

WATER SUPPLY SYSTEMS AND EVALUATION METHODS

Rose Marie O. Mendoza

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Water Supply Systems and Evaluation Methods

Water supply is one of the most basic requirements of life. As inscribed in the WHO (2006) "Water for Life" Act, it is each and everybody's basic right to have access to safe and efficient water supply. Though the act focuses on drinking water, it is implied that the access to safe and efficient water supply must be made available to all, particularly by the government and managing agencies. Water helps in protecting the health of people, improving the quality of life, and stimulating development of economy, both in rural and urban areas. It is believed that adequate water supply is one of the internationally recognized indicators of economic development, public health, and country's competitiveness. However, the majority of people around the world are living without safe and clean water supply. Studies have shown that over 80% of the total cost incurred in water supply system is tailored towards transmission and distribution of water. It is of greatest benefit therefore that the principles of effectiveness, efficiency, affordability, sustainability, and appropriateness should be adhered to, to improve water supply systems both in rural and urban areas. Today, several developing countries are challenged with water supply scarcity. Water supply challenges in urban are mainly attributed to the rapidly growing population and increased urbanization. Researches show that the need for clean and safe water has put great pressure on various public institutions because access to this precious commodity is usually faced with a lot of challenges. Some of the major challenges to accessing clean and safe water include risks of contamination from sewage discharge, farm chemicals, bacteria and harmful parasites. This book has been prepared in order to equip the reader with the basic understanding of the evaluation of water supply system management. It has integrated different concepts related with applicable water supply management. It also presents a number of basic principles applied in water supply systems. This book caters for the needs of all graduate and undergraduate students taking courses in water supply systems management, various researchers, governmental professionals involved with water supply systems related functions, and various practising engineers. The author has used the simplest and understandable language in order to assist the students, researchers, engineers, and water supply managers to properly conceptualize the material presented. Although there are some references presented at the end of the book to offer essential information to the optimization evaluation of water supply system management, it is worth noting that this book has been prepared using these references in order to provide a comprehensive and detail information. There are ten chapters in this book and each presents a specific concept with regards to water supply system management. Chapter one discusses the introduction to water supply systems and evaluation methods. This chapter mainly focuses on basic information on water supply systems information and various concepts used in water supplying activities. Chapter two talks about details on evaluation of piped supply system and ground water quality. Chapter three mainly discusses on various ways of improving water security in arid and semi-arid areas through rainwater harvesting. One of the important concepts that are discussed entirely in this chapter is various types of rainwater harvesting and storage structures. Chapter four touches the issues on management and governance of water supply systems in the informal settlements. One of the areas deeply considered in this chapter are the factors influencing water supply in informal settlements. Chapter five discusses about financial evaluation on small-scale water supply investments. Chapter six tackles the basics on evaluation of women's role in water supply systems which stresses on the various problems that women face in supplying water in their household and ways that can be put into practice to reduce these problems. Chapter seven presents a detailed discussion on privatization of water supply services. Chapter eight, chapter nine, and chapter ten encompasses management of non-revenue water (unaccounted for water); threat to potable drinking water; and water crisis, respectively.



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