GUIDELINES FOR THE PREPARATION OF WHITE PAPER

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Geoenvironmental Research Experience (list projects in progress or completed within the past 5 years)**:**

- Chemical-osmotic behavior of soil-bentonite slurry trench cutoff walls (NSF project with CSU)
- Hydraulic conductivity, strength and compatibility of slag-cement-bentonite slurry trench cutoff walls
- Comparison of US-UK practice for vertical barrier design and construction (EPSRC project conducted at the University of Nottingham, UK)
- Synthesis of recent advances in remediation of the geoenvironment for publication of 2nd edition of Hazardous Waste Management published by McGraw-Hill in 2002.
- Use of additives for the enhanced performance of vertical barriers.

Geoenvironmental Teaching Experience (within the past 5 years)**:**

- CENG 451 Environmental Geotechnology taught at Bucknell University (2002, 2000, 1998)
- H2CG07 Environmental Geotechnology taught at the University of Nottingham UK (1998)

Geoenvironmental Consulting Experience (major projects only within last 5 years)**:**

- Consultant for STS during the construction phase of a soil-bentonite slurry trench cutoff wall in Wisconsin.
- Consultant for Tecsult of Montreal Canada during the design phase of a soil-bentonite slurry trench cutoff wall in Quebec, Canada
- Consultant to NoMound for the development of a below grade waste water treatment system.
- Services to Gannett-Fleming, Inc including consultation, trial preparation and expert testimony regarding litigation relating to a waste water lagoon failure and reconstruction.
- Geotechnical materials characterization for ARM for a landfilled geo-material.
- Consultant to Remedial Construction Services, Inc. (RECON) regarding a specific aspect of soil-bentonite slurry trench cutoff wall behavior.
- Consultant to LG Engineering and Construction Corp.of Seoul, Korea regarding environmental geotechnics aspects of landfill policy issues.
- Consultant to USEPA though ICF for the closure of the McColl superfund site in Fullerton, CA.

Appraisal of Geoenvironmental Research, Education and Practice

Research: Geoenvironmental research continues to be strong although perhaps not at the levels of a few years ago. I believe the research to be strong in large part due to the quality and commitment of those doing research in this area. While funding continues from NSF, EPA and other agencies, research also continues on many unfunded projects (such as projects involving graduate students funded with teaching assistantships or involving undergraduates) or on projects funded with various startup, seed grants and discretionary sources. It is interesting to note that the August 2003 issue of the ASCE Journal of Geotechnical and Geoenvironmental Engineering had 7 technical papers, none of which were geoenvironmental in nature. This suggests a decline in research.

Education: The first course in Enviromental Geotechnics was taught at Lehigh University in the Fall of 1984 and in the intervening 20 years courses have been added to the offerings of virtually all civil engineering departments. In the last 20 years numerous Ph.D. degrees have been awarded to civil engineering students whose dissertation described some advancement in geoenvironmental engineering. As a result, formal education has advanced substantially in geoenvironmental engineering.

Practice: The practice of geoenvironmental engineering has matured as well. After the passage of Superfund in 1980, geotechnical engineers often abandoned traditional geotechnical practice for work in the geoenvironment. Investigation and remediation techniques were evolving and rarely were projects "routine." Since that time, many techniques have been standardized and are indeed routine. Having spent 10 years as a practicioner, there was a time that a substantial portion of geotechnical engineering was devoted to geoenvironmental engineering. I believe that time is past and traditional geotechnical engineering practice has again become dominant.

Perspective on Emerging Geoenvironmental Issues and Technologies

Issues: Is there an issue relating to the time lag between improved understanding of a given technology and/or improvements to a given technology and implementation of the improvements? Developments by vendors and consultants are likely to find there way into the practice rather quickly. Developments from university research, if cost savings result, may also be accepted rather quickly. Developments from university research which may provide improved environmental protection do not seem to gain the same acceptance. Since much of the industry remains regulatory driven and there is little incentive for owners or agencies to do any more than the current accepted practice. For example, natural attenuation has been widely accepted.