USSD

39TH ANNUAL CONFERENCE AND EXHIBITION

April 8-11, 2019

Hilton Chicago

Chicago, IL

SECOND CITY, SECOND CHANCES:
STORIES OF REHABILITATION, MODIFICATION AND REVITALIZATION

CONFERENCE GUIDE

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Conference Local Host

FERC
FEDERAL ENERGY REGULATORY COMMISSION

Planning Committee Chair
Rachael Bisnett, Stantec

Save the Date

April 20-24, 2020
Denver, Colorado

Call for Papers: Mid-May 2019

Technical Program Chair:
Elena Sossenkina, HDR

Important Information

Conference App

The AttendeeHub is your place to easily plan out your conference experience, network with other attendees, and learn more about speakers, sponsors and exhibitors.

Conference Proceedings

http://ussd2019.conferencespot.org
Here you'll find abstracts, final papers, author bio-sketches, links to exhibitors and sponsors and more.

STEM Donations

Your STEM donation supports the Young Women's Leadership Charter School in Chicago. The school has an enrollment of 150 students, of which 90% are on the free or reduced lunch program; 33% are special education students. The school is focused on STEM education and works to get all students ready and accepted to college. To learn more: https://ywlcs.org.

President
Dean Durkee
Gannett Fleming

Vice President
Denise Bunte-Bisnett
Santee Cooper

Secretary-Treasurer
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TVA

Executive Director
Sharon Powers

USSD

United States Society on Dams
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Suite K-2, 145
Westminster, CO 80021
info@ussdams.org
Phone: 303-792-8753
Fax: 303-792-8782
www.ussdams.org

USSD Code of Conduct/Anti-Harassment Policy

The U.S. Society on Dams is committed to providing its employees, directors, officers, volunteers, members, contractors and event participants with an environment that is free from harassment, in any form.

USSD will not tolerate any form of harassment of or by an individual. Any person guilty of such behavior will be subject to disciplinary action, which may include loss of employment or contract, revocation of membership and/or immediate expulsion from the USSD-sponsored event.

The policy can be read in its entirety at www.ussdams.org/about/governance/.

Sponsors

Platinum

Stantec

Closing Party at the Crystal Gardens

Gold

AECOM

Conference Bags

Gannett Fleming

Kickoff Reception

HDR

Conference Lanyards

Silver

BARNARD
People building for People.

YP Luncheon

GOLDER

YP Networking Social

PHILLIPS & JORDAN
A Proven Solution

Wednesday Breaks

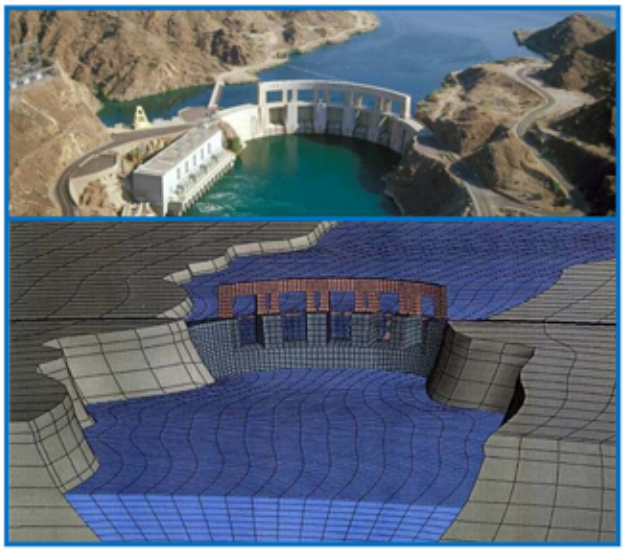
Schnabel ENGINEERING

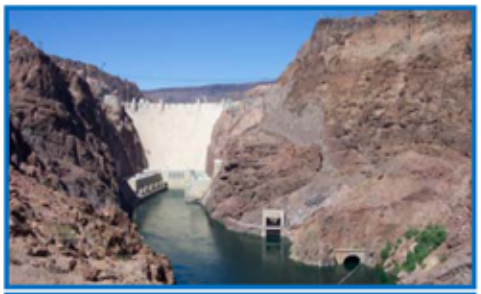
Tuesday Breaks

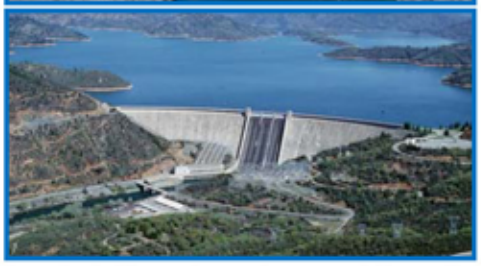
Bronze

GLOBAL

Poster Session







Engineering CAREERS

The Bureau of Reclamation has several mid-level civil engineering positions that it is looking to fill in its Waterways and Concrete Dams Groups at the Technical Service Center in Denver, Colorado. By working for the Bureau of Reclamation you will become part of the world-recognized center of technical excellence in dam engineering and related water resources.

The Waterways and Concrete Dams Groups are responsible for developing solutions to a wide variety of engineering problems involving both structural and hydraulic analyses, evaluations, and designs of major concrete dams, spillways, outlet works and other appurtenant features associated with both concrete and embankment dams.

Structural analyses and evaluations can vary from use of simple traditional methods to significantly more complex studies that include development of two- or three-dimensional non-linear finite element models. Responsibilities also include hydraulic assessments for new and existing spillways and outlet works features such as performing reservoir flood routings, developing water surface profiles for spillways, designing energy dissipation structures and development of diversion concepts.

Project work is prioritized using risk analysis techniques through development of potential failure modes. Dams identified for dam safety modifications require development of detailed design plans and specifications using software such as ACAD, Civil 3D, and Revit. Engineering support during construction activities provides engineers the opportunity to foster projects from conceptual design through construction.

Applications are currently being accepted through the USAJobs web site using the following links:

Civil Engineer, GS-0810-11
https://www.usajobs.gov/GetJob/ViewDetails/526156700

Civil Engineer, GS-0810-12
https://www.usajobs.gov/GetJob/ViewDetails/526158800

Awards and Recognitions

Lifetime Achievement

David E. Kleiner has 56 years of experience in hydropower, dams and water resources projects and has participated as project manager and lead geotechnical engineer in a broad mix of assignments with Harza and MWH. He has supported more than 75 large hydropower and dam projects in more than 25 countries. He has been an active member of USSD and ICOLD for many years, and served as Vice President for USSD.

