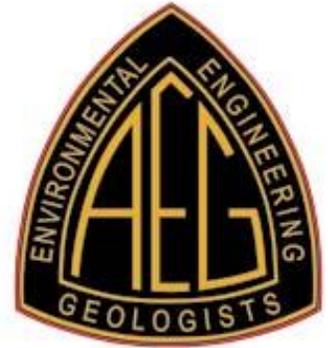


January 2018



Meeting Announcement

AEG Sacramento Section



Tuesday, January 23, 2018

Location: Cattlemen's – Rancho Cordova
12409 Folsom Blvd., Rancho Cordova, 95742
[Link to map](#)

Speakers: Dr. Tatia Taylor and David Paul
U.S. Army Corps of Engineers

Topic: “Foundation Geology and Remedial Grouting at Mosul Dam, Iraq”

Meeting Sponsor: TBD

Agenda:

5:30–6:30pm – Social hour

6:30-7:30pm – Dinner

7:30-8:30pm – Speaker

8:30-8:45pm - Questions

Meeting Cost:

Members: \$30

Non-Members: \$35

Students: \$10

Please RSVP by 1/22/2018. A \$3 surcharge will be applied to walk-ins (no surcharge for student walk-ins). The FIRST five students to RSVP are free!

Student Sponsorships welcomed! Sponsor a student for \$20 (suggested).

RSVP at <http://www.aegsacto.org/meetings/signup/>
or email: chase.white@conservation.ca.gov

“Foundation Geology and Remedial Grouting at Mosul Dam, Iraq”

Tuesday, January 23, 2018

presented by: Dr. Tatia Taylor and David Paul, U.S. Army Corps of Engineers

Mosul Dam is a 3.4-km-long zoned embankment dam completed in 1984 to impound the Tigris River about 50 km north of the city of Mosul Iraq. The dam was built on a karst foundation common to this region of northern Iraq. The geology in this area includes layered sequences of evaporitic units including anhydrite and gypsum interbedded with limestone and alternating clay units known as marls. This stratigraphy extends several hundred meters at depth and has been complexly folded and faulted within the foreland fold belts of the Zagros Mountains to the northeast. Solubility rates for gypsum and anhydrite are several times that of limestone and other karstic rocks more commonly seen in the US. When anhydrite becomes hydrated to become gypsum, it undergoes up to 60 percent dilation in situ, causing intense fracturing to adjacent rock units. As the resulting gypsum goes into solution, voids and collapse features form, which are filled with broken clasts of limestone and clay marl from overlying units forming massive gypsum breccias. The processes of dilation, solution, collapse and brecciation leave rocks in core and outcrop with a shattered appearance and significant permeability. The effects of these chemical and geologic subsurface processes are critical to the evaluation and monitoring of the Dam. The U.S. Army Corps of Engineers (USACE) have performed an extensive evaluation of the dam that has categorized the dam at extremely high risk. The Mosul Dam Task Force is a multinational effort led by the USACE to perform emergency foundation grouting beneath Mosul Dam. Objectives are to reduce immediate risk of failure by intensive grouting of the foundation from the 2.2 km long grouting gallery constructed on centerline of the dam. The focus of the emergency grouting program is to identify critically affected foundation areas and remediate by grouting.

The consequences from failure of Mosul Dam would be catastrophic for the country of Iraq. The U.S. Army Corps of Engineers (USACE) has been involved with the project since 2003 and currently is providing technical assistance to the Government of Iraq (GoI) for remediation of the dam. Construction of the dam began in 1981 with closure in June 1984. First filling of the reservoir was initiated in the spring of 1985. Seepage was immediately observed due to the high permeability of the karstic foundation units and solutioning of interbedded gypsum and anhydrite layers within the foundation. The Ministry of Water Resources (MoWR) has been grouting the foundation during different periods since 1985. The GoI has awarded a contract to the Trevi Group for foundation grouting and repair of the Bottom Outlet (low level outlet). The GoI has designated the USACE to be their Engineer and provide oversight of the contract. A detailed Risk Analysis (RA) has been completed by USACE to advise on further dam safety actions. The USACE is working closely with the MoWR and Trevi to plan and execute the work. The existing instrumentation system is also being evaluated and upgraded to provide for assessment of the performance of the dam. The presentation will summarize the results of the ongoing remedial grouting program and potential additional risk reduction measures that may be implemented.

About our Speaker:

Dr. Taylor is a Structural Geologist who completed her Ph.D. at the University of California, Davis. She has been with the Army Corps of Engineers for 8 years, serving for most of that time as the Project Geologist for the Folsom Auxiliary Spillway Joint Federal Project, a Corps flood risk reduction megaproject in Folsom, CA. Most recently, she has served as Lead Geologist on the Mosul Dam Task Force, which is overseeing emergency grouting operations to reduce the risk of failure of the Mosul Dam, near Mosul Iraq. Since returning from Iraq, she continues to support the Folsom project, and has begun helping with the Lake Isabella Dam Modification Project, and other projects at Sacramento District.