

# Volume Preface

Reservoirs are important freshwater ecosystems providing water resources for several beneficial purposes, including agricultural irrigation, urban municipal water utilization, and drinking water supply. In China, there are more than 86,852 reservoirs, which play a vital role in providing a source of water to urban citizens, especially in arid and semi-arid regions.

This volume provides an overview of water pollution and water quality control of several selected Chinese reservoirs, named Jinpen Reservoir, Shibianyu Reservoir, Fenhe Reservoir, Zhelin Reservoir, and Zhoucun Reservoir. These reservoirs represent broad geographical distributions and different nutrition levels. In our research group, to ensure the security of drinking water supply, water pollution control has been systematically performed for 12 years. Drinking water supply is the main use of these reservoirs, with water-lifting aerators and bioremediation being the dominant management options. The main goals of water pollution investigation of Chinese reservoirs include monitoring cyanobacterial blooms, transformation of endogenous pollution (e.g., nitrogen, phosphorus, iron, and manganese) released from sediments, determining reservoir water/sediment microbial activity, and community compositions using biochemical and molecular technology. Meanwhile, water quality control and management of reservoirs using mixing–oxygenating technology combined with the bioremediation method, the technical background, the water quality improvement principles of water-lifting aeration, and the methods of designing and optimizing the structure of water-lifting aerators are discussed in this volume.

This volume is divided into four parts: (I) Water pollution of selected Chinese reservoirs, (II) Reservoir sediment contamination and its impact on water quality, (III) The mixing–oxygenating technology in situ controlling the reservoir water quality, and (IV) Microbial remediation method for polluted source water. This comprehensive volume can be used as a reference book by researchers and reservoir ecosystem managers.

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express our gratitude to the reservoir management departments for their cooperation on water quality monitoring and water pollution controlling demonstration projects. With the progress of our research and practical engineering applications, we are expecting to publish an updated second edition of this volume some years down the line. In particular, we wish to acknowledge the foundation management departments, and the primary funding was provided by grants from the National Science and Technology Pillar Program (No. 2012BAC04B02), the Key National Natural Science Foundation of China (No. 50830303), and the National High-Tech Research and Development Program of China, also known as the “863 Program” (No. 2007AA06Z302).

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