Excellence in the Constructed Project

Calaveras Dam Replacement Project restores the Calaveras Reservoir to full capacity, previously restricted to 40%. The New Calaveras Dam is a zoned earth and rockfill dam with a structural height of 220 feet and a crest length of 1,210 feet. **Owner**: San Francisco Public Utilities Commission. **Design Consultant:** AECOM. **Construction Management Consultant**: Black & Veatch. **Contractor (JV)**: Dragados USA, Flatiron West Inc., Sukut Construction.

Public Safety and Security for Dams Recognition

Frank Calcagno is a senior security advisor/engineering geologist for Gannett Fleming. He has 36 years of Federal dam safety and security experience with the Federal Energy Regulatory Commission and the Bureau of Reclamation.

Scholarship Finalists

Jack Cadigan, Louisiana State University, *Design Trends and Guidance for Substratum Pressure Relief Wells for Dams and Levees Using Computational Methods*

Amy Getchell, Purdue University, *Alternative Use of Synthetic Nanoclay for Permeation Grouting in Dam and Levee Engineering*

Michael Kiernan, Auburn University, *Improving Methods to Evaluate the Effect of Strain-Softening Clays on the Stability of Dams*

Tyler Oathes, University of California, Davis, *Implementing the Effect of Strain-Rate on Strain-Softening Clays into Nonlinear Dynamic Analyses*

5K FUNds Run/Walk

Run, walk, or be a virtual runner and sleep in. The 5th Annual 5k FUNds Run will take place in Grant Park on Wednesday, April 10th. Net proceeds benefit the USSD Scholarship Program. The event will begin at 6:30 am on a scenic course that begins and ends in Grant Park, across the street from the Chicago Hilton. Stop by the 5K registration desk in the Lower Level Lobby on Tuesday to receive your bib and/or register for the run.

Race registration is $40 until March 27th; $50 after March 27th.

Partners in Education

The following contributed at least $350 to support the USSD Scholarship Program (as of March 24)

ACF
AECOM
ASI Group
Ballard Marine Construction
Barnard Construction
Bechtel
BenCor
Bisnett Family
Black & Veatch
Brayman Construction
Brookfield Renewable
Byers Group
Canary Systems
CEATI
Council Oak Resources, LLC
Crux Subsurface
D'Appolonia
Flow Science
Freese and Nichols
Gannett Fleming
GEI Consultants, Inc.
GENTERRA
Geokon
Geosyntec Consultants, Inc.
Golder
Hatch
HDR
KC Construction
Kleinschmidt
Knight Piesold
McMillen Jacobs Associates
Mead & Hunt
Measurand
OBG
Phillips & Jordan
Schnabel Engineering
Stantec
TREVIICOS
WEST Consultants
Wood Group/Amec Foster Wheeler
Worthington Products
W.W. Wheeler

Exhibition

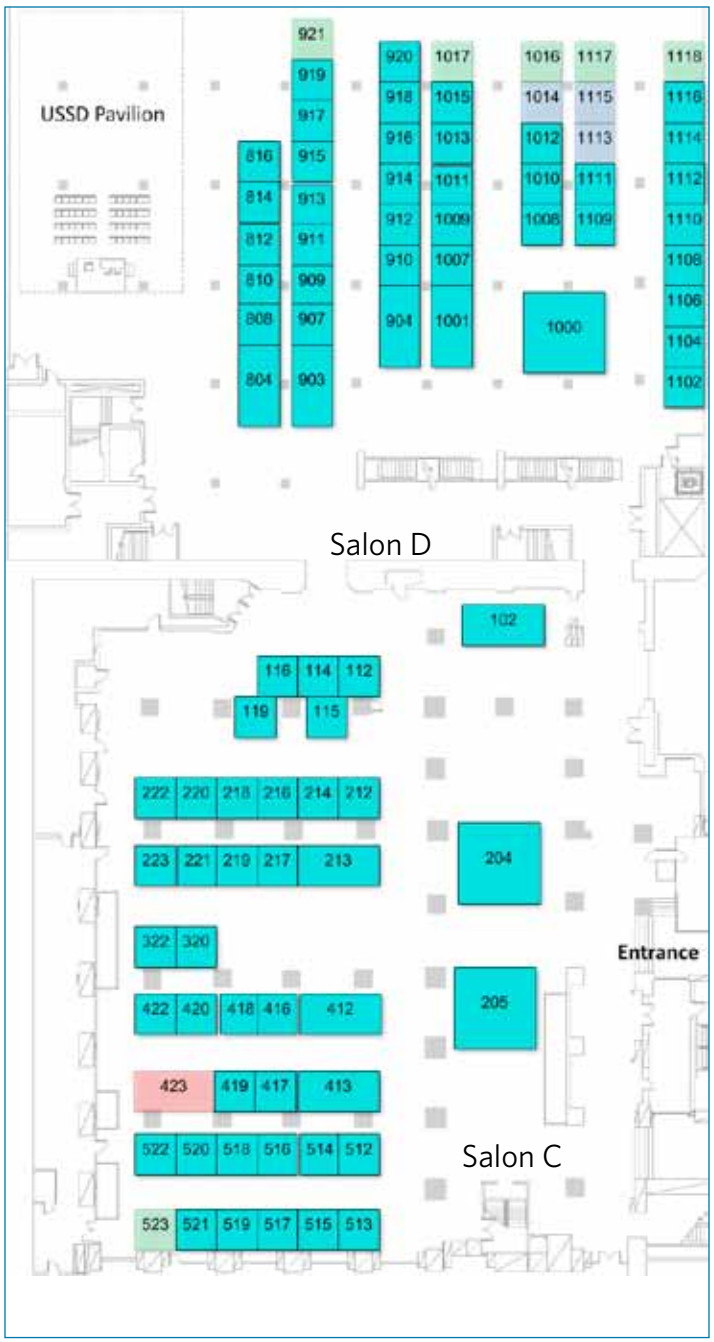


Exhibit Hall Highlights

- **Networking opportunities during breaks, lunches and receptions**
- **Poster Session in the USSD Pavilion 3:30 - 6 pm on Tuesday**
- **Earn points and win prizes with the new USSD Gamification**
- **Meet colleagues and recharge your devices in the USSD Pavilion**
- **Four recharge stations in Salon C (lower part of map)**

