

Eighth International Acid Sulfate Soils Conference at University of Maryland, July 17-23, 2016



DEPARTMENT OF ENVIRONMENTAL SCIENCE & TECHNOLOGY

Delvin S. Fanning*¹, Martin C. Rabenhorst¹, Brian Needelman¹ Maxine Levin², Thomas Reinsch² W. Lee Daniels³
 1-Dept. of Environ. Sci. and Tech. Univ. of MD College Park, MD, 2- USDA-NRCS Beltsville, MD, 3-VA Tech Univ. Blacksburg, VA

www.enst.umd.edu

<http://www.midatlanticsoilscientists.org/acid-sulfate-soils-conference/>

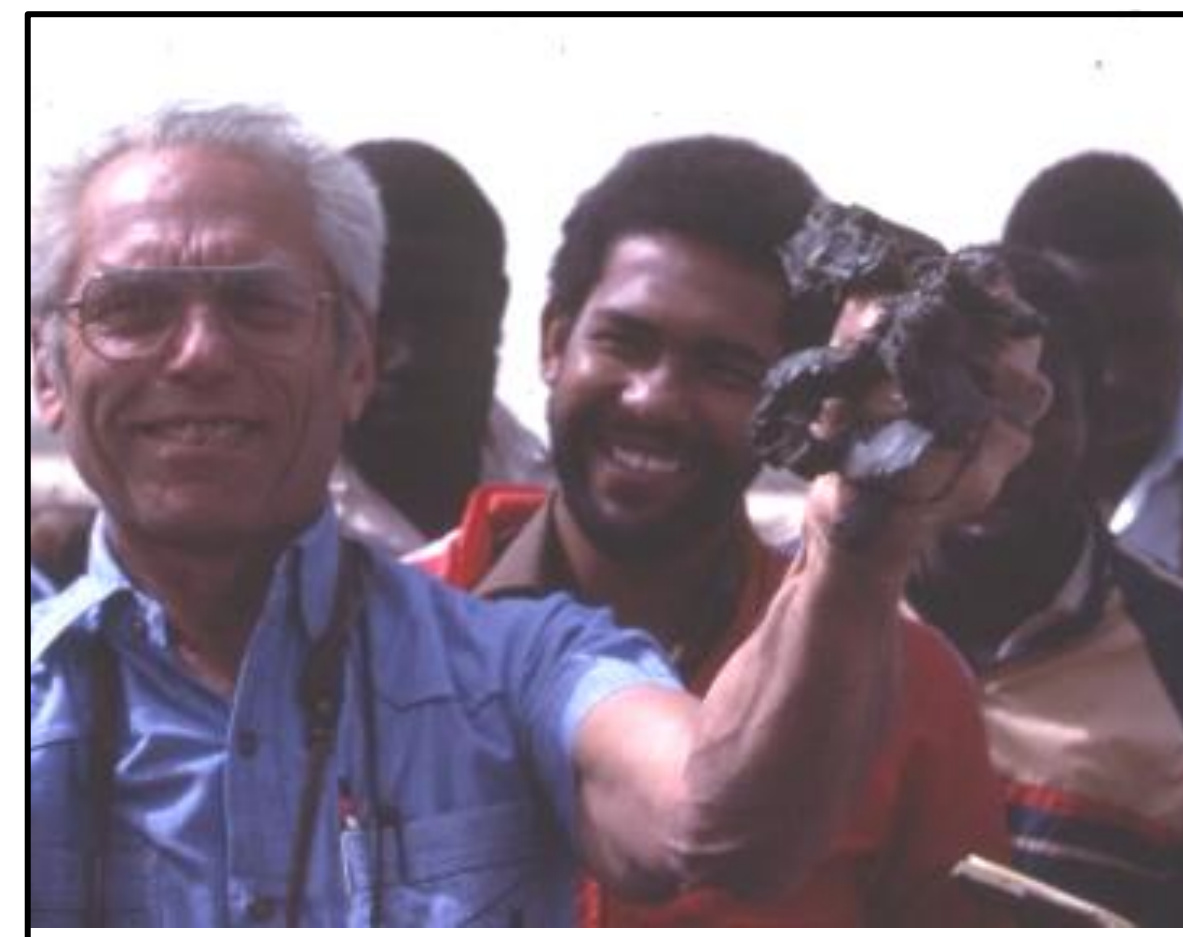
Organizing Committee

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Previous Conferences:

