

American Society of Civil Engineers
**Comprehensive
Transboundary Water
Quality Management
Agreement**

With Guidelines for Development of a Management Plan,
Standards, and Criteria



Published by the American Society of Civil Engineers

Library of Congress Cataloging-in-Publication Data

Comprehensive transboundary water quality management agreement : with guidelines for development of a management plan, standards, and criteria.

p. cm.

Includes bibliographical references and index.

ISBN 978-0-7844-1019-6

1. Water quality management—Law and legislation—United States. 2. Regional planning—Law and legislation—United States. 3. Interstate agreements—United States. I. American Society of Civil Engineers.

KF3790.C66 2009

346.7304'691—dc22

2009021830

Published by American Society of Civil Engineers

1801 Alexander Bell Drive

Reston, Virginia 20191

www.pubs.asce.org

This standard was developed by a consensus standards development process which has been accredited by the American National Standards Institute (ANSI). Accreditation by ANSI, a voluntary accreditation body representing public and private sector standards development organizations in the U.S. and abroad, signifies that the standards development process used by ASCE has met the ANSI requirements for openness, balance, consensus, and due process.

While ASCE's process is designed to promote standards that reflect a fair and reasoned consensus among all interested participants, while preserving the public health, safety, and welfare that is paramount to its mission, it has not made an independent assessment of and does not warrant the accuracy, completeness, suitability, or utility of any information, apparatus, product, or process discussed herein. ASCE does not intend nor should anyone interpret, ASCE's standards to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this standard.

ASCE has no authority to enforce compliance with its standards and does not undertake to certify products for compliance or to render any professional services to any person or entity.

ASCE disclaims any and all liability for any personal injury, property damage, financial loss or other damages of any nature whatsoever, including without limitation any direct, indirect, special, exemplary, or consequential damages, resulting from any person's use of, or reliance on, this standard. Any individual who relies on this standard assumes full responsibility for such use.

ASCE and American Society of Civil Engineers—Registered in U.S. Patent and Trademark Office.

For copies and reprints. You can obtain instant permission to photocopy ASCE publications by using ASCE's online permission service (<http://pubs.asce.org/permissions/requests/>). Requests for 100 copies or more should be submitted to the Reprints Department, Publications Division, ASCE (address above); e-mail: permissions@asce.org. A reprint order form can be found at <http://pubs.asce.org/support/reprints/>.

Copyright © 2009 by the American Society of Civil Engineers.

All Rights Reserved.

ISBN 13: 978-0-7844-1019-6

Manufactured in the United States of America.

16 15 14 13 12 11 10 09

1 2 3 4 5

STANDARDS

In 2003, the Board of Direction approved the revision to the ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by the Society. All such standards are developed by a consensus standards process managed by the Society's Codes and Standards Committee (CSC). The consensus process includes balloting by a balanced standards committee made up of Society members and nonmembers, balloting by the membership of the Society as a whole, and balloting by the public. All standards are updated or reaffirmed by the same process at intervals not exceeding five years.

The following standards have been issued:

