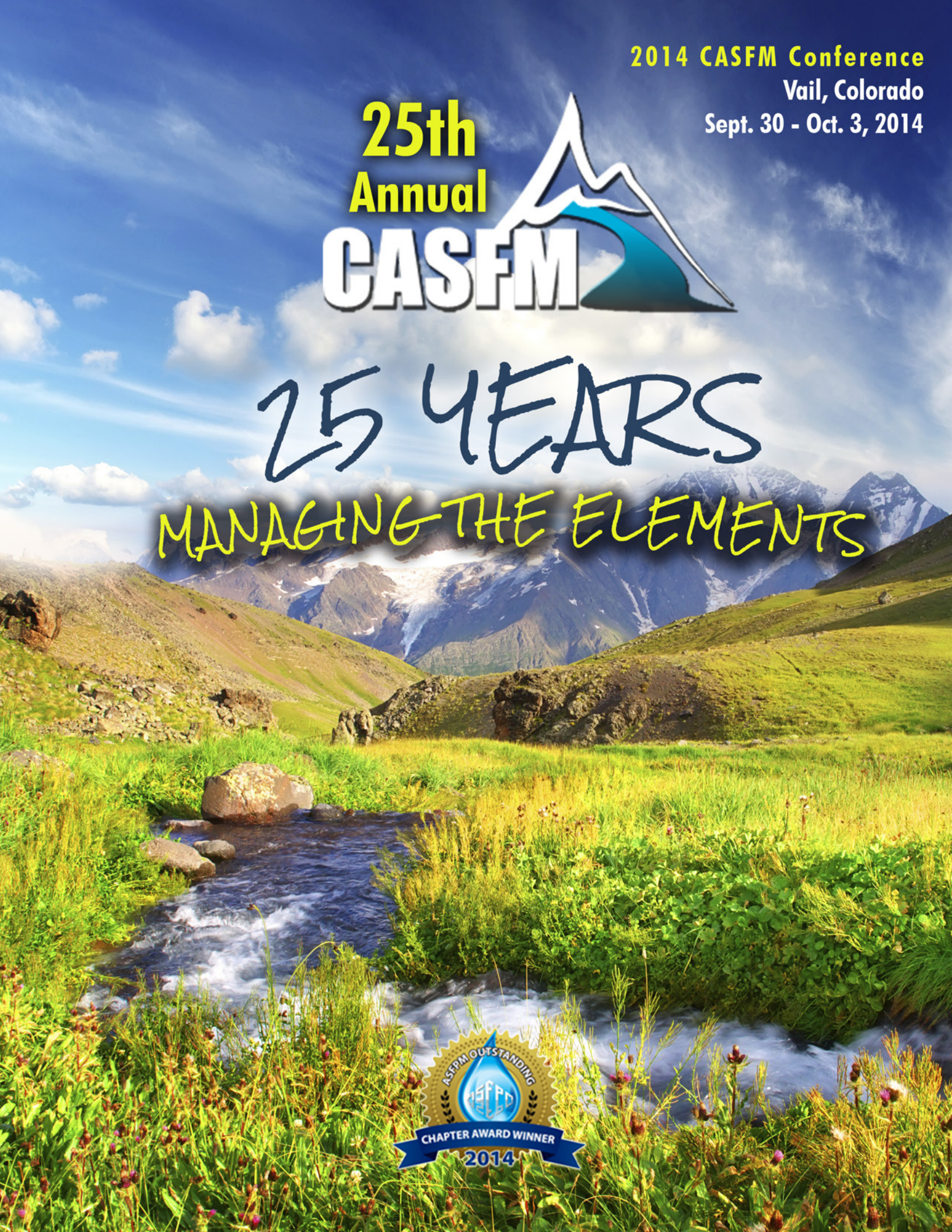
2014 CASFM Conference
Vail, Colorado
Sept. 30 - Oct. 3, 2014

25th Annual CASFM

25 YEARS

MANAGING THE ELEMENTS



25th Annual 2014 CASFM Conference
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MANAGING THE ELEMENTS

ASFPM OUTSTANDING CHAPTER AWARD WINNER 2014

Welcome to Vail!

Robert Krehbiel, Conference Chair

Thank you to the many attendees, speakers and sponsors! We appreciate your active participation in CASFM. Did you realize that CASFM is 25 years old now? This week we will celebrate the many accomplishments of the members and organization. We have come a long way, with undoubtedly much more to come.

We wish we had solved all flooding problems by now, but even seasoned stormwater and floodplain professionals were amazed by the catastrophic events we witnessed during the 2013 CASFM conference. We sincerely appreciate everyone's efforts to respond to the regional disaster, and to continue the work to make Colorado stronger, safer and resilient from future floods.

Our theme, "25 Years of Managing the Elements," emphasizes our attempt to manage the natural environment. We are excited to learn of all of the work everyone has done since the regional disaster of last September. We greatly appreciate all of the presentations related to Stormwater and Floodplain Management, as well as Flood Response and Flood Recovery.

Shea Thomas did a masterful job organizing this year's conference and her work is greatly appreciated, but it takes an army of members to pull together this big event. The following list of individuals donated many hours to CASFM to organize this year's conference:

- Shea Thomas, Program
- Stuart Gardner, Facilities & Web Master
- Alan Turner, Registration
- Deb Ohlinger, Vendors & Sponsorships
- John Pflaum, Project Awards
- Brian Murphy, Field Trips Coordinator
- Rich Ommert, Bike Tour Coordinator
- Dave Center, Golf Tournament
- Janae Newman, Conference Announcement & Brochure

We sincerely hope that you find the conference to be beneficial, educational and entertaining!
Thanks for coming, and welcome to Vail!

Robert Krehbiel
Conference Chairman

Brian Varrella
CASFM Chairman

THANKS TO OUR SPONSORS!

Gold Level: ERO Resources Group, RESPEC Consulting & Services, Brierley Associates, Oldcastle Precast, Muller Engineering Company, Michael Baker Jr.

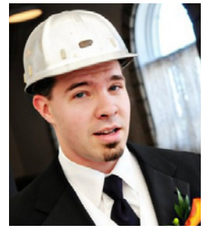
Silver Level: Triton Environmental, Smart Vent Products, Nilex Environmental, Hydro International, Hanes Geo Components, Contech Engineered Solutions, Brown and Caldwell, Borgert Products, Advanced Drainage Systems, CDM Smith, Bohannan Huston, Dewberry, Anderson Consulting Engineers

2014-2015 OFFICERS AND REGIONAL REPRESENTATIVES

CHAIR
Brian Varrella
City of Fort Collins

VICE CHAIR
Shea Thomas
Urban Drainage and Flood Control District

CHAIR
Jason Messamer
Olsson Associates



TREASURER
Brad Bettag
CH2M Hill

NORTHEAST REGION
Beck Anderson
City of Fort Collins

NORTHWEST REGION
Betsy Suerth
Garfield County

METRO REGION
Drew Beck
Matrix Design Group

SOUTHEAST REGION
Roberto Becerril
City of Lamar

SOUTHWEST REGION
Sam Samuelson
Town of Telluride

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FEATURED SPEAKERS

BRIAN BLEDSOE

Brian Bledsoe conducts research and teaches courses on rivers and watersheds in the Dept. of Civil and Environmental Engineering at Colorado State University. Brian has over 25 years of experience as an engineer and environmental scientist in the private and public sectors, including over 20 years of experience in stream and wetland restoration. He earned degrees from Georgia Tech, North Carolina State University, and Colorado State University. He has worked in the private sector as a surveyor and consulting engineer, and for the State of North Carolina as a stream and wetland restoration specialist and as nonpoint source program coordinator. Brian's research and teaching interests are f 1ocused on the interface between hydrology and aquatic ecology. In 2006, Brian received an NSF CAREER Award, and in 2008 he served as a Fulbright Scholar in Chile where he worked on environmental flows for sustaining river ecosystems. He also has extensive experience in the development of practical diffuse pollution and hydromodification management strategies and tools in several regions of the US and Canada. Brian served as an expert peer reviewer on the Everglades and Louisiana Coastal Area restoration efforts, as well as the EPA Environmental Monitoring and Assessment Program. Brian is a licensed professional engineer in NC and CO and has authored over 100 publications related to stream and watershed processes, ecological restoration and water quality.

BARRY FAGAN

As the ALDOT Environmental Program Engineer, Barry serves as environmental promoter, coordinator, communicator, educator, and problem solver within and outside ALDOT. Barry connects, represents and participates. He is associated with the Alabama Erosion and Sediment Control Program Steering Committee, the AASHTO Stormwater Community of Practice, the Collaborative Environmental Network of Alabama, AASHTO Center for Environmental Excellence, the International Erosion Control Association, Envirocert International and CPESC. Barry maintains the StormwaterTools.com blog where he regularly discusses water quality and leadership. Barry was selected as the IECA Presenter of the Year in 2011 and 2012. He and Jess both received the award in 2014.

JESSE POORE

Jesse is an environmental planner with FHU which is an engineering consulting firm focused on Transportation and NEPA-related services. Prior to joining FHU, Jesse worked as the wet-weather permits coordinator for Nebraska Department of Environmental Quality. He is an industry leader in creating value out of the planning process conducted by municipalities, counties, state agencies and watershed associations required to manage stormwater runoff. He is a trusted advisor for clients that need policy planning and practice assistance for water shed and stormwater management. He is the past president of the Nebraska Floodplain and Stormwater Managers Association. Jesse was included as one of the 20 Under 40 Young Professionals making a difference in Lincoln, Nebraska and was named Presenter of the Year by IECA in 2014 for presentation of this workshop.