- Wageningen, the Netherlands (1972)
- Bangkok, Thailand (1981)
- Dakar, Senegal (1986)
- Ho Chi Minh City, Vietnam (1992)
- Tweed Heads, Australia (2002)
- Guangzhou, China (2008)
- Vaasa, Finland (2012)

Much of what is known about as-soils has been presented at and published in proceedings of previous conferences. Poster senior author with students and colleagues have utilized the information, especially papers by David T. Rickard and Nico van Breemen, in proceedings of first conference, to develop process models of sulfidization and sulfuricization by which potential and active as-soils form -- see Chapter 10 of D. S. Fanning and M. C. B. Fanning. 1989. Soil Morphology, Genesis, and Classification. John Wiley and Sons, New York and other publications, some available for examination.



Leen Pons, 1921-2008, of Wageningen, Netherlands, Father of the Int. Acid Sulfate Soil Conferences demonstrates field test for *n*-value, (index of soil fluidity) on field tour, at third conf.



Above. Red IRIS (indicator or reduction in soils) tubes (white PVC pipes painted with iron oxide paint) become blackened after being inserted into tidal marsh soil for only a few minutes. Black areas are iron sulfide that forms rapidly by chemical reaction of dissolved H₂S and/or HS⁻ with the iron oxides. Such observations have led to a new model for how sulfidization takes place (paper presented at 7th conference).

On right, an example of "dead stream" (Quantico Creek) at Prince William Forest Park in VA, caused by extreme acid mine drainage moving downstream from spoil from abandoned pyrite mine (active during early 20th century). Some unreclaimed soil had pH between 1 and 2, and remained unvegetated for several decades. Subsequent reclamation practices (recommended originally by James C. Patterson, shown in picture, then of Ecological Services Lab., National Park Service) utilizing biosolids, have returned the stream to "life".



Preliminary Conference Program

We intend to schedule sessions that address the following topical areas:

1. Advances and issues in the classification of AS soils
2. Understanding AS soils across the landscape: soil formation and mapping strategies
3. Off-site environmental effects of AS soils
4. Acid sulfate impacts related to large scale earth disturbance
5. Agricultural activities in areas with AS soils
6. Methodology and assessment techniques
7. Subaqueous AS soils and dredged material disposal issues
8. AS soils and human and ecosystem health
9. Bringing science to policy, regulation and education

Pons at first conference proposed the term "Acid Sulphate Soils be used in the widest sense of the expression. As such this expression pertains to all materials and soils in which as a result of processes of soil formation, sulfuric acids either will be produced, are being produced or have been produced in amounts that have a lasting effect on main soil characteristics".

Pons broad definition provides for recognition of what we now call potential, active, and post-active as-soils and soil materials. The *Soil Taxonomy* concept of *sulfidic materials* was developed to recognize potential as-soil materials, whereas the *sulfuric horizon* recognizes aass materials.

Conference Tours and Excursions

Pre-Conference Tour: Several options are under consideration for the Pre-Conference tour (July 17) that would permit observation of dredge material deposition areas and viewing of active AS soils and remediation processes.

Mid-Conference Tour: During the mid-conference tour (July 20) we will visit the Univ. of MD research facility in Upper Marlboro and also the Smithsonian Environmental Research Center (SERC) to view sulfide-forming processes in subaqueous soils and tidal marshes of Chesapeake Bay, and will then view both **Active** and **Post Active** AS soil in Eocene/Paleocene and Cretaceous sediments before concluding the tour with a cookout at the scenic Sandy Point State Park (near Annapolis) overlooking Chesapeake Bay.

