Georgia Institute of Technology
School of Civil and Environmental Engineering

Prof. Matthew Mauldon
Department of Civil and Environmental Engineering
Virginia Tech
200 Patton Hall, Blacksburg, VA 24061, USA

February 27, 2005

Dear Dr. Mauldon:

I am writing this letter on behalf of Prof. Larry Murdoch of Clemson University and myself. My area of research is fracture mechanics, including open and shear fractures in rocks and soils. I have also been involved in studying properties of earth and extraterrestrial materials, micromechanical modeling, mathematical modeling of complex, multi-scale engineering and natural systems, including processes of rock deformation and fracture coupled with diffusion and transport phenomena. Prof. Larry Murdoch's research interests include geomechanics, with particular emphasis on fluid flow and fracture propagation. He has experience with field methods involving excavation and mapping of subsurface experiments, as well as numerical and analytical methods in solid mechanics and flow and transport. His expertise also includes structural geology and field mapping. We share common research interests and have closely collaborated on various projects involving teaching and research for approximately 5 years.

We feel that the Kimballton site offers an excellent location to pursue research in areas of chemical precipitation in natural fracture networks, mineralization of natural veins, seismicity induced by subsurface fluid and thermal manipulation, mechanics of induced fractures, characterizing multi-scale hydromechanical properties, as well as pressure solution effects (quite feasible in limestone formations) on rock fracture phenomena. The possibility of back mining makes the Kimballton project is especially appealing. Last but not least, the project opens a real potential for a direct study of fracture tip issues at scales relevant to industrial and natural applications (e.g., fracture branching and segmentation, fracture toughness mechanisms, and fracture interaction).

Both Prof. Murdoch and I will work as members of the Kimballton team to help make this project a reality. Among many appealing features of this project, we want to mention the possibility of collaboration with bio-scientists on studying colonization of freshly created and mature fractures by microorganisms and on their effects on subsequent fracture development and fluid flow in rock materials.

Sincerely,

Leonid Germanovich
Professor and Director, Center for Applied Geomaterials Research

Cc: Larry Murdoch, Clemson University
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