



# USSD International Symposium on the Mechanics of Internal Erosion for Dams and Levees

## Monday, August 8

3:00 p.m. - 6:00 p.m.

**Registration**

6:00 p.m. - 8:00 p.m.

**Reception/Exhibition Opening**

## Tuesday, August 9

7:00 a.m. - 6:00 p.m.

**Registration**

7:00 a.m. - 8:00 a.m.

**Continental Breakfast in Exhibit Hall**

8:00 a.m. - 8:20 a.m.

**Welcome and Introduction**

**John D. Rice**, Utah State University (USA)

8:20 a.m. - 9:30 a.m.

**Keynote Presentation**

**Robin Fell**, Emeritus Professor, University of New South Wales (Australia)

9:30 a.m. - 10:00 a.m.

**Break in Exhibit Hall**

10:00 a.m. - 11:45 a.m.

**Session 1 — Processes and Mechanics of Backward Erosion Piping**

Moderators — **Charles Redlinger**, U.S. Army Corps of Engineers (USA); and **Jean-Jacques Fry**, Ecole Centrale Lyon and EDF-CIH (France)

*Welcome Introduction, Outline, Context and Presentation of Speakers*

**Charles Redlinger**

*Terminology and Main Processes*

**Jean-Jacques Fry**

*Typical Problems Encountered at Levees or Observed on Dams and Lessons Learned from Design and Performance*

**Scott Shewbridge**, U.S. Army Corps of Engineers (USA)

*Mechanics of Backward Erosion Piping in a Sandy Layer Under a Roof*

**Vera Van Beek**, Deltares (Netherlands)

*Type 2 : Backward Erosion: Other Mechanics than Backward Erosion Piping*

**Jean-Jacques Fry**

*Conclusion*

**Charles Redlinger** and **Jean-Jacques Fry**

11:45 a.m. - 1:15 p.m.

**Lunch with Speaker**

Moderator — **John D. Rice**

*AV Watkins Dam Near Failure Caused by Backward Erosion Piping*

**Dennis Hanneman**, Bureau of Reclamation (USA)

1:15 p.m. - 3:00 p.m.

**Session 2 — Analysis of Critical Hydraulic Conditions for Backward Erosion Piping**

Moderators — **Vera Van Beek**, Deltares (The Netherlands); and **Bryant Robbins**, U.S. Army Corps of Engineers (USA)

*Critical Conditions for Backward Erosion Piping*

**Vera Van Beek**

*Modes of BEP Progression*

**Qiuling Yao**, China Institute of Water Resources and Hydropower Research (China)

*Backward Erosion Piping In Well Graded Soils*

**Rebecca Allen**, University of New South Wales (Australia)

*Kaskaskia Island and Bois Brule Levee Breaches during the 1993 Mississippi*

**Michael Navin**, U.S. Army Corps of Engineers (USA)

*Summary and Looking Forward*

**Bryant Robbins**

3:00 p.m. - 3:30 p.m.

**Break in Exhibit Hall**

3:30 p.m.- 5:30 p.m.

**Session 3 — Open Discussion on Topics of Sessions 1 and 2**

5:30 p.m.- 7:30 p.m.

**Reception in Exhibit Hall**

## Wednesday, August 10

7:00 a.m. - 5:30 p.m.      **Registration**

7:00 a.m. - 8:00 a.m.      **Continental Breakfast in Exhibit Hall**

8:00 - 9:45 a.m.          **Session 4 — Processes and Mechanics of Concentrated Leak Erosion**

**John W. France**, AECOM (USA); and **Mark Foster**, AECOM (Australia)

*ICOLD Bulletin 164 and Concentrated Leak Erosion*

**Rodney Bridle**, Dam Safety Ltd. (United Kingdom)

*Processes and Mechanics of Concentrated Leak Erosion — Some Matters of Detail*

**Robin Fell**

*James Sherard's Research and Views on CLE*

**Mark Foster**, AECOM (Australia)

*The U.S. Army Corps of Engineers Experience and Approach for CLE*

**Timothy O'Leary**, U.S. Army Corps of Engineers (USA)

9:45 a.m. - 10:15 a.m.      **Break in Exhibit Hall**

10:15 a.m. - 12:00 noon      **Session 5 — Assessment of Concentrated Leak Erosion**

Moderator — **William Engemoen**, Bureau of Reclamation (USA)

*Introduction*

**William Engemoen**

*Application of the Hole Erosion Test to the Quantitative Risk Assessment of a Levee*

**Jean-Jacques Fry**

*Application of the Hole Erosion Test to the Evaluation of Dam Failure Hydrograph: Example of Teton Dam*

**Fry Thomas**, Lycée du Parc Lyon (France)

*The Submerged Jet Erosion Test: Past-Present-Future*

**Tony Wahl**, Bureau of Reclamation (USA)

*Reclamation Experience with Initiation Rates of Concentrated Leak Erosion*

**William Engemoen**

12:00 noon - 1:30 p.m.      **Lunch with Speaker**

Moderator — **John D. Rice**

*Risk Assessment and Internal Erosion*

**Eric C. Halpin**, U.S. Army Corps of Engineers (USA)

1:30 p.m. - 3:15 p.m.      **Session 6 — Processes and Assessment of Suffusion and Contact Erosion**

Moderators — **Jonathan Fannin**, University of British Columbia (Canada); and **Alexander Scheuermann**, The University of Queensland (Australia)

*Unorthodox Thoughts About Grain-Size Criteria for Assessing Suffusion Potential*

**Karl Josef Witt**, Bauhaus-Universität Weimar (Germany)

*Spatial and Time Scale-Effects on Suffusion Characterizations — What Alternatives?*

**Didier Marot**, University of Nantes (France)

*A Micro-Mechanics Understanding of Internal Erosion in Dams — How, Where and When?*

**Jonathan Fannin**

*Micro-Scale Considerations on the Onset of Contact Erosion*

**Alexander Scheuermann**

3:15 p.m. - 3:45 a.m.      **Break in Exhibit Hall**

3:45 p.m. - 5:30 p.m.      **Session 7 — Open Discussion on Topics of Sessions 4, 5 and 6**

7:00 p.m. - 7:30 p.m.      **Reception**

7:30 p.m. - 9:30 p.m.      **Dinner with Speaker**

Moderator — **John D. Rice**

*Teton Dam — Technical Factors Contributing to the Failure*

**Jeanne Major**, Bureau of Reclamation (USA)

## Thursday, August 11

7:00 a.m. - 7:00 p.m.      **Field Tour — Site of Teton Dam Failure**

The Field Tour will be led by **David B. Paul**, U.S. Army Corps of Engineers, **Brent Carter**, Bureau of Reclamation (Retired), and **John D. Rice**, Utah State University. Motor coach transportation, breaks and lunch are included.