

2007 Unsaturated Zone Interest Group Meeting
August 27 – 30, 2007
Los Alamos, New Mexico



Co-Hosted by
Los Alamos National Laboratory
U.S. Geological Survey



AGENDA

Monday, August 27 – *Trinity Beverage Company*

7:00 – 9:00 pm PRE-REGISTRATION – Join your colleagues for an informal gathering and early registration.

Tuesday, August 28 – *Best Western Hilltop House*

8:00 – 8:30 REGISTRATION Sign in; pay registration fee; distribute agenda, abstracts, name tags, and local maps; sign-up for Wednesday banquet

8:30 – 8:40 WELCOME

8:40 – 9:10 INTRODUCTION Hydrogeology of the Los Alamos area – Dave Broxton

TECHNICAL PRESENTATIONS

Unsaturated Zone Characterization – Rick Healy, president

9:10 – 9:30 Joel Hubbell Quantifying Deep Vadose Zone Moisture Changes at a Waste Disposal Site

9:30 – 9:50 David Bedford Spatial Patterns of Soil Properties: Effects of Vegetation and Land Forms

9:50 – 10:10 Allen Moench Analytical and Numerical Analyses of an Unconfined-Aquifer Test Considering Unsaturated-Zone Characteristics

10:10 – 10:30 Robert Holt Combined Macroscopic Invasion Percolation and Continuum Modeling of Electrical Resistivity Measurements in Unsaturated Media

10:30 – 10:40 Open Discussion

10:40 – 11:00 BREAK

Model Development and Use – Rick Healy, president

11:00 – 11:20 Richard Niswonger A Method for Estimating Spatially-Variable Seepage and Hydraulic Conductivity in Intermittent and Ephemeral Streams

11:20 – 11:40 Jasper Vrugt Inverse Modeling of Subsurface Flow and Transport Properties Using Recent Advances in Global Optimization and Parallel Computing

11:40 – 12:00 Yakov Pachepsky Multimodel Simulation of Water Flow in a Field Soil Using Pedotransfer Functions

12:00 – 12:10 Open Discussion

Tuesday, August 28 -- continued

12:10 – 1:20 LUNCH

Infiltration and Percolation – Bill Herkelrath, president

1:20 – 1:40 Jim Constantz The Growing Unsaturated Zone Beneath Stream Channels
1:40 – 2:00 Carlos Ochoa Water Transport Through the Vadose Zone and Shallow Groundwater
Response Following Flood Irrigation
2:00 – 2:20 John Nimmo A New Method for Estimation of Fluxes during Preferential Flow
2:20 – 2:40 John Wilson Controls on Recharge to Mountain Blocks
2:40 – 3:00 Kay Birdsell Modeling Spatially Varying Net Infiltration from Canyon Bottoms
3:00 – 3:10 Open Discussion

3:10 – 3:30 BREAK

Unsaturated Zone and Atmosphere Interactions – Dave Stonestrom, president

3:30 – 3:50 Dan Levitt A Distributed Water Balance Model of Evapotranspiration and Net
Infiltration for Semiarid and Arid Regions
3:50 – 4:10 Brian Andraski Amargosa Desert Research Site (ADRS) — Overview and Update on
Monitoring and Modeling to Improve Understanding of
Contaminant-Transport Processes in Arid Environments
4:10 – 4:30 Amanda Garcia Estimating Vertical Tritium Transport from the Shallow Unsaturated
Zone to the Atmosphere, Amargosa Desert Research Site, Nye
County, Nevada
4:30 – 4:50 Alan Riggs Soil CO₂ Flux in the Amargosa Desert, Nevada, During El Niño 1998
and La Niña 1999
4:50 – 5:00 Open Discussion

Wednesday, August 29 – Fuller Lodge

8:00 – 8:10 INTRODUCTION Miscellaneous announcements

TECHNICAL PRESENTATIONS

Transport - General – John Nimmo, president

8:10 – 8:30 Guoping Tang Model Discrimination for Nonlinear Least Square Fitting of
Breakthrough Curves Using Uncertainty Analysis
8:30 – 8:50 Bin Gao Fate and Transport of Colloidal Particles in the Unsaturated Zone
8:50 – 9:10 Chittaranjan Ray Difficulties in Dealing with Unsaturated Flow and Transport in
Hawaii's Deep Vadose Zones
9:10 – 9:20 Open Discussion
9:20 – 9:40 BREAK