WORKSHOPS

GREEN INFRASTRUCTURE AND LOW IMPACT DEVELOPMENT PLANNING, DESIGN AND EVALUATION

Tuesday, September 30, 2:00 pm

The Colorado Stormwater Center – Chris Olson

This workshop will provide an overview to planning, design and evaluation of green infrastructure and low impact development (GI/LID) stormwater management facilities with the overall goal of providing participants with relevant information and knowledge to increase GI/LID applications and improve the performance of those applications. We will teach participants about the different types of GI/LID, proper GI/LID design to improve performance and maintenance efficiency, appropriate application of GI/LID in different settings and tools for evaluating the performance and costs of GI/LID. The target audiences for this workshop include (but are not limited to); MS4 managers, design engineers and design reviewers, landscape architects and municipal planners.

GIS TOOLS FOR HYDROLOGY

Tuesday, September 30, 2:00 pm

David Delagarza – RESPEC

Recent advances in geoprocessing tools and the widespread availability of geographical datasets allow for the simplified development of large scale hydrology. This workshop is intended to demonstrate how GIS may be used to expedite the development and analysis of hydrology focusing specifically, though not exclusively, on the Colorado Urban Hydrograph Procedure (CUHP). The themes of the workshop will include utilizing publicly available datasets, using ArcHydro tools for floodplain automation, and simple scripting within GIS. The workshop will include a hands-on demonstration which will allow participants to run the tools and work directly with the results. A basic working knowledge of GIS and CUHP is recommended, though not required, for this program and participants are encouraged to bring a laptop with access to ESRI ArcMap software.

BASIC BRIDGE HYDRAULICS USING HEC-RAS

Friday, October 3, 9:00 am

Sam Crampton—Dewberry

At the end of this course we hope that attendees will understand basic computation procedures for bridges in HEC-RAS, know how to code in a bridge and appurtenances (abutments, piers, etc), and know which equations to use when modeling a bridge structure. This course will cover water surface profiles, how they relate to specific energy, gradually and rapidly varied flow conditions, and super, sub, and critical depth flow regimes through bridges. We will cover the basics of energy and momentum and how to determine which equation to apply between different bridge configurations and flow classifications. This course will also discuss the advantages between 2-D and 1-D hydraulic modeling when considering contractions and ineffective flow areas around hydraulic structures. This course will be part 1 part lecture and 3 parts workshop. Attendees should have HEC-RAS pre-installed on their computers and have downloaded the workshop files made available before the course begins.

FIELD TRIPS

TENMILE CREEK RESTORATION PROJECT

Friday, October 3, 9:00 am

Coordinator: Brian Murphy, CDM Smith

The Tenmile Creek restoration project includes stream and floodplain restoration, soil amendment, wetlands creation and revegetation in a heavily impacted reach of Tenmile Creek near the Copper Mountain ski area. The project area was impacted primarily by historic mining upstream from the site, which for decades caused a major increase in sediment delivery from direct discharge into Tenmile Creek and from tailing pond dam failures. This caused changes in channel morphology in the project area including channel braiding, a decrease in sinuosity and pool frequency, loss of topsoil and loss of wetlands. This period was followed by a major decrease in sediment delivery following the establishment of permanent tailing ponds at the Climax Mine and additional floodplain development on-site, factors that precluded natural channel migration and recovery toward the pre-mining morphology. The restoration project was approached using natural channel design, meaning that the intent of the restoration work was to mimic natural form and function within the stream channel and to recreate to the best extent possible the morphology and site characteristics believed to have existed on the site before mining. Restoration work began in 2013 and resulted in approximately 1,600 linear feet of restored stream channel and the creation of 5 new meander bends, 5 new riffle-pool-glide sequences, and 5 new oxbow wetland features. A total of 3.15 acres of riparian, wetland and floodplain habitat was restored. Soils were amended using a mix of compost and mineral soil applied as topsoil ranging from 3 inches to 6 inches deep. Plantings included a mix of native grasses, sedges, containerized shrubs and willow cuttings. Funding for this project came from the Colorado Water Conservation Board, Climax Molybdenum and the National Forest Foundation. In-kind support came from Copper Mountain Resort and the US Forest Service. Additional restoration work is planned in 2015 including 1,200 feet of stream channel immediately downstream from the recently completed work.

MOUNTAIN BIKE TOUR – GORE CREEK

Friday, October 3, 9:00 am

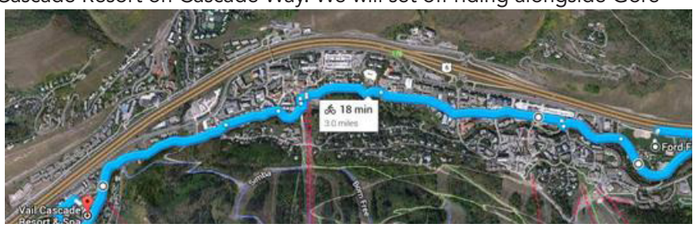
Coordinator: Rich Ommert, RESPEC

Join Rich Ommert for a day you will never forget. We will ride alongside the scenic Gore River, taking in the surroundings and chatting about improvements to the watershed due to sedimentation and maintaining stream health while having a safe and open highway corridor. This is something you don't want to miss!

Bike rentals are available through Charter Sports at the Vail Cascade Resort and Spa. The hourly rate for a path bike is $12, and $8 each additional hour. Helmets are included in the bike rental.

The ride will begin right behind the Vail Cascade Resort and Spa, once everyone is settled and has a bike to ride. From the hotel we will enter the trail east of the Vail Cascade Resort on Cascade Way. We will set off riding alongside Gore Creek.

The ride will continue for about an hour until Ford Park (just past Golden Peak), at which point we will turn around and head back to the resort.



9:00 am - Meet at Vail Cascade Resort entrance

12:00 pm - Return to Vail Cascade Resort

GOLF TOURNAMENT

CASFM GOLF TOURNAMENT

Friday, October 3, 10:00 am

Coordinator: Dave Center, AECOM

The elevation changes on the magnificent EagleVail layout will have you talking about your shots long after you hole-out on #18. (Golf View, July 2007)

Created by the Devlin/Von Hagge design team, EagleVail Golf club is full of elevation change and unique play. Elevated tees guarantee gravity-defying drives in the rarefied air, and, at 6836 yards, beginners won't be intimidated and experienced golfers will be well-challenged.

The front nine meanders through the valley floor, crossing the scenic Eagle River several times. After this pleasant warm-up, you are ready for the thrilling back nine that winds up the mountain-side through aspen, lodgepole pine and fir – the only excusable distraction from your golf game comes from the stunning setting!

WHO: All Conference Participants, Family Members, Sponsors and Exhibitors

WHERE: EagleVail Golf Club

WHEN: Friday, October 3, 2014 at 10:00 am

COST: $89 Entry Fee per Person payable to CASFM (includes cart, green fees, range balls and prizes)

FORMAT: Four-Person Scramble

Results of last year's tournament:

1st place - Stacey Thompson, Jon Sierk, Jeremy Hamer, Ian Simkiss

2nd place -Bill DeGroot, Shea Thomas, Chris Kroeger, Kevin Thomas

CHERRY CREEK STREAM RESTORATION AT 12-MILE PARK

CH2M Hill, Cherry Creek Basin Water Quality Authority, Cherry Creek State Park, U.S. Army Corps of Engineers

INTRODUCTION AND BACKGROUND

The Cherry Creek Stream Reclamation at 12-Mile Park project is located within the Cherry Creek State Park Dog Off Leash Area (DOLA) near the Parker Road and Orchard Road Intersection in Centennial, CO. The DOLA at 12-Mile Park was originally established as a hunting dog trial facility in 1971. Over time, the 12-Mile DOLA became a popular location for dog owners with yearly visitation reaching 232,000 in 2009. As the DOLA usage increased, the east bank of Cherry Creek became severely degraded with limited vegetation and steep banks. The lack of vegetation was one of the contributors to the breakout of Cherry Creek in early 2010.

DOES THE PROJECT ENHANCE PUBLIC HEALTH, SAFETY, AND WELFARE?

The east bank of Cherry Creek through the project areawas severely eroded with steep to near vertical banks exceeding 15 feet in some locations. Bank protection included ungrouted boulder edging, soil wraps, and an ungrouted stacked boulder wall. All steep banks were sloped back and existing vegetation was protected to the maximum extent possible.

DOES THE PROJECT ENHANCE THE SURROUNDING ENVIRONMENT?

The Cherry Creek Basin Water Quality Authority (CCBWQA) is tasked with preserving, protecting, and enhancing the beneficial uses and water quality in Cherry Creek and the Cherry Creek Reservoir. This project stabilized the east bank of Cherry Creek in two phases, reducing sediment loads and the accompanying nutrient loads into the Cherry Creek Reservoir. The project also restored Cherry Creek to its historic flow path, restored an existing open water area in in which sediment had deposited burying wetland vegetation, and reduced the amount of fill within the Cherry Creek Reservoir volume, while saving many of the existing trees and vegetation.

DOES THE PROJECT INCORPORATE ANY CREATIVE, UNIQUE OR INNOVATIVE SOLUTIONS OR DESIGNS?

With the project being located within the Cherry Creek DOLA, multiple creative and innovative solutions were required.

- Ungrouted boulder edging and stacked boulder wall
- Timber step creek access locations
- Fence at the top of slope and along the creek access locations
- Concrete trail to access Cherry Creek to meet ADA requirements
- Bio-swale at top of slope to retain runoff from the DOLA

DOES THE PROJECT INCLUDE MULTIPLE-OBJECTIVE MANAGEMENT IN ACHIEVING ITS GOAL?