904 AECOM
1108 Alpine Rockwell
920 Arcadis
214 ASI Construction LLC
915 ASI Marine
519 Associated Underwater Services
1012 Axter Colentanche Inc.
907 Ballard Marine Construction
115 Barnard Construction
520 Barr Engineering Co.
917 Bauer Foundation Corp.
911 Black & Veatch
223 Brayman Construction Corporation
913 Bureau of Reclamation
219 Campbell Scientific
814 ICOLD 2019
512 Canary Systems, Inc.
422 Carpi USA, Inc.
518 Cascade Drilling
515 CDM Smith
1015 CMI Limited Co.
816 Collier Geophysics
420 ConeTec
1008 Contech Engineered Solutions
1010 DeWind One Pass Trenching LLC
1104 Emagineered Solutions
914 FEMA National Dam Safety Program
514 Flow Science
1102 Freese and Nichols, Inc.
1116 Foth/CLE Engineering
1001 Gannett Fleming
804 GEI Consultants, Inc.
522 Geocomp
217 Geokon, Inc.
419 GEOSLOPE International
417 Geosyntec Consultants
1007 Global Diving & Salvage
119 Golder
516 Great Lakes Environmental & Infrastructure, LLC
112 Griffin Dewatering
114 GZA
1112 Hatch Associates Consultants, Inc.
903 HDR
205 Hydro Component Systems
521 hydroGEOPHYSICS
212 Hydroplus, Inc.
218 Keller: Hayward Baker & Bencor
412 Kleinschmidt Associates
513 Knight Construction & Supply, Inc.
222 Measurand
1114 Mecan-Hydro
320 Nicholson Construction
221 OBG
116 Olson Engineering, Inc.
810 OneRain Incorporated
102 Pacific Netting Products
808 Phillips & Jordan
1009 Plaxis Americas LLC
919 Quake Wrap
322 RIZZO International, Inc.
916 Rocscience
517 RST Instruments Ltd.
418 Sage Engineers, Inc.
213 Schnabel Engineering
220 Sensemetrics
1013 SIXENSE INC.
413 SNC Lavalin
1000 Stantec
416 Tetra Tech
1001 The Reinforced Earth Company
909 Traylor SRG LLC
1111 Underwater Acoustics International
912 U.S. Army Corps of Engineers
1110 VideoRay
1109 WALO USA
812 Watershed Geo
1106 WEST Consultants, Inc.
918 Willowstick Technologies
910 Wood
204 Worthington Products

Program

Sunday, April 7

3:00 pm - 6:00 pm	**Registration Desk Open**	*Hilton Lower Level*

Monday, April 8

7:30 am - 7:00 pm	**Registration Desk Open**	*Hilton Lower Level*
8:30 am - 12:00 noon	**Conference Opening Session** **Recognition of Outgoing Board Members and Committee Chairs** **Legacy Lecture Series:** Dr. Donald Bruce, President of Geosystems, L.P.	*Boulevard ABC*
1:30 pm - 3:30 pm	**Committee Meetings Session 1**	*Various*
3:30 pm - 4:00 pm	**Break**	*Various*
4:00 pm - 6:00 pm	**Committee Meetings Session 2**	*Various*
6:00 pm - 7:30 pm	**Kickoff Reception and Exhibition Opening**	*Salon CD, Lower Level*

Tuesday, April 9

7:00 am - 5:00 pm	**Registration Desk Open**	*Hilton Lower Level*
8:30 am - 10:15 am	**Plenary Session I — Engineering in the Second City** **Moderator —** *Rachael Bisnett, Stantec* **Welcome and Introductions**, *Dean Durkee, USSD President, Gannett Fleming, Inc.* **Welcome from the Conference Local Host**, FERC Chicago **Flood Relief from Chicago's TARP System**, Kevin Fitzpatrick, Metropolitan Water Reclamation District of Greater Chicago **USACE Electric Fish Barrier — Protecting the Great Lakes**, Chuck Shea, USACE Chicago District **History of the Chicago Hilton**, Kevin Griebenow, FERC Chicago **Development of Chicago's Skyline through Foundation Engineering**, Bill Walton, GEI **Award Presentations** *Excellence in the Constructed Project *Public Safety and Security for Dams Recognition *Lifetime Achievement	*Grand Ballroom, 2nd Floor*
10:15 am - 10:45 am	**Break in Exhibit Hall**	*Salon CD, Lower Level*
10:45 am - 12:15 pm	**Concurrent Technical Sessions Track 1** **1A Advocacy** **1B Scholarship Finalist Presentations** **1C Concrete I** **1D Dam Safety I** **1E Construction (General)**	*Salon A, Lower Level* *A2* *A4* *A1* *A3* *A5*
12:15 pm - 1:30 pm	**Lunch in Exhibit Hall**	*Salon CD, Lower Level*
1:30 pm - 3:30 pm	**Concurrent Technical Sessions Track 2** **2A Embankment Dams I** **2B Earthquakes (Concrete)** **2C Conference Theme I** **2D H&H (Hydraulics)** **2E Construction (Rehabilitation)**	*Salon A, Lower Level* *A2* *A4* *A1* *A3* *A5*
3:30 pm - 4:00 pm	**Break in Exhibit Hall**	*Salon CD, Lower Level*
3:30 pm - 6:00 pm	**Poster Session in USSD Pavilion**	*Salon CD, Lower Level*
4:00 pm - 6:00 pm	**Committee Meetings Session 3**	*Various*
6:00 pm - 7:30 pm 8:00 pm - 10:00 pm	**Reception in Exhibit Hall** **Young Professional and First-Time Attendee Networking Social**	*Salon CD, Lower Level* *Buddy Guy's Legends, 700 South Wabash*

