

# Construction of Cutoff Walls for Levees and Small Embankment Dams

Thursday, May 3, 2018; one day

The construction and/or rehabilitation of small earthen dams or levees often require the reduction or control of seepage under or through the dam or levee. Cutoff walls have been extensively and successfully used to control seepage for over 60 years at sites where construction of an excavated positive cutoff with compacted backfill is impractical because of the depth of permeable materials, groundwater conditions, operational limitations, time requirements and cost. Technological advances in the past decade, continuing today, offer engineers and owners an array of cutoff wall options for application at a specific project.

The workshop will focus on continuously excavated and backfilled walls and walls constructed in-situ that are typical of small dam and levee applications along with the use of cutoff walls in Coal Combustion Residual Management. This workshop will provide an overview of wall composition and construction methods, site investigation requirements, design considerations, procurement methods and specifications, characteristics of various wall construction methods, owner's quality assurance and contractor quality control methods used to validate wall quality and compliance with specification requirements. Presentations will include case histories to reinforce the guidance presented.



## Topics:

- Cutoff wall use, types, limitations and failure mechanisms
- Cutoff wall design considerations, and selection of wall type
- Data requirements for cutoff wall design and specification
- Contracting methods and specifications for wall construction
- Construction considerations for different wall types
- Contractor Quality control and Owner Quality Assurance during construction
- Cutoff wall acceptance criteria
- Cost
- Performance Monitoring

USSD WORKSHOP  
CONSTRUCTION OF CUTOFF WALLS  
FOR  
LEVEES AND SMALL EMBANKMENT DAMS  
DRAFT AGENDA

8:00 AM      **Call to Order, Welcome**

- Welcome and Introduction of Workshop Participants
- Problem Definition
- Summary of Topics to be covered

8:10AM      **Cutoff Wall Overview – Donald Bruce (Geosystems L.P.)**

- Cutoff wall applications
- Cutoff wall construction methods
- Cutoff wall composition
- Applicable sites for different wall types
- Cost ranges

8:45 AM      **Site investigation and Characterization – Alberto Pujol (GEI)**

- Design data required for wall design, bidding and construction
- Limitations on drilling in embankments
- Characterization of soils the wall will penetrate
- Delineation of existing and projected construction ground water conditions
- Depth to bedrock
- Characterization of bedrock for wall embedment

9:15 AM      **Design – John Rice (Utah State University)**

- Cutoff wall design considerations
- Selection of wall type
- Performance requirements
- Selection of wall type
- Design
- Performance monitoring
- Failure mechanisms (construction and operation)

10:15 AM      **Break**

10:30 AM      **Cutoff Wall Procurement and Specifications – Panel Discussion**

- Procurement methods
- Contractor qualifications
- Contractor proposals

- Delineation of owner and contractor responsibility
- Prescriptive versus performance specifications
- Key performance requirements
- Limitations on construction methods
- Contractor mix design
- QC requirements
- Measurement and payment

11:15 AM      **Construction Considerations for Excavate and Backfill Walls - Kenneth Andromalos (Geo-Solutions)**

- Key factors in contractor project assessment
- Contractor mix design
- Equipment selection
- Facilities
- Access
- Contractor use areas
- Work surface
- Excavation
- Slurry and backfill mixing and placement
- Waste generation and disposal
- QC – real-time data acquisition, sampling, testing
- Interaction with concurrent construction activities

12:00 PM      **Lunch**

1:00 PM      **Construction Considerations for Mix in Place Walls - Charlie Krug (DeWind) & TBD**

- Key factors in contractor's project assessment
- Contractor mix design
- Equipment selection
- Facilities
- Access
- Contractor use areas
- Work surface
- Excavation
- Waste generation and disposal
- QC – real-time data acquisition, sampling, testing
- Interaction with concurrent construction

2:00 PM      **Owner's Quality Assurance – Richard Millet (AECOM)**

- Delineation of responsibility between QA and QC
- Personnel experience requirements
- Sampling

- Testing
- Post construction testing
- Acceptance criteria

2:40 PM            **Break**

2:55 PM            **Cutoff Wall Closure and Repair – Jeffrey Hill and Kenneth Ivanetich, (HaywardBaker)**

- Wall closure against structures
- Wall closure around penetrations in foundation or embankment
- Repair of defects in constructed walls
- QC and verification of the integrity of closure or repair

3:30 PM            **Coal Combustion Residual Management – Robert Bachus (Geosyntec)**

- Cutoff wall applications
- Design and construction requirements unique to CCR management

4:00 PM            **Herbert Hoover Dike Project – Christopher Papiernik and John Kendall, (USACE)**

- Performance history
- Soil conditions and failure modes
- Wall design and risk reduction
- Contract specifications
- Wall construction
- Construction verification and acceptance
- Lessons learned and incorporation in to Phase 1 extension

4:40PM            **Case History – Nagesh Malyala (AECOM)**

- Feather River Levee Rehabilitation

5:10 PM            **Proposed Mosul Dam Cutoff Wall – Dave Paul (USACE)**

5:40 PM            **Adjourn**