction projects with overlapping physical work spaces.
- Multiple agency review processes and accommodating agricultural and recreational uses in the Harney-Lastoka Open Space jointly owned by Boulder County, City of Louisville, and City of Lafayette and easement acquisition from four private properties.
- 80,000 cubic yards of earthwork. Spoiling surplus soil on adjacent agricultural land managed by Boulder County required special treatment.
- Relocating Louisville's main power feed twice, plus 40 other utility adjustments.
- Timing of design and construction to minimize impacts to Louisville's many downtown summer events.

As a result of this project, at least 37 buildings, including some multi-family units, 20 commercial properties, and the WWTP, were removed from the floodplain, and redevelopment that will spur economic growth can occur. Flood risk resulting from unmapped spills in Lafayette was reduced and eliminated at the 100-year level. The new pedestrian trails along the channels, pedestrian bridges, and connections to a school and regional trails are highly used regional amenities that will contribute to the enjoyment, health, and well-being of their users.

#### Project Sponsors:

*Urban Drainage and Flood Control District, City of Louisville, City of Lafayette*

#### Design Team:

*Olsson Associates, Stream Design Landscape Architecture, Brierley Associates, Dewberry Engineers, ERO Resources*

#### Contractors:

*Concrete Express, Inc. Redpoint*

#### Construction Cost:

*\$6.8 million*

#### Completion:

*February 2017*







## 2017 CASFM AWARD FINALISTS

### ST. VRAIN CREEK RESTORATION - TOWN OF LYONS

Prior to the Record Setting Floods of September 2013, the Town of Lyons recognized there were issues within the flood plain throughout the Town; creating risks to the Town during major storm water runoff events. The issues were related to older, historic installation of public infrastructure such as roads and bridges, along with construction of private homes and improvements to private land, all prior to the modern drainage standards and runoff conveyance considerations. Over time, newer areas of Town developed around the creeks and flood plain were developed to modern standards that recognized the flood plain and flood way.

#### PROJECT FACTS:

Community Size: ~2,000 residents  
 Project Start: August 2015  
 Project Completed: Oct 2016  
 Total Project Budget: \$2,498,060

Town Staff historically identified flow rates on the St. Vrain Creek and tributaries within Town via public notification of localized nuisance flooding, which was often expected during spring runoff or storm events and the Town had identified areas of concern. However, finding funding and resources to conduct comprehensive studies and improvements to the flood plain were not regularly available, and when available, it was very competitive to secure funds. Post flood, the opportunities for improvements became significant and resources surfaced for studying and implementing changes to the flood plain. Some of the changes included removal of private homes and others included changes to infrastructure and the flood plain areas, including public improvements.

Town Engineer Jim Blankenship identified a need for the flood plain improvements through the area of Town known as the confluence neighborhood and surrounding areas upstream and downstream, while simultaneously working on restoring the Town's water, sewer and electric systems, temporary roads and flood plain and restoration permits, due to the September 2013 flood. Records show that the confluence area of Town had historically been hit hard by floods at various times during the prior 125 years. Infrastructure and homes in the area were generally built 30 or more years prior to the 2013 flood, with some structures dating back to the late 1800's. Working with Town Administrator Victoria Simonsen and Parks Director Dave Cosgrove, they identified a concept plan for St Vrain Creek area improvements that encompassed Town owned land including park areas and public works facility areas, CDOT right of way and private lands. A challenging, but worthwhile project began to obtain funding for design and construction of improvements to improve the quality of life in the Town. Initiatives included were enhancements to maintain the public welfare, lessen flood impacts and ensuing insurance premiums, creating increased property values for private individuals, enhance and improve the public safety and health by reducing flood risk to private property owners and enhancing safety access for emergency responders.

