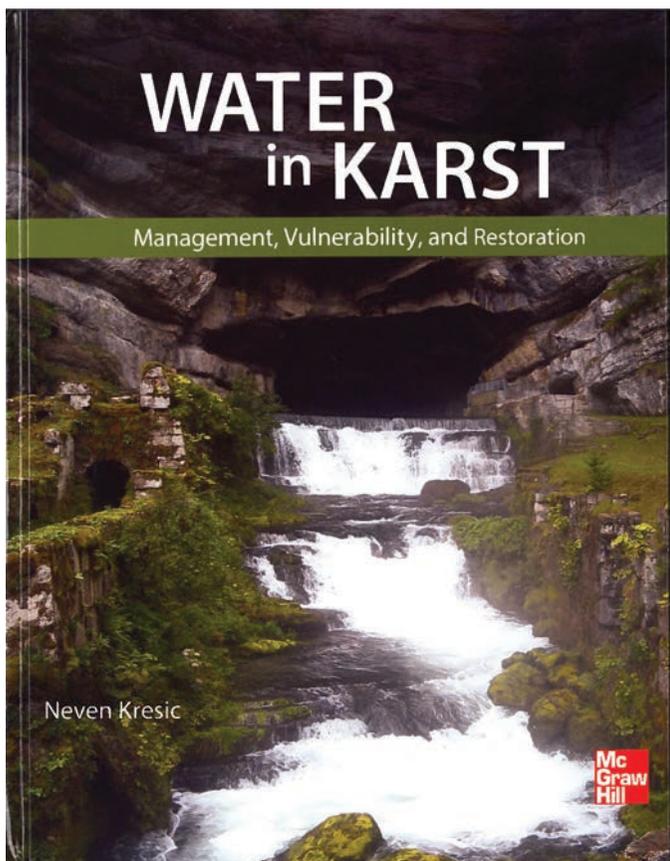


BOOK REVIEW



Water in Karst: Management, Vulnerability, and Restoration

Neven Kresic, 2013, New York, The McGraw-Hill Companies, Inc., 708 p. 7.5 × 9.5 inches, ISBN 978-0-07-175333-3, hardcover, \$125.00.

This is the latest in a line of books on karst waters; the author is a very prolific writer of groundwater texts who specializes in karst hydrogeology. As many karst professionals will no doubt note, for many years, karst science was all but ignored in the United States, but that is no longer the case. This book represents a timely addition to the many new karst books being rolled out by publishers because so many individuals are now working in the field of karst hydrogeology.

The book is divided into three parts: Karst Hydrogeology and Hydrology, Management of Water in Karst, and Vulnerability and Restoration of Water in Karst. Chapter 1, Karst Aquifers, is over two hundred pages long and provides a very comprehensive overview of basic karst hydrology and hydrogeology. Even though chapter 1 is an overview, it is worth reading even by experienced karst professionals because of the wealth of information it contains. For example, those individuals familiar with the

concept of epikarst are likely to find interesting and controversial perspectives on the topic. Chapters 2, Flow Measurements and Analysis, and 3, Drainage Areas in Karst, are more practically oriented than is Chapter 1, and will be beneficial to practitioners involved in site investigations where discharge measurements, tracer testing, and geophysical methods are appropriate.

Part 2 includes six chapters on various aspects of water management, ranging from basic management principles and education to modeling methods, flooding or droughts, groundwater extraction, and engineering of karst aquifers and springs. Sustainability, a current trend in hydrogeology and other environmental sciences, is briefly addressed. More useful to many might be the discussions on government regulations, such as Groundwater Rule and Groundwater Under Direct Influence of surface water (GWUDI), that are so pervasive throughout the United States and elsewhere (e.g., Canada). This reviewer has been involved in sites where these regulations were important both at the federal and state level, and it is critical that professional groundwater scientists and engineers understand them from the perspective of both general hydrogeology and karst hydrogeology. Groundwater exploitation and aquifer management are familiar to hydrogeologists, although the discussions of capture of spring flow and of surface dams will be new to many.

Part 3 includes just two chapters, vulnerability and restoration. Most karst professionals are very aware that karst aquifers are generally more vulnerable to contamination than are other aquifer types, because of their rapid flow and lack of filtration. This section of the book provides a solid foundation for professionals working at vulnerable or contaminated sites where aquifer protection or restoration must be accomplished. Those familiar with contaminated karst aquifers will note that not a lot is presented regarding aquifer restoration, especially for karst aquifers contaminated with dense nonaqueous-phase liquids, because the technology for DNAPL removal is still relatively limited, especially for karst aquifers. Still, the chapter on restoration is very strong despite the necessary limitations.

This book is chock-full of figures and photos from all over the world. In fact, nearly every page includes either a figure or a photo that complements the text and enhances the reader's understanding. The center of the book includes thirty-six high-quality color plates. This book is no substitute for formal education and experience, but it will go a long way toward educating those unfamiliar with karst hydrology and hydrogeology and serve as a refresher for those who are experienced.

Reviewed by Malcolm S. Field, U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW, Washington, DC 20460-0001 (field.malcolm@epa.gov).

DOI: 10.4311/2013BR0105