Program

Wednesday, April 10

7:00 am - 5:00pm	**Registration Desk Open**	*Hilton Lower Level*
8:30 am - 10:15 am	**Plenary Session II — Dam History and Future Trends** **Moderator —** *Rachael Bisnett, Stantec* **USSD Historical Milestones**, Keith Ferguson, HDR **30+ Years of Dam Rehabilitation in the United States**, Greg Paxson and Brian Toombs, Schnabel Engineering; Elena Sossenkina, HDR; Nate Snorteland and Rebecca Ragon, USACE; and Stephanie Williams, HDR **Australian Perspective on Risk Informed Decision Making in the Context of a Regulatory Framework**, Shane McGrath, ANCOLD Chairman **United States Regulatory Future**, Commissioner Cheryl A. LaFleur, FERC **Award Presentations** *USSD Scholarships *President's Award	*Grand Ballroom, 2nd Floor*
10:15 am - 10:45 am	**Break in Exhibit Hall**	*Salon CD, Lower Level*
10:45 am - 12:15 pm	**Concurrent Technical Sessions Track 3** **3A Embankment Dams II** **3B Environment/Decommissioning** **3C Public Safety, Security and Emergency Management** **3D Dam Safety II** **3E Conference Theme II**	*Salon A, Lower Level* *A2* *A4* *A1* *A3* *A5*
12:15 pm - 1:30 pm 12:15 pm - 1:30 pm	**Lunch in Exhibit Hall** **Young Professional Mentoring Luncheon (pre-registration required)**	*Salon CD, Lower Level* *Grand Ballroom*
1:30 pm - 3:30 pm	**Concurrent Technical Sessions Track 4** **4A Concrete II** **4B Earthquakes (Embankments)** **4C Conference Theme III** **4D H&H (Hydrology)** **4E Construction (Seepage)**	*Salon A, Lower Level* *A2* *A4* *A1* *A3* *A5*
3:30 pm - 4:00 pm	**Break in Exhibit Hall**	*Salon CD, Lower Level*
4:00 pm - 6:00 pm	**Concurrent Technical Sessions Track 5** **5A Levees** **5B Monitoring** **5C Dam Safety III**	*Salon A, Lower Level* *A2* *A4* *A1*
5:00 pm - 6:00 pm	**USACE TownHall Meeting**	*Salon A3, Lower Level*
6:30 pm - 9:30 pm	**Closing Party (ticketed)**	*The Crystal Gardens*

Thursday, April 11

7:30 am - 1:00 pm	**Workshop Registration**	*Salon A, Lower Level*
8:00 am - 12:00 noon	**TARP Project Field Tour (extra fee)**	
8:00 am - 12:00 noon	**Workshop 1: Flood Consequence Estimation with HEC-LifeSim**	*A1*
8:00 am - 12:00 noon	**Workshop 2: Introducing ICOLD Bulletin 177 on RCC**	*A3*
8:00 am - 12:00 noon	**Workshop 3: Threshold and Action Levels**	*A5*
11:30 am - 1:30 pm	**Lunch**	*Salon A, Lower Level*
1:00 pm - 5:00 pm	**TARP Project Field Tour (extra fee)**	
1:00 pm - 5:00 pm	**Workshop 1: Flood Consequence Estimation with HEC-LifeSim (continued)**	*A1*
1:00 pm - 5:00 pm	**Workshop 4: Seismic Evaluation of Concrete Dams**	*A3*
1:00 pm - 6:00 pm	**Workshop 5: Emergency Communication Primer**	*A5*

Tuesday, April 9 • 10:45 am to 12:15 pm
CONCURRENT SESSIONS TRACK 1

1A: Advocacy

Room: Salon A2

Moderators: Yulia Zakrevskaya, Stantec; and Keith Ferguson, HDR

Dam and Levee Safety Leaders Library
Lee Mauney, Bureau of Indian Affairs

Federal Emergency Management Agency (FEMA) Dam Safety Technical Assistance Program
Molly Finster, Argonne National Laboratory
Preston Wilson, Federal Emergency Management Agency
Lesley Edgemon, Argonne National Laboratory
Kyle Pfeiffer, Argonne National Laboratory;

Rehabilitation of High Hazard dams - FEMA Grants to Non-Federal Sponsors
Edward Beadenkopf, Atkins - a member of the SNC Lavalin Group
James Demby, Federal Emergency Management Agency
Jon Keeling, Stantec

Practical Retrofit at Low-Head Dams to Reduce Drowning
Rollin Hotchkiss, Brigham Young University
Ronald McGhin, Kiewit Engineering Group, Inc.

1B: Scholarship Finalist Presentations

Room: Salon A4

Moderators: Tina (Stanard) McMartin, Freese and Nichols, Inc.; and Stuart Harris, TVA

Design Trends and Guidance for Substratum Pressure Relief Wells for Dams and Levees Using Computational Methods
Jack Kadigan, Louisiana State University

Alternative Use of Synthetic Nanoclay for Permeation Grouting in Dam and Levee Engineering
Amy Getchell, Purdue University

Improving Methods to Evaluate the Effect of Strain-Softening Clays on the Stability of Dams
Michael Kiernan, Auburn University

Implementing the Effect of Strain-Rate on Strain-Softening Clays into Nonlinear Dynamic Analyses
Tyler Oathes, University of California, Davis

1C: Concrete I

Room: Salon A1

Moderators: Hillery Venturini and Jerzy Salamon, Bureau of Reclamation; and David Queen and Soheil Razavi Darbar, BC Hydro

A Novel Approach for Characterizing Shear Strength of Mass Concrete Lift Joints: Experimental Procedure and Empirical Model
Jeff Yathon, BC Hydro
Samita Chakrabarti, BC Hydro
Osmar Penner, BC Hydro
Evan Lindenbach, Bureau of Reclamation
Brent Bergman, BC Hydro
Soheil Razavi-Darbar, BC Hydro

Seismic Input and Topographic Effects: A Rigorous Approach to Simulating 3D Dam-Foundation Interaction in LS-DYNA
Mina Shahbazi, BC Hydro
Osmar Penner, BC Hydro
Brent Bergman, BC Hydro

Design and Construction of Seismic and Reliability Upgrades of Ruskin Dam
Saman Vazinkhoo, BC Hydro
David Queen, BC Hydro
David Lautner, BC Hydro
Minjin Luo, BC Hydro

Best Practices for Seismic Response Analysis of Concrete Dams: A Proposed Industry Guideline
Osmar Penner, BC Hydro
Brent Bergman, BC Hydro
Jeff Yathon, BC Hydro

1D: Dam Safety I

Room: Salon A3

Moderators: Emily Schwartz, Black & Veatch; and Miguel Rocha, Bureau of Reclamation

How to Make a Business Case to Justify Dam Safety Improvements?
Ali Reza Firoozfar, HDR
Keith Moen, HDR
Adam Jones, HDR