ANSI/ASCE 1-82 N-725 Guideline for Design and Analysis of Nuclear Safety Related Earth Structures
ASCE/EWRI 2-06 Measurement of Oxygen Transfer in Clean Water
ANSI/ASCE 3-91 Standard for the Structural Design of Composite Slabs and ANSI/ASCE 9-91 Standard Practice for the Construction and Inspection of Composite Slabs
ASCE 4-98 Seismic Analysis of Safety-Related Nuclear Structures
Building Code Requirements for Masonry Structures (TMS 402-08/ACI 530-08/ASCE 5-08) and Specifications for Masonry Structures (TMS 602-08/ACI 530.1-08/ASCE 6-08)
ASCE/SEI 7-05 Minimum Design Loads for Buildings and Other Structures
SEI/ASCE 8-02 Standard Specification for the Design of Cold-Formed Stainless Steel Structural Members
ANSI/ASCE 9-91 listed with ASCE 3-91
ASCE 10-97 Design of Latticed Steel Transmission Structures
SEI/ASCE 11-99 Guideline for Structural Condition Assessment of Existing Buildings
ASCE/EWRI 12-05 Guideline for the Design of Urban Subsurface Drainage
ASCE/EWRI 13-05 Standard Guidelines for Installation of Urban Subsurface Drainage
ASCE/EWRI 14-05 Standard Guidelines for Operation and Maintenance of Urban Subsurface Drainage
ASCE 15-98 Standard Practice for Direct Design of Buried Precast Concrete Pipe Using Standard Installations (SIDD)
ASCE 16-05 Standard for Load Resistance Factor Design (LRFD) of Engineered Wood Construction
ASCE 17-93 Air-Supported Structures
ASCE 18-96 Standard Guidelines for In-Process Oxygen Transfer Testing
ASCE 19-96 Structural Applications of Steel Cables for Buildings
ASCE 20-96 Standard Guidelines for the Design and Installation of Pile Foundations

ANSI/ASCE/T&DI 21-05 Automated People Mover Standards—Part 1
ANSI/ASCE/T&DI 21.2-08 Automated People Mover Standards—Part 2
ANSI/ASCE/T&DI 21.3-08 Automated People Mover Standards—Part 3
ANSI/ASCE/T&DI 21.4-08 Automated People Mover Standards—Part 4
SEI/ASCE 23-97 Specification for Structural Steel Beams with Web Openings
ASCE/SEI 24-05 Flood Resistant Design and Construction
ANSI/ASCE/SEI 25-06 Earthquake-Actuated Automatic Gas Shutoff Devices
ASCE 26-97 Standard Practice for Design of Buried Precast Concrete Box Sections
ASCE 27-00 Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction
ASCE 28-00 Standard Practice for Direct Design of Precast Concrete Box Sections for Jacking in Trenchless Construction
ASCE/SEI/SFPE 29-00 Standard Calculation Methods for Structural Fire Protection
SEI/ASCE 30-00 Guideline for Condition Assessment of the Building Envelope
SEI/ASCE 31-00 Seismic Evaluation of Existing Buildings
SEI/ASCE 32-01 Design and Construction of Frost-Protected Shallow Foundations
SCF/EWRI 33-09 Comprehensive Transboundary Water Quality Management Agreement
EWRI/ASCE 34-01 Standard Guidelines for Artificial Recharge of Ground Water
EWRI/ASCE 35-01 Guidelines for Quality Assurance of Installed Fine-Pore Aeration Equipment
CI/ASCE 36-01 Standard Construction Guidelines for Microtunneling
SEI/ASCE 37-02 Design Loads on Structures During Construction
CI/ASCE 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data
EWRI/ASCE 39-03 Standard Practice for the Design and Operation of Hail Suppression Projects
ASCE/EWRI 40-03 Regulated Riparian Model Water Code
ASCE/SEI 41-06 Seismic Rehabilitation of Existing Buildings
ASCE/EWRI 42-04 Standard Practice for the Design and Operation of Precipitation Enhancement Projects
ASCE/SEI 43-05 Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities
ASCE/EWRI 44-05 Standard Practice for the Design and Operation of Supercooled Fog Dispersion Projects
ASCE/EWRI 45-05 Standard Guidelines for the Design of Urban Stormwater Systems
ASCE/EWRI 46-05 Standard Guidelines for the Installation of Urban Stormwater Systems

ASCE/EWRI 47-05 Standard Guidelines for the Operation and Maintenance of Urban Stormwater Systems
ASCE/SEI 48-05 Design of Steel Transmission Pole Structures

ASCE/EWRI 50-08 Standard Guideline for Fitting Saturated Hydraulic Conductivity Using Probability Density Functions
ASCE/EWRI 51-08 Standard Guideline for Calculating the Effective Saturated Hydraulic Conductivity

