

National Capital Section

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DC Water's Biosolids Management Program

Brent Christ, Construction Supervisor for DC Water, Dave Schwartz, Vice President of CDM Smith, Project Manager for the PC/CDM Joint Venture, and Peter Loomis, of CDM Smith, Design Manager for the Main Process Train Project

For our first dinner meeting of the new year, the ASCE-National Capital Section (NCS) will join with the American Water Resources Association, National Capital Region, for a presentation on the Biosolids Management Program (BMP) at the Blue Plains Advanced Wastewater Treatment Plant.

Blue Plains is the largest advanced wastewater plant in the world. Its peak treatment capacity exceeds 1 billion gallons per day, serving more than 2 million residents of Washington DC, Maryland, and Virginia. DC Water is currently implementing a ten-year, \$3.8 billion Capital Improvement

The mission of DC Water's Biosolids Management Program is to provide reliable, diversified, flexible, sustainable, environmentally sound, publicly acceptable, and cost-effective management of biosolids produced by the Blue Plains Advanced Wastewater Treatment Plant, while helping preserve agriculture and protect the Chesapeake Bay.



Digesters and Digester Building



Aerial view of the Blue Plains Advanced Wastewater Treatment Plant

Program (CIP), which aims to improve the District's water and sewer infrastructure. A major component of the Program is the BMP.

The BMP focuses on the reduction of biosolids volume, as well as treatment of the biosolids to meet regulatory requirements. Currently, the BMP consists of four main projects:

- 1. the Main Process Train (MPT);
- the Combined Heat and Power Facility;
- 3. final dewatering; and
- 4. site preparation.

The BMP will help achieve DC Water's goal of lowering operating costs, improving energy efficiency, and reducing its carbon footprint. The MPT contract was awarded in 2011 to the joint venture of CDM Smith and PC Construction as a Design-Build delivery, with a contract amount exceeding \$208 million. When completed in 2015, the MPT will consist of screening, centrifuge dewatering, thermal hydrolysis, anaerobic digestion, biogas production, and odor control. The MPT will be the

largest thermal hydrolysis plant in the world, essentially serving as a pressure cooker for biosolids.

The renovations to the Blue Plains Plant will bring about significant benefits. Class A biosolids will be produced, which have relatively fewer restrictions on land application and can be bagged and sold to the public as fertilizer. The hauling of biosolids, currently at 65 truckloads per day, will be cut in half. Lastly, greater reduction in solids results in more biogas, which is being converted to electricity by the separate combined heat and power project. This project will generate 8-10 megawatts of power, sufficient to provide one-third of the total energy used at Blue Plains.



Cambi System (thermal hydrolysis) with the Pre-Dewatering Building in the background

The improvements to DC Water's facility will reach beyond its own walls. The residents of the DC region will save \$20 million annually – \$10 million from power savings and \$10 million from sludge disposal savings. Also, greenhouse gas emissions will be curtailed by 40 percent from the reduced biosolids production and plant energy needs. The new MPT will also

President's Corner

Every year ASCE sets aside resources to help its younger members take part in leadership training they may not otherwise have access to. The three-day leadership conference sponsored annually by the Emerging Leaders Alliance costs \$1,500 per participant

but NCS members can apply to win one of several spots available each year to attend the conference at no cost. For details about the conference point your browser to: http://www.emergingleadersalliance.org/.

Katherine Kortum, P.E., a member of the NCS represented ASCE at this year's Conference in Reston, VA, which ran November 11–13, 2013. Applications for the November 2014 conference will open up in the spring of 2014 at the website identified in the



paragraph above. I encourage NCS younger members to apply to win a spot.

Now on to an important multi-year planning opportunity: On December 5, committee chairs Chris Manalo (NCS Secretary) and Scott Wolf (NCS Vice President) kicked off our planning efforts for the

Section's 2016 Centennial Celebrations that will run from October 2015 through September 2016. There are two ways you can help: (1) contact Chris or Scott to join the Committee to help us plan memorable activities our members will cherish; and (2) send them links to articles, books, or other information that is of significance to civil engineering within the region served by the NCS.

I hope you enjoyed our November Section Meeting which focused on the foundations of the Crystal Bridges Museum of American Art. Mr. Andrew Baxter's presentation showed us the challenges behind creating a strong foundation on uneven ground and the museum's eye-catching design. This month, our Section Meeting focuses on DC Water's Biosolids Management Program at the Blue Plains Advanced Wastewater Plant. This program is a major component of DC Water's tenyear Capital Improvement Program to improve the District's water and sewer infrastructure. I look forward to seeing you over dinner on January 21.