#### GOALS & OBJECTIVES MET:

- Several multi-objective principals were implemented into the project. They included:
- Restoration of flood ravaged creek and flood plain
- Restoration and creation of habitat corridors
- Enhancement of usability of the creek by tubers, kayakers and fishermen
- Enhancement of flood plain protection for private property
- Enhancement of protection of public infrastructure
- Enhancement of available access for emergency responders during flood events and for day to day rescue operations on the creek
- Reduction of flood plain and flood way







## 2017 CASFM AWARD FINALISTS

# LITTLE DRY CREEK DRAINAGE AND FLOOD CONTROL PROJECT

In 2005 the 40-acre Little Dry Creek corridor between Federal and Lowell Boulevards in Westminster Colorado was primarily a dumping ground that hosted homeless encampments and was mostly visited by locals quickly passing through on a broken regional trail. Fast-forward to 2017, the community now enjoys a transformed and engaging space hosting a new 2.3 acre lake, nearly 5 miles of trails and, an accessible creek edge designed to be inviting and explored. The Little Dry Creek Drainage and Flood Control project was a significant component within a greater \$80,000,000 investment in this once blighted area.



To begin the transformation, the City of Westminster collaborated with Design Studios West (now Matrix Design Group) to develop conceptual master planning documents for the area. Later, in 2009, the City signed intergovernmental agreements with the Urban Drainage and Flood Control District and Adams County and, embarked on the design and construction process by selecting Muller Engineering Company to lead a multi-faceted design team. This was all in preparation for integrating the flood control improvements to coincide with the construction of the B-Line, the City's first Commuter Rail with RTD! The City's vision allowed for direct access from the rail to this 40-acre park site, but without the Little Dry Creek project, the 100-year flood would cover the commuter rail line by more than 4-feet of water!

During the years between 2010 and 2014 critical utilities were relocated, land was purchased, groundwater contamination remediated, buildings demolished and, in 2014, Concrete Express Inc. (CEI) was selected to engage in a construction manager/general contractor (CM/GC) method of contracting.

This method of contracting brought the partnered sponsors, the engineer, the architect and the contractor to the design table resulting in providing CEI significant latitude to move this Grading and Flood Control project forward. CEI started with a 70-page set of drawings originally bid at \$7,000,000. Over the following two years the project strategically evolved into 400 pages of final plans. Initial project estimates were \$25 million The CM/GC approach led to a final project cost of \$16.2 million.

Beyond 2017, the City of Westminster Parks Department in partnership with Matrix Design Group have developed a vision for programming this 40 acre site. A cutting edge natural play area, restrooms and, an educational xeric garden in partnership with the Butterfly Pavilion will break ground in spring 2018. These transformational improvements to this once blighted area will act as catalysts for economic growth and bring people out to enjoy and engage in their open space.

### PROJECT SNAPSHOT:

- Cost \$16,200,000
- Timeline 2005 to 2017
- Lowered the 100-year floodplain by five feet
- Integrated 172 acre-feet of flood storage detention
- Relocated and restored 4,100 liner feet of Little Dry Creek, 200 feet to the north
- Cleaned up 3,000,000 pounds of trash
- Aquatic habitat and riparian corridor restoration and creation
- Planted over 450 trees
- Planted 26,000 square feet of shrubs and grasses
- Tunneled 800-feet of utility pipeline up to 108-inch in diameter under Federal Blvd.
- Exported 350,000CY of material (and repurposed 200,000CY for two other projects.
- Relocated one beaver





## 2016 - 2017 CASFM SCHOLARSHIP RECIPIENTS

### BEN URBONAS SCHOLARSHIP

The 2016-2017 CASFM Ben Urbonas Scholarship recipient is **Brik Zivkovich**. He is enrolled as a Doctoral Student of Civil Engineering at the University of Colorado Denver within the coordinated joint PhD program at the Boulder campus. His dissertation will focus on improving links and developing software to aid stormwater professionals, city governments, and other municipalities in understanding vegetative management impacts on floodplains and flood hydraulics, as well as involvement with a new educational research committee focusing on acid mine drainage remediation.

### FAMILY SCHOLARSHIP

**Emma Gardner** is the daughter of CASFM Member Stuart Gardner and is attending Colorado Mesa University in Grand Junction where she will be among the first Civil Engineering graduates in CMU's cooperative program with CU in 2020. She has been exposed to engineering discussions and field trips her entire life and is excited about moving into the field and using her education to make Colorado a better place to live.

**Brittany Bender** is the daughter of CASFM Member Janet Bender. The incredible engineering feats she's seen helped form a desire to be part of something bigger than herself, and to pursue a passion that she would not only love, but would challenge her every day. She is studying at the Colorado School of Mines and plans to graduate in 2018. After graduation, she plans to stay in Colorado and help improve the living conditions and communities of the state she knows and loves.