Wednesday, August 29 -- continued

Transport – Site Specific – Ed Weeks, presider

9:40 – 10:00	Pat Longmire	Aqueous Chemistry of Chromium in the Unsaturated Zone Beneath Sandia Canyon, New Mexico
10:00 – 10:20	Dave Stonestrom	A Reservoir of Natural Perchlorate in Unsaturated Zones of Arid and Semi-Arid Regions, Southwestern USA
10:20 – 10:40	Chris Green	Nitrogen Fluxes through Unsaturated Zones in Five Agricultural Settings across the United States
10:40 – 11:00	Rick Healy	Infiltration From an Impoundment for Coal-Bed Methane Water, Powder River Basin, Wyoming: Evolution of Water and Sediment Chemistry
11:00 – 11:20	Bill Herkelrath	Solute Transport from the Unsaturated Zone to Ground Water at the USGS Bemidji, Minnesota Crude-Oil Spill Site
11:20 – 11:30	Open Discussion	
11:30 – 1:00	LUNCH	
1:00 – 2:00	UZIG – NEWS, UPDATES, AND PLANS	
2:00 – 2:30	BREAK	
2:30 – 5:30	POSTER PRESENTATIONS	

Unsaturated Zone Characterization

Todd Caldwell	Soil Development and Hydrology of an Arid Soil Chronosequence in the Sonoran Desert
Eric McDonald	Hydraulic Properties of a Desert Soil Chronosequence in the Mojave Desert, USA
Kim Perkins	Property-Transfer Modeling to Estimate Unsaturated Hydraulic Conductivity of Deep Sediments at the Idaho National Laboratory, Idaho
Rosangela Sviercoski	Analytical Upscaling of Nonlinear Darcy's Law for Block Permeability Inclusion
Ed Perfect	Measurement of Relative Permeability using the Transient Flow Centrifuge Method

Model Development and Use

Rafael Muñoz-Carpena	An Improved Infiltration and Redistribution Simulation Method for Uneven Multistorm Precipitation Time Series
Ed Kwicklis	Multiphase, Multicomponent Parameter Estimation for Liquid and Vapor Fluxes in Deep Arid Systems Using Hydrologic Data and Natural Environmental Tracers
Andy O'Reilly	Simulation of Transient Ground-Water Recharge in Deep Water-Table Settings: A simple Water-Balance/Transfer-Function Model

Wednesday, August 29 -- continued

Infiltration and Percolation

Maria Caputo	Evaluation of Vertical Flow in Fractured and Karstic Subsoil of Altamura (Southern Italy) Using Field Infiltrometer Measurements.
Cynthia Dinwiddie	Sensors and Monitoring Techniques for the Deep Unsaturated Zone: Reducing Uncertainty Related to Seepage and Transport in Fractured Rock
Sarah Falk	Estimation and Spatial Distribution of Recharge to the Southern High Plains Aquifer, in and near Cannon Air Force Base, Curry County, New Mexico, 2004
John Nimmo	Hydraulic Properties of Mojave Desert Soils: Field Measurements and Modeling Results
John Wilson	On The Role Of Faults In Vadose Zone Fluid Flow And Solute Transport
Michael Young	Large Weighing Lysimeters for Studying Environmental Processes in Arid Soils

Unsaturated Zone and Atmosphere Interactions

Dave Stannard	Estimation of Evapotranspiration from a Domestic Leach-Field and Surrounding Lawn Using a Combined Measurement and Modeling Approach
Kyle Blasch	Climate Induced Fluctuations of Ground-Water Inflow to Kartchner Caverns, a Karstic Environment