Post-Conference Tour: The post-conference tour will be a two-day excursion (July 22-23) permitting participants to view sulfidic materials exposed in the Nanjemoy formation along the Potomac river and native American shell middens en route to the Richmond, VA area where AS soil problems associated with mining activities and highway construction will be seen. Friday night will be spent near Fredericksburg, VA which was the location of a number of important battles in the US civil war (Dec, 1862). On day two, additional active AS soil exposures associated with the Stafford regional airport and home site development will be examined before returning to College Park.

Conference Venue

The 8th IASSC will be held at the College Park Marriott Hotel & Conference Center, 3501 University Blvd E, Hyattsville, MD 20783, which is immediately adjacent to the campus of the University of Maryland in College Park. College Park is a Maryland suburb of Washington, DC, located 8 miles from downtown Washington, DC.



A Chesapeake Bay tidal marsh, where potential acid sulfate soils, e.g. *Sulfihemists* by *Soil Taxonomy*, form; but formation of iron sulfides may be limited by low supply of sediments with iron oxides supplied to such environments.



An active acid sulfate soil on a scalped land surface at Stafford Co., VA regional airport. Yellow jarosite in *sulfuric horizon*. Vegetation possible because of application of lime-stabilized biosolids as reclamation strategy. Web soil survey at this and other disturbed land sites often needs update as it commonly shows pre-disturbance soils not existing active acid sulfate soils, see section left corner below.

Preliminary Conference Schedule

Sunday July 17 - Pre-Conference Excursion; Conference Registration, Welcome reception
Monday July 18 - Technical Sessions
Tuesday July 19 - Technical Sessions
Wednesday July 20 Mid-conference excursion; Conference Cookout - Sandy Point State Park
Thursday July 21 - Technical Sessions; Closing session and conference summary
Friday July 22 and Saturday July 23 Post-conference excursion

Important deadlines:

First Circular May 1 2015
 2nd Circular September 2015
 Abstract submission opens September 2015
 Conference Registration opens Feb 1, 2016
 Abstract submission closes May 1, 2016
 Early registration closes June 1, 2016
 Pre-registration closes July 10, 2016

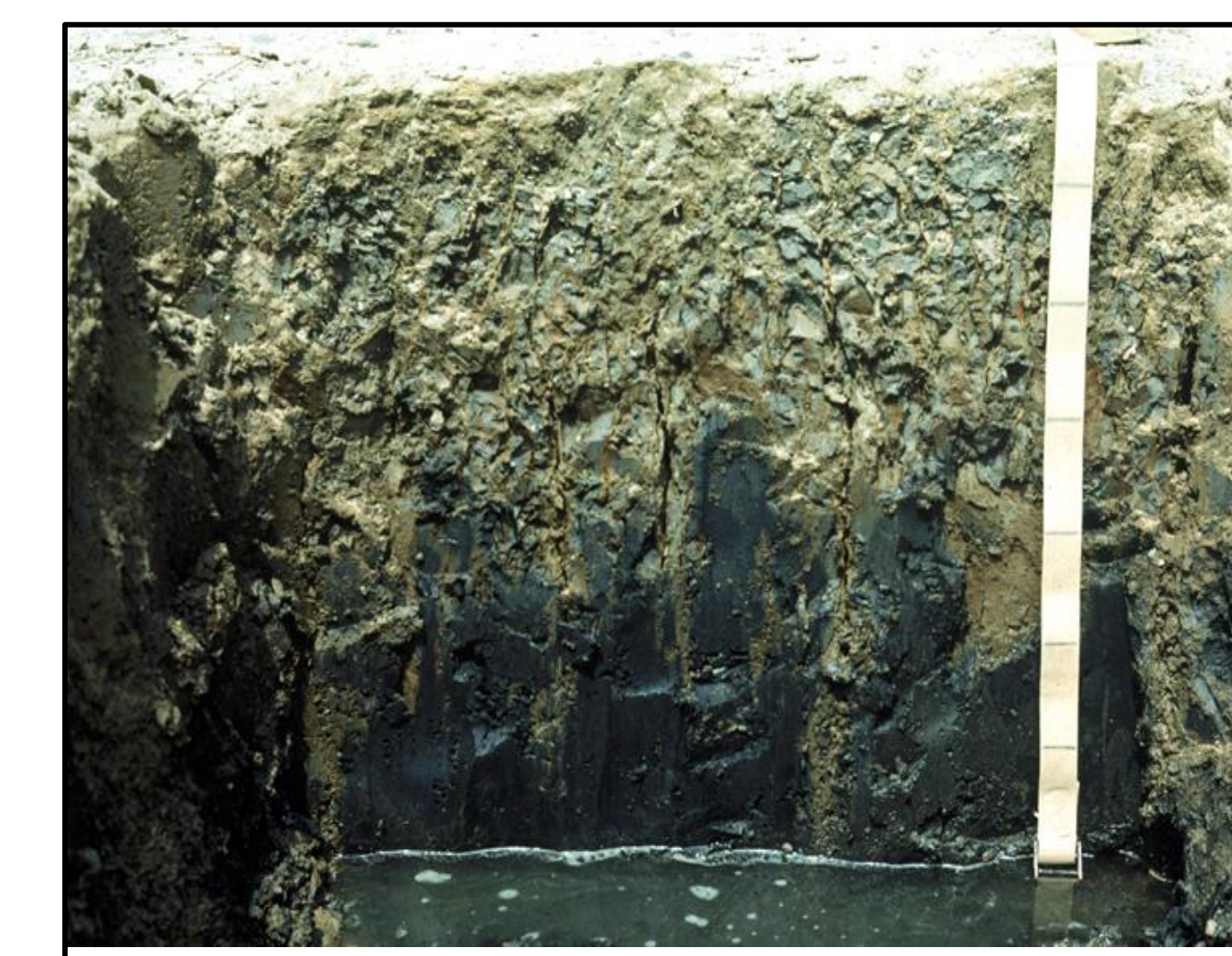
Pictures of soils like some we hope to show on field trips are shown in adjoining panel

