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# **Environmental Geology (9th Edition)**





## Synopsis

Having originally defined the Environmental Geology course, this is considered the most comprehensive yet readable book for your course level. Keller continues to offer the most detailed, current research available. He covers a wide range of topics, discussing everything from fundamental geologic principles to the specifics of environmental law and geologic hazards, from a truly environmental perspective. The Ninth Edition emphasizes the engineering geology approach, especially in the discussion of soil and rock mechanics and landslides.

### **Book Information**

Hardcover: 624 pages Publisher: Pearson; 9 edition (January 31, 2010) Language: English ISBN-10: 0321643755 ISBN-13: 978-0321643759 Product Dimensions: 8.8 x 1.1 x 10.9 inches Shipping Weight: 3.4 pounds (View shipping rates and policies) Average Customer Review: 4.5 out of 5 stars 19 customer reviews Best Sellers Rank: #17,188 in Books (See Top 100 in Books) #30 in Books > Science & Math > Earth Sciences > Geology #45 in Books > Politics & Social Sciences > Social Sciences > Human Geography #63 in Books > Science & Math > Earth Sciences > Environmental Science

### **Customer Reviews**

Ideal for students with little or no previous exposure to the study of geology, this text offers one of the most comprehensive, up-to-date treatments of environmental geology available -- from fundamental geologic principles to the specifics of environmental law and geological hazards. It fully discusses both processes and environmental issues, and where appropriate, includes Special Features boxes with quantification of processes. --This text refers to an out of print or unavailable edition of this title.

PREFACE Environmental geology is the application of geologic information to the entire spectrum of interactions between people and our physical environment. Those students who become more interested in the subject may go on to become environmental geologists. They will take advanced courses in subjects such as engineering geology and hydrogeology. Study of environmental geology is facilitated by previous exposure to an introductory physical geology or geography course.

However, most students may not have the flexibility in their undergraduate curriculum to take more than a single geology course. As a result, Environmental Geology is designed so that students who have had no previous exposure to the geological sciences may comprehend and understand the principles of environmental geology. This requires that a fair amount of physical geology is presented along with discussion of relationships between geology and the environment. One important objective of the book is to present a broad spectrum of subject matter relevant to students studying a wide variety of traditional sciences such as chemistry, biology, geology, physical geography, and physics; liberal arts students studying subjects such as anthropology, economics, environmental studies, human geography, literature, political science, and sociology; and students who may be preparing for professional schools such as engineering, architecture, or planning. ORGANIZATION The organization of the eighth edition is similar to the seventh with appropriate expansion of the two water chapters: water supply and management, and water pollution. The continuing emphasis on water results because of the tremendous importance of water resources and their use to all people on earth. Of particular significance is the added material concerning surface and groundwater processes. Since the seventh edition, the subjects of earth system science and air pollution are now stand-alone chapters. The subject of earth system science and global change is of particular importance to environmental geology, and considerable discussion has been added concerning such global environmental problems as potential global warming, stratospheric ozone depletion, and acid rain. The subject material for Environmental Geology is arranged in five parts. Part 1 introduces fundamental principles important in the study of environmental geology. The purpose is to set the philosophical framework for the remainder of the text, as well as to introduce important aspects of geology necessary to undertake a study of applied geology. Emphasis is on geologic process and the study of the earth as a system. This is facilitated through study of earth materials such as minerals, rocks, soils as they relate to processes operating in the solid earth, biosphere, hydrosphere (surface and groundwaters), and atmosphere. Part 2 addresses the important subject of natural processes (hazards) that continue to make life on earth occasionally difficult for people. These include flooding, landslides, earthquakes, volcanoes, and coastal erosion. Discussion of hazardous natural processes is facilitated through the introduction of numerous case histories that represent the spectrum of hazards and the response of society. New case histories or discussions include the 1993 floods of the Mississippi River and the 1994 earthquake that damaged part of the Los Angeles, California, area. Part 3 focuses on human interactions with the environment and includes detailed discussions of water resources, water pollution, integrated waste management, and geologic aspects of environmental health. In

