Wednesday, January 8, 2014

Black Lab Pub, Churchill Room • 4100 Montrose Blvd.

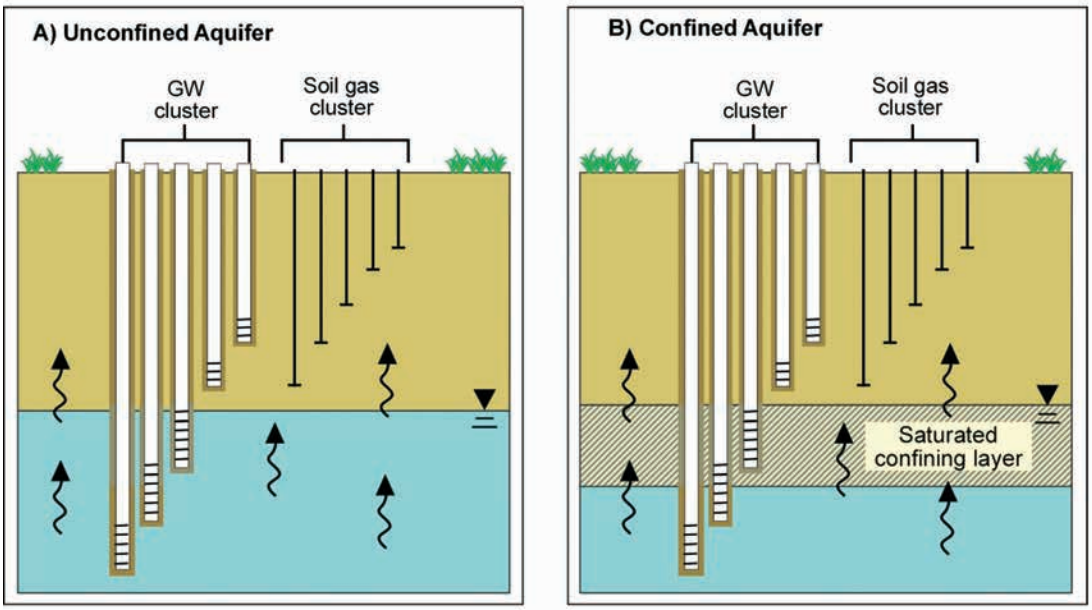
Social 5:30 p.m., Dinner 6:30 p.m.

Cost: $30 Preregistered members; $30 non-members/walk-ups

To guarantee a seat, pre-register on the HGS website & pre-pay by credit card.
Pre-registration without payment will not be accepted.
Walk-ups may pay at the door if extra seats are available.

Lila Beckley, P.G.,
Danielle Bailey, P.G.
GSI Environmental, Inc.

Influence of Shallow Geology on Volatile Organic Chemical Attenuation from Groundwater to Deep Soil Gas



The main focus of our research was to better understand the effects of both physical and chemical processes on vapor migration in the subsurface, thereby obtaining a greater understanding of the vapor intrusion process. Vapor intrusion is the migration of volatile chemicals from contaminated soil or groundwater into overlying buildings. Evaluation of this exposure pathway is increasing across the country because of changing regulatory requirements. Additionally, vapor intrusion is increasingly being evaluated in the context of real estate transactions, and is now included in the American Society for Testing and Materials standard on Phase I Environmental Site Assessments.

Vapor intrusion pathway evaluations commonly begin with a comparison of volatile organic chemical (VOC) concentrations in groundwater to generic, or Tier 1, screening levels. These screening levels are typically quite low reflecting both a desired level of conservatism in a generic risk screening process as well as limitations in understanding of physical and chemical processes that impact vapor migration in the subsurface. To study the latter issue, we have collected detailed soil gas and groundwater vertical concentration profiles and evaluated soil characteristics at seven different sites overlying chlorinated solvent contaminant plumes.

The goal of the study was to evaluate soil characteristics and their impacts on VOC attenuation from groundwater to deep soil gas (i.e., soil gas in the unsaturated zone within two feet of the water table). The study results suggest that generic screening levels can be adjusted by a factor of 100 times at sites with fine-grained soils above the water table, as identified by visual observations or soil air permeability measurements. For these fine-grained soil sites, the upward-adjusted screening levels maintain a level of conservatism while potentially eliminating the need for vapor intrusion investigations at sites that may not meet generic screening criteria. ■

Biographical Sketch

Lila Beckley, P.G. is a geologist with GSI Environmental Inc. in Austin, Texas, with 19 years of experience in the environmental field. Her primary practice areas are vapor intrusion and regulatory support. In the area of vapor intrusion, she has conducted assessments using

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both conventional and innovative methods at sites around the United States, developed and tested investigation protocols as part of Department of Defense-funded research, developed guidance and training programs, and is a member of regulatory guidance development workgroups such as Interstate Technology and Regulatory Council (ITRC).

Since joining GSI in 2007, she has also been involved in groundwater monitoring optimization, regulatory and litigation support, and database and software development projects. Prior to joining GSI, Ms. Beckley worked in enforcement and remediation programs at the Texas Commission on Environmental Quality in various roles ranging from project to program management. Ms. Beckley earned a master's degree and a bachelor's degree in geological sciences from the University of Texas at Austin.

Danielle "Danny" Bailey, P.G is a hydrogeologist with GSI Environmental Inc. in Houston, Texas, with 8 years of professional experience in the environmental field. Her primary practice areas have included site investigations and risk assessments of several residential and commercial/industrial properties. These include chemical manufacturing plants, dry cleaning and oil and gas facilities, and military bases. She has provided technical support to expert witnesses and attorneys on a variety of environmental litigation projects in Ecuador, Texas, Louisiana, and Montana. She has overseen the design and installation of monitoring well networks, vapor intrusion investigations, soil sampling for environmental and geotechnical parameters, groundwater and outdoor air sampling programs, and implementation of enhanced in-situ biodegradation treatment programs in the Dominican Republic, Germany, Texas, Virginia, Mississippi, Alabama, and Montana.

She has designed, coordinated, and implemented large scale site investigations at international oil and gas facilities in Ecuador. She has conducted an environmental compliance audit and inspection of a heavy construction equipment rental facility in Texas. She has participated in several Department of Defense Environmental Security Technology Certification and Strategic Environmental Research and Development Program research projects in Texas, Oklahoma, Florida, Utah, Rhode Island, and California. Ms. Bailey received a Master of Science degree in hydrogeology from The University of Texas and a Bachelor of Science degree in geology from Texas A&M University.

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