### UNDERGRADUATE SCHOLARSHIP

The 2016-2017 CASFM Undergraduate Scholarship recipient is **Daniel Sanchez**. Daniel is an undergraduate in Civil Engineering at Colorado State University and anticipates graduating in the Spring of 2020. Daniel is looking to serve with Engineering Ministries International designing infrastructure in developing countries.

## THANKS! TO OUR 2016-2017 OUTGOING OFFICERS, COMMITTEE CHAIRS, & REGIONAL REPRESENTATIVES!

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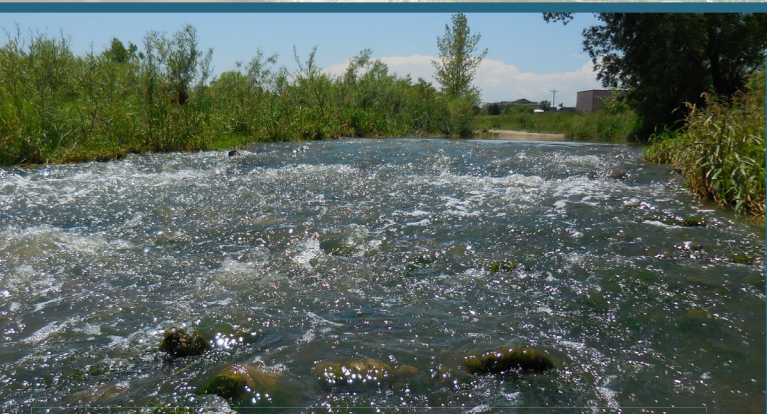
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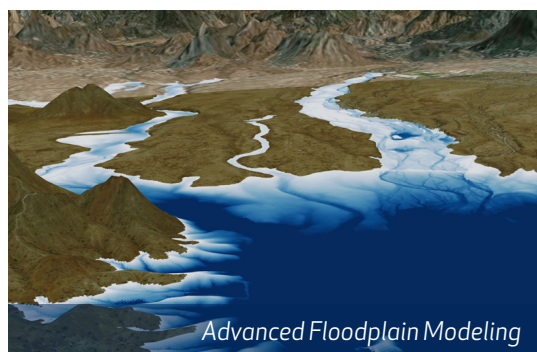
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#### Western Slope Office

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## SPONSOR CONTACT LIST

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<b>Anderson Consulting Eng.</b>	Brad Anderson brad.anderson@acewater.com	375 Horsetooth Rd, Bldg #5 Fort Collins, CO 80525	970-226-0120 www.acewater.com
<b>AquaShield, Inc.</b>	John Santos jsantos@aquashieldinc.com	9580 Oak Avenue Parkway, Suite 7-203 Folsom, CA 95630	970-223-5556 www.ayresassocaites.com
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<b>Basalite Concrete Products, LLC</b>	Glenn Van Horn glenn.vanhorn@basalite.com	5170 Kalamath Street Denver, CO 80221	303-783-3864 www.basalite.com
<b>BASF Corporation</b>	Katie Piotrowski katie.piotrowski@basf.com	1703 Crosspoint Avenue Houston, TX 77054	713-796-9743 www.basf.com
<b>Bioclean Environmental</b>	Mia Chism mia.chism@forterrabp.com	336 West Hampden Avenue Englewood, CO 80110	303-789-0133 www.biocleanenvironmental.com
<b>Bohannon Huston, Inc.</b>	Craig Hoover aolden@bhinc.com	9785 Maroon Circle, Suite 140 Englewood, CO 80112	303-799-5103 www.bhinc.com
<b>Contech Engineered Solutions</b>	Jaimee O'Dea jodea@conteches.com	5670 Greenwood Plaza Blvd., Ste. 530 Greenwood Village, CO 80111	720-587-2701 www.conteches.com
<b>Enginuity Eng. Solutions</b>	Don Jacobs djacobs@enginuity-es.com	10106 W. San Juan Way, Suite 215 Littleton, CO 80127	720-266-6925 www.enginuity-es.com
<b>ERO Resources Corporation</b>	Rae Frederick rfrederick@erresources.com	1842 Clarkson Street Denver, CO 80218	303-830-1188 www.erresources.com
<b>Hanes Geo-Components</b>	Jack Knaub jack.knaub@hanescompanies.com	14200 East 35th Pl., Suite 100 Aurora, CO 80011	303-307-8111 www.hanesgeo.com
<b>HR Green, Inc.</b>	Marin Schmitt mschmitt@hrgreen.com	7887 East Belleview Avenue Denver, CO 80011	303-228-1660 www.hrgreen.com
<b>JVA, Inc.</b>	Courtney Russell crussell@jvajva.com	1319 Spruce Street, Suite 100 Boulder, CO 80302	303-444-1951 www.jvajva.com
<b>Lithos Engineering</b>	Robin Dornfest robin@lithoseng.com	2629 Redwood Road, #150 Ft. Collins, CO 80526	970-373-3195 www.lithoseng.com
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<b>Nilex</b>	Todd Croke rhonda.murie@nilex.com	15253 East Fremont Drive Englewood, CO 80112	303-766-2000 www.nilex.com
<b>RESPEC</b>	Rick Moser rebecca.moser@respec.com	720 S. Colorado Blvd. Denver, CO 80246	303-757-3655 www.respec.com
<b>Stream Design Landscape Architecture</b>	Jess Clark jclark@streamla.com	1245 East Colfax Avenue, Suite 300 Denver, CO 80218	720-663-7352 www.streamla.com
<b>Triton Environmental</b>	Dean Lamanna dean@tritonenviro.com	5433 Newport St. Commerce City, CO 80022	720-557-5842 www.tritonenviro.com

