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Upcoming Meetings:

- **Wed, May 27th—Joint Meeting with ASFPM**
- **Wed, June 24th**
- **Thurs., July 16th—Golf Tournament at Oak Marsh Golf Course in Oakdale, MN**

Frequently Used Links:

- National website at www.same.org
- Post website at www.same-msp.org
- Listing of [Post Leaders](#)
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Next Meeting Presentation

Wednesday, April 22nd, 2015

Have you had your leakage checked?

Come learn about what techniques have been developed to help assess leakage and seepage from dams and reservoirs.

Bethany Kelly and Ivan Contreras
Barr Engineering

1/2-PDH

Presentation Synopsis:

Leakage is a major safety issue that, if left unchecked, may result in dam failure by various mechanisms. There is enormous pressure on dam operators to repair leaks without significant delays. Frequently, the need to reduce the risk of failure or control water loss has led to costly remedial repairs that are planned and executed without a complete understanding of the problem. A lack of appropriate leakage investigation and monitoring can result in repairs that are unsuccessful in controlling or reducing leakage.

In the last few decades, a series of new techniques have been developed to help in the assessment of leakage and seepage in dams. It is important to make these techniques available to the engineers responsible for dam construction and management so that they become aware of these tools. The available literature on dam leak studies is relatively limited with regard to the use of these techniques when assessing dam leakage. It is difficult to find case studies that discuss integrating the use of several of these techniques in comprehensive evaluations that lead to successful leakage mitigation. These techniques allow identification of recharge zones, preferential paths, and transit times, which aid in monitoring and mitigating the dam leakage.

The presentation includes description of the techniques and several projects in the United States and abroad involving prevention and detection of dam and reservoir leakage, including leakage evaluation, analysis, design, construction, and post-construction verification of repairs.

Speaker Bios:

See [page 2](#) to learn more about Bethany Kelly and Ivan Contreras

Meeting Location:

Fort Snelling Officer's Club at 395 Minnesota 5, St Paul, MN 55111. See map at http://www.same-msp.org/_images/934thOfficersClub.jpg

Agenda:

Social time and lunch (if you so desire) will be from 11:30 AM to 12:30 PM in the dining room of the Officers Club. Post Meeting and Presentation will be from 12:30 PM to about 2:00 PM in the ballroom of the Officers Club.

The Club's cafeteria-style lunches are typically \$10.00 or less; people who partake in the cafeteria-style lunch will pay the Officers Club directly. If you come only for the presentations, there is no charge. Please RSVP with your intent to either partake in the cafeteria-style lunch or to come for the presentation only; this will help the Officers Club staff to ensure that an adequate amount of food is prepared. Either leave a message with Michelle Larson at **651-290-5632**, click the RSVP button in the left-hand column of page 1, or send an email to Michelle.J.Larson@usace.army.mil

Highlights of the Previous Meeting



During March's Joint ASCE and SAME luncheon meeting, Petra DeWall, a waterway engineer from the MN Department Of Transportation (MNDOT), provided a great overview of the river and lake hydrography projects done by the MNDOT Bridge Hydraulics-Waterways group. Over the past 16 years, MNDOT has used survey-grade depth-sounders and an Acoustic Doppler Current Profiler (ADCP). Depths, flow rate, velocity and direction are measured, mapped in ArcGIS and CADD and applied to project requirements. Petra described some of the challenges of gathering underwater hydrographic data during low flows and flooding extremes. She described the flow conditions during a scour hole repair assessment near Brainerd, MN as "very treacherous, like being in a washing machine".

Petra included some of the technical consideration for data collection at several MNDOT projects including the Minnesota River (lateral migrations, emergency repairs, scour hole mapping) Red River of the North at Oslo, Iron Mine road re-alignment near Virginia, MN. Petra also extended her talk into the hydraulic modeling done to address flood mitigation at a historic bridge at St Peter, MN. Finding the preferred solution included data collection that would support a detailed hydraulic model, including high resolution LiDAR, aerial photographs during river flooding, high water mark collections, ADCP Flow measurements and extending the hydraulic modeling to a 2-Dimensional model using the newest version of HEC-RAS.