The goal of the CCBWQAwas to enhance water quality within CherryCreek and the Cherry Creek Reservoir. This was achieved by stabilizing theeast bank of Cherry Creek and restoring Cherry Creek to its historic flow path. The USACE requirement of maintaining the reservoir flood storage volume in Cherry Creek Reservoir was achieved by producing a net export of material for the project. CCSP goals of maintaining existing vegetation, limited impacts to park users, creating maintainable improvements, and patrol access were all achieved.

DID THE PROJECT MEET IS GOAL WITH RESPECT TO PROBLEM SOLUTION, BUDGET, AND SCHEDULE?

The project finished both phases of design and construction within the project schedule. Total change orders during construction were approximately 1% of the total Phase 1 plus Phase 2 construction cost.

2014 CASFM AWARD FINALISTS

CITY OF LONGMONT - FLOOD RECOVERY PROJECT

City of Longmont, Anderson Consulting Engineers, Atkins, Bohannan Huston, CH2M Hill, Deere & Ault Consultants, Dewberry, Cap Construction, Nixcavating, DeFalco Construction, L&M Enterprises

The City of Longmont was hit by a 500-year flood on the St. Vrain River and a 100-year flood on Left Hand Creek on September 12th, 2013. Over 14 inches of rainfall fell in the mountains above Longmont with the combined flow rate in Longmont peaking at 27,800 cfs. This flood virtually cut the City in half.

The City responded in the following months with several steps to respond and recover from the flood.

Emergency Response included Closing Bridges, Evacuating People, Close the Waste Water Treatment Plant, Cutting a channel through Hygiene Road to re-route the river into its banks, protect the City from Irrigation Ditch Headgates failures, and Monitor Button Rock Reservoir to prevent dam failure.

Immediate Post Flood Recovery included Measuring Flood Highwater levels, Documenting Flood Extents & Damage, Inspecting Bridges for reopening – Engineered by Atkins Global, Inc., Jetting Storm Sewer System filled with mud, Cleaning mud off Roads, Flood Debris Collection and Disposal from Homes, and Damaged Drywall Collection and Disposal from Homes

The City of Longmont spent over $11.5 million in FEMA reimbursable costs including over $6.6 million in flood recovery construction projects in the 6 months following the flood. These projects were designed by 5 different engineering firms working closely with the city, some even as the flood was happening.

Engineering analysis of the flood was also needed. Four engineering firms assisted with estimating damages and identifying river capacity including what projects needed to be constructed before spring runoff which had snowpack levels at 250% of normal.

Four projects were identified to become Alternate Projects based on the Sandy Recovery Improvement Act of 2013 which allows FEMA to reimburse the City for damages based on replacement construction costs that can then be used on any comparable project. This allows funds to be allocated to the most critical repair locations.

The City was also proactive with updating the Storm Drainage Utility. The monthly fee was increased from $7.77 to $13.05 per month. A channel design project was prepared to increase the size of the St. Vrain River corridor to pass the 100-year flows through the City of Longmont. This project would cost $80-90 million. This design was used to get a $20 million Storm Drainage Bond election to help pay for the improvements.

The end result of all of these activities has allowed the City of Longmont not only to recover from the flood but mitigate damages from future flooding.

2014 CASFM AWARD FINALISTS

TO MOVE A RIVER - SAVING LOVELAND'S WATER SUPPLY

City of Loveland, Ayres Associates, Tetra Tech

Epic engineering feat, on the fly, saves Loveland's water supply" read the headlines. It was indeed an epic feat: risky, courageous, and unlikely to succeed. But they had to try. The September 2013 flood scoured land away as the river shifted course 300 feet from its original channel, exposing then destroying, two of three water transmission lines that provide drinking water to tens of thousands of people and businesses in the Loveland area. The only remaining 48-inch steel pipe was now exposed underneath the newly formed channel, getting pounded by high velocity water and rolling boulders. It would only be a matter of time before that pipeline also succumbed to the flood. So the City had to do what was previously unthinkable: move a river at flood stage in order to save the City's water supply.

Normally this kind of effort would take years of engineering analysis, design, and permitting plus months of construction. However, the City didn't have a year. The remaining transmission line was expected to survive somewhere between minutes to a few days at best. So an epic, round-the-clock effort began. Jim Schall was brought in from Ayres Associates to help assess the river and come up with a plan of action with Chris Carlson. After inspecting the reach and discussing the options, a general plan to construct spur dikes was devised in approximately 15-30 minutes. It was marked up in the field on an 11x17 aerial photo then "staked" out using a can of spray paint and some aluminum tent poles that washed ashore during the flood. In the meantime, a simultaneous monumental effort began to build a haul road into the site across a heavily scoured and saturated floodplain. Most construction equipment couldn't access the site until this road was constructed. Both CEI and Ward Construction were mobilized to perform the emergency construction work. They did an amazing, highly commendable job!

With the haul road construction underway, Chris and Dan Evans from Tetra Tech got approval from the land owner of the opposite bank to bring in an additional excavator through his property. The team also devised a plan to re-excavate the now fully sedimented-in original channel, create a man-made headcut, and start working from the opposite side of the river to open a flow path for flows that would hopefully be redirected by the spur dikes. Then the plan would be modified as needed depending upon the river's response. Work… watch… react.

To complicate matters greatly, there was virtually no riprap or boulders available in such a short time frame. So a deal was made to import discarded flagstone material from a nearby quarry for free while using dozers to mine on-site rocks from the adjacent hogback on City property. Downed trees were gathered for an upcoming beaver dam/dike. There was no time, no computer modeling, no analysis, no permitting, inadequate materials, and flood conditions on the river – yet, engineering experience, ingenuity, great collaboration, risk taking, incredible contractors, and a healthy dose of luck moved a river and saved a city's water supply. 9News and local newspapers reported the story that evening. "No one had ever done it before and no one had ever seen it done."

Working from both sides to build the "beaver dam/dike." Note trees being held in place across the remaining opening. Most of the flow is moving back into the original channel alignment.

HONORABLE MENTION PROJECTS

WALDO CANYON WATSHED AT US 24 - STORMWATER CHALLENGES RESULTING FROM A FOREST FIRE

CDOT Region 2, RESPEC

FOUNTAIN CREEK CHANNEL IMPROVEMENTS DESIGN

Ayres Associates, City of Woodland Park

Thanks to this year's selection panel:

Kevin Wegener, City of Aurora,
John Pflaum, Independent,
Dave Skuodas, UDFCD

Start planning for next year!

Nominations for the 2015 CASFM Project Award will be due next May.

CONFERENCE SCHEDULE

TUESDAY, SEPTEMBER 30, 2014

8:00 am—5:00 pm CERTIFIED FLOODPLAIN MANAGER TRAINING SESSION
Location: Rocky Mountain Ballroom
Jamie Prochno, Kevin Houck—Colorado Water Conservation Board
Craig Jacobson—ICON
Chris Tagert – Michael Baker Jr.

2:00 pm—5:00 pm GREEN INFRASTRUCTURE AND LOW IMPACT DEVELOPMENT PLANNING, DESIGN AND EVALUATION
Location: Centennial D
Chris Olson – Colorado Stormwater Center

2:00 pm—5:00 pm GIS TOOLS FOR HYDROLOGY
Location: Centennial E/F
David Delagarza – RESPEC

5:00 pm—8:00 pm DINNER ON YOUR OWN

8:00 pm—9:00 pm ICE BREAKER SOCIAL HOUR
Location: Creekside Deck
Sponsored by Michael Baker Jr.

Michael Baker INTERNATIONAL

WEDNESDAY, OCTOBER 1, 2014

7:00 am—10:00 am CERTIFIED FLOODPLAIN MANAGER EXAM
Location: Rocky Mountain Ballroom
Jamie Prochno, Kevin Houck—CWCB
Craig Jacobson, Troy Carmann - ICON Engineering
Chris Tagert - Michael Baker Jr.

8:00 am—9:00 am REGISTRATION AND BREAKFAST
Location: Vendor Foyer
Alan Turner—CH2M Hill

9:00 am—9:30 am WELCOME AND INTRODUCTION
Location: Centennial Ballroom
Brian Varrella, CASFM Chair—City of Fort Collins

9:30 am—10:00 am IT'S ONE YEAR LATER: DO YOU KNOW WHERE YOUR PSYCHE IS?
Location: Centennial Ballroom
Penn Gildersleeve – ICON Engineering

10:00 am—11:30 am KEYNOTE ADDRESS: RESILIENT AND RAMBUNCTIOUS FLOODPLAINS
Location: Centennial Ballroom
Dr. Brian Bledsoe – Colorado State University

11:30 am—1:30 pm LUNCH
Location: Cascade Ballroom
Introduction of 2014/2015 Officers and Committee Chairs

CASFM

SAVE THE DATE:
26th Annual CASFM Conference
September 22-25, 2015

25th Annual 2014 CASFM Conference
Vail, Colorado Sept. 30 - Oct. 3, 2014

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ASFPM OUTSTANDING CHAPTER AWARD WINNER 2014

	Water Quality	2013 Flood	Emergency Preparedness
1:30	How to Define Success on a Project	Floodplain Mapping after a Flood Event	Using Staff Gauges as Flood Response Tools
2:00	Huston Lake Storm Water Quality Treatment	The Jamestown Experience	After the Flood: Using Collaborative Tools
2:30	Optimizing Organic Content in Bioretention Media	Fountain Creek Channel Improvements	Sediment, Sediment & More Sediment
3:00	<---------- break ---------->		
3:30	CDOT's Transportation Erosion Control Supervisor Certification	Engineering Forensics: Fourmile Canyon Creek	H&H Analysis Post-Fire Mitigation
4:00	Evaluating BMPs using EPA's SUSTAIN Model	The First Few Days of the September 2013 Flood	Kelly Road Dam Updating Denver's EAPs
4:30	Bending the Forebay – The Swirlbay	CDOT Flood Response and Recovery	Improving Flood Forecasting