CONTENTS

Standards	iii
Foreword	ix
PREAMBLE	1
ARTICLE 1 DECLARATION OF PURPOSES AND POLICIES	2
1.1 PURPOSES OF AGREEMENT	2
1.2 JOINT EXERCISE OF SOVEREIGNTY	2
1.3 INTERRELATIONSHIP OF WATER RESOURCES	3
1.4 SEVERANCE OR MATERIAL BREACH (Optional)	3
1.5 GOOD FAITH IMPLEMENTATION	3
1.6 COORDINATION AND COOPERATION	4
ARTICLE 2 GENERAL PROVISIONS	4
2.1 GENERAL OBLIGATIONS	4
2.1.1 Effective Date of Execution	4
2.1.2 Duration of Agreement	4
2.1.3 Amendments and Supplements	5
2.1.4 Withdrawal	5
2.1.5 Existing Agencies	5
2.1.6 No Precedence (Optional)	5
2.2 DEFINITIONS	5
2.2.1 _____ Basin	5
2.2.2 Beneficial Use	6
2.2.3 Commission	6
2.2.4 Comprehensive Transboundary Water Quality Management Plan	6
2.2.5 Consumptive Use	7
2.2.6 Cost	7
2.2.7 Drought Conditions	7
2.2.8 Effluent Standards	7
2.2.9 Equitable	7
2.2.10 Flood Conditions	8
2.2.11 Instream Use	8
2.2.12 Minute	8
2.2.13 Multilateral Body	8
2.2.14 Non-Point Source (NPS) Pollution	8
2.2.15 Party or Parties	9
2.2.16 Point Source	9
2.2.17 Project	9
2.2.18 Reasonable Use	9
2.2.19 Riparian Rights	9
2.2.20 Standards and Criteria	10
2.2.21 Sustainable Water Use	10
2.2.22 Total Maximum Daily Load (TMDL)	10
2.2.23 Transboundary Waters	10
2.2.24 Wasting	10

2.2.25 Waters of the _____ Basin	11
2.2.26 Water Quality Monitoring	11
2.2.27 Zero Discharge	11
ARTICLE 3 ADMINISTRATION	11
3.1 ADMINISTRATIVE AUTHORITY	11
3.1.1 Commission Created	11
3.1.2 Jurisdiction of the Commission	11
3.1.3 Commissioners	12
3.1.4 Commission Administration	12
3.2 POWERS AND DUTIES	13
3.2.1 General Powers and Duties	13
3.2.2 Powers and Duties Reserved to the Commission	13
3.2.3 Obligations of the Commission (Optional)	14
3.2.4 Regulations and Enforcement	15
3.2.5 Prohibited Activities	15
3.2.6 Referral and Review	15
3.2.7 Advisory Committees	16
3.2.8 Reports	16
3.2.9 Condemnation Proceedings	16
3.2.10 Meetings, Hearings, and Records	17
3.3 INTERGOVERNMENTAL RELATIONS	17
3.3.1 Intergovernmental Coordination and Cooperation	17
3.3.2 Project Costs and Evaluation Standards	17
3.3.3 Projects of the Signatory Parties and Their Subdivisions	18
3.3.4 Cooperative Services	18
ARTICLE 4 TRANSBOUNDARY WATER QUALITY MANAGEMENT	18
4.1 COMPREHENSIVE TRANSBOUNDARY WATER QUALITY MANAGEMENT PLAN	18
4.2 PURPOSE AND OBJECTIVES	19
4.3 CONDITIONS OF COMPREHENSIVE PLAN	20
4.4 WATER ALLOCATION	21
4.5 WITHDRAWALS AND DIVERSIONS	22
4.6 WATER QUALITY	23
ARTICLE 5 FINANCING	24
5.1 ANNUAL CURRENT EXPENSE AND CAPITAL BUDGETS	24
5.2 CAPITAL FINANCING BY SIGNATORY PARTIES AND GUARANTIES	24
5.3 GRANTS, LOANS, OR PAYMENTS	25
5.4 RATES AND CHARGES	25
5.5 BORROWING POWER	26
5.6 CREDIT EXCLUDED	26
5.7 INDEBTEDNESS	26
5.8 FUNDING AND REFUNDING	27