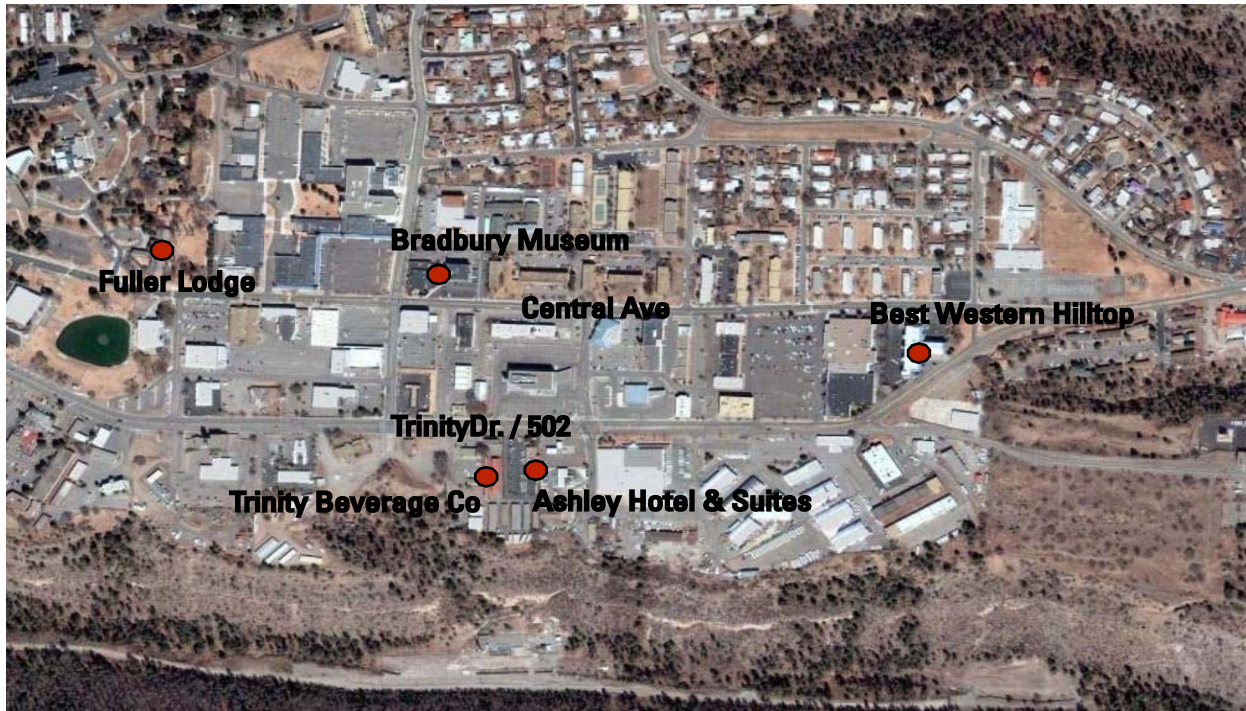
Transport

Phil Stauffer	The Unsaturated Zone Transport Test, Busted Butte, NV: Phase 1B Experimental Results and Model Validation.
Ed Weeks	Nitrous Oxide Production Rates from the High Plains Unsaturated Zone

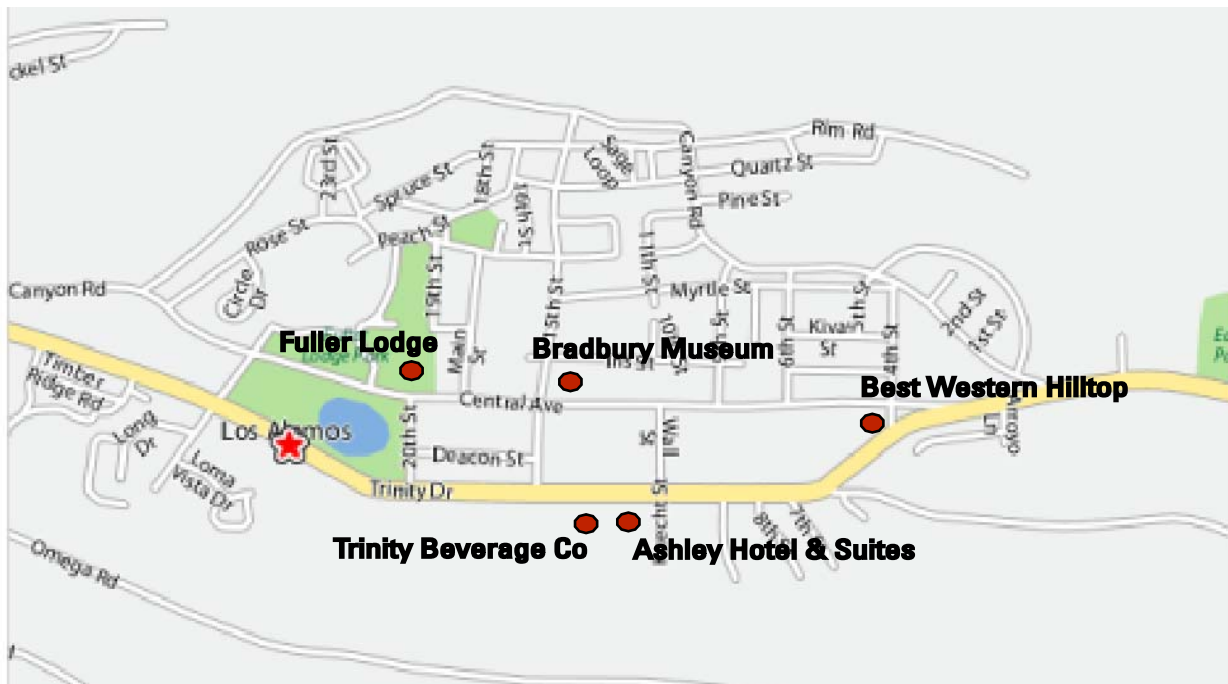
5:30 – 6:00	BREAK
6:00 – 7:00	INFORMAL CARPOOLS TO BANQUET
7:00 – ?	BANQUET – Rancho de Chimayo