Registration:

Feb 1, 2016 - Conference Registration opens - Early registration \$520 (\$260 for documented students)
 June 1, 2016 to July 10, 2016 - Regular Registration Fee \$595 (\$295 for documented students)
 On-site registration (after July 10, 2015) Fee \$645
 The fee covers admission to the sessions, the one-day mid-conference tour, conference material, breakfast, lunches and both morning and afternoon breaks/snacks during the conference, and the cookout at Sandy Point State Park.
 Pre-conference and post-conference excursions will be arranged at additional costs to be announced in the 2nd circular.



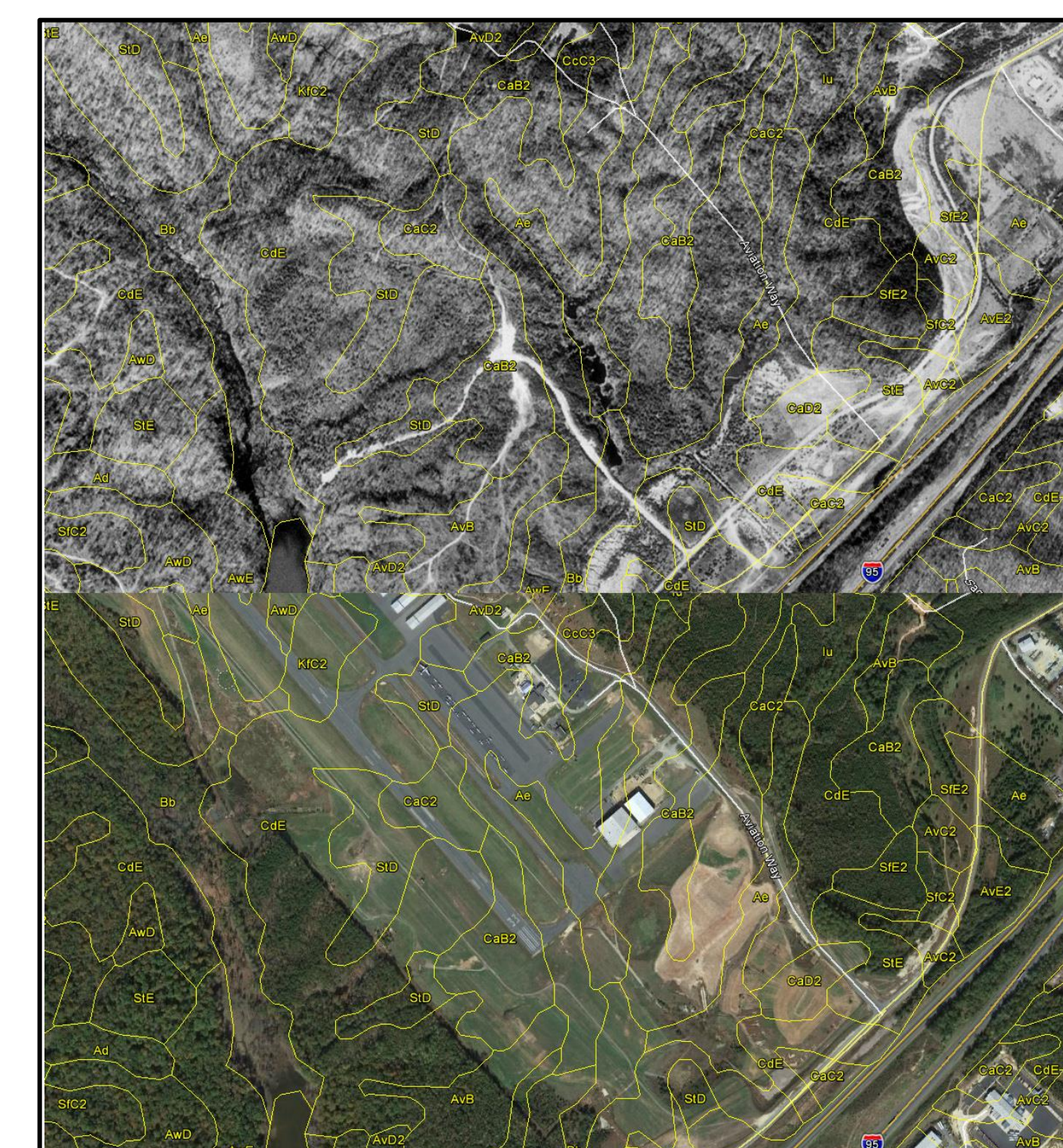
Active acid sulfate soils in Great Oaks development, Fredericksburg, VA. Sidewalks turned red from oxidation and hydrolysis of iron is seepage waters released by oxidation of iron sulfides in soil exposed by excavation.



Profile of 4 year old active acid sulfate soil in Baltimore Harbor dredged materials (1982.) Soil had a *sulfuric h.* 30 cm thick over *sulfidic m.* with monosulfides. Description and data for this soil in F&F textbook, pp. 306-311. At present, this area in Baltimore has been paved over.



Phragmites reeds begin to invade on active acid sulfate soils in DM at Hart-Miller Island in 1980's. Phragmites is one of few kinds of plants that can grow on these soils while surficial horizons are undergoing sulfuricization and have *sulfuric horizons*.



On left, two photos from Google Earth with web soil survey delineations for southeast end of Stafford Co. VA Regional Airport, before (top) in 1990's and after (currently, bottom) airport construction, which took place about turn of century. Note that the soil survey information is the same, no update to show that many of the soils on the disturbed lands are now aass (active acid sulfate soils) and that slopes have been drastically changed etc. Interstate I-95 crosses SE corners of the photos;

On right, cores of subaqueous soils from Indian River Bay in DE showing dark gray and black, chromas of 1 or less, *sulfidic materials* that occur in most Coastal subaqueous soils, many of which are *Sulfuwassents*, potential acid sulfate soils. When dredged and exposed to aerobic conditions in upland containment sites, these soil materials give rise to *sulfuric horizons* within a few weeks or months in active acid sulfate soils, typically *Sulfaquepts*.