# SCHEDULE AT A GLANCE

TUESDAY, SEPTEMBER 19, 2017		
8:00	Floodplain 101	
9:00		
10:00		
11:00		
12:00		
1:00		Bulletin 17C Training
2:00		Effective Community Communications Workshop
3:00		Code Camp for Engineers - A Crash Course in Python Programming
4:00		
5:00		
6:00	Dinner on Your Own	
7:00		
8-9:00	Ice Breaker Social Hour	

WEDNESDAY, SEPTEMBER 20, 2017			
7:00	Yoga		Certified Floodplain Manager (CFM) Exam
8:00	Registration and Breakfast		
9:00	Welcoming Remarks		
	Featured Speaker - "Asset or Liability" by Penn Gildersleeve and Invited Guests		
10:00	Keynote Address - "High Altitude Leadership: Lessons from the Death Zone" by Chris Warner, Brooks Institute		
11:00			
12:00	Lunch Board Member Meeting		
1:00			
2:00	Emergency Prep & Risk Management	Stream Restoration	Green Infrastructure & LID/Stormwater Quality Treatment
3:00	Break		
4:00	Emergency Prep & Risk Management	Stream Restoration	Green Infrastructure & LID/Stormwater Quality Treatment
5:00	Happy Hour		
6:00			

THURSDAY, SEPTEMBER 21, 2017		
7:00	Yoga	
8:00		Breakfast/ Committee Meetings
9:00	2017 Project Award Finalist Presentations	
10:00		
11:00	Featured Session: Lessons & Observations from the Middle of the Major Stormwater Permit Litigation	
12:00	Lunch General Membership Meeting	
1:00	Committee Meetings	
2:00	Floodplain Management	Technical Modeling
		Stormwater Management & Master Planning
3:00	Break	
4:00	Professional Development	Technical Modeling
		Stormwater Management & Master Planning
5:00	Happy Hour	
6:00		
7:00	Break	
8:00	CASFM Association Dinner and Awards	
9-11	Entertainment - Casino Night!	

FRIDAY, SEPTEMBER 22, 2017				
7:00	Yoga		Breakfast	
8:00				
	Closing Remarks			
9:00	Field Trip: Dillon Reservoir	Mountain Bike Tour	Field Trip: Swan River	Golf Tournament
10:00				
11:00				
12:00				
1:00				
2:00				
3:00				
4:00				

## Color Key

	Workshops & Sessions
	Social Events
	Meals & Food
	Break
	CFM Exam
	Field Trips & Tours

SEE YOU NEXT YEAR AT  
THE 29TH ANNUAL  
CASFM CONFERENCE!

#CASFM2018

SEPTEMBER 25-28, 2018

THE WESTIN SNOWMASS RESORT

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