

SCE MANUALS AND REPORTS ON ENGINEERING PRACTICE No. 54

# **Sedimentation Engineering**

Edited by Vito A. Vanoni





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Vito A. Vanoni

Prepared by the ASCE Task Committee for the Preparation of the Manual on Sedimentation of the Sedimentation Committee of the Hydraulics Division



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About the cover: River dunes in the Rio Paraná near Paso de la Patria, Argentina. Bed morphology measurements were made with a multibeam echo sounder in May 2004. Note the ubiquitous superimposition of smaller bedforms on the stoss side of the larger dunes. Image courtesy of Dan Parsons and Jim Best, University of Leeds, U.K.

## MANUALS AND REPORTS ON ENGINEERING PRACTICE

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## MANUALS AND REPORTS ON ENGINEERING PRACTICE

#### No. Title

- 13 Filtering Materials for Sewage Treatment Plants
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- 35 A List of Translations of Foreign Literature on Hydraulics
- 40 Ground Water Management
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- 77 Design and Construction of Urban Stormwater Management Systems
- 78 Structural Fire Protection
- 79 Steel Penstocks
- 80 Ship Channel Design
- 81 Guidelines for Cloud Seeding to Augment Precipitation
- 82 Odor Control in Wastewater Treatment Plants
- 83 Environmental Site Investigation
- 84 Mechanical Connections in Wood Structures
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- 87 Urban Runoff Quality Manual
- 88 Management of Water Treatment Plant Residuals
- 89 Pipeline Crossings
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- 104 Recommended Practice for Fiber-Reinforced Polymer Products for Overhead Utility Line Structures
- 105 Animal Waste Containment in Lagoons
- 106 Horizontal Auger Boring Projects
- 107 Ship Channel Design and Operation
- 108 Pipeline Design for Installation by Horizontal Directional Drilling
- 109 Biologic Nutrient Removal Operation

# CONTENTS

		Foreword	1X
		Foreword to the First Edition	xi
CHAPTER	Ι	NATURE OF SEDIMENTATION PROBLEMS	1
		A. Introduction	1
		B. Problems of Erosion	2
		C. Problems of Sediment Transport	6
		D. Problems of Sediment Deposition	6
		E. Solution of Sediment Problems	8
		G. References	9
CHAPTER	II	SEDIMENT TRANSPORTATION MECHANICS	11
		A. Introduction	11
		B. Properties of Sediment	12
		C. Erosion of Sediment—Local Scour	27
		D. Suspension of Sediment	39
		E. Initiation of Motion	54
		F. Hydraulic Relations for Alluvial Streams	69
		G. Fundamentals of Sediment Transportation	92
		I. Wind Erosion and Transportation	113
		I Transportation of Sediment in Pipes	148
		K. Density Currents	166
		L. Genetic Classification of Valley Sediment Deposits	171
		M. References	175
CHAPTER	III	SEDIMENT MEASUREMENT TECHNIQUES	191
		A. Fluvial Sediment	191
		B. Reservoir Deposits	208
		C. Accelerated Valley Deposits	227
		D. Airborne Sediment	234
		E. Laboratory Procedures E. References	239
		r. References	255
CHAPTER	IV	SEDIMENT SOURCES AND SEDIMENT YIELDS	261
		A. Introduction	261
		B. Erosion Rates from Sediment Sources	262
			vii

		<ul><li>C. Yield from Sediment Sources</li><li>D. References</li></ul>	273 289
CHAPTER	V	SEDIMENT CONTROL METHODS	295
		A. Introduction	295
		B. Watershed Area	295
		C. Stream Channels	309
		D. Canals	325
		E. Reservoirs	348
		F. References	361
CHAPTER	VI	ECONOMIC ASPECTS OF SEDIMENTATION	367
		A. General Comment	367
		B. Deposition of Sediment	368
		C. Alluvial Channels	371
		D. Municipalities	374
		E. Sediment Removal	374
		F. References	375
CHAPTER	VII	AMERICAN SEDIMENTATION LAW AND	
		PHYSICAL PROCESSES	377
		A. Introduction	377
		B. Rights in Land and Diffused Surface Waters	380
		<ul><li>C. Rights in Land and Defined Surface Waters</li><li>D. Rights to be Free from Undue Damage Caused by</li></ul>	384
		Obstructions: Major Works of Improvement,	200
		Sediment Wedges, and Similar Causes	386
		E. Court Citations and Other References	402
		Appendix I Conversion Factors	405
		Appendix II Density and Viscosity of Water $0^{\circ}C$ – $40^{\circ}C$	407
		Appendix III Symbols	411
		Index	415

# FOREWORD

ASCE Manual 54 *Sedimentation Engineering*, edited by the late Professor Vito A. Vanoni, provides both qualitative and quantitative guidance to theoreticians and practitioners with respect to sediment issues and processes associated with the development, use, and conservation of water and land resources. It describes the nature and scope of sedimentation problems, details methods of investigation, and presents practical approaches to solution and management.



As a major contribution to the profession, Professor Vanoni organized, partially wrote, and edited the definitive Manual 54. As chairman of the special Task Committee, established in 1954 with the charge of writing the manual, Vanoni worked for two decades and set a high standard. Many of the sections of the original manuscript for the book were first published in the *Journal of the Hydraulics Division ASCE* and received considerable discussion, which was taken into account in the final manuscript. Manual 54 received worldwide recognition and widespread use in academia and practice. In 1976, the book was awarded the ASCE Karl Emil Hilgard Hydraulic Prize for best publication.

Since the publication of Manual 54 in 1975, global awareness of sediment erosion, transport, and deposition processes and of their impact on the use and development of water and land resources has greatly increased. Manual 54 remains an important reference on many aspects of sedimentation engineering, but in other aspects it has been outdated by advances in knowledge and techniques and by the emergence of new problems and issues.

In 1991 a Task Committee was formed to update Manual 54. By 2000, however, the ASCE Sedimentation Committee decided that the original volume was to be preserved as a classic and that a new manual should be prepared to include more recent advances. This resulted in the preparation of ASCE Manual 110 *Sedimentation Engineering: Processes, Measurements, Modelling, and Practice*, which is intended to provide an updated review of sedimentation engineering as a complement to the original Manual 54. Both manuals document the evolution of the sedimentation field over a 50-year-period as well as the state of the art in sedimentation engineering.

ASCE/EWRI Sedimentation Committee is proud to be able to publish this second edition of the classic ASCE Manual 54 *Sedimentation Engineering* 30 years after its first printing. This edition includes a new index originally prepared by Vito Vanoni after the first edition had already been published. As a teacher and a practitioner himself, he would be delighted to know that future generations will be able to benefit from this monumental contribution to the engineering profession.

Marcelo H. Garcia

Chair, Sedimentation Committee (1999–2004) Corresponding Editor

Manual 110 Sedimentation Engineering: Processes, Measurements, Modelling, and Practice