

Thomas J. Burbey, Assoc. Professor, Hydrogeosciences  
4044 Derring hall, Blacksburg, Virginia 24061  
(540) 231-6696 Fax: (540) 231-3386  
Email: tjburbey@vt.edu

February 16, 2005

Dear Committee Member,

My field of research is hydrogeology. The Kimballton site represents a preferred location for the many facets of the research to be pursued, and I am working as an active member of the Kimballton team to help make this a reality.

The features of Kimballton which appeal to me are:

- The sedimentary rock environment. A large majority of the world's current ground-water supply comes from sedimentary rocks and our efforts to better understand how water flows through multiple interfaces (bedding planes, fractures, formation boundaries, fault systems) is critical for further understanding the resource potential in such a setting. Furthermore the geochemical processes occurring in fractured carbonate and clastic formations need to be further expanded and more clearly understood.
- Its occurrence in a classic fold and thrust belt. We have the opportunity to investigate *in situ* the nature of a major regional décollement to better understand the modes of deformation and their impact on fracture density and orientation, which impact the nature and direction of flow and transport. Furthermore, we need to discern whether these features tend to compartmentalize flow across the fault plane while possibly enhancing flow parallel to the fault plane on the hanging wall. The opportunity to investigate fault hydraulics is a very important research area in hydrogeology.

The hydrogeoscience research community I am a member of should be represented in DUSEL because:

- It represents a vast hydrologic observatory where a large range of investigations at multiple scales can occur. I believe that the Hydrologic Sciences Directorate at NSF, including CUAHSI, should consider DUSEL as a potential observatory in the coming years. No site in the world will allow us to accomplish *in situ* observational ground-water science like this underground lab.

Sincerely,  
Thomas J. Burbey