With the very best of wishes for a Happy New Year!



Ranjit S. Sahai, P.E., F.ASCE President, ASCE-NCS

DC Water's Biosolids Management Program

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permit additional capacity in the future, allowing sustainable growth.

The presentation will have three distinguished speakers: Brent Christ, the Construction Supervisor for DC Water, will provide insight on the project's background and its drivers; Dave Schwartz, Vice President of CDM Smith and Project Manager for the PC/CDM Joint Venture, will discuss the designbuild process; and Peter Loomis, also of CDM Smith, and design manager for the MPT project, will discuss technical aspects of the project.

The presentation will be held on Tuesday, January 21, 2014, at the Hilton Arlington, 950 North Stafford Street, Arlington, VA, on the second floor in the Gallery Ballrooms. Parking is available at the hotel (\$8), at the Ballston Mall garage (\$1 after 6 p.m.), and on the street (free after 6 p.m.). The Hilton is in the same block as the Ballston Station on Metro's Orange Line. Registration and networking will be from 6 to 6:45 p.m., followed by dinner. The program will conclude by 8:30 p.m. The cost is \$10 for students, \$45 for those preregistering, and \$55 for walkins as space allows.

Please register by January 15, 2014. Click HERE to register. One Professional Development Hour is available to attendees. For questions

available to attendees. For questions, please contact Ranjit Sahai at president@asce-ncs.org or 703-994-4849.

Please note that because the NCS is charged for each meal guaranteed, those who register but are unable to attend will be charged the full registration fee. We welcome "walk-up" attendees, including any registrations made after the guarantee is given to the hotel. However, the cost for "walk-ups" is higher because the Section is charged accordingly by the hotel for late registrations. ■

Newsletter

L.J. Sauter, Jr., *Editor* Telephone: 703-243-5298

February 2014 Issue Deadline: January 15, 2014

To Submit Articles:

newsletter@asce-ncs.org

Address Changes:

Call 1-800-548-ASCE, e-mail member@asce. org, go to http://www.asce.org, or write: ASCE – Membership, 1801 Alexander Bell Drive, Reston, VA 20191. Remember to include your membership number.

National Capital Section

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Committee Chairs

Please refer to the NCS website at http://www.asce-ncs.org for a current list of NCS committees and chairs.

What Does it Mean to be a Member of the NCS Board?

Editors Note: This issue's column was prepared by L.J. Sauter, Jr., who has served on the NCS Board of Directors (BOD) as Newsletter Editor since May 2010.

Joining the NCS Board as the newsletter editor has provided me with an opportunity to "take charge" of the newsletter (sort of like being responsible for environmental impact documents in my previous life, but without having to defend the results to a perpetually angry public). I enjoy preparing reports that make the reader want to read; not so highly technical that folks loose interest, and filled with photos and graphics that draw the reader's attention and help explain the issue.

On the Board, I get to associate with eager, young, smart professionals, all P.E.s (or on the way to becoming P.E.s), who work in exciting positions doing some incredible work on projects with clear societal value. Being a Board member puts me directly in the middle of everything the Section does, from scheduling speakers to budgeting to sponsorship and outreach. As a volunteer organization, I can participate in virtually any of the NCS' functions. And there's always more help needed than there are volunteers to assist with NCS activities and initiatives!

Being on the BOD inspires me to come to more of the monthly meetings than I probably would otherwise because I feel a responsibility to the Section as a Board member. So I'm treated, on a monthly basis, to a presentation on some facet of civil engineering (sort of like a nerdy show-and-tell). While some of the presentations are not as fascinating as others, it's hard not to be inspired when someone who knows what they're talking about shares their insights on a particular topic. And many of the presentations are flat-out captivating.

About L.J.: Retired as a Senior Project Manager from the Federal

Energy Regulatory Commission's Office of Energy Projects in



2013, where he worked for 38 years as a sanitary (and then environmental) engineer. His work involved conducting environmental impact reviews of interstate natural gas transmission facilities, natural gas storage facilities, and liquefied natural gas import terminals. L.J. graduated from the University of Maryland with a B.S. in Civil Engineering and a M.S. in Engineering. He currently lives a quiet life with his wife in Arlington, VA.