Decision Making in Dam Engineering
Daniel Osmun, HDR
William Fiedler, HDR

Pilot Study for Dam Safety Considerations Related to Low Failure Probability High Consequence Facilities
Dom Galic, Bureau of Reclamation
Miguel Rocha, Bureau of Reclamation

Safety Culture - What it Is and How it Will Help Improve Dam Safety
Ahmad Faramarzi, Analysis Planning and Management Institute, Inc.
Charles Hutton, Hutton Consulting
Miguel Rocha, Bureau of Reclamation

1E: Construction (General)

Room: Salon A5

Moderators: Jared Williams, Great Lakes E&I; and Susan Hou, San Francisco Public Utilities Commission

Revitalization of the Kentucky River System
Benjamin Webster, Stantec

Calaveras Dam Replacement Project: From Conception in 2003 to Reality in 2018
Michael Forrest, AECOM
Erik Newman, AECOM
Susan Hou, SFPUC
John Roadifer, AECOM
Tedman Lee, SFPUC
Daniel Wade, SFPUC

Calaveras Dam Replacement Project - Challenges of Constructing the Second Dam
Jim McClain, Black & Veatch
Susan Hou, San Francisco Public Utilities Commission
Manuel Morejon, Dragados USA, Inc.

Underpinning Prairie: Micropiles Support Prairie Du Sac Dam — Part One
Brian D. Barkauskas, Nicholson Construction
Joshua Timmreck, Nicholson Construction
Alexander Sherman, Nicholson Construction

In the Exhibit Hall

Discover the latest in products and services from top industry exhibitors

Networking opportunities abound during breaks, lunches, and receptions

Conference attendees can earn points and win prizes with the new USSD Gamification

Exhibitors will compete for 'Best in Show' awards

USSD Pavilion is the place to meet colleagues and recharge your devices

Poster Session in the USSD Pavilion, Tuesday 3:30 - 6 pm

Tuesday, April 9 • 1:30 pm to 3:30 pm
CONCURRENT SESSIONS TRACK 2

2A: Embankment Dams I

Room: Salon A2

Moderators: Justin Stoeber, AECOM; and Gabriel Martinez, Stantec

Seepage-Induced Internal Instability Testing for Dam Safety Assessments
Paul Slangen, Geosyntec
Jonathan Fannin, University of British Columbia

Comparison of Methodologies for Preliminarily Evaluating Internal Erosion of Earthen Embankment Dams
Clinton Carlson, Geosyntec
Wesley MacDonald, Geosyntec
Glenn Rix, Geosyntec
Lucas DeMelo, Geosyntec
Caleb Douglas, TVA

Numerical Approach to Modeling Internal Erosion in Embankment Dams and Levees
Biswajit Dasgupta, Southwest Research Institute
Gordon Wittmayer, Southwest Research Institute
Goodluck Ofoegbu, GNO Modeling Research

Study of Embankment Cracking for Small Dams
Ana Avendano, Universidad Nacional de Colombia
Guillermo Ávila, Universidad Nacional de Colombia

Selection Factors and Performance of Overtopping Protection Alternatives
Jeremy Young, Schnabel Engineering
Thomas Hepler, Schnabel Engineering

2B: Earthquakes (Concrete)

Room: Salon A4

Moderators: Melanie Walling; GeoEngineers; and Mark Schultz, USACE

Vector-Hazard Approach for Liquefaction Assessment
Melanie Walling, GeoEngineers

Developing Design Ground Motions for the Expansion of Gross Reservoir
Christine Weber, Stantec
Dina Hunt, Gannett Fleming

State-of-the-Art Dam-Foundation Interaction Procedure for Non-linear Arch Dam Analysis
Gurinderbir Singh Sooch, Hatch
Dan Curtis, Hatch

Crossvalley Performance of Piers
Iman Ghorbani, Hatch
James Rutherford, Hatch
John Werner, Hatch
Max Mantola, Hatch
John Stanton, University of Washington

Comparing Simplified Added Mass and Advanced Numerical Methods for Evaluating Hydrodynamic Effects on Free-Standing Intake Towers
Harpreet Hansra, DRW, Division of Safety of Dams
Vojislav Cvijanovic, California DRW, Division of Safety of Dams
Ian Maki, DRW, Division of Safety of Dam

2C: Conference Theme I

Room: Salon A1

Moderators: Darrin Harris, Black & Veatch; and Bob Eichinger, Stantec

Santee Cooper Upstream Slope Protection Project – An Owner's Perspective
Denise Bunte-Bisnett, Santee Cooper
John Osterle, WSP

Extreme Repurposing: from Guard Wall to Coffer Wall to Dam at Monongahela River Locks and Dam No. 4
Timothy Hampshire, DLZ National, Inc.

Evaluation and Stabilization of Steep Rock Slopes to Mitigate Rockfall Hazard during Construction
Erik Newman, AECOM
Holly Nichols, California DWR
Jennifer Dean, California DWR
Nicholas Hightower, California DWR
Andrew Tate, California DWR
Jennifer Bauer, Appalachian Landslide Consultants

Roller Compacted Concrete Placed with a High Density Paver for Use as a Flood Barrier - Application to TVA Dam
Husein Hasan, TVA
Quincy Anderson, Barnard Construction Company, Inc.
Aaron Nottis, TVA

Cedar Rapids, Iowa - A Second Chance for a Flooded City
Matthew Redington, HDR
Michael Butterfield, HDR

2D: H&H (Hydraulics)

Room: Salon A3

Moderators: Brian Crookston, Utah State University; and Steve Barfuss, Utah State University

Performance of a Wire Rope Hoist Leaf Gate during Emergency Closure (Unbalanced Loading)
Nathan Cox, McMillen Jacobs Associates
Ethan Thompson, USACE

Physical Model of Morning Glory Spillway and Reservoir Debris Interaction
Kent Walker, Bureau of Reclamation

Using Stochastic Modeling to Assess Operational Risk at Center Hill Dam
Jim Garner, USACE
David Bogema, USACE

2E: Construction (Rehabilitation)

Room: Salon A5

Moderators: Masood Kafash, AECOM; and Scott Korab, Ballard Marine Construction

Nepal Dam Mitigates Impacts of GLOF Hazard On Downstream Communities
Michael Bruen, Stantec
Zbigniew Matus, Stantec
Bikram Sthapit, Bhote Koshi Power Corperation

