

Preface

The largest largest source of freshwater lies in underground water. Rapid economic and construction development makes engineering geological and environmental problems of groundwater more serious. In many cases, such as soil deformation or pit bottom bursting in foundation pit excavation, land subsidence by engineering dewatering, quicksand, piping, or sand liquefaction in underground construction, stability problem in bedrock area, corrosion of concrete and steel bar, etc., groundwater always plays a crucial role. These engineering geological, hydrogeological problems or construction disasters have been paid a substantial amount of attention by researchers and engineers. A lot of new knowledge about groundwater engineering has been accumulated over the past decades. Combined with the engineering practice experience and the summary of construction lessons, the prevention or alleviation of engineering geological and environmental problems relevant to groundwater must be of greater significance and emergence.

The authors have been involved in the teaching and research work on groundwater engineering for many years. For a textbook, it is an achievement on the summary of previous basic knowledge and our practical engineering experience. It also plays an important role as a most applicable education material for both senior undergraduate and graduate students. The integration of theory and practice makes it a professional textbook for related students. Moreover, it can provide valuable references for technical staff and managers of engineering construction.

Involving several disciplines of engineering geology, hydrogeology, and geotechnical engineering, this book mainly covers the general field of groundwater from an engineering perspective, based on new research results in China and abroad. The first two chapters provide theoretical aspects, such as basic theory in groundwater and parameter calculation in hydrogeology. The large main part introduces the problem caused by groundwater and dewatering construction design, including geological problem and prevention caused by groundwater, construction dewatering, engineering wellpoint dewatering method, dewatering well and drilling, groundwater dewatering in foundation pit engineering, and groundwater engineering in bedrock area. Chapter 9 presents approaches in computer modeling

for groundwater engineering. Finally an introduction to groundwater corrosion on concrete and steel is discussed in Chap. 10 as supplementary material.

I am grateful to have an excellent group of authors such as Prof. Yiqun Tang, Ph.D. Jie Zhou, graduate student Jingjing Yan, Associated Prof. Ping Yang, Prof. Nianqing Zhou, Associated Prof. Jianxiu Wang, and Assistant Prof. Guo Li.

Specifically, Chaps. 1 and 3–6 are written by Yiqun Tang, Jie Zhou, and Jingjing Yan. Chapter 2 is organized by Ping Yang. Chapter 7 is mainly revised by Guo Li. In Chap. 9, Jianxiu Wang has given the most contribution, while in Chap. 10, Jie Zhou and Tang have made great efforts.

The re-edition, organization, and revision of the whole book have been done by Yiqun Tang, Jie Zhou, Ping Yang, and Jingjing Yan. I am also very grateful to the graduate students Chen Tang and Ph.D. Jie Zhou. They made a special effort on the graphic drawing and processing work. The case study and exercises are organized by Prof. Yiqun Tang, Associated Prof. Ping Yang, Ph.D. Jie Zhou, and graduate students Jie Xu and Kai Sun.

The completion of the book was supported by the National Key Technologies R&D Program of China through Grant No. 2012BAJ11B04, 12th five-year teaching material planning program, and pilot program of comprehensive reform on major higher education teaching quality and teaching reform project by the Ministry of Education.

I also express our appreciation here since some basic material and knowledge is referred from Handbook of hydrogeology of water-supply. Some notation has been specifically marked in relevant texts. Some reference could not be correctly found due to the long-time missing record. I apologise in case of minor inaccuracies, which authors have not noticed. It should be noted that the copyright holder of the materials on land subsidence data of Tokyo (Figs. 5.35–5.37) could not be traced with proper credit, we would appreciate any information that could enable us to do so.

The experiments in this book were mostly conducted in the key laboratory of geotechnical and underground engineering at Tongji University, Ministry of Education. Ph.D. Qi Liu has done us a favor during the experimental design. All the authors are appreciated for this.

This book will be an essential handy reference for industrial and academic researchers working in the groundwater field and can also serve as a lecture-based course material to provide fundamental and practical information for both senior undergraduate and graduate students, who will need to work in the fields of geology engineering, hydrogeology, geotechnical engineering, or to conduct related research.

Shanghai, China
June 2015

Prof. Yiqun Tang

Groundwater Engineering

Tang, Y.; Zhou, J.; Yang, P.; Yan, J.; Zhou, N.

2017, XIII, 410 p. 278 illus., 8 illus. in color., Hardcover

ISBN: 978-981-10-0668-5