

Short Courses

Choose among four courses to expand your knowledge of practical applications of karst science.

Short Course 1: *Stormwater Management in Karst – A Regional Perspective*

Instructor:

Robert K. Denton Jr., CPG, LPSS (GeoConcepts Engineering Inc.)

Course length – 4 hours

The short course will detail general principles of karst characterization utilized for the siting and design of stormwater best management practices (BMPs) in karst. Topics to be covered will include:

- 1) Utilization of terrain, hydrogeological, and subsurface investigation analyses (borings, electrical resistivity, etc.) to properly characterize and design stormwater BMPs in karst, with special emphasis on the karst terrain of the Appalachian regions of Virginia, West Virginia, and Maryland
- 2) Environmental issues including the mitigation of the transport and migration of soil-adsorbed contaminants into the karst aquifer
- 3) Design of stormwater BMPs for internally drained sites (onsite absorption, dry ponds, Class V injection wells, etc.)
- 4) The impact of limestone saprolite on pond design and failure
- 5) Understanding and utilization of the Karst Reduction Factor
- 6) A review of regional guidelines and regulations governing karst stormwater BMPs

Short Course 2: *Title TBD*

Instructors:

Lori Collins

Course length – x hours

Short Course 3: *Designing and Conducting Tracer Studies in Karst With Emphasis on Sites with Actual or Potential Contamination Releases*

Instructors:

Ralph Ewers, Ph.D. (President, EWC - Ewers Water Consultants, Inc.)

Keith White, CPG (Vice President/Principal Geologist, Arcadis, Inc.)

Course length: 4 hours

Course Description:

Tracer investigations, particularly those conducted with fluorescent dyes, have been shown to provide essential information regarding the fate and transport of contaminants in karst aquifers. They do this quickly, reliably, and inexpensively in most karst terranes. Modern spectrofluorometric analytical techniques provide part-per-trillion sensitivity and identify each dye by its characteristic wavelength, allowing several dyes to be used simultaneously.

Test Design Essentials – The four essential steps in conducting a tracer test: 1-reconnaissance, 2-tracer background assessment, 3-tracer introduction, and 4-tracer monitoring will be explored and the rationale for each will be given.

Tracer Dyes – This short course will provide details on the usefulness of each of the common fluorescent tracer dyes and their individual characteristics. We will discuss the means by which the tracers can be introduced and how, where, and when to monitor for them. The pros and cons for each of the analytical methodologies will be examined.

Example Tests – Recent and historical tracing examples will be examined in detail, offering a wide range of karst settings in which tracing has been successfully used. In these examples the hydrogeology demonstrated by the tracing will be compared to the hydrogeology inferred by traditional well data.

Qualifications – The presenters have a combined experience of 70 years in karst studies and have been involved in nearly 1,000 tracer tests.

Short Course 4: Stormwater Management in Karst – A Regional Perspective

Instructor:

Robert K. Denton Jr., CPG, LPSS (GeoConcepts Engineering Inc.)

Course length – 4 hours

The short course will detail general principles of karst characterization utilized for the siting and design of stormwater best management practices (BMPs) in karst. Topics to be covered will include:

- 1) Utilization of terrain, hydrogeological, and subsurface investigation analyses (borings, electrical resistivity, etc.) to properly characterize and design stormwater BMPs in karst, with special emphasis on the karst terrain of the Appalachian regions of Virginia, West Virginia and Maryland
- 2) Environmental issues including the mitigation of the transport and migration of soil-adsorbed contaminants into the karst aquifer
- 3) Design of stormwater BMPs for internally drained sites (onsite absorption, dry ponds, Class V injection wells, etc.)
- 4) The impact of limestone saprolite on pond design and failure
- 5) Understanding and utilization of the Karst Reduction Factor
- 6) A review of regional guidelines and regulations governing karst stormwater BMPs