Dr. Ziad Sabra, CEO of Sabra, Wang, & Associates, Inc. to Speak at NCS Annual Awards Banquet on March 18, 2014.

Mark your calendars for this year's awards banquet to be held at the Hilton Arlington on March 18. We are honored to have Dr. Sabra as our keynote speaker sharing his Lessons in Civil Engineering Entrepreneurship. Sabra, Wang, & Associates is recognized as a 2012 Top 100 Minority Business Enterprise Award Winner in the Mid-Atlantic Region. You don't want to miss this talk. Who knows, you might discover a gem or two of wisdom that will inspire you to create your own prosperous civil engineering firm or take yours to the next level! Save the Date!



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Community Participation: Effective Stakeholder Involvement Throughout the Project Lifecycle

The next course in the ASCE series on best practices in Sustainable Engineering

Sustainable development requires engineers to educate the public about sustainability, as well as clients, partners, and regulatory decision-makers. Are you ready to engage stakeholders in this educational conversation? If not, this one-day seminar is a must!

The seminar will be presented over the course of six hours, enriched by real stories from engineers who have succeeded and struggled with stakeholder involvement. They will discuss different approaches to various stakeholder groups and explain how their decisions affected their work. The models and frameworks presented will help teach you how to make these decisions for yourself and as part of teams.

Seminar Benefits

Upon completion of this seminar, you will be able to:

- Understand the demands and resources stakeholders bring to the design, construction, operations, and repurposing phases of major engineering projects.
- Have confidence as a leader and educator on issues related to sustainable engineering for the 21st century.
- Integrating the ideas and concerns of non-engineers into engineering solutions effectively.
- Utilize models and ideas presented in this course to advance your career.

Learning Outcomes

- Achieve "Community Participation" for sustainable engineering.
- Set levels of community participation to meet the varying needs you encounter.
- Identify and manage the level of community involvement a project requires.
- Integrate community participation with sustainable engineering with other frameworks governing community participation (such as required environmental and permitting processes).
- Recognize the inherent complexities which set sustainable engineering projects apart from traditional projects.
- Use the non-engineering professional assistance to advance your work with community participation.
- Apply tools for evaluating community participation.

Intended Audience

Representatives of local, state, or federal agencies; professionals involved in stakeholder outreach; and engineers, architects, and planners.

Registration

Registration is limited to 35 attendees – please register by Friday, January 17, 2014. The \$75 registration fee includes course materials, a continental breakfast, and lunch. To register, go to www.asce.org/ Conted/Community-Participation.

The Instructor

Frank Blechman is a consultant helping businesses, community organizations, and public agencies increase their effectiveness though internal and external consensus building. He has assisted with process design, system design, facilitation, training, and motivation. Since 1987, Mr. Blechman has been an organizational consultant, working with state, local, and national organizations. He has led interventions in disputes involving land-use, transportation, historic preservation, church procedures, educational structures, ethnic rivalry, and governance.

For further information, contact Michael Sanio, ASCE Director for Sustainability and International Alliances, at msanio@asce-ncs.org or 703-295-6116. ■



http://discovere.org/our-programs/engineers-week

NCS Committee News and Updates

Sustainability Committee

Nominations for the 2014 Sustainability Award are due January 31! To make a nomination or for additional information, contact Alex Rosenheim, P.E., LEED AP, CCM, ASCE-NCS Sustainability Committee Chairman, at tcc-sus@asce-ncs.org.

Automation Committee

Automation Committee Hosts NIST at GMU to Discuss Future of Construction. Ever wonder how civil engineering construction will look in the not too distant future? Join the NCS Automation Committee from 6 to 7:30 p.m. on January 28, 2014, at George Mason University's (GMU) Fairfax Campus for a fascinating look at the construction industry. Construction has remained low-tech for decades and is poised to be revolutionized with mechanized robotics at the construction





This is a free event (food will be served at no cost to attendees after the presentation) and is sponsored by the NCS Automation Committee and the ASCE GMU Student Chapter. Dr. Kamel Saidi, a Guest Researcher at the National Institute of Science and Technology, will be presenting. Dr. Saidi is a Research Engineer at the University of Texas at Austin and has a special interest in construction robotics and automation.

The event will be held in the Long and Kimmy Nyguen Engineering Building, on the first floor, Room 1602. Visitor parking is available at the Sandy Creek Parking Deck. The event is open to all NCS members and ASCE

Student Chapter members at GMU and other universities. Feel free to contact gmuasce@gmail.com for directions. For further details about the presentation, contact Ranjit Sahai, NCS President and Automation Committee Chair, at president@asce-ncs.org.