Upgrades for a Second Century at Duke Energy's Bridgewater Hydroelectric Project
Brian Reinicker, HDR
Brian Chrisman, HDR
Brad Keaton, Duke Energy
Jon Wise, Duke Energy
David Gerlach, HDR

Buckeye Lake Dam Remediation: Unique Design & Construction at a Unique Structure
Boyd Howard, Gannett Fleming, Inc.
Robert Kline, Gannett Fleming, Inc.
Daniel Stare, Gannett Fleming, Inc.
James Hilovsky, Ohio Department of Natural Resources

From Ideal to Unconventional: Case Study of the Atoka Dam and Spillway Rehabilitation
Brad Kirksey, Freese & Nichols, Inc.
John Rutledge, Freese & Nichols, Inc.
Nicole Wiesner, Freese & Nichols, Inc.
Larry Hare, Oklahoma City Water Utilities Trust
Andrew Mishler, Oklahoma City Water Utilities Trust

A Rehabilitated Outlet for St. Charles No. 2
Micah Smidt, RJH Consultants, Inc.
Michael Graber, RJH Consultants, Inc.
Eric Hahn, RJH Consultants, Inc.

Tuesday, April 9 • 3:30 pm to 6:00pm
POSTER SESSION

On the Probabilistic Nonlinear Seismic Analysis of Concrete Arch Dams
Omid Abdi, Arup
Mohammad Amin Hariri Ardebili, University of Colorado Boulder

Seismic Earth-Dam Damage Identification
Richard Armstrong, CSU, Sacramento
Tadahiro Kishida, Khalifa University, UAE
Dongsoon Park, K-water, South Korea

Design and Construction of Dam Rehabilitation with Weighted Filter Overlay
Doug Carr, AECOM
Gabe Lang, AECOM

Designing from Inside the Box: Developing an Innovative Temporary Closure Structure for Two USACE Dams with Numerous Design Constraints
Miroslav Kurka, Mead & Hunt, Inc.
Jeffrey Anderson, Mead & Hunt, Inc.

Increasing the Resiliency and Reducing the Carbon Footprint of Earthen Flood Defense Structures with High Performance Turf Reinforcement Mat Reinforced Vegetation
Drew Loizeaux, Propex Operating Company
Randy Thompson, Propex Operating Company

Seismic Fragility Relationships for Embankment Dams from Empirical Performance Data
Glenn Rix, Geosyntec Consultants, Inc.
Lynnae Luettich, Georgia Institute of Technology
Chris Hunt, Geosyntec Consultants, Inc.

Design Details – Concrete Chute Spillways
Paul Rizzo, RIZZO International, Inc.

Effects of Gate-Wall Interaction on Spillway Tainter Gates
Anurag Singhal, HDR

A Numerical Study of the Effect of Hysteresis on Transient Seepage Flow
Fred Tracy, Engineer Research and Development Center
Maureen Corcoran, Engineer Research and Development Center

Three-Dimensional Finite Element Analysis of Levee Through Seepage Considering End-Around Effects
Joseph Weber, Loyola Marymount University
Robert Jaeger, GEI Consultants, Inc.
Mark Stanley, HDR
Page Hval, Loyola Marymount University

Wednesday, April 10• 10:45am to 12:15 am
CONCURRENT SESSIONS TRACK 3

3A: Embankment Dams II
Room: Salon A2

Moderators: Clinton Carlson, Geosyntec Consultants; and Chris Krage, GEI Consultants

Numerical Evaluation of Strain-Rate Effects on Strain-Softening and Localization in Saturated Clays
Tyler Oathes, University of California, Davis
Ross Boulanger, University of California, Davis

Weak Rock Foundation Characterization From Laboratory Cyclic Testing
Evan Lindenbach, Bureau of Reclamation
Richard Bearce, Bureau of Reclamation

Determination of Material Properties for a Fine-grained Embankment Foundation Layer
Robert Rinehart, Bureau of Reclamation
Peter Irey, Bureau of Reclamation

Evaluation of Earthquake-Induced Cracking of Embankment Dams
Lelio Mejia, Geosyntec Consultants
Ethan Dawson, AECOM

3B: Environment/ Decommissioning
Room: Salon A4

Moderators: Ali Reza Firoozfar, HDR; and Glen DeWillie, Kleinschmidt Group

Hydraulic Modeling of a Nature-Like Fishway using 2-Dimensional HEC-RAS
Michael Hross, Kleinschmidt
Jennifer Jones, Kleinschmidt
Chris Goodell, Kleinschmidt
Trevor Lykens, Kleinschmidt
Jose Zayas, Cube Hydro Partners, LLC

Retrofitting Fish Passes at Dams and Weirs: International Best Practice, Current Research and Foreseeable Developments
Marq Redeker, CDM Smith

Dam Decommissioning in Mississippi: Maintain It or Drain It
Johnathon Atkins, MS DEQ

Dam Removal Allows Boardman River to Reclaim Natural Alignment
Craig Seger, Contech Engineered Solutions
Dan DeVaun, AECOM

3C: Public Safety, Security and Emergency Management
Room: Salon A1

Moderators: Megan Puncke, Black & Veatch; and Stewart Vaghti, Gannett Fleming

Making an Entrance - Security Upgrades at the Entrance to Boundary Hydroelectric Project
Brandan Vavrek, Seattle City Light
Jon Gray, Seattle City Light

Public Safety - Emergency Management in a Crisis
William Foos, Gannett Fleming
Matthew Balven, Gannett Fleming

CFD Modelling to Evaluate and Improve Public Safety Around Dams
Benjamin Israel Devadason, Gannett Fleming, Inc.
Paul Schweiger, Gannett Fleming, Inc.

Hazard and Biodynamic Responses for Evaluation of Public Safety at Dams and Spillways
Brian Crookston, Utah State University
Steven Barfuss, Utah Water Research Laboratory

3D: Dam Safety II
Room: Salon A3

Moderators: Bruce R. Rogers, USACE; and Rafael Prieto, Gannett Fleming, Inc.