1:30 pm—2:00 pm CONCURRENT TECHNICAL SESSIONS:

WQ1 HOW TO DEIFNE SUCCESS ON A PROJECT - THEN HOW TO ACHIEVE IT
Location: Centennial D
David Skuodas – Urban Drainage and Flood Control District

FD1 FLOODPLAIN MAPPING AFTER A FLOOD EVENT
Location: Centennial E/F
Josh Hollon – Atkins
Thuy Patton – Colorado Water Conservation Board

EP1 USING STAFF GAUGES AS FLOOD RESPONSE AND STORMWATER MANAGEMENT TOOLS
Location: Rocky Mountain
Jacob James – Town of Parker

2:00 pm—2:30 pm CONCURRENT TECHNICAL SESSIONS:

WQ2 HUSTON LAKE STORM WATER QUALITY TREATMENT
Location: Centennial D
Kevin Lewis – City and County of Denver
Chris Kroeger, Melanie Chenard – Muller Engineering Company

FD2 RAPID AND SUSTAINABLE DISASTER RECOVERY WITHIN A DYNAMIC WATERSHED – THE JAMESTOWN EXPERIENCE
Location: Centennial E/F
Jeff Brislawn, Joel McGuire – AMEC Environment and Infrastructure
Mark Williams - Town of Jamestown

EP2 AFTER THE FLOOD: USING COLLABORATIVE TOOLS TO INFORM FUTURE PREPAREDNESS
Location: Rocky Mountain
Casey Caldwell – HydroLogics

2:30 pm—3:00 pm CONCURRENT TECHNICAL SESSIONS:

WQ3 OPTIMIZING ORGANIC CONTENT IN BIORETENTION MEDIA
Location: Centennial D
Holly Piza – Urban Drainage and Flood Control District
Jim Wulliman – Muller Engineering Company

FD3 FOUNTAIN CREEK CHANNEL IMPROVEMENTS
Location: Centennial E/F
William Alspach – City of Woodland Park
Richard Smith – Ayres Associates

EP3 SEDIMENT, SEDIMENT & MORE SEDIMENT – IMPACTS AND MITIGATION EFFORTS ON CAMP CREEK, NORTH & SOUTH DOUGLAS CREEK IN COLORADO SPRINGS
Location: Rocky Mountain
Timothy Mitros – City of Colorado Springs

3:00 pm—3:30 pm BREAK
Location: Vendor Area

3:30 pm—4:00 pm CONCURRENT TECHNICAL SESSIONS:

WQ4 CDOT'S TRANSPORTATION EROSION CONTROL SUPERVISOR CERTIFICATION
Location: Centennial D
Eliot Wong – Wright Water Engineers
Tripp Minges - CDOT

FD4 ENGINEERING FORENSICS: RECREATING THE FOURMILE CANYON CREEK FLOOD UNSING A CALIBRATED 2D MODEL
Location: Centennial E/F
Craig Jacobson, Brian LeDoux – ICON Engineering
David Skuodas – Urban Drainage and Flood Control District

EP4 HYDRAULIC AND HYDROLOGIC ANALYSIS ASSISTING POST-FIRE MITIGATION FOR STANLEY CANYON ROAD NEAR COLORADO SPRINGS, COLORADO
Location: Rocky Mountain
Joseph Machala, Chris Shrimpton, Frederick Larson, Hui-Ming Shih – URS Corporation

4:00 pm—4:30 pm CONCURRENT TECHNICAL SESSIONS:

WQ5 EVALUATING BMP SCENARIOS IN BALLONA CREEK WATERSHED USING EPA'S SUSTAIN MODEL
Location: Centennial D
Drew Beck – Matrix Design Group

FD5 THE FIRST FEW DAYS OF THE SEPTEMBER 2013 FLOOD FROM A HIGHWAY HYDRAULIC ENGINEERING PERSPECTIVE
Location: Centennial E/F
Steven Griffin - CDOT

EP5 KELLY ROAD DAM & UPDATING DENVER'S EMERGENCY ACTION PLANS
Location: Rocky Mountain
Saeed Farahmandi, Bruce Uhernik – City and County of Denver

4:30 pm—5:00 pm **CONCURRENT TECHNICAL SESSIONS:**

WQ6 **BENDING THE FOREBAY TO CREATE BETTER SEDIMENT CAPTURE AND RETENTION – THE SWIRLBAY**
Location: Centennial D
Ted Christianson – City and County of Denver

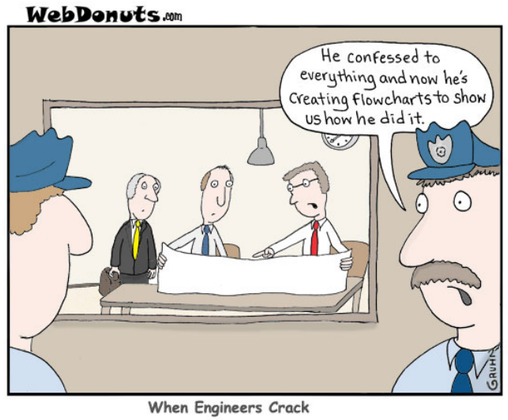
FD6 **CDOT FLOOD RESPONSE AND RECOVERY**
Location: Centennial E/F
Steven Humphrey – Muller Engineering Company
Keith Sheaffer - CDOT

EP6 **IMPROVING FLOOD FORECASTING USING INNOVATIVE QUANTITATIVE PRECIPITATION FORECASTING TOOLS**
Location: Rocky Mountain
Dimitry Smirnov, Stu Geiger – Dewberry
Kevin Houck – Colorado Water Conservation Board

5:00 pm—6:30 pm **HAPPY HOUR**
Location: Vendor Foyer
Sponsored by ERO Resources Corporation

ERO Resources Corp.

6:30 pm **DINNER ON YOUR OWN**



When Engineers Crack

THURSDAY, OCTOBER 2, 2014

7:30 am—8:30 am **BREAKFAST**
Location: Centennial Ballroom
Sponsored by Brierley

BRIERLEY ASSOCIATES
Creating Space Underground

BOARD MEMBER MEETING
Officers and Committee Chairs
Location: Aspen Board Room

8:30 am—10:00 am **2014 CASFM AWARD FINALISTS**
Location: Centennial Ballroom

Cherry Creek Stream Restoration at 12-Mile Park
CH2M Hill, Cherry Creek Basin Water Quality Authority, Cherry Creek State Park, U.S. Army Corps of Engineers

City of Longmont - Flood Recovery Project
City of Longmont, Anderson Consulting Engineers, Atkins, Bohannan Huston, CH2M Hill, Deere & Ault Consultants, Dewberry, Cap Construction, Nixcavating, DeFalco Construction, L&M Enterprises

To Move a River - Saving Loveland's Water Supply
City of Loveland, Ayres Associates, Tetra Tech

10:00 am—10:30 am **BREAK**
Location: Vendor Foyer

10:30 am—11:30 am **FEATURED SPEAKERS: ENVIRONMENTAL LEADERSHIP THROUGH COLLABORATION – IT'S NOT MY WAY OR THE HIGHWAY**
Location: Centennial Ballroom
Barry Fagan – Alabama Department of Transportation
Jesse Poore – Felsburg, Holt & Ullevig

11:30 pm—1:30 pm **GENERAL MEMBERSHIP LUNCH MEETING**
Location: Cascade Ballroom

	Stream Restoration	Technical Modeling	General Interest
1:30	Improving Revegetation in Cobble-Bed Streams	Real World Storm – Real World Calibration	How to Build Relationships before You Need Them
2:00	Large Woody Debris	About that Hydrograph Timing	The Use of QBS in Selection of Professional Services
2:30	UDFCD Riparian Floodplain Stewardship Initiative	Re-evaluating Hydrologic Assumptions in Basalt	The 90-Mile Road to Recovery
3:00	<---------- break ---------->		
3:30	Principles of Channel Design for an Urban Stream	Real Time Simulation for Flood Forecasting	Westerly Creek: A Poster Child
4:00	Dam Removal and Restoration on the Cache La Poudre	Geospatial + Gaming: A New Data Paradigm	Pathogens in Urban Stormwater Systems
4:30	Little Thompson Watershed Restoration	The Next Model	How Did a 1,000-Yr Rainfall Cause a 50-Yr Flood?