Younger Members Forum Monthly Happy Hours. The NCS Younger Members Forum (YMF) holds monthly happy hours in either Arlington, VA, or Washington, DC. Happy hours typically are the first Wednesday of each month unless a holiday falls during that week. For the December happy hour, approximately 35 members attended the YMF annual holiday party at the Front Page

Restaurant in Arlington, VA. Members donated new toys, many engineering and construction themed, for the Toys-for-Tots Program to benefit less fortunate children in the Washington metro area.

The next Happy Hour will be held at McFadden's (2401 Pennsylvania Avenue, Washington, DC; http://www.mcfaddensdc.com/) from 6 to 8 p.m. Watch for an announcement closer to the date



Paul Parfitt (left) and Jordan Pitt (YMF President) share a mirthful moment at the YMF Christmas Party. Collected Toys for Tots are in the background.

with more details. For additional information, contact Sonja Hinish at SHinish@wje.com.

If you would like to become more active with the YMF or would like more information on its events, contact the YMF President, Jordan Pitt, at JPitt@parrishandpartners.com or ncsymfpresident@gmail.com.





Younger Member Professional Development Meeting. Because of the P.E. Exam schedule and the Federal Government shut-down, the October 2013 ASCE-NCS Younger Members Professional Development Meeting has been **RESCHEDULED** to **January** 15, 2014. Join YMF from 6:30 to 8:30 p.m. at McCormick and Schmick's (901 F Street NW, Washington, DC; mccormickandschmicks.com) for a presentation on Land Planning in 3D - How GIS Technology is Shaping Our Future Cities. Aelisa Carr, P.E. & CFM, and Gore Bolton, P.E. & PLS, with AMT, LLC, will be giving a presentation on the effects of building heights within urban areas as the new creation of city skylines. They will offer insight into what other cities around the world are doing, and what technology is allowing stakeholders to model as they look forward. Our speakers will share their experiences in working with this technology on recent projects, and the future of city planning.

For more information about the ASCE-NCS Younger Member Professional Development Meetings or if you would like to suggest a presentation topic, please contact Paul Parfitt at pparfitt@wje.com or David Smith at dsmith@ amtengineering.com. ■



Employment Clearinghouse

The ASCE-NCS provides the Employment Clearinghouse as a free service to its membership. The Clearinghouse allows members to post short notices for available positions or candidates seeking employment. All employers listed herein

are equal opportunity employers. If you have questions, are seeking employment, or would like to post a position, please contact the newsletter editor at newsletter@ascencs.org or phone 703-243-5298.

The Future City Competition Needs Volunteers!



What is Future City?

Thirty-three thousand students in grades 6, 7, and 8 nationwide work in teams with their engineer mentor and educator to imagine, design, and build cities of the future. Along the way, they learn about engineering; develop their writing and public speaking skills; and apply math and science to real world issues. Regional winners will represent their region at the National Finals in Washington, DC, on February 15–19, 2014.

Learn more about Future City at www.futurecity.org.

When is it Happening in this Area?

The 2013/2014 MidAtlantic Regional Finals will be held at the Baltimore Museum of Industry, 1415 Key Highway, Baltimore, MD, on Saturday, January 18, 2014, beginning at 8 a.m. The theme is "Tomorrows Transit: Design a way to move people in and around your city."

We Need Volunteers!

Thirty-seven schools in the MidAtlantic Region are preparing for the big day and Future City needs:

- mentors for the schools,
- model judges,
- special award judges, and
- event-day volunteers.

Please register at http://www.futurecity.org/register.



There are many opportunities to become involved with the teams and the competition. Commitment levels vary and can be as low as just a few hours of your time to a couple of days a week.

If you have any questions, contact Kim Adams, MidAtlantic Co-Coordinator, at Kim.Adams@dattaconsultants.com or 410-243-2882. ■



Volunteers Needed for Discover Engineering Family Day

National Building Museum - February 22

The NCS needs volunteers for our activity at the National Building Museum's (NBM) Discover Engineering Family Day on Saturday, February 22, 2014.

Discover Engineering Family Day is an annual event designed to introduce children to the wonder of engineering and the importance of technological literacy. Family Day is enjoyed by thousands of children of all ages and their families.