Evaluation of Hydrological and Geological Hazards to Support PFMA of Large High Hazard Dams
M. Logan Cline, RIZZO
Cagri Cinkilic, RIZZO
Tom Edwards, RIZZO
Priyanka Jain, East Bay Municipal Utility District
Doug Raszewski, RIZZO
Joe Tam, East Bay MUD

Evaluating Human Consequences of Dam-Break Floods Using DSS-WISE™ HCOM Module
Mustafa Altinakar, U. Mississippi
Marcus McGrath, U. Mississippi
Vijay Ramalingam, U. Mississippi
Kyle Burke Pfeiffer, Argonne National Laboratory
James E. Demby, FEMA
Gokhan Inci, FEMA

Predicting High Dam Flood Discharge-Induced Ground Vibrations with Improved Stochastic Transfer Functions
Yan Zhang, China Institute of Water Resources and Hydropower Research
Guoxin Zhang, CIWRHR
Yi Liu, CIWRHR
Songhui Li, CIWRHR

3E: Conference Theme II
Room: Salon A5

Moderators: Seth Krause, WSP; and Andrew Verity, Terracon Consultants

3D Ground Modelling for a Dyke Reconstruction Project (HaLiMa) in North Rhine-Westphalia, Germany
Myles Lawler, CDM Smith Europe GmbH
Oriol Ciurana, CDM Smith Europe GmbH
Aloys Kisse, CDM Smith Europe GmbH
Ilja Prinz, CDM Smith Europe GmbH

Improving Engineering Judgement Using 3-Dimensional Data Management Techniques
Nate Bolles, Stantec
Andrew Higgins, Geosyntec
Rozh Mohamadameen, Tennessee Valley Authority

Using Technology and Old-Fashioned Detective Work to Predict Low-Level Outlet Tunnel Performance under Catastrophic Loading
Miroslav Kurka, Mead & Hunt
George Webb, Terracon

Automated Crack Width Calculation
Iman Ghorbani, Hatch
James Rutherford, Hatch
John Werner, Hatch
Colleen Woods, Hatch

Wednesday, April 10 • 1:30 pm to 3:30 pm
CONCURRENT SESSIONS TRACK 4

4A: Concrete II

Room: Salon A2

Moderators: Eric Kennedy, Federal Energy Regulatory Commission; and Robert Hall, Engineering Innovations, LLC

Concretes for Concrete Dams
Quentin Shaw, ARQ Consulting Engineers

Implementation of Bathymetric and LiDAR Surveys into Sliding Stability Assessment of Concrete Gravity Dams
Tarik Saichi, Polytechnique Montreal
Sylvain Renaud, Polytechnique Montreal
Najib Bouaanani, Polytechnique Montreal
Benjamin Miquel, Hydro-Quebec

Fontana Dam Spillway Crack Investigation
Michael Morrison, Tennessee Valley Authority
James Rossillon, Tennessee Valley Authority
Dan Curtis, Hatch Associates Consultants, Inc.

Performance-Based Assessment of Post-Tensioned Anchors in a Large Concrete Dam
Casey Gardner, Harvey Mudd College
Maggie Gelber, Harvey Mudd College
Andrew Pham, Harvey Mudd College
Dana ShangGuan, Harvey Mudd College
Flora Xia, Harvey Mudd College
Ziyad Duron, Harvey Mudd College
Robert Hall, Engineering Innovations, LLC

Application of Response Surface Meta-model in Probabilistic Analysis of Concrete Dams
Mohammad Amin Hariri-Ardebili, University of Colorado Boulder
Mohammad Noori, CalPoly
S.Mahdi Seyed-Kolbadi, X-Elastica LLC

4B: Earthquakes (Embankments)

Room: Salon A4

Moderators: Zara Plasencia, Consultant; and Biswajit Dasgupta, Southwest Research Institute

Development of Seismic Thresholds in ShakeCast for FERC Post-Earthquake Notification and Response
Justin Smith, Federal Energy Regulatory Commission
Edgar Salire, Federal Energy Regulatory Commission
Chris Wang, Federal Energy Regulatory Commission

Seismic Deformation of Different Size Embankments on a Spatially Variable Liquefiable Deposit
Nicholas Paull, University of California Davis
Ross Boulanger, University of California Davis
Jason DeJong, University of California Davis

Use of Horizontal to Vertical (H/V) Ambient Noise Measurements to Determine Natural Frequency of Embankment Dams
Albert Kottke, Pacific Gas and Electric
Emily Steen, Pacific Gas and Electric

Lessons Learned from Re-Evaluation of the Upper and Lower San Fernando Dams Using Current State of Practice in Numerical Modeling
Khaled Chowdhury, USACE
Raymond Seed, University of California, Berkeley
Vlad Perlea, AECOM
Michael Beaty, Beaty Engineering
Fenggang Ma, Kleinfelder
George Hu, USACE

Modulus Reduction and Damping Ratio of Compacted Earth Cores of Dams
DongSoon Park, K-Water Convergence Research Institute
Seong-Bae Jo, K-water Convergence Research Institute

4C: Conference Theme III

Room: Salon A1

Moderators: Brandan Vavrek, Seattle City Light; and Travis Tutka, USACE

Thornton Composite Reservoir – Limited Accessibility Leads to Challenging Instrumentation and Monitoring
Hannah Maas, Stantec
Rachael Bisnett, Stantec
Louis Storino, Metropolitan Water Reclamation District of Greater Chicago

Case Study: Automated Movement Monitoring with Grouped AMTS in Prairie Du Sac Dam
Raphael Victor, Sixense Group, USA
Loic Galisson, Sixense Group USA
Zhangwei Ning, Sixense Group, USA

Implementing an Instrumentation Monitoring Program for the Staged Construction of the Red Rock Hydroelectric Project
Hannah Maas, Stantec
Thomas Andrews, Stantec
Rachael Bisnett, Stantec

Chicago Sanitary and Ship Canal at Lockport Rehabilitation Case Study
Thomas Mack, USACE
Andrew Goodall, USACE

Design and Construction of the Norway Hydroelectric Project Spillway Capacity Expansion
Manoshree Sundaram, Stantec
Jason Hedien, Stantec
Justin Darling, NIPSCO, LLC

4D: H&H (Hydrology)

Room: Salon A3

Moderators: Melinda Dirdal, Schnabel Engineering; and Om Prakash, California Department of Water Resources

Flood Model for the World-Record Rainfall from July 1942 Smethport, PA Storm – Supporting the Pennsylvania Probable Maximum Precipitation Study
Joe Bellini, Aterra Solutions
Bill Kappel, Applied Weather Associates

Inflow Design Flood Selection for Long Embankment Dams
Bob Eichinger, Stantec Consulting Services Inc.
Zach Whitten, Stantec Consulting Services, Inc.

