

BOARD REPORT

Committee Name: Hydraulics & Hydrology

Submitted by: Keil Neff, Greg Paxson, Jennifer Gagnon

Report Date: 3 May 2021

Committee Mission/Purpose

The USSD Hydraulics and Hydrology Committee supports and promotes advancement of the technical practices of hydrology and hydraulics as they relate to the evaluation of dams, spillways, and appurtenant structures. This includes (1) flood analyses including design hydrology and flood flow frequency estimation; (2) hydraulic design of spillways, outlet works, and other hydraulic structures related to multi-purpose project operation; (3) analyses of floods resulting from dam failures and assessment of potential downstream consequences; (4) hydraulic and hydrologic aspects of operation and maintenance, and (5) reservoir sedimentation and sustainability.

Chair: Greg S. Paxson, PE, D.WRE
Vice Chair: Keil J. Neff, PE, PhD
Vice Chair: Jenn Gagnon, PE, CFM (Young Professional)

To assist in carrying out its work, the Hydraulics and Hydrology Committee has established subcommittees. As of 2020, the committee has the following three active subcommittees: (1) Sedimentation Subcommittee (Marty Teal, chair), (2) Spillways Subcommittee (Brian Crookston, chair), (3) Hydrology Subcommittee (Keil Neff, chair), and (4) Gates and Valves Subcommittee (Kevin Gerst, chair), which is not currently active.

The Committee membership includes professionals from government or private organizations that own and operate dams, government organizations that regulate dams, consulting engineers that provide engineering services to dam owners, and members of academia involved in research related to hydraulics and hydrology. The Committee discusses technical issues, develops guidelines and publications, presents workshops, and generally promotes the advancement of state-of-the-practice for hydrologic and hydraulic analysis related to dams through the diverse backgrounds, experiences, and perspectives of the Committee membership.

2020 Goals/Accomplishments

(1) Three committee meetings were conducted in 2020: (i) 16 April 2020; (ii) 24 June 2020; and (iii) 11 December 11.

(2) The hydrology sub-committee established, and its charter was formalized. The purpose of this technical subcommittee is to advance education, collaboration, and outreach of hydrology with respect to dams and levees as part of the Committee of Hydraulics and Hydrology. This includes analysis of floods and the reduction of flood impacts by dam projects.

(3) Several new members joined the committee since the last annual conference. This includes: (i) Kevin Gerst, (ii) Travis Ford, (iii) Kerry Price, (iv) Patrick VandeWiele, (v) Justin Claytor, (vi) Rick Shmurak, (vii) Giovanni Del Papa, (viii) Ryan Martin, and (ix) Kent Walker. Additionally, several folks registered for the 2021 annual conference have expressed interesting in joining the committee or participating in the 2021 committee meeting.

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(4) Provided training on RCEM (Reclamation Consequences Estimating Methodology) as part of the 2020 USSD Fall Workshop Series.

(5) Hydraulics and hydrology papers were prepared and reviewed to support the 2021 Annual USSD Conference. This includes (i) Session 1, Track 5 – Dam Breach Modeling and Emergency Response (4 papers/presentations); (ii) Session 2, Track 5 – Flood Hazard and Probabilistic Analysis (5 papers/presentations); (iii) Session 3, Track 5 – Hydraulic Modeling for Spillways and Dams (4 papers/presentations); and (iv) Interactive Presentations (6 papers/presentations).

(6) Gates and Valves committee reactivated with Kevin Gerst excited to chair.

(7) Identified Greg Paxson as the US delegate to ICOLD Committee C – Hydraulics for Dams

2021 Goals

(1) Submit updated USSD Hydraulics and Hydrology Committee Charter to the USSD Board.

(2) Provide Probabilistic Flood Hazard Analysis (PFHA) training (1-Day) as part of the 2021 USSD Fall Workshop Series.

(3) Support newly formed Education and Training Committee. Two topics the H&H Committee is working towards in providing training include: (i) Reservoir Sediment Management and (ii) CFD Modeling for Dams and Levees.

(4) Assemble leads and teams for drafting of 1-5 white papers. Topics may include: (i) Probabilistic Flood Hazard Analysis, (ii) rock erosion of spillways, (iii) Physical Modeling and CFD, (iv) Estimation and Application of Downstream Consequences in Dam and Levee Safety Risk-Informed Decision-Making, and (v) Spillway Capacity Upgrades for Existing Dams

(5) Select 2022 workshop(s) H&H topic and designate champion(s). Topics may include: (i) Life Cycle Management of Spillways; (ii) Calibration and Verification of Hydraulic Modeling; (iii) Sediment Diversion; and (iv) Reservoir Sustainability.

(6) Solicit requests and receive submissions of quality abstracts to support 3 H&H sessions as part of 2022 annual USSD conference.

(7) Support the ongoing efforts of ICOLD Committee C – Hydraulics for Dam, which is a new Bulletin related to various topics to spillway design.

What do you need to accomplish your 2021 goals?

Take all steps possible to allow in-person participation in the 2021 USSD Fall Workshop Series and the 2022 USSD Annual Conference.