1:30 pm—2:00 pm CONCURRENT TECHNICAL SESSIONS:

SR1 IMPROVING REVEGETATION SUCCESS FOLLOWING CHANNEL RESTORATION IN COBBLE-BED STREAM SYSTEMS: RESEARCH ON THE ENCAMPMENT RIVER, WYOMING
Location: Centennial D
J. Randall Walsh – Stantec Consulting

TM1 REAL WORLD STORM – REAL WORLD CALIBRATION
Location: Centennial E/F
Morgan Lynch – CH2M Hill
Kevin Houck – Colorado Water Conservation Board

GI1 HOW TO BUILD RELATIONSHIPS BEFORE YOU NEED THEM
Location: Rocky Mountain
John Burke – City of Westminster

2:00 pm—2:30 pm CONCURRENT TECHNICAL SESSIONS:

SR2 LARGE WOODY DEBRIS: TECHNIQUES FOR BANK STABILIZATION AND HABITAT IMPROVEMENT
Location: Centennial D
Brian Murphy – CDM Smith

TM2 ABOUT THAT HYDROGRAPH TIMING – MODELING MOVING STORMS IN CUHP AND SWMM
Location: Centennial E/F
David Delagarza – RESPEC

GI2 THE USE OF THE QUALIFICATIONS BASED SELECTION PROCUREMENT PROCESS AS A BEST PRACTICE IN THE SELECTION OF PROFESSIONAL SERVICES
Location: Rocky Mountain
Colin Haggerty – Parsons Brinckerhoff
Wyatt Popp – Olsson Associates

2:30 pm—3:00 pm CONCURRENT TECHNICAL SESSIONS:

SR3 URBAN DRAINAGE AND FLOOD CONTROL DISTRICT RIPARIAN FLOODPLAIN STEWARDSHIP INITIATIVE
Location: Centennial D
Jenelle Kreutzer – ERO Resources Corp
Kevin Lewis – City and County of Denver

TM3 RE-EVALUATING HYDROLOGIC ASSUMPTIONS WITH A 2D MODEL IN BASALT, CO
Location: Centennial E/F
Chris Romeyn – URS Corporation
Stuart Gardner – CDOT

GI3 THE 90-MILE ROAD TO RECOVERY
Location: Rocky Mountain
Chris Tagert – Michael Baker International

3:00 pm—3:30 pm BREAK
Location: Vendor Foyer

3:30 pm—4:00 pm CONCURRENT TECHNICAL SESSIONS:

SR4 PRINCIPLES OF CHANNEL DESIGN AND CONSTRUCTION TECHNIQUES FOR AN URBAN STREAM AND WETLAND MITIGATION PROJECT
Location: Centennial D
TC Dinkins - Stantec

TM4 REAL TIME HYDROLOGIC AND HYDRAULIC SIMULATION FOR FLOOD FORECASTING AND FLOOD CONTROL DECISION SUPPORT
Location: Centennial E/F
Sam Crampton – Dewberry

GI4 WESTERLY CREEK: A POSTER CHILD FOR UNDERSTANDING THE BENEFIT OF STORMWATER INVESTMENT
Location: Rocky Mountain
Alan Turner – CH2M Hill
Johathan Villines – City of Aurora

4:00 pm—4:30 pm CONCURRENT TECHNICAL SESSIONS:

SR5 DAM REMOVAL AND RESTORATION OF A GEOMORPHIC FLOODPLAIN ON THE CACHE LA POUDRE RIVER IN NORTHERN COLORADO
Location: Centennial D
Michael Lighthiser – Biohabitats

TM5 GEOSPATIAL + GAMING: A NEW DATA PARADIGM
Location: Centennial E/F
Bill Emison – Merrick & Company

GI5 PATHOGENS IN URBAN STORMWATER SYSTEMS: WHAT'S THE PROBLEM?
Location: Rocky Mountain
Candice Owen, Jane Clary – Wright Water Engineers

4:30 pm—5:00 pm CONCURRENT TECHNICAL SESSIONS:

SR6 LITTLE THOMPSON WATERSHED RESTORATION
Location: Centennial D
Peggy Bailey – Tetra Tech

TM6 THE NEXT MODEL
Location: Centennial E/F
Dusty Robinson – Ayres Associates

GI6 HOW DID A 1,000-YEAR RAINFALL CAUSE A 50-YEAR FLOOD?
Location: Rocky Mountain
Kurt Bauer – City of Boulder
Andrew Earles – Wright Water Engineers

5:00 pm—6:30 pm HAPPY HOUR
Location: Vendor Foyer
Sponsored by RESPEC

RESPEC CONSULTING & SERVICES

7:00 pm—9:00 pm CASFM ASSOCIATION DINNER AND AWARDS
Location: Centennial Ballroom
Sponsored by Muller Engineering Company

MULLER

2014 CASFM Project Awards Presentation: John Pflaum
Grand Prize Drawings: Stuart Gardner—CDOT

9:00 pm—Midnight ENTERTAINMENT – TRIVIA
Location: Centennial Ballroom

FRIDAY, OCTOBER 3, 2014

7:30 am—8:30 am CONTINENTAL BREAKFAST
Location: Vendor Foyer

8:30 am—9:00 am CLOSING REMARKS
Location: Centennial Ballroom
Brian Varrella, CASFM Chair—City of Fort Collins

9:00 am—11:00 am WORKSHOP: BASIC BRIDGE HYDRAULICS USING HEC-RAS
Location: Rocky Mountain
Sam Crampton – Dewberry

9:00 am—12:00 pm FIELD TRIPS:
TENMILE CREEK RESTORATION PROJECT
Coordinated by Brian Murphy—CDM

MOUNTAIN BIKE TOUR
Coordinated by Rich Ommert—RESPEC

10:00 am—3:00 pm GOLF TOURNAMENT—EagleVail Golf Club
Coordinated by Dave Center—AECOM
Sponsored by Oldcastle

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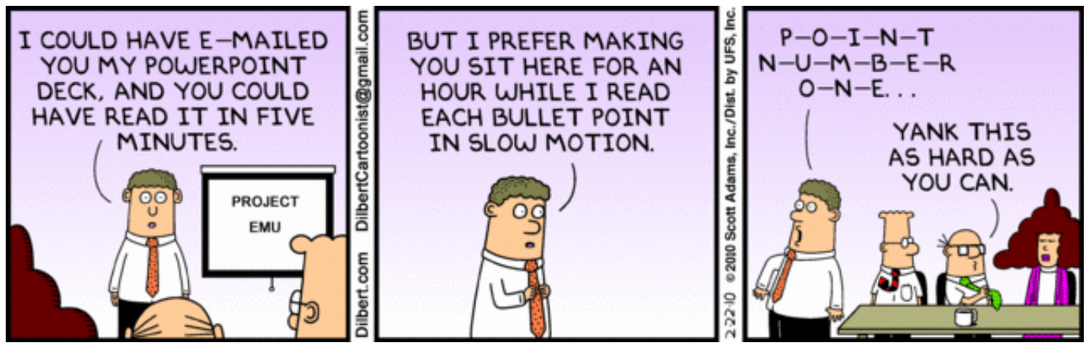

PRESENTATION ABSTRACTS

Wednesday, October 1st
Location: Centennial D

WQ1 1:30 pm

HOW TO DEFINE SUCCESS ON A PROJECT – THEN HOW TO ACHIEVE IT

David Skuodas – UDFCD
dskuodas@udfcd.org

Is there a formula to delivering a successful project? We believe it starts with defining what success means. This isn't the same from one project to the next, and as projects become larger and more complex defining success becomes even more important. We'll discuss tools to establish what success means on a given project, and how to achieve success through harnessing the talents of the entire project team.

WQ2 2:00 pm

HUSTON LAKE STORM WATER QUALITY TREATMENT

Kevin Lewis – City and County of Denver; Chris Kroeger, Melanie Chenard – Muller Engineering Company
donald.Lewis@denvergov.org, ckroeger@mullereng.com, mchenard@mullereng.com

The presentation will focus on the design, construction, and performance of a storm water quality treatment BMP that was constructed on the north side of Huston Lake Park to replace a poorly functioning sand filter water quality treatment basin. Unique to this project is the forebay integrated within two parallel parking street pullouts so that sediment and debris removal can be performed under Denver's routine street sweeping program. An infiltration gallery incorporated into the park landscape consists of an underdrain system, site specific developed growing media, and sand-grown sod. The project was completed in November 2013.

WQ3 2:30 pm

OPTIMIZING ORGANIC CONTENT IN BIORETENTION MEDIA

Jim Wulliman – Muller Engineering Company; Holly Piza – UDFCD
jwulliman@mullereng.com, hpiza@udfcd.org

This presentation summarizes research that explores optimizing the organic content in bioretention media to provide adequate nutrients for vegetation to establish and thrive while minimizing export of nutrients in the effluent. The study also explores the outcome of using various amendments, including a slow-release organic fertilizer and granulated iron.

WQ4 3:30 pm

CDOT'S TRANSPORTATION EROSION CONTROL SUPERVISOR CERTIFICATION

Eliot Wong, Jennifer Keyes, Andrew Earles – Wright Water Engineers; Tripp Minges – CDOT
ewong@wrightwater.com

This presentation will highlight the newly launched Colorado Department of Transportation (CDOT) Transportation Erosion Control Supervisor (TECS) Certification class. The goal of the certification is to promote and sustain a high standard of stormwater quality and help to ensure stormwater permit compliance. This presentation will provide an overview of the classroom and field curriculum and illustrate why the TECS class is beneficial not only for CDOT employees and its contractors, but for anyone who works in the stormwater quality compliance arena.

WQ5 4:00 pm

EVALUATING BMP SCENARIOS IN BALLONA CREEK WATERSHED USING EPA'S SUSTAIN MODEL

Drew Beck – Matrix Design Group
drew_beck@matrixdesigngroup.com

The current research utilizes EPA's SUSTAIN model to compute the quantitative and qualitative impacts of BMP implementation in a highly urbanized watershed. Five BMP types are optimized based on a range of average annual metal load reduction. The number and types of BMPs are optimized to generate cost effectiveness curves for varying management and implementation scenarios.

WQ6 4:30 pm

BENDING THE FOREBAY TO CREATE BETTER SEDIMENT CAPTURE AND RETENTION – THE SWIRLBAY

Ted Christianson – City and County of Denver
ted.christianson@denvergov.org

A better forebay design may be swirling the forebay; floatables move into the vegetation in the banks of the forebay and sediment moves away from the forebay outlet. To demonstrate the concept a pilot study was set up in a pond on the Denver Wastewater campus, and the results were better than anticipated. The outlet, berm, and energy dissipater were all held constant, and a dike of sand bags was installed in a curve away from the forebay drain. Dynamic placement of the sediment created a dune shaped well graded soil that seems to be the key to keeping the sediment in the forebay and vegetation friendly.