Stochastic Framework for Flood Risk Analysis
Siamak Esfandiary, FEMA
Sean McNabb, FEMA
Andrew Bonner, AECOM
Mathew Mampara, Dewberry

A Holistic Evaluation of Potential Downstream Inundation for the Baker River Hydroelectric Project
Loring Crowley, Schnabel Engineering
Ali Tabrizi, Schnabel Engineering
Kevin Ruswick, Schnabel Engineering
Joshua Gile, Puget Sound Energy
Alex Rutledge, Schnabel Engineering

Dam and Levee Break Modeling with HEC-RAS Simulation and Risk Analysis (SimRAS)
Brent Travis, WEST Consultants, Inc.
Chris Bahner, WEST Consultants, Inc.
Gyan Basyal, WEST Consultants, Inc.
Brian Wahlin, WEST Consultants

4E: Construction (Seepage)

Room: Salon A5

Moderators: Dimitri Ivanov, Advanced Construction Techniques; and Philippe Bourdeau, Purdue University

Lessons Learned from More Than 35 Years of Cofferdam Construction
Steve Jamieson, W. W. Wheeler & Associates, Inc.

Treating Excessive Foundation Seepage at a Dam Site in the Lower Himalayas
Joseph Kovacich, Stantec
Hafiz M. Kashif Bajwa, National Engineering Services Pakistan (NESPAK)

Practical Application of Seepage Analyses for Rehabilitation of Existing Dams and Levees
Lucas Carr, Geosyntec Consultants
Tom Cooling, AECOM
G. Richard Bird, AECOM
Scott Morgan, AECOM

Using Piezometer Data to Better Understand the Rehabilitation Performance of the C.W. "Bill" Young Regional Reservoir
Jason Valeria, Gannett Fleming, Inc.
Scott Burch, Gannett Fleming, Inc.

Wednesday, April 10 — 4:00 pm -6:00 pm
CONCURRENT SESSIONS — TRACK 5

5A: Levees

Room: Salon A2

Moderators: Elena Sossenkina; HDR; and Adda Zekkos, University of Michigan

Hazard Potential Classication within Levee Safety Programs
Jasmine Austin, USACE
Rick Hauck, USACE

The Lower Wood River Levee Risk Informed Formulation Case History
Chris Redell, USACE
Jose R. Lopez, USACE

Intermittent Embankment Overtopping: Erosion Protection Options
Bryan Scholl, Watershed Geo
Brad Cooley, Watershed Geo

Levee Remediation Alternatives Analysis of a Partially Failed Rio Grande Levee in Brownsville, TX
Charlie Wildman, Arcadis, U.S., Inc.

Improving Levee Resiliency - Mitigating Failure Modes to Avoid Disasters in Great Britain and the United States
Robert Beduhn, HDR Engineering Inc.
Jonathon Simm, HR Wallingford

5B: Monitoring

Room: Salon A4

Moderators: John Hynes, Stantec; and Amanda Sutter, USACE

Case History on Monitoring Seepage on Large Zoned Embankment Dams
Thomas Solano, ISAGEN S.A. E.S.P.
Rafael Prieto, Gannett Fleming, Inc.

Phased Approach in Evaluating Existing Piezometers to Inform a Risk Assessment, Blakely Mountain Dam, Ouachita River, Arkansas
Suzanne Hess-Brittelle, USACE
Amy LeFebvre, USACE
Ryan Reves, USACE
Tracy Phillips, USACE

Jerry F Costello Lock and Dam Unwatering Monitoring
Lucas Krumwiede, USACE
Amanda Sutter, USACE
Sean Hibbits, USACE
Keith Thole, USACE
Samuel Ross, USACE

How Old is Too Old? Deciding When to Upgrade or Replace the Equipment in Automated Data Acquisition Systems
Greg Dutson, Canary Systems, Inc.
Darren Olguin, Canary Systems, Inc.
Daryl Jordan, Oglethorpe Power Corporation
Carol Leung, Los Angeles County Public Works
Martin Hieronymi, Brookfield Renewable

Applications of Underwater Acoustic Remote Sensing
Kenneth LaBry, Underwater Acoustics International, L.L.C.

5C: Dam Safety III

Room: Salon A1

Moderators: Mohammad Amin Hariri-Ardebili, University of Colorado; and Peter Haug, Ayres Associates

Use of Risk Assessment Information to Inform Design of Dams and Levees
Michael Sharp, USACE
Elena Sossenkina, HDR, Inc.
Noah Vroman, USACE

Managing Risk During Major Earth Fill Dam Seismic Retrofit Project
Scott Huntsman, Black & Veatch
Megan Puncke, Black & Veatch

How a Little Seepage and Minor Spillway Slab Displacement Led to Reservoir Restrictions and Remediation
Becky Allen, Kleinschmidt Associates
Keenan Goslin, Kleinschmidt Associates
Wade Osborne, Cornforth Consultants
Jeff Coffin, Kleinschmidt Associates

Simulating Spillway Gate Availability in Dam Safety Risk Studies
Gregory Baecher, University of Maryland
Robert Patev, USACE
Adiel Komey, University of Maryland

Trees on Dikes - Flood Protection Versus Ecological Landscape Planning?
Aloys Kisse, CDM Smith Consult GmbH, Bochum, Germany

Closing Party — 6:30-9:30 pm
Crystal Gardens at Navy Pier

The conference closing party will take place at the indoor one-acre botanical garden at historic Navy Pier. Event ticket is included with all full conference and guest registration fees.

This six-story glass atrium with a 50-foot arched ceiling holds over 80 live palm trees, lush foliage, and fountains.

A highlight of the evening will be these special announcements:

* *Outstanding paper awards*
* *Exceptional Young Professional of the Year*
* *FUNds Run/Walk results*
* *STEM donation*
* *Recognitions*
* *Introduction of new Board Directors*
* *Passing the Presidential Gavel*

Wander through the one-acre indoor tropical garden while enjoying various Chicago-themed foods and drink. Don't forget to take your selfie in the special photo booth to capture the moment. Surprise entertainment throughout the gardens promises to make this closing party the talk of the town.

Transportation will be provided at the Chicago Hilton to and from the Crystal Gardens.Buses will depart from the 8th Street entrance to the hotel, beginning at 6 p.m.