

WATER RESOURCES ASSESSMENT—

**METHODOLOGY & TECHNOLOGY
SOURCEBOOK**

by

LARRY W. CANTER

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PREFACE

This book summarizes the work performed under Purchase Order No. DACW39-78-M1603 titled, "Literature Review on Methods of Environmental Impact Assessments," dated February, 1978, between the U.S. Army Engineer Waterways Experiment Station (WES) and the author. The research was sponsored by the Office, Chief of Engineers, U.S. Army, Washington, D.C., and directed by the Environmental Laboratory, WES. The objective was to prepare a comprehensive review and evaluation of methodologies and technologies that are used directly or that have potential application to environmental impact assessment and/or impact assessment and alternative evaluation studies for water resources programs and projects.

The literature was reviewed in accordance with six time periods: 1960-70, 1971-73, 1974, 1975, 1976, and 1977-78. The 1960-70 period encompasses pre-NEPA literature, while the latter five cover the period since NEPA passage. The latter five periods were chosen so as to limit the reviewed references to no more than 60 in a period. Each reviewed reference was evaluated relative to 12 criteria: interdisciplinary team, assessment variables, baseline studies, impact identification, critical impacts, importance weighting, scaling or ranking, impact summarization, documentation, public participation, and conflict management and resolution.

A total of 254 references were examined, with 176 meeting one criterion or more. The first section of the book summarizes the references according to the 12 criteria. Salient features of references having potential useable information for water resources assessments are then summarized by time period. The 176 references meeting one or more of the 12 entrance criteria are summarized in Appendices A through F according to time period. For example, Appendix A contains information on the 16 pertinent references from the 1960-70 period, and Appendix B addresses the 37 german references from the 1971-73 period. Abstracts of the 78 references not meeting any entrance criteria are in Appendix G. It should be noted that just because a reference did not meet any criterion does not mean it has no value in environmental impact assessment. It may simply reflect non-orientation to water resources projects.

This book is intended for use by professionals working on environmental impact studies. Even though the orientation is to water resources, the book is of general value due to the large number of general methodologies and technologies described. The book could also be used in upper division or graduate level courses dealing with environmental impact assessments/statements.

The author expresses his gratitude to the College of Engineering, University of Oklahoma, for its support during the preparation of this book. Special acknowledgement is given to Ms. Sue Richardson and Dr. Stan West of the Environmental Resources Division, WES, for their professional advice in conjunction with the literature survey. In addition, the author acknowledges Mrs. Edna Rothschild, Mrs. Kristi Smith, Ms. Susan Wilkerson and Mrs. Carol Holloway for their typing assistance in the preparation of this manuscript. Special thanks are extended to Ms. Jerry Lawrence for her efforts in the preparation of the author and subject indexes. Finally, the author thanks his wife and three sons for their encouragement in the process of developing this book.

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SUMMARY AND CONCLUSIONS