particular, the material in Chapters 10 and 11 has been completely reorganized and updated in light of important issues related to water as a resource and water pollution. Finally, because groundwater processes are becoming so important in many environmental geology areas, additional discussion is provided so that students might better understand the physical processes related to the occurrence and movement of groundwater. Part 4 includes the important topics of mineral and energy resources as they pertain to needs of society and environmental issues. Emphasis is placed on the origin and significance of our mineral and energy resources, as well as their availability and environmental impact associated with their development. Part 5 introduces the subjects of earth system science, global change, air pollution, environmental evaluation, and environmental law. For the eighth edition, the material on earth system science and global change as it relates to global environmental problems has been revised to include a more thorough discussion of stratospheric ozone depletion and global warming. The subjects of environmental impact analysis, land-use planning, and environmental law have been combined into a single chapter that integrates these subjects and highlights the usefulness of environmental geology to society. SOME SPECIAL FEATURES The eighth edition of Environmental Geology includes a complete reorganization of the chapters: The eighth edition presents some quantitative examples in the Putting Some Numbers On boxes, which discuss a variety of processes, including: exponential growth; soil mechanics; flood frequency analysis; landslide stability analysis; construction of a beach budget; groundwater movement; and construction of the design response spectra for evaluating the earthquake hazard at a site. Each chapter begins with a photograph and an accompanying short explanatory narrative, followed by learning objectives. The purpose of the learning objectives is to inform students about what is important in that chapter. Selected Case History boxes are separated from the general text so that students might better focus on important issues. A Closer Look special feature boxes discuss important issues or concepts separately from the general text. For example, A Closer Look: Wetlands in Chapter 10 defines wetlands and important environmental processes of wetlands. Key terms presented in the text are listed at the end of each chapter to further assist students in their study of the material. Study questions are provided for each chapter with the intent of stimulating discussion of important issues related to environmental geology. There are only a few questions for each chapter but the emphasis is on developing critical thinking skills about the text material. Useful Web sites are listed in Appendix A: World Wide Web: An Introductory Statement. SPECIAL NOTES TO STUDENTS I wrote part of the first edition of Environmental Geology while I was still a graduate student at Purdue University. As a student I was very interested in trying to understand this new field of environmental geology that a few people were beginning to talk about. I taught a class in

environmental geology at Indiana University-Purdue University in Indianapolis, Indiana. At that time, in the early 1970s, we were just becoming conscious of environmental problems and were more concerned with identifying the problems rather than dealing with solutions. Since then, the field of environmental geology has grown substantially, and there are many practicing professional environmental geologists. The focus has also shifted to finding solutions to environmental problems. This requires increased understanding of application of geologic processes to the environment. As a result, we need to know more about how the earth works and how the subject of geology interrelates with other disciplines, such as biology, chemistry, physics, and geography. Some of the most fruitful areas for research for future students will be interdisciplinary studies that combine one or more of the other sciences. Environmental geology, however, is more than just science. Our science may provide potential solutions to environmental problems and outline risk of such processes as earthquakes and flooding. What we decide to do about our environmental problems is more related to our value system. As a result, subjects such as psychology, social anthropology, history, human geography, political science, law and society, and economics come to the forefront. People who will solve environmental problems in the future will continue to be more interdisciplinary in their research approach and their study of the environment. The upshot of all this is that our study of the environment is becoming broader on one hand and more rigorous on the other. In response to this, I have made no attempt to dodge difficult subjects such as hydraulic conductivity, fluid pressure in rocks and soils, moment magnitude of earthquakes, and processes related to stratospheric ozone depletion. I am confident that students remain interested in obtaining the best possible education and expect to be challenged. I have made every attempt to discuss difficult subjects in a way that will enable students to better understand what is happening. However, many of these subjects are difficult, and considerable study is necessary to understand them thoroughly. Finally, more advanced courses in areas such as hydrogeology, geochemistry, and seismology are suggested for those students who wish to pursue these subjects further. I have learned a great deal in preparing Environmental Geology. I hope you enjoy reading the book and hope that some of you may pursue environmental geology as a career. A few of you may become so intensely interested that you will pursue a research and teaching career to better understand how our earth works and how we might better solve environmental problems. Edward A. Keller Santa Barbara, California -- This text refers to an out of print or unavailable edition of this title.

This was the textbook used for my college environmental geology course. This textbook covers some of the essential topics in environmental geology and is well written. Information was presented

in a manner that made it understandable without being overbearing. I enjoyed reading this book and learning about various topics within the field of environmental geology.

This book is not cheap but it is worth every penny. This is a practical guide to environmental geology. Geologic processes and cycles are succinctly explained. Each photograph and diagram is utilitarian; no space is wasted on pictures of sailboats or overly cheerful hikers. From steep slope land use to forecasting volcanic activity, this book has it all. Geologic hazards and disaster preparedness is given especially thoughtful treatment. Buy it!

This is a well-written book. It is also very interesting.

Came exactly like it was described

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nice tb good.

This book is well written and straight forward. It is a good book for an introduction to the environment, especially the impact of humans on the environment. It was an easy read.

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