MNDOT recently acquired a 3D sonar scanner device (Teledyne Blue View 3D Scanner) that produces a 3D-point cloud, where the image can be rotated and dimensioned measured from the 3-Dimensional image. Petra reminded the audience that LiDAR does not penetrate below water and the bathymetry in a river is the backbone of hydraulic modeling. The Teledyne works with sound waves, so collection can be successful even in turbid water. Petra described demonstration of the Teledyne, where it was used to assess the condition of concrete piers at a bridge in the Twin Cities. The ability to rotating the point cloud allows for a look under and all around a feature to measure the quantity of missing material in a scour hole or the extent of damage. The 3D Sonar scanner is currently being used in a continuous mode for construction monitoring near Winona, MN. The monitoring system has integrated alarms that alert engineers of potential issues that may need investigation. Using the 3D sonar scanners reduces the need for human divers for structural assessments and improves overall safety of site inspections.

April Speaker Bios

Bethany Kelly joined Barr in 2007 with a master's degree in geological engineering from Montana Tech of the University of Montana. Her key geotechnical engineering interests include slope stability analysis and design; hydrogeologic investigation, analysis, and remediation of seepage impacting stability; liquefaction stability assessments; "special soils" (e.g., brine-impacted and contaminated); rock wall design; and geotechnical monitoring instrumentation.

Iván Contreras was born and raised in Venezuela, earned a doctorate in civil engineering (geotechnical engineering) from University of Illinois at Urbana-Champaign, and has more than 25 years of experience in geotechnical engineering on a wide variety of projects in the United States, Canada, Mexico, and Venezuela. These projects range from the design of small reservoirs to the detailed design of oil-storage-tank foundations and slope stability remediation. He has designed and performed safety reviews, dam performance evaluations, construction observation, long-range planning, and comprehensive geotechnical investigations.

Elmwood High School Education Grant

On March 18, 2015, Chris Afdahl and Disa Wahlstrand from the MSP Post attended a presentation by the Elmwood High School (Elmwood, Wisconsin) Advanced Biology class, led by Secondary Science Teacher, Kristel Flesberg. Our Post awarded the school an education grant which they used to purchase anatomical models for scientific study. This particular class follows a college curriculum so that students achieving a C or better grade earn 4 college credits. Presenters gave a short demonstration of how they use the model and what they learned about the anatomical system represented by the model. Students (Ms. Flesberg) expressed their appreciation to the Post for the grant and emphasized how this kind of hands on opportunity greatly enhanced their ability to absorb the new scientific knowledge. This gift will continue to give as future classes at Elmwood High School continue to use them for Biology.



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**USAFA SAME Engineering Camp
Recipient**

The SAME-MSP Board has selected Mr. Jacob Ballensky to attend the USAFA SAME Engineering Camp in Colorado Springs, CO. Jacob is currently in his junior year at Anoka High School. He has a strong interest in science and math, and the military. He has a strong GPA that includes several honors level science and math courses along with two aviation/aerospace engineering courses. Outside of course work, Jacob is involved in hockey, cross country, trap shooting and several other activities. He also has an interest in applying to a Service Academy or ROTC program and has several family members that have been members of the Air Force.

Small Business Corner

The 16th Annual SADBOD Government Procurement Fair will be held Thursday, April 30th, 2015 from 9:00 AM to 3:00 PM at the Earle Brown Heritage Center in Brooklyn Center, MN. Small business interested in doing business with government agencies and prime contractors are encouraged to attend this trade fair. Coupling education with marketing strategies, this event provides small businesses with an opportunity to meet with representatives from federal, state, and local departments, commercial/prime contractors, and nonprofit organizations. Small businesses will have access to technical assistance and learn about upcoming contracts.

To learn more and register for the event, click [here!](#)

**March Lunch
Winners**

And the winners
are...

**Jim Staberg—
Barr Engineering**

**Nate Lamusga—
Aerotek
Engineering and
Environmental**

Congratulations!

Volunteers Needed for SAME Engineering & Construction Camps

The SAME Engineering & Construction Camps Program is still looking for a few more Young Members or NCO Members to volunteer to serve as mentors at the US Marine Corps and US Air Force Academy Camps. The dates are June 21 – 27 and June 24-July 1, respectively. Mentors perform a vital role in helping to conduct the camps and encourage participating high school students to consider STEM related fields in college and career decisions. This outreach is an important SAME objective tied to our National security. The camps provide mentors with rewarding personal and professional experience. If you are interested in learning more about the camps and becoming a mentor, please visit www.samecamps.org or contact Kurt Ubbelohde, kfubbelohde@leoadaly.com.

Save the Date!



Mark your calendars for the SAME Golf Tournament on Thursday, July 16th, 2015 at Oak Marsh Golf Course in Oakdale, MN!

More details to come!

www.same-msp.org