Volunteers are needed for two shifts; the morning shift will be from 9 a.m. to 1 p.m. and the afternoon shift will be 1 to 5 p.m. If you can't commit to an entire shift, volunteers are welcome to come in at any time and stay for as long as they like. Volunteers will hand out materials and help guide children in the construction of sky scrapers made of spaghetti and mini marshmallows. The structures will be tested with a dead load until failure (the best part for the kids!). This year, we will also challenge the children to work within a fixed

budget (fake money, of course) to see how that impacts their design. The NCS will provide all materials.

The NBM is located 401 F Street NW, in Washington, DC, and is most accessible from the Judiciary Square Metro Station on the Red Line. Parking is NOT available at the museum. There are several parking garages in the area as well as metered street parking. The NBM will provide breakfast and lunch to all volunteers.

We are also pleased to announce that Bechtel is back on board as our Family Day partner for the second year in a row and they have graciously offered to host a Post-Family Day Networking Event again this year for all volunteers. We have also received word from ASCE National that the current ASCE National President, Randy Over, has made time to attend Family Day and the Networking Event afterwards. More information about the networking event will be available in the February

newsletter.



Please contact **Emily Dean** at dean.emilyanne@gmail.com
to volunteer or for
additional information.
Additional information
can also be found at
http://www.engineeringfamilyday.org. ■



November Meeting Recap – Foundation System for The Crystal Bridges Museum of American Art

The NCS's November meeting was a geotechnical engineering topic related to the foundation systems and construction at one of America's newest art venues, the Crystal Bridges Museum of American Art, located in Bentonville, AR. About 47 members and guests attended. The program was presented by Andrew C. Baxter, P.E., P.G., of Schnabel Engineering, Inc.

Construction began with site clearing in 2005 and the museum opened in 2011. The facility is striking in its architecture, which also supports its function. The museum consists of approximately 100,000 square feet of program space in multiple buildings. The large gallery buildings, surrounded by water features, have moveable internal walls to support exhibits.

The site was cut into the side of surrounding hills and follows natural contours of the land. The layout of the structure made the foundation system



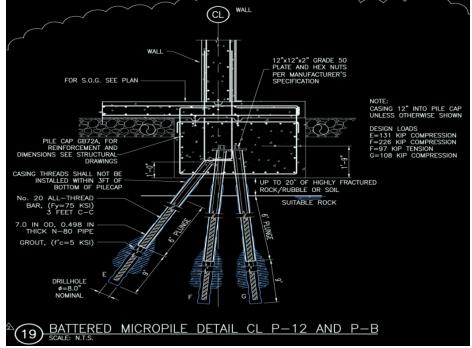
complicated in several ways. Sizeable lateral soil loads had to be resisted by below-grade walls and foundations on rock.

Baxter described the challenges that the geotechnical engineering team faced in developing foundations to achieve the design goals. The two primary foundation systems consisted of battered, micro-pile systems for walls on soil and "shear-pin" micropiles for walls on rock. The shear-pin system was developed to resist lateral loads of up to 75 kips per foot when it became evident that 8-foot-deep shear keys were not feasible.

Baxter also described the difficult engineering and construction challenges associated with the cable-supported roof structures of the galleries. The abutments that support the main cables for the roof structures required innovative design and precise installation. Sophisticated instrumentation and testing was required to validate performance of the structures.

The presentation was very informative for the attendees and brought to light many interesting

innovations in foundation engineering for a spectacular project. Baxter was also very knowledgeable on the construction challenges of the project, as indicated by the questions received. The finished facility is a worthy showpiece for the impressive art collection. Best of all, the museum is now open to the public for viewing. ■





Upcoming Events (Also available on the NCS website under the Events tab; click <u>HERE</u>.)

January 6-10, 2014

The National Institute of Building Sciences (NIBS) hosts the second annual conference and expo, *Building Innovation 2014: Advancing Life-Cycle Performance*, in Washington, DC. The conference agenda will highlight NIBS activities and programs for developing innovative solutions for the built environment. For additional information or to register, click HERE.

January 8

The NCS YMF sponsors its monthly happy hour from 6 to 8 p.m. at *McFadden's* in Washington, DC. Join younger members from the area for free appetizers and drink specials. For additional information, contact Sonja Hinish at SHinish@wje.com. (See newsletter brief.)

