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MEMORANDUM FOR: Myron H. Fliegel, Section Leader
Hydrology Section
Geotechnical Branch
Division of Waste Management

FROM: Mark Larson
Hydrology Section
Geotechnical Branch
Division of Waste Management

SUBJECT: TRIP REPORT - AGU SPRING MEETING IN BALTIMORE

I attended the 1985 Spring Meeting of the AGU in Baltimore, MD held during the week of May 27-31, 1985. Papers were presented on a variety of topics during 9 different sessions: General Surface Water, Analysis of Errors in Regional Water Balance Models, General Hydrology, Saturated/Unsaturated Groundwater Flow Systems - Measurement and Estimation of Parameters, Flood Frequency Analysis, Stochastic Surface Water Hydrology, Coupling Geochemical and Hydrologic Models for Subsurface Solute Transport, Solute Transport in Groundwater, and History of Hydrology.

I presented the paper "A Comparison of Methods to Characterize Unsaturated Hydraulic Properties of Mill Tailings" during the Saturated/Unsaturated Groundwater Flow Systems - Measurement and Estimation of Parameters session. Two other papers were presented by NRC staff: "High-Level Radioactive Waste Repository Site Characterization - Unsaturated Zone" by Tom Nicholson (Research) and "Runoff from Armored Slopes" by Dick Codell (WMGT).

Almost all the papers were of interest to those involved in waste management however the research that may be the most applicable to our work here at NRC are the field and laboratory investigations. Many of the computer-based projects concluded that certain parameters are very important in determining modelling results - thereby necessitating the need for field work.

The following is a summary of a few of the more interesting projects, the results of which will be very helpful to WM activities here.

Regina Hunter (Sandia) - "A Preliminary Regional Water Balance for the WIPP Site and Surrounding Area". Results indicated that uncertainties in

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precipitation (commonly considered "well known" in these types of studies) and evaporation (not usually well quantified are greater than most factors in the water balance.

Peter Wierenga (New Mexico State) - "A Comparison of Solute Transport in small and Large Columns." This work is in the early stages, however, preliminary results have indicated that conduction through macropores occurs even in very uniformly packed large columns resulting in very long tails of solute slugs as compared to small column studies.

R. J. Luxmoore (Oak Ridge) - "Soil Water Flow Characterization." In this research, elaborate field instrumentation is being utilized to characterize soil hydraulic properties in situ. The effects of scale and macropores are also being investigated. The location of the research project is in the vicinity of the likely site for Monitored Retrievable Storage of high-level radioactive waste.

Paul Roberts (Stanford) et al. "Transport Behavior of Organic Solutes in a Long-Term Natural-Gradient Experiment." This work is part of a large, field research project being conducted at the Borden Landfill near the University of Waterloo in Canada. Early results indicate that for some of the organic constituents observed, sorption equilibrium may not be instantaneous.

Aaron A. Jennings (Notre Dame) "Kinetic versus Equilibrium Formulations for Multicomponent Transport Models." This work also investigated the "instantaneous equilibrium" assumption which infers that reaction rates are sufficiently fast to warrant this assumption. Criteria by which to gauge whether this assumption is valid was developed using analytical models.

Mark Larson
Hydrology Section
Geotechnical Branch
Division of Waste Management

cc: Mal Knapp

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