WEDNESDAY, OCTOBER 1 - WATER QUALITY TRACK

Wednesday, October 1st
Location: Centennial E/F

FD1 1:30 pm

FLOODPLAIN MAPPING AFTER A FLOOD EVENT

Thuy Patton – CWCB; Josh Hollon – Atkins
thuy.patton@state.co.us, joshua.hollon@atkinsglobal.com

Following the September 2013 floods, CWCB and local communities identified the flood had caused significant channel migration and with that, flooding risks had changed. To identify new areas of flooding risk and support recovery and restoration efforts, Atkins provided automated floodplain mapping for approximately 500 miles of flood affected rivers and streams. The post-flood awareness mapping was provided to local communities to support their floodplain management activities and provide an additional tool to help guide floodplain development and restoration efforts.

FD2 2:00 pm

RAPID AND SUSTAINABLE DISASTER RECOVERY WITHIN A DYNAMIC WATERSHED – THE JAMESTOWN EXPERIENCE

Jeff Brislawn, Joel McGuire – AMEC Environment and Infrastructure; Mark Williams - Town of Jamestown
jeff.brislawn@amec.com, joel.mcguire@amec.com

Located in Boulder County, the small mountain community of Jamestown was "ground zero" for the Colorado flood disaster in September of 2013 The presentation will discuss the challenges of completing a provisional flood hazard delineation in a short time frame and how it was applied in the recovery for floodplain management, hazard mitigation and stream restoration purposes. The presentation will also cover community engagement efforts and how state, federal, and other technical and financial resources were leveraged for the town's recovery and resiliency against future events.

FD3 2:30 pm

FOUNTAIN CREEK CHANNEL IMPROVEMENTS

William Aslpach - City of Woodland Park; Richard Smith - Ayres Associates
smithr@ayresassociates.com

The Fountain Creek Channel Improvements project involved stabilizing an extensively eroded gully in Woodland Park, Colorado. The project was part of pre-disaster mitigation program addressing channel erosion, instability issues, and property losses. The project consists of reinforced box culvert (RBC) with improved slope tapered inlet to reduce size of required box culvert by about half.

FD4 3:30 pm

ENGINEERING FORENSICS: RECREATING THE FOURMILE CANYON CREEK FLOOD USING A CALIBRATED 2D MODEL

Craig Jacobson, Brian LeDoux – ICON Engineering; Dave Skuodas - UDFCD
cjacobson@iconeng.com, bledoux@iconeng.com, dskuodas@udfcd.org

The September 2013 flood was devastating to the Fourmile Canyon Creek corridor within the City of Boulder. Flooding from Fourmile Creek was widespread, but occurred differently than expected. Most concerning was that Fourmile Canyon Creek did not spill significantly into Wonderland Creek, as previously predicted by recent regulatory mapping updates. With these spills not occurring, many questions were left for the City to answer. ICON developed a 2-dimentional hydraulic model using the FLO-2D software program to help answer these questions.

FD5 4:00 pm

THE FIRST FEW DAYS OF THE SEPTEMBER 2013 FLOOD FROM A HIGHWAY HYDRAULIC ENGINEERING PERSPECTIVE

Steven Griffin – Colorado Department of Transportation
steven.griffin@state.co.us

The flooding event of September 2013 severely damaged key routes along Colorado's State and Federal Highway system. This presentation will contain an overview of the first few days of flooding from a highway hydraulic engineering perspective, focusing on the types of damage incurred by the infrastructure and the unique role which a hydraulic/water resources engineer might have within the first days of a severe flooding event.

FD6 4:30 pm

CDOT FLOOD RESPONSE AND RECOVERY

Keith Sheaffer – CDOT; Steven Humphrey – Muller Engineering Company
shumphrey@mullereng.com

This presentation summarizes the destruction that took place in the September flood event to CDOT infrastructure. It highlights the emergency response work that was done in two months to re-establish transportation routes and provide access to the local communities and it discusses the ongoing flood recovery work that is taking place to permanently repair the damage roadways in a manner that will make them better and more resilient than before.

Wednesday, October 1st
Location: Rocky Mountain

EP1 1:30 pm

USING STAFF GAUGES AS FLOOD RESPONSE AND STORMWATER MANAGEMENT TOOLS

Jacob James – Town of Parker
jjames@parkeronline.org

The Town of Parker has implemented a stream monitoring system by installing staff gauges at critical roadway crossings of major drainageways within the Town limits. In addition to the staff gauges, critical identifying markers were also installed adjacent to the gauges corresponding to predetermined water surface elevations of interest. Flood response directives will be provided based on real time inspection and reporting of water levels at crossings with staff gauges and markers. The routine inspection of staff gauges and markers will also provide information that can be used to determine required stormwater facility or floodplain maintenance and/or rehabilitation activities.

EP2 2:00 pm

AFTER THE FLOOD: USING COLLABORATIVE TOOLS TO INFORM FUTURE PREPAREDNESS

Casey Caldwell, A. Michael Sheer, Dan Sheer – HydroLogics; Mike Kelly, Ryan MacDonald, Mike Nemeth, Megan Van Ham – Alberta WaterSMART
ccaldwell@hydrologics.net

In June 2013, several days of heavy rainfall culminated in record flooding of Bow River basin in southern Alberta, Canada - devastating the city of Calgary and surrounding areas. Flows estimated at 1,740 cubic meters per second (more than 60,000 cfs) barreled through Calgary, the highest recorded peak in over a century. The Bow River Flood Mitigation and Watershed Management Project used a collaborative approach to assess proposed flood mitigation options from a basin wide perspective to inform the larger flood recovery and preparedness efforts in the province.

EP3 2:30 pm

SEDIMENT, SEDIMENT & MORE SEDIMENT – IMPACTS AND MITIGATION EFFORTS ON CAMP CREEK, NORTH & SOUTH DOUGLAS CREEK IN COLORADO SPRINGS

Timothy Mitros – City of Colorado Springs
tmitros@springsgov.com

On, June 26, 2012, the Waldo Canyon Fire killed two people, burned 346 homes, and forced the evacuation of over 32,000 people in Colorado Springs. Carol Ekarius, Executive Director from the Coalition of the Upper South Platte (CUSP), immediately warned the City "we haven't seen anything yet - wait till you see the flooding." Dave Rosgen prepared the Watershed Assessment of River Stability and Sediment Supply (WARSSS) and determined we were going to have problems with Camp Creek, North and South Douglas Creek for years to come. The storms in September exacerbated the situation bringing down over 60,000 cubic yards of sediment into the City, with additional amounts staged and ready to come down.

EP4 3:30 pm

HYDRAULIC AND HYDROLOGIC ANALYSIS ASSISTING POST-FIRE MITIGATION FOR STANLEY CANYON ROAD NEAR COLORADO SPRINGS, COLORADO

Joseph Machala, Chris Shrimpton, Fredrick "Paco" Larson, Hui-Ming "Max" Shih – URS Corporation
joseph.machala@urs.com

The 2012 Waldo Canyon Fire caused significant damage to facilities both within and downstream from the West Monument Creek drainage. The URS team will share their observations, technical approaches, and lessons learned on this design-build project, including site damage assessment, hydrologic and hydraulic analysis of pre-fire and post-fire conditions, low water crossing design, water line relocation and repairs, erosion control, and sedimentation catchment construction.

EP5 4:00 pm

KELLY ROAD DAM & UPDATING DENVER'S EMERGENCY ACTION PLANS

Saeed Farahmandi, Bruce Uhernik – City and County of Denver
bruce.uhernik@denvergov.org, saeed.farahmandi@denvergov.org

This presentation looks back at what happened at Kelly Road Dam and a team effort by Denver, UDFCD, City of Aurora, Lowry Redevelopment Authority & the State Dam Safety Branch to improve the Emergency Action Plan (EAP). EAPs can be greatly underappreciated until an event occurs that requires their use. The September 2013 storm revealed that the available flood information for Kelly Road Dam was clunky and hard to follow. Thus in 2014, Denver joined forces to revamp Kelly Road Dam's EAP as part of the State's ongoing effort.

EP6 4:30 pm

IMPROVING FLOOD FORECASTING USING INNOVATIVE QUANTITATIVE PRECIPITATION FORECASTING TOOLS

Dimitry Smirnov, Stu Geiger – Dewberry; Kevin Houck – Colorado Water Conservation Board
dsmirnov@dewberry.com, sgeiger@dewberry.com, kevin.houck@state.co.us

Over the past 5 years, advances in weather forecasting models have improved our ability to forecast heavy precipitation events with greater spatial and temporal resolution, resulting in increased lead times for emergency responders. During the course of the 2014 flood season, the CWCB is testing several new techniques to facilitate improved precipitation forecasting (QPF) across the State of Colorado. This presentation will explore the science behind the QPF techniques, its application to Colorado, and the results across the 2014 season.

WEDNESDAY, OCTOBER 1 - EMERGENCY PREPAREDNESS TRACK

Thursday, October 2nd
Location: Centennial D

SR1 1:30 pm

IMPROVING REVEGETATION SUCCESS FOLLOWING CHANNEL RESTORATION IN COBBLE-BED STREAM SYSTEMS: RESEARCH ON THE ENCAMPMENT RIVER, WYOMING

J. Randall (Randy) Walsh – Stantec Consulting
randy.walsh@stantec.com

This presentation will introduce research being conducted to evaluate materials and methods used to increase revegetation success in association with ongoing stream restoration projects in the upper Platte River valley, Carbon County, Wyoming. An introduction to recent restoration efforts in the valley will be described, study methods will be discussed, and preliminary results of the field studies will be presented.