5.9	REMEDIES FOR HOLDERS OF BONDS	27
5.10	ANNUAL INDEPENDENT AUDITS	27
	ARTICLE 6 DISPUTE RESOLUTION	28
6.1	ALTERNATIVE DISPUTE RESOLUTION	28
6.2	NEGOTIATIONS AND CONSULTATIONS	29
6.3	CONCILIATION AND MEDIATION	29
6.4	BINDING ARBITRATION	29
6.5	ARBITRAL PANEL	30
6.6	PENAL SANCTION (OPTIONAL)	31
6.7	TORT LIABILITY	31
	ARTICLE 7 IMPLEMENTATION	31
	ARTICLE 8 REFERENCES	32
8.1	CHARTERS, CONVENTIONS, AND TREATIES	32
8.2	LEARNED TREATISES	32
	APPENDIX A GUIDELINES FOR DEVELOPMENT OF A TRANSBOUNDARY WATER QUALITY MANAGEMENT PLAN	34
	PREFACE	34
A-1	STEPS TOWARD AN AGREEMENT	34
A-1.1	Introduction	34
A-1.2	Geography of the Shared Water Body	34
A-1.3	General Approach to Developing Actions to Improve Water Quality	35
A-2	REGULATORY AGENCIES	35
A-2.1	Agencies	35
A-2.2	Management Team	37
A-2.3	Governmental Action Procedures	37
A-3	AGREEMENT ON STANDARDS AND CRITERIA	37
A-4	PLAN TO IMPROVE WATER QUALITY FOR USE DESIGNATIONS	38
A-4.1	Evaluating Current Pollution Sources	38
A-4.2	Negotiation of Specific Plan to Reduce Pollution Sources	38
A-4.2.1	Water Body Traversing the Boundary	38
A-4.2.2	Water Body Defining the Boundary	38
A-4.3	Strategies to Control Pollution	39
A-4.4	Cost Sharing	39
A-5	IMPLEMENTATION OF MEASURES FOR SUSTAINABLE USE	39
A-5.1	Water Quality Monitoring	40
A-5.2	Enforcement	40
A-6	GROWTH AND TIME	40
A-7	REFERENCES	41
	APPENDIX B GUIDELINES FOR THE DEVELOPMENT OF TRANSBOUNDARY WATER QUALITY STANDARDS AND CRITERIA	41
	PREFACE	41

B-1	THE PROCESS LEADING TO ESTABLISHMENT AND IMPLEMENTATION OF TRANSBOUNDARY WATER QUALITY STANDARDS AND CRITERIA	42
B-2	FACTORS AFFECTING TRANSBOUNDARY WATER QUALITY STANDARDS	43
	B-2.2 Water Quality Regulations	43
	B-2.3 Designated Use in Each Government	44
B-3	TYPES OF WATER QUALITY REGULATORY CONSTRAINTS AND THEIR RELATIVE DOMESTIC IMPORTANCE	44
	B-3.1 Distinction between Water Quality Standards, Criteria, Goals, Objectives, and Others	44
	B-3.2 Regulatory Constraints as a Functional Use	45
	B-3.3 Ranking in Terms of Domestic Importance	45
	B-3.4 Variance Allowed for Extreme Conditions	45
	B-3.5 Negotiation of Standards or Criteria	45
B-4	MEXICO–U.S. TRANSBOUNDARY WATER QUALITY STANDARDS	46
B-5	REFERENCES	47
	INDEX	49

FOREWORD

The Board of Direction approved revisions to the ASCE Rules for Standards Committees to govern the writing and maintenance of standards developed by ASCE. All such standards are developed by a consensus standards process managed by the ASCE Codes and Standards Committee. The consensus process includes balloting by a balanced standards committee and reviewing during a public comment period. All standards are updated or reaffirmed by the same process at intervals between five and ten years.

