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

CONFERENCE GUIDE

39TH ANNUAL CONFERENCE AND EXHIBITION

April 8-11, 2019
Hilton Chicago
Chicago, IL
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

Closing Party at the Crystal Gardens

Gold

Conference Bags
Kickoff Reception
Conference Lanyards

Silver

YP Luncheon
Wednesday Breaks

Bronze

YP Networking Social
Tuesday Breaks
Poster Session
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.

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
TREVIOCONSULTANTS
WEST Consultants
Wood Group/Amec Foster Wheeler
Worthington Products
W.W. Wheeler
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)
## Sunday, April 7

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>3:00 pm - 6:00 pm</td>
<td>Registration Desk Open</td>
<td>Hilton Lower Level</td>
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## Monday, April 8

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:30 am - 7:00 pm</td>
<td>Registration Desk Open</td>
<td>Hilton Lower Level</td>
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<tr>
<td>8:30 am - 12:00 noon</td>
<td>Conference Opening Session</td>
<td>Boulevard ABC</td>
</tr>
<tr>
<td>Recognition of Outgoing Board Members and Committee Chairs</td>
<td>Legacy Lecture Series: Dr. Donald Bruce, President of Geosystems, L.P.</td>
<td></td>
</tr>
<tr>
<td>1:30 pm - 3:30 pm</td>
<td>Committee Meetings Session 1</td>
<td>Various</td>
</tr>
<tr>
<td>3:30 pm - 4:00 pm</td>
<td>Break</td>
<td>Various</td>
</tr>
<tr>
<td>4:00 pm - 6:00 pm</td>
<td>Committee Meetings Session 2</td>
<td>Various</td>
</tr>
<tr>
<td>6:00 pm - 7:30 pm</td>
<td>Kickoff Reception and Exhibition Opening</td>
<td>Salon CD, Lower Level</td>
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## Tuesday, April 9

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:00 am - 5:00pm</td>
<td>Registration Desk Open</td>
<td>Hilton Lower Level</td>
</tr>
<tr>
<td>8:30 am - 10:15 am</td>
<td><strong>Plenary Session II — Dam History and Future Trends</strong>&lt;br&gt;<strong>Moderator — Rachael Bisnett, Stantec</strong>&lt;br&gt;<strong>USSD Historical Milestones</strong>, Keith Ferguson, HDR&lt;br&gt;<strong>30+ Years of Dam Rehabilitation in the United States</strong>, Greg Paxson and Brian Toombs, Schnabel Engineering; Elena Sossenkina, HDR; Nate Snorteland and Rebecca Ragon, USACE; and Stephanie Williams, HDR&lt;br&gt;<strong>Australian Perspective on Risk Informed Decision Making in the Context of a Regulatory Framework</strong>, Shane McGrath, ANCOLD Chairman&lt;br&gt;<strong>United States Regulatory Future</strong>, Commissioner Cheryl A. LaFleur, FERC&lt;br&gt;Award Presentations&lt;br&gt;*USSD Scholarships&lt;br&gt;*President’s Award</td>
<td>Grand Ballroom, 2nd Floor</td>
</tr>
<tr>
<td>10:15 am - 10:45 am</td>
<td>Break in Exhibit Hall</td>
<td>Salon CD, Lower Level</td>
</tr>
<tr>
<td>10:45 am - 12:15 pm</td>
<td><strong>Concurrent Technical Sessions Track 3</strong>&lt;br&gt;3A Embankment Dams II&lt;br&gt;3B Environment/Decommissioning&lt;br&gt;3C Public Safety, Security and Emergency Management&lt;br&gt;3D Dam Safety II&lt;br&gt;3E Conference Theme II</td>
<td>Salon A, Lower Level</td>
</tr>
<tr>
<td>12:15 pm - 1:30 pm</td>
<td>Lunch in Exhibit Hall</td>
<td>Salon CD, Lower Level</td>
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<tr>
<td>12:15 pm - 1:30 pm</td>
<td><strong>Young Professional Mentoring Luncheon (pre-registration required)</strong></td>
<td>Grand Ballroom</td>
</tr>
<tr>
<td>1:30 pm - 3:30 pm</td>
<td><strong>Concurrent Technical Sessions Track 4</strong>&lt;br&gt;4A Concrete II&lt;br&gt;4B Earthquakes (Embankments)&lt;br&gt;4C Conference Theme III&lt;br&gt;4D H&amp;H (Hydrology)&lt;br&gt;4E Construction (Seepage)</td>
<td>Salon A, Lower Level</td>
</tr>
<tr>
<td>3:30 pm - 4:00 pm</td>
<td>Break in Exhibit Hall</td>
<td>Salon CD, Lower Level</td>
</tr>
<tr>
<td>4:00 pm - 6:00 pm</td>
<td><strong>Concurrent Technical Sessions Track 5</strong>&lt;br&gt;5A Levees&lt;br&gt;5B Monitoring&lt;br&gt;5C Dam Safety III</td>
<td>Salon A, Lower Level</td>
</tr>
<tr>
<td>5:00 pm - 6:00 pm</td>
<td>USACE TownHall Meeting</td>
<td>Salon A3, Lower Level</td>
</tr>
<tr>
<td>6:30 pm - 9:30 pm</td>
<td>Closing Party (ticketed)</td>
<td>The Crystal Gardens</td>
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### Thursday, April 11

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

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

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

A Novel Approach for Characterizing Shear Strength of Mass Concrete Lift Joints: Experimental Procedure and Empirical Model
Jeff Yatham, BC Hydro
Samita Chakrabarti, BC Hydro
Osmar Penner, BC Hydro
Evon 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 Shahbaz, BC Hydro
Osmar Penner, BC Hydro
Brent Bergman, BC Hydro

Design and Construction of Seismic and Reliability Upgrades of Ruskin Dam
Saman Vazinhkoo, 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 Yatham, BC Hydro

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

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
Rollen Hatchkiss, Brigham Young University
Ronald McGhin, Kiewit Engineering Group, Inc.