January 15

The NCS YMF will host a professional development meeting from 6:30 to 8:30 p.m. at *McCormick and Schmick's* (F Street NW location). Aelisa Carr and Gore Bolton (both of AMT, LLC) will discuss the effects of building heights on urban areas in creating new skylines and how cities around the world are handling new vertical development. (This event was RESCHEDULED from October 22, 2013; see newsletter brief.)

January 18

The Future City MidAtlantic Regional Finals will be held at the Baltimore Museum of Industry in Baltimore, MD. For additional information, contact Kim Adams, MidAtlantic Co-Coordinator, at Kim.Adams@dattaconsultants.com or 410-243-2882. (See newsletter article.)

January 21

NCS-American Water Resources
Association joint meeting at the Hilton
Arlington. Brent Christ of DC Water and
Dave Schwartz and Peter Loomis, both
of CDM Smith, will provide insights
into DC Water's Biosolids Management
Program at the Blue Plains Advanced
Wastewater Treatment Plant. (See
newsletter lead article.)

January 23–24

ASCE Continuing Education Seminar "Financial Management for the Professional Engineer" to be held at the Sheraton Suites Old Town Alexandria in Alexandria, VA. Earn 1.4 Continuing Education Units (CEU). For more information, click HERE.

January 24

ASCE will host Community
Participation: Effective Stakeholder
Involvement Throughout the Project
Lifecycle at its Reston conference
center from 8 a.m. until 5 p.m. The
cost is \$75 and includes the course
materials, a continental breakfast, and
lunch. Registration is limited to 35
attendees; please register by Friday,
January 17, 2014. Click HERE to
register. (See newsletter article.)

January 28

NCS' Automation Committee and the ASCE GMU Student Chapter host a meeting GMU to discuss the future of engineering construction from 6 to 7:30 p.m. NIST Research Engineer Dr. Kamel Saidi will be presenting. (See newsletter brief for details.)

January 31

Deadline for submitting nominations for the 2014 NCS Awards Banquet and the 2014 NCS Sustainability Award. Nominations for the Outstanding Civil Engineering Project, Community Service Award, and Meritorious Service Award should be submitted to Qamar Kazmi at qkazmi@schnabel-eng.com. Nominations for the Sustainability Award should be submitted to Alex Rosenheim at tcc-sus@asce-ncs.org. Nomination criteria for each award were listed in the October 2013 NCS eNewsletter (click HERE to review).

February 18

NCS monthly meeting at the Hilton Arlington. The topic will focus on DC's Streetcar Project. The lead article in the February newsletter will provide further details.

February 22

Discover Engineering Family Day at the National Building Museum in Washington, DC. Contact Emily Dean (dean.emilyanne@gmail.com) for further information or to volunteer. (See newsletter article.)

February 27-28

ASCE Continuing Education Seminar "Liability of Engineers: How to Stay out of Trouble" to be held at the Embassy Suites Philadelphia Center in Philadelphia, PA. Earn 1.4 CEUs. For more information, click HERE.

March 18

NCS Annual Awards Banquet to be held at the Hilton Arlington. Our speaker will be Dr. Ziad Sabra, CEO of Sabra, Wang & Associates, Inc. (SWA), speaking on Lessons in Civil Engineering Entrepreneurship. SWA is one of the top 100 Disadvantaged/Minority Business Enterprise firms in the area.

April 15

NCS monthly meeting at the Hilton Arlington. The program will be devoted to the 2014 Sustainability Keynote Address. Watch for additional details in upcoming newsletters.

May 20

NCS monthly meeting at the Hilton Arlington. The Section's History & Heritage Committee is reviewing several alternative topics for presentation. Watch for additional information in upcoming newsletters.

June 1-5

ASCE's Environmental & Water Resources Institute hosts the World Environmental & Water Resources Congress 2014: *Water Without Boarders*, in Portland, OR. For additional information or to register, click HERE.

July 21-23

ASCE's Energy Division will host the Shale Energy Engineering Conference in Pittsburgh, PA. For additional information or to register, click HERE.

August 3-6

ASCE will sponsor the Pipelines 2014 Conference in Portland, OR, with the theme *From Underground* to the Forefront of Innovation and Sustainability. For additional information, click HERE. Registration opens in February 2014.

November 6-8

ASCE will sponsor the International Conference on Sustainable Infrastructure 2014 in Long Beach, CA. The event will focus on sustainability in the built environment, presenting relevant engineering research, demonstrations, and applications that contribute to competitiveness and well-being. For additional information, click HERE.