Thursday, August 30 – *Field Trip*

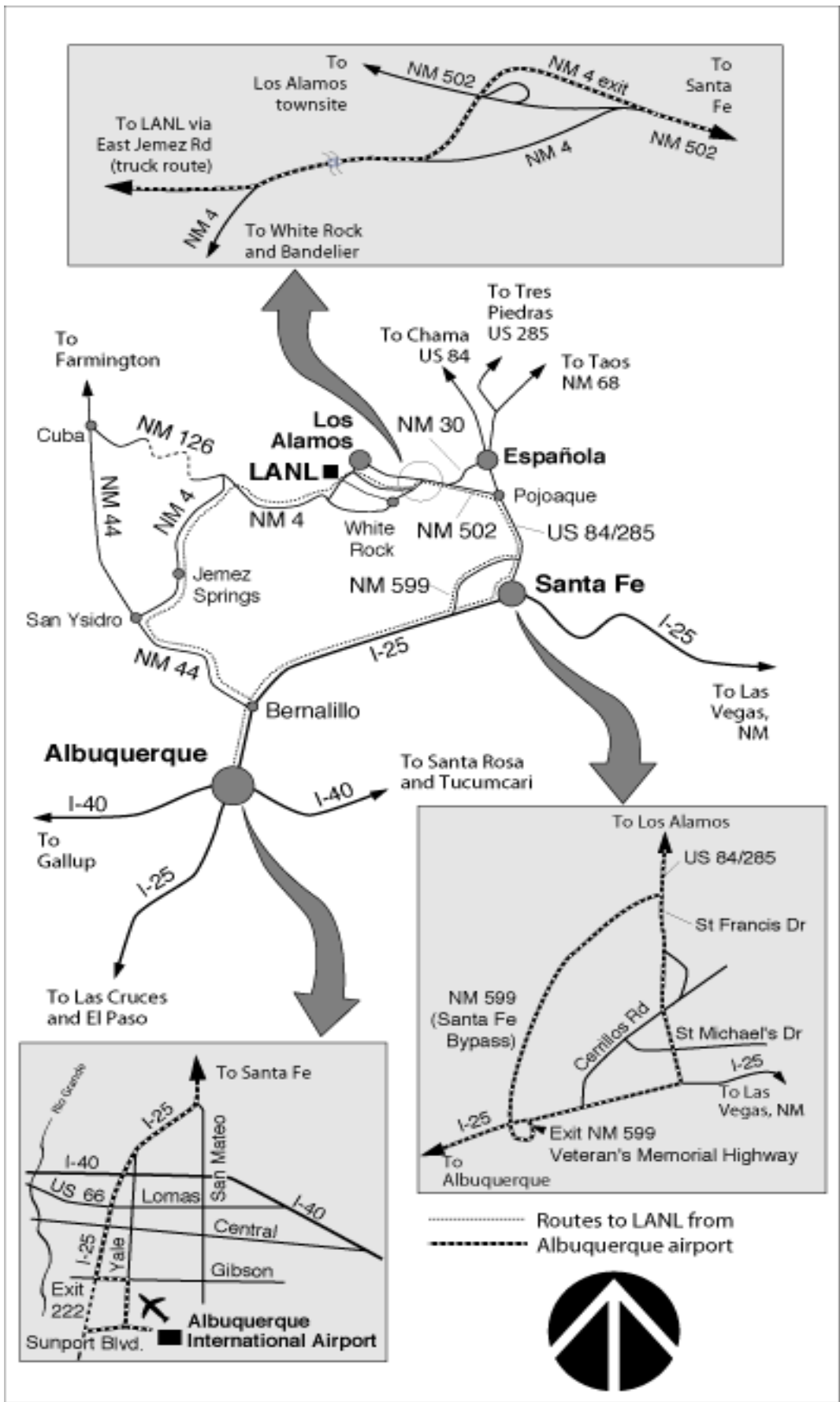
8:00 – 10:00	BRADBURY MUSEUM – History of LANL
10:00 – 4:30	FIELD TRIP – Archaeology, Geology, and Unsaturated Zone Studies at LANL (Prompt departure time; Approximate return time; Depart from and return to Bradbury Museum)



Map from Google Earth



Map from Yahoo.com



Map from <http://www.lanl.gov/tools/maps/maps.shtml>. Map not to scale