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Dr. Woodward;

This letter is to inform you of the status of the EMSP project entitled 'A Hybrid-Hydrologic-Geophysical Inverse Technique for the Assessment and Monitoring of Leachates in the Vadose Zone'. This project requires researchers at Sandia National Laboratories (SNL) to develop a test site at which a water/dilute saline solution will be infiltrated into the subsurface. The goal of the experiment is to use both geophysical and sparse hydrologic measurements to determine detailed distributions of hydrologic parameters in situ. Unfortunately we have run into some delays and thus we are still pursuing a location for this new test site. This letter is to inform you of the events that have led to this delay and to reassure the DOE that we are proceeding as planned with the proposed work.

Soon after receiving funding, scientists at SNL began a search for appropriate sites in the Albuquerque area that would provide both relatively permeable subsurface materials as well as fairly easy access to the staging area (SNL's Subsurface Plow Visualization Lab). Several locations were chosen as possible sites, and at a meeting between SNL and University of Arizona PI's in early January a site was chosen just southwest of the Albuquerque International Airport. adjacent to the old Albuquerque landfill.

Once this site was chosen, work began at SNL to obtain the proper permission and permits in order to lease the site for the experiment. The site is located on State of New Mexico land which is managed by the University of New Mexico. Unfortunately it was not determined until early April that the state was planning to build an open air amphitheater for concerts near the site, and later in April it was found that a park and the access road for the theater would be built directly adjacent to the proposed location. Thus because the state did not want an 'experimental site' in this area for visual reasons, and due to security reasons (i.e. possible vandalism and theft of equipment at the site) the proposal to stage the experiment at this site was abandoned.

Soon afterwards a search was begun for a new site. Because of the logistics, and the fact that the development of the site was now behind schedule, we chose a location along the Tiejeras Arroyo on SNL property adjacent to Technical Area II. Initial meetings in late May with representatives from the SNL Environmental Restoration (ER) Department indicated that although a hazardous waste site was going to be excavated within Tech. Area II, we should be able to perform our

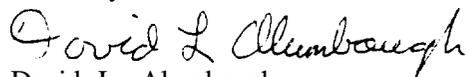
experiment with no problems. Thus we proceeded to submit the appropriate paper work that would allow us to develop the site. In addition we obtained soil samples to run property analyses, and began to obtain cost estimates for construction. In mid July we were finally informed about the scope of the excavation that is to occur in Area II and realized that although the ER group was willing to work with us in providing access to the area, there would always be a chance that our experiment could be shut down due to unexpected problems. In addition, hydrologic measurements of the soils at the site showed the material to be of very low permeability meaning a large time period would be required to achieve steady state conditions. Finally it was determined that the construction by on-site contractors could begin no sooner than October 1, thus further delaying the beginning of the experiment. Therefore, although the proposal to develop this site has not been abandoned, alternatives that will provide for better experimental conditions are being considered.

Recently we have located land at the New Mexico Institute of Mining and Technology (NMT) which appears to be ideal for the test. The geology consists of Ancestral Rio Grande deposits which are the high permeability materials we -were originally looking for. There are no environmental barriers nearby such as landfills or waste sites, and all the necessary archeological and environmental surveys have already been conducted as the land is on property managed by the Explosives Maintenance and Research Technology Center (EMRTC). The NMT Hydrology Department is very interested in in this possibility as it has been their goal for a number of years to construct such a vadose zone test site for research and teaching purposes. This project would develop strong ties between two institutions known for their excellence in hydrologic research. In addition there exist locations nearby for development of a second test site which is uniquely different from that of the first.

In conclusion we would like to emphasize that although we may be slightly behind in the development of the vadose zone test site, we believe that we are still well on track to complete the experiment within the EMSP funding period. The numerical work being done by Dr.'s Yeh and LaBrecque is on track, and initial results of their work may be presented at the AGU this fall. In addition SNL researchers are making great progress in the laboratory getting measurement systems ready to be deployed, understanding the error present in these measurement systems, designing property measurement systems, and making hydrologic and geophysical measurements on samples that have been collected at the various sites. Thus although the project has experienced some setbacks, we expect to provide a new insight on how fluids travel in the vadose zone as outlined in the original proposal.

Thanks for your time and help.

Sincerely,



David L. Alumbaugh

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