SR2 2:00 pm

LARGE WOODY DEBRIS: TECHNIQUES FOR BANK STABILIZATION AND HABITAT IMPROVEMENT

Brian Murphy – CDM Smith
murphybm@cdmsmith.com

Stabilization of incising channels and their stream corridors can have major, positive ecological effects, particularly when the methods and structures rely on natural processes. Today, the vast majority of river bank protection techniques utilize rock that is unrepresentative of the river's natural bank characteristics. Large woody debris (LWD) structures such as snags, root wads, weirs, and deflectors have been used effectively in stream channels along Colorado's Front Range. This presentation will summarize LWD techniques and their use in meeting bank protection, ecological, and economic objectives. Examples from recent projects will also be discussed to examine the engineering, risks, and construction associated with LWD and the two common concerns: stability and life expectancy of LWD structures.

SR3 2:30 pm

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT RIPARIAN FLOODPLAIN STEWARDSHIP INITIATIVE

Jenelle Kreutzer – ERO Resources Corp; Kevin Lewis – City and County of Denver
jkreutzer@eroresources.com

UDFCD is a special district that leads drainage and flood control efforts in the Denver metropolitan area. Over the years, the methods UDFCD has used to stabilize channels and streams and detain flood flows have evolved as knowledge of natural floodplain functions and values has increased. UDFCD, in partnership with the City and County of Denver, is initiating a new approach to wetland and riparian vegetation management along channels and streams within its boundaries. The initiative recognizes that healthy riparian systems increase the resiliency of the stream channel during high flows, improve water quality, and require less maintenance.

SR4 3:30 pm

PRINCIPLES OF CHANNEL DESIGN AND CONSTRUCTION TECHNIQUES FOR AN URBAN STREAM AND WETLAND MITIGATION PROJECT

TC Dinkins – Stantec
tdinkins@stantec.com

The continuous trend of development and urbanization has led to the complete loss or permanent impact of many streams and wetlands. Without provisions in place to set a precedent on protecting these natural ecosystems, many of these natural areas could disappear altogether. Stream and wetland mitigation requirements, provide a solution, in which future developments can be planned in a way that not only protects existing aquatic and riparian habitats, but also funds the creation and permanent protection of new habitats. This presentation will discuss the background, goals and objectives, design, implementation, and long term monitoring of an urban stream and wetland mitigation project in Spanish Fork, Utah, completed Summer 2014.

SR5 4:00 pm

DAM REMOVAL AND RESTORATION OF A GEOMORPHIC FLOODPLAIN ON THE CACHE LA POUDRE RIVER IN NORTHERN COLORADO

Michael S. Lighthiser – Biohabitats
mlighthiser@biohabitats.com

The City of Fort Collins Natural Areas Department completed the Sterling Pond and Josh Ames Structure Ecological Restoration Project along the Cache la Poudre River in Larimer County, Colorado. The project addressed past impacts by lowering high, confining berms along the river channel to create a geomorphic floodplain and using the excavated material to create wetlands in Sterling Pond, an existing gravel mining pit. In addition, the project removed the dam and high wall associated with the Josh Ames diversion structure, which had been abandoned. In its place, the project constructed a stabilized riffle that was part of a restored riffle/pool sequence in the river. The project created 11 acres of riparian habitat and reconnected over 3,000 feet of river.

SR6 4:30 pm

LITTLE THOMPSON WATERSHED RESTORATION

Peggy Bailey – Tetra Tech
peggy.bailey@tetratech.com

In September 2013, the Little Thompson River experienced a catastrophic flood event estimated at three times the 100 year flood event. This presentation will describe the process used by the Tetra Tech project team to develop the master plan for the Little Thompson Watershed Restoration Coalition. We will discuss the community engagement program to help guide the master planning, the development of recommendations for restoration, and the general results of the process to prioritize projects.

THURSDAY, OCTOBER 2 - STREAM RESTORATION TRACK

Thursday, October 2nd
Location: Centennial E/F

TM1 1:30 pm

REAL WORLD STORM – REAL WORLD CALIBRATION

Morgan Lynch – CH2M HILL; Kevin Houck – Colorado Water Conservation Board
Morgan.lynch@ch2m.com, kevin.houck@state.co.us

Model calibration is the iterative process of adjusting model parameters so that simulated results match real-world observations (measurements). Model calibration provides a degree of certainty beyond that achieved through the use of parameters reported in literature because calibrated parameters ideally account for unique attributes of a particular watershed. During the flood event that occurred in September 2013, engineers and hydrologists were given the opportunity to evaluate watershed hydrology based on "real-world" observations. This presentation focuses on a calibration process for the hydrologic model developed for the September 2013 storm event that occurred along Boulder Creek, specifically upstream of the canyon mouth in Boulder County, Colorado.

TM2 2:00 pm

ABOUT THAT HYDROGRAPH TIMING – MODELING MOVING STORMS IN CUHP AND SWMM

David Delagarza – RESPEC
david.delagarza@respec.com

Using python to automate CUHP and SWMM models, it is possible to simulate various moving storms over a watershed. This simulation was performed for hundreds of different storms with varying storm track directions and velocities using a number of existing hydrologic watershed models in the Denver area. This presentation illustrates the results of this work and some thoughts on how this type of analysis may be useful for hydrologic studies.

TM3 2:30 pm

RE-EVALUATING HYDROLOGIC ASSUMPTIONS WITH A 2D MODEL IN BASALT, CO

Chris Romeyn – URS Corporation; Stuart Gardner – CDOT
chris.romeyn@urs.com, stuart.gardner@state.co.us

In 1987, as part of a highway project, CDOT constructed a berm to remove part of the Town of Basalt from the floodplain. There are no construction records, a LOMR was never submitted, and the existing berm does not qualify for the Levee Analysis and Mapping Procedure. CDOT hired URS in 2010 to design a new levee but it became apparent that private property issues would be a significant hurdle. URS noted issues with previous flood studies that could be re-evaluated using 2-dimensional modeling and was tasked with completing a new analysis and a LOMR. The project will provide the Town with wider range of options for addressing the flooding issues in the South Side area.

TM4 3:30 pm

REAL TIME HYDROLOGIC AND HYDRAULIC SIMULATION FOR FLOOD FORECASTING AND FLOOD CONTROL DECISION SUPPORT

Sam Crampton, Gerald Blackler – Dewberry
scrampton@dewberry.com, gblackler@dewberry.com

Dewberry recently implemented a pilot Real Time Simulation (RTS) modeling project for a major hydro power utility. The project provides the first public use of the Army Corps of Engineers' Hydrologic Engineering Center (HEC) Real Time Simulation (RTS) modeling program, which incorporates a suite of HEC modeling components, including their Hydrologic Modeling System (HMS), River Analysis System (RAS), and Reservoir Simulation (ResSim) programs. The program also incorporates a variety of observed data inputs, including gridded precipitation, snowmelt, and stream gage information, as well as forecasted meteorological data. This presentation will cover our approach to RTS with HEC modeling components and the benefits it brought to a major power utility.

TM5 4:00 pm

GEOSPATIAL + GAMING: A NEW DATA PARADIGM

Bill Emison – Merrick & Company
bill.emison@merrick.com

Following the devastating flooding in northern Colorado in early September 2013, Merrick & Company's Geospatial Solutions team collected LiDAR and high-resolution imagery from our helicopter platform of the Big Thompson Canyon (US Highway 34) from Estes Park to Loveland, Colorado. Using a new approach, Merrick offers a "video game" solution to access and visualize unlimited amounts of data in real-time on a typical workstation or laptop. This presentation will provide insight into an emerging trend – the intersection of geospatial & gaming technologies to support innovative new visualization technologies that provide IMMEDIATE data access capabilities.

TM6 4:30 pm

THE NEXT MODEL

Dusty Robinson – Ayres Associates
robinsond@ayresassociates.com

HEC-RAS is the go to model for most of us working in river environments. Two-dimensional models have been in use for the last 20 years but have been used sparingly due to lack of computing power, longer setup and run times, and they have been more expensive and more complex to run and solve than one-dimensional models. This presentation will provide a brief comparison of one-dimensional and two-dimensional modeling and highlight a new two-dimensional model, SRH-2D, created by the USBR and recommended by FHWA for highway hydraulics. SRH-2D overcomes many of the hurdles that historically made two-dimensional modeling difficult to use. Some material will be borrowed from the FHWA hydraulic design of safe bridges (HDS-7) manual. Some material is from FHWA HDS-7 and related NHI course 135090 "Hydraulic Design of Safe Bridges.

Thursday, October 2nd
Location: Rocky Mountain

GI1 1:30 pm

HOW TO BUILD RELATIONSHIPS BEFORE YOU NEED THEM

John Burke – City of Westminster
jburke@cityofwestminster.us

John Burke will bring an interesting perspective to the flood recovery efforts of 2013 by focusing on the importance of building relationships before you need them. John's 19-years of experience in the engineering profession in both the public and private sectors has provided him a unique perspective on what it takes to bring high quality projects to fruition through full engagement of design teams. This presentation will entertain, challenge and leave you with strategic techniques for building strong long lasting relationships.

GI2 2:00 pm

THE USE OF THE QUALIFICATIONS BASED SELECTION PROCUREMENT PROCESS AS A BEST PRACTICE IN THE SELECTION OF PROFESSIONAL SERVICES

Colin Haggerty – Parsons Brinckerhoff; Wyatt Popp – Olsson Associates
haggerty@pbworld.com, wpopp@olssonassociates.com

This session will provide an overview of the Qualifications Based Selection (QBS) process, laws regulating procurement of professional services, case studies, recently completed evaluations of procurement methods, and testimonials from local agency representatives who have used this process, to achieve superior results as opposed to a "lowest cost" selection process.