The provisions of this document are written in permissive language and, as such, offer to the user a series of options or instructions, but do not prescribe a specific course of action. Significant judgment is left to the user of this document.

The purpose of the *Comprehensive Transboundary Water Quality Management Agreement with Guidelines for Development of a Management Plan, Standards, and Criteria* (the Agreement) is to provide a framework that riparian governments could adopt or modify for comprehensive water quality planning and management of shared water resources. This Agreement and its appendices are based on the concept of shared sovereignty. It is appropriate only for those situations in which sovereign governments, hereafter called Parties, are prepared to manage their portion of shared water resource together with their neighbors and when the Parties show an interest in improving the quality of the water resource.

The Agreement is extensive and considers many aspects of planning and management of water resources. Parties agree to restrict practices to the reasonable use of water and provide sufficient data to the other Parties to verify beneficial use. The Agreement suggests that information acquisition costs be apportioned so that data collection, environmental assessment, and inventories of basin water user efforts should be systemic in nature and integrated across the basin.

The Agreement is based on the elements of Model C, Comprehensive Management Agreement Relating to the *Shared Use of Transboundary Water Resources, Model Water Sharing Agreements for the Twenty-First Century* (Draper 2002), which is based on the Delaware River Basin Compact (DRBC 1961), and its amendments. The Delaware Compact has been successful in resolving interstate conflicts over the water rights and water quality management of the basin between and among the States of New York, Pennsylvania, New Jersey, and Delaware. Commentary in this Agreement is based on the *Comprehensive Transboundary International Water Quality Management Agreement*, ASCE/EWRI Standard 33-01, published in 2001.

The intent of this Agreement is to be sufficiently flexible for use across borders of sovereign governments in a variety of geopolitical settings. Article 2 lists major definitions and general provisions for the document. Defining the terms avoids the need to include similar language at numerous points throughout the Agreement. Many definitions were taken from *The Regulated Riparian Model Water Code* (ASCE 2003).

Blanks _____ within the text are used to allow a reader to insert names or material appropriate for a particular set of Parties. Numbers underscored (20) within the text refer to sample agreements derived from other cases throughout the world. Some sample articles are optional and have been labeled accordingly.

The ASCE/EWRI Border International Water Quality Standards Committee (BIWQ SC) is a Committee within the Standards Development Council (SDC) of the Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers (ASCE). Committee members who have attended one or more meetings and/or voted on one or more ballots regarding the Agreement are listed below in alphabetical order. Those Committee members are as follows: Bayrundo Aguirre, Fernando Cadena, Rongjiu Cai, Robert T. Chuck, Fadi G. Comair, Harold L. Day, Stephen E. Draper, John H. Easton, David J. Eaton—Chair, Thomas G. Gebhard, Jr., Carolyn E. Gerwe, Ramakar Jah, Kathlie Jeng-Busch, Conrad G. Keyes, Jr.—Past Chair, Mark W. Killgore—Secretary, April Lander, Elizabeth Lien, John P. McCullough, Daene C. McKinney, David H. Merritt, Percival A. Miller—Vice Chair, Stephen Niemeyer, Bernardino Olague—Treasurer, Jeroen Olthof—Representative to the EWRI SDC, Jim Stefanov, Gerald Sehlke, Mike Stenstrom, D. Rick Van Schoik, and Peter R.B. Ward.

This BIWQ SC reports to the Environmental and Water Resources Institute's Standards Development Council. The EWRI SDC and the ASCE Codes and Standards Committee have approved the balloting process according to the ASCE Rules for Standards Committees that have been established in agreement with the American National Standards Institute.

This standard has been prepared in accordance with recognized engineering principles and should not be used without the user's competent knowledge for a given application. The publication of this standard by ASCE is not intended to warrant that the information contained therein is suitable for any general or specific use, and ASCE takes no position respecting the validity of patent rights. The user is advised that the determination of patent rights or risk of infringement is entirely his/her own responsibility.