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.

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
### 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 Slagen, Geosyntec
- Jonathan Fanin, 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 Ofogbo, GNO Modeling Research

#### Study of Embankment Cracking for Small Dams
- Ana Avendano, Universidad Nacional de Colombia
- Guillermo Avila, Universidad Nacional, 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
- Melany 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 Soooh, 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

- Harpreeet Hansra, DRW, Division of Safety of Dams
- Vojislav Cijanovic, California DRW, Division of Safety of Dams
- Ian Moki, 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 Cofferdam to Dam at Monongahela River Locks and Dam No. 4
- Timothy Hamshire, 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

#### Roller Compacted Concrete Placed with a High Density Paver for Use as a Flood Barrier - Application to TVA Dam
- Andrew Tate, California DWR
- Jennifer Bauer, Appalachian Landslide Consultants

#### 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
- 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
- Davide 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
- Vikram Shathip, Bhote Koshi Power Corporation

#### Upgrades for a Second Century at Duke Energy’s Bridgewater Hydroelectric Project
- Brian Reinicker, HDR
- Brian Chrisman, HDR
- Brad Keaton, Duke Energy
- Jan Wise, Duke Energy
- David Gerlach, HDR

#### Buckeye Lake Dam Remidiation: 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 Wesner, Freese & Nichols, Inc.
- Larry Hare, 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.
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, CSL, Sacramento
Tadahiro Kishida, Khalifa University, UAE
Dongsoo 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 Earthfill 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.
Lynne 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 pm
CONCURRENT SESSIONS TRACK 3

3A: Embankment Dams II
Room: Salon A2
Moderators: Clinton Carlson, Geosyntec Consultants; and Chris Krage, GEI Consultants

3B: Environment/Decommissioning
Room: Salon A4
Moderators: Ali Reza Firoozfar, HDR; and Glen DeWillie, Kleinschmidt Group

3C: Public Safety, Security and Emergency Management
Room: Salon A1
Moderators: Megan Puncke, Kleinschmidt Group

3D: Dam Safety II
Room: Salon A3
Moderators: Bruce R. Rogers, USACE; and Rafael Pineda, Gannett Fleming, Inc.

3E: Conference Theme II
Room: Salon A5
Moderators: Seth Krause, WSP; and Andrew Ventry, Terracon 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
Evon 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

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
Johnathan Atkins, MS DEQ

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

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

Public Safety - Emergency Management in a Crisis
William Fos, 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.

Evaluation of Hydrological and Geological Hazards to Support PFMA of Large High Hazard Dams
M. Logan Cline, RIZZO
Cagri Cinkikle, RIZZO
Tom Edwards, RIZZO

Evaluating Human Consequences of Dam-Break Floods Using DSS-WISE™ HCOM Module
Mustafa Atilinakar, 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

Evaluation of Hydrologic and Geographical Hazards to Support PFMA of Large High Hazard Dams
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Kyle Burke Pfeiffer, Argonne National Laboratory
James E. Demby, FEMA
Gokhan Inci, FEMA

3D Ground Modelling for a Dyke Reconstruction Project (HaLiMa) in North Rhine-Westphalia, Germany
Myles Lawler, CDM Smith Europe GmbH
Oriol Cuirana, CDM Smith Europe GmbH
Alois 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
Razh 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
4A: Concrete Dams
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 ASAR and LiDAR Surveys into Sliding Stability Assessment of Concrete Gravity Dams
Tark 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 ShangGuar, Harvey Mudd College
Gyan Basyal, WEST Consultants, Inc.

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 Seyedi-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 Salitre, 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 Kotte, 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 Beatty, Beatty Engineering
Fenggang Ma, Kleinfield
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: Brandon Vavrak, 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
Laic 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 Mock, 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 Eichenberg, Stantec Consulting Services Inc.
Zach Whitten, Stantec Consulting Services, Inc.

Stochastic Framework for Flood Risk Analysis
Siamak Esfandiar, 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

Lessons Learned from More Than 35 Years of Cofferdam Construction

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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.

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

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
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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

**5B: Monitoring**
*Room: Salon A4*
Moderators: John Hynes, Stantec; and Amanda Sutter, USACE

**5C: Dam Safety III**
*Room: Salon A1*
Moderators: Mohammad Amin Harin-Ardebili, University of Colorado; and Peter Haug, Ayres Associates

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**Hazard Potential Classification 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**

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

**Case History on Monitoring Seepage on Large Zoned Embankment Dams**
Thomas Soletta, 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 Hibbitts, 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

**Applications of Underwater Acoustic Remote Sensing**
Kenneth Labry, Underwater Acoustics International, L.I.C.

**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 Gaslin, 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 Patew, USACE
Adiel Komey, University of Maryland

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

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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.