GI3 2:30 pm

THE 90-MILE ROAD TO RECOVERY

(TBD) Boulder County & Chris Tagert – Michael Baker International
ctagert@mbakerintl.com

In Boulder County the September floods scoured mountain streams, depositing approximately 5,000 truckloads of debris throughout the county starting in the high-country and continuing down into the plains. With only 8 months to get ready for spring runoff the county had to identify, prioritize, resource, and mobilize an effort to mitigate the risk that spring runoff posed through the new stream corridors throughout the county. This presentation will discuss those challenges as well as the county's approach to coordinating political, governmental, and public interests.

GI4 3:30 pm

WESTERLY CREEK: A POSTER CHILD FOR UNDERSTANDING THE BENEFIT OF STORMWATER INVESTMENT

Alan Turner – CH2M HILL; Johnathan Villine – City of Aurora
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In 1969, the Colorado State legislature created the Urban Drainage and Flood Control District (UDFCD) to "work with local governments to address multi-jurisdictional drainage and flood control challenges in order to protect people, property, and the environment." The Flooding events of September 2013 acted as a wakeup call for the Front Range of Colorado. Although we have invested heavily in stormwater infrastructure, we have a long way to go to complete the mission. The storm highlighted many successes and the areas that need improvement. One bright spot from the flood was the Westerly Creek Watershed, in Aurora that was master planned and improved and withstood the flooding events preventing damage, erosion and protecting lives, property, and infrastructure. This paper will look at the cost of the infrastructure improvements and quantify the approximate benefits achieved from the investment in storm water improvements throughout the basin.

GI5 4:00 pm

PATHOGENS IN URBAN STORMWATER SYSTEMS: WHAT'S THE PROBLEM?

Jane Clary, Candice Owen – Wright Water Engineers
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The single most frequent cause of water quality impairment in the U.S. is elevated fecal indicator bacteria (FIB). This presentation will provide an overview of basic background related to regulatory context; sources of pathogens in the urban environment and fate and transport processes; approaches for monitoring, source tracking and statistically valid evaluations of FIB; and source controls and treatment strategies, including expected effectiveness for source controls structural stormwater controls, and disinfection. The presentation will emphasize advanced source tracking approaches and emerging regulatory alternatives (e.g., quantitative microbial risk assessment).

GI6 4:30 pm

HOW DID A 1,000-YEAR RAINFALL CAUSE A 50-YEAR FLOOD?

Kurt Bauer – City of Boulder; Andrew Earles – Wright Water Engineers
bauerk@bouldercolorado.gov, aearles@wrightwater.com

This presentation provides an overview of analyses conducted by the City of Boulder, working cooperatively with the Denver Urban Drainage and Flood Control District (UDFCD), to determine 5-, 10-, 15-, 30-minute, 1-, 6-, 12-, and 24-hour worst case rainfall return periods for the September 2013 flood event for watersheds within and draining through the City. The presentation will characterize rainfall frequency for watersheds in and around the City and to examine how observed rainfall depths and intensities1 relate to the characteristics of the CUHP design storm. Coupled with rainfall-runoff modeling by others, this information helps to explain why a "1000-year" storm, as was recorded for durations in excess of 24-hours, did not produce "1000-year flood."

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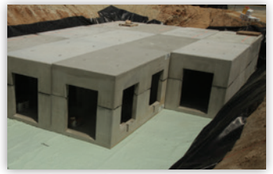

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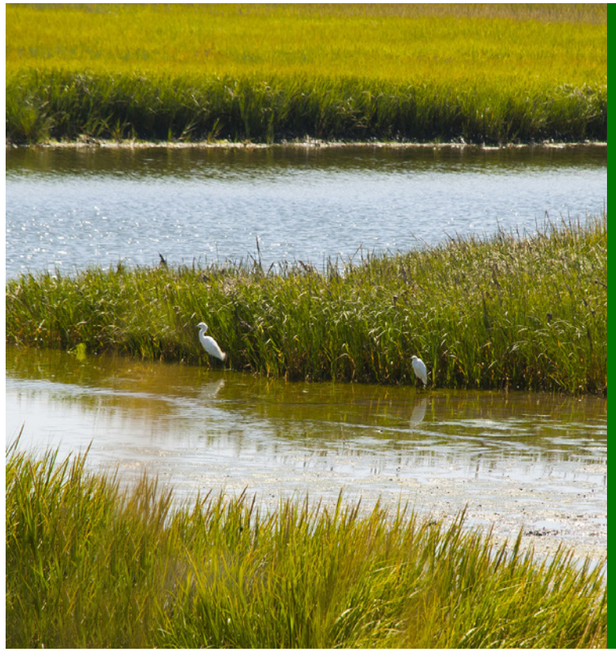

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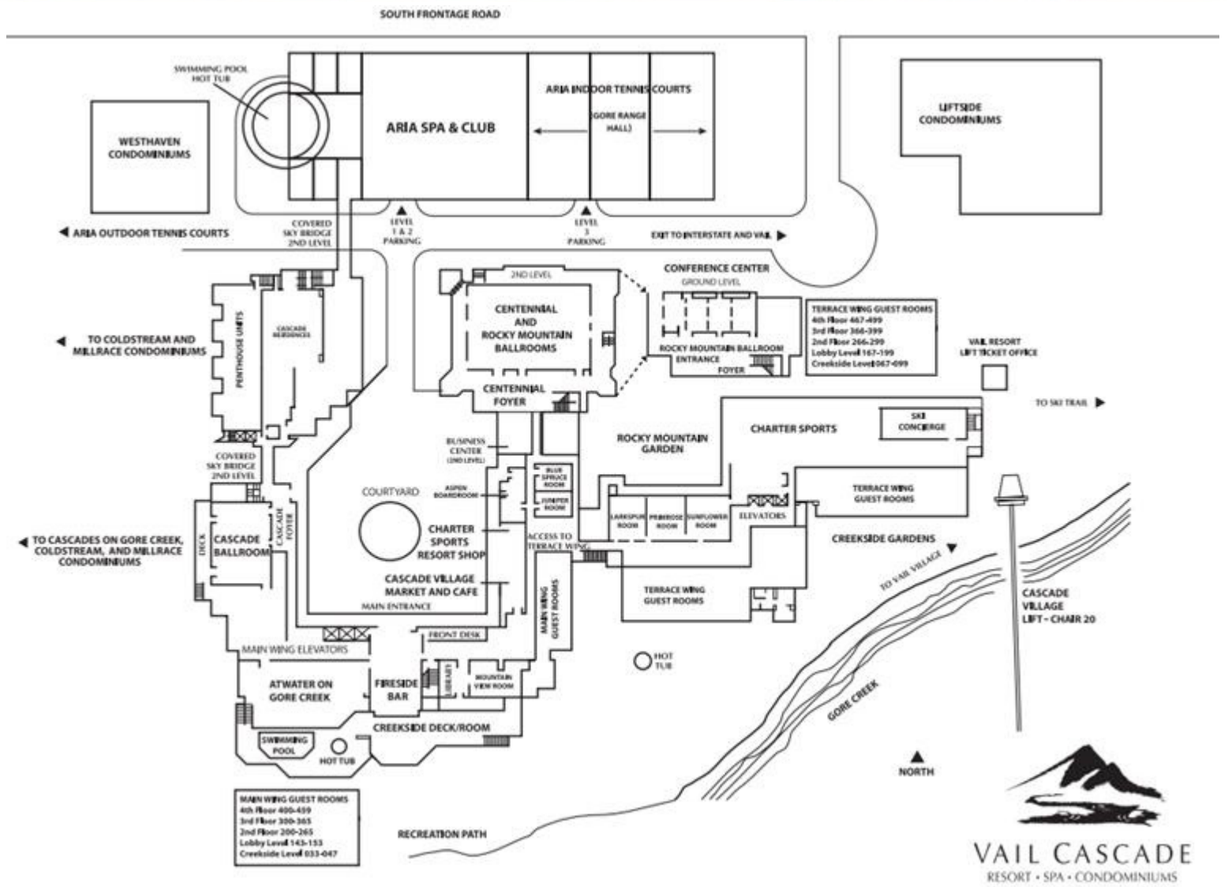

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25th Annual CASFM

25 YEARS
MANAGING THE ELEMENTS

Tuesday, September 30, 2014

8:00	Certified Floodplain Manager Training Session		
9:00			
10:00			
11:00			
12:00			
1:00			
2:00		Workshop #1 – Green Infrastructure and Low Impact Development	Workshop #2 – GIS Tools for Hydrology
3:00			
4:00			
5:00			
6:00			
7:00			
8:00	Ice Breaker Social Hour		

Wednesday, October 1, 2014

7:00		Certified Floodplain Manager Exam
8:00	Registration and Breakfast	
9:00	Welcome	
	One Year Later	
10:00	Keynote Address – Brian Bledsoe	
11:00		
12:00	Lunch	
1:00		
	CONCURRENT TECHNICAL SESSIONS	
2:00	Water Quality / 2013 Flood / Emergency Preparedness	
3:00	BREAK	
4:00		
5:00	Happy Hour	
6:00		

Thursday, October 2, 2014

7:00			
8:00	Breakfast Board Member Meeting		
9:00	2014 CASFM Award Finalists		
10:00			
11:00	Featured Speaker – Poore and Fagan		
12:00	Lunch		
1:00			
	CONCURRENT TECHNICAL SESSIONS		
2:00	Stream Restoration	Technical Modeling	General Interest
3:00		BREAK	
4:00			
5:00	Happy Hour		
6:00			
7:00	CASFM Association Dinner and Awards		
8:00			
9:00	Entertainment		
10:00			
11:00			

Friday, October 3, 2014

7:00				
8:00	Breakfast			
	Closing Remarks			
9:00	Workshop #3 – Basic Bridge Hydraulics using HEC-RAS	Field Trip – Tenmile Creek Restoration Project	Mountain Bike Tour	
10:00				Golf Tournament
11:00				
12:00				
1:00				
2:00				

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