Design and Operation of Farm Irrigation Systems

2nd edition

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PREFACE

Irrigated agriculture has played an important role in food production during the past century and will become even more important as the global population continues to increase. The internet has hastened the dissemination of new irrigation technology and water management guidelines developed by specialists. Personal computers have facilitated complex calculations and control of automated irrigation systems. However, there is still a need for irrigation system designers and system operators to have a comprehensive book on farm irrigation systems readily available. This monograph has been widely disseminated since first published in 1980 and reprinted in 1982. This second edition is expected to meet an important need for several future decades.

Publication of this monograph culminates a decade of effort. Planning the second edition first started in 1994 when a group met informally at a meeting of the American Society of Agricultural Engineers to discuss the need for an updated version of the first irrigation monograph. Ronald Elliott and Marvin Jensen began the organizational and editorial processes. Leading experts in their respective areas were asked to write various chapters. In 2000, because Elliott’s new assignment restricted his time for this work and Jensen’s time was limited because of his involvement in several water use studies, work on this edition was delayed. In 2002, the SW-24 Group chaired by Robert Evans established a new editorial committee consisting of Glenn Hoffman, Robert Evans, Gary Clark, and Derrel Martin to share the load of this monumental task. The committee met in Denver in November, 2002, to review the status of the revised chapters, to add new chapters, set new target dates, and to make review assignments. Elliott indicated that he did not wish to continue an active role and in August, 2005, Gary Clark assumed a new position and no longer had time to continue as an editor. The remaining work load was redistributed to Evans, Hoffman, Jensen, and Martin.

This edition provides the latest technology in the design of surface, sprinkler, and microirrigation systems along with basic information about soils and current information on estimating crop water requirements. New chapters have been added on planning systems, environmental issues, efficiency and uniformity, chemigation, and use of wastewater for irrigation.

As is the case with all ASABE monographs, the Society is indebted to many individuals who contributed significantly to the planning, writing, reviewing, editing, and publishing of this book. The sharing of their knowledge, time, and patience in the production of this book is greatly appreciated. All of the editors are extremely grateful for the opportunity to work with so many dedicated and enthusiastic engineers and scientists in completing this project. The assistance of the ASABE staff, especially Peg McCann, in editing and producing this monograph is especially appreciated.

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