

Proceedings of the
Symposium on
**NONPOINT POLLUTION: 1988 - POLICY,
ECONOMY, MANAGEMENT, AND
APPROPRIATE TECHNOLOGY**

Edited by

[Part of AIWRA 24. Annual
Conference.
Milwaukee, Wis., 6.-11.11.88]

DR. VLADIMIR NOVOTNY
Department of Civil Engineering
Marquette University
1515 West Wisconsin Avenue
Milwaukee, Wisconsin 53233

Sponsored by

American Water Resources Association

Co-Sponsored by

**The Bradley Center for Democracy and Public Values
Marquette University, Milwaukee, Wisconsin**

**The German Marshall Fund
Washington, D.C.**

**U.S. Environmental Protection Agency, Region V
Chicago, Illinois**

Hosted by

**Wisconsin Chapter
American Water Resources Association**



AMERICAN WATER RESOURCES ASSOCIATION
5410 Grosvenor Lane, Suite 220
Bethesda, Maryland 20814-2192

UB/TIB Hannover 89
102 697 043



RN 7860(88-4)

531763

BIBLIOTHEK
HOVER
ISCHE
BIBLIOTHEK

TABLE OF CONTENTS

I. POLICIES OF NONPOINT POLLUTION ABATEMENT

The Federal Environmental Legislative Process — <i>Henry P. Caufield, Jr.</i>	1
Groundwater Quality: The Role of Agricultural Politics and Policy — <i>Rebecca S. Roberts and David R. Lighthall</i>	9
Ground Water Policy of USDA — <i>Robert W. Long</i>	23
Reducing Nitrogen Pollution from Crop Production Systems: A Watershed Perspective — <i>Patricia E. Norris and Leonard A. Shabman</i>	29

II. ECONOMICS, ECONOMIC EFFICIENCY, AND EQUITY OF THE PROGRAMS

Effects on U.S. Water Resources of Agricultural Chemicals and Runoff: Magnitude, Extent, and Economic Consequences — <i>Stephen R. Crutchfield</i>	39
Economic Implications of the Food Security Act of 1985's Discretionary Environmental Provisions — <i>Clayton W. Ogg and Marc O. Ribaud</i>	49
Nonpoint Pollution Policies and Politics: The Role of Economic Incentives — <i>J. B. Braden</i>	57
An Institution-Sensitive Approach to the Use of Economic Instruments for Nonpoint Source Water Pollution Control — <i>Eran Feitelson</i>	67
The Economics of Silvicultural Best Management Practices — <i>George E. Dissmeyer and Edward Frandsen</i>	77
Equity and Efficiency Aspects of Alternate Stormwater Management Financing Systems — <i>Greg Lindsey</i>	87
Revenue Sources for Nonpoint Source Pollution Abatement: An Economic Analysis — <i>J. B. Braden, R. L. Farnsworth, J. W. Mill, W. D. Seitz, and D. L. Uchtmann</i>	97
Impact of Risk and Planning Horizons on the Selection of Soil Conservation Management Systems — <i>Ravi Venkataraman R. and Gary V. Johnson</i>	107

III. NPS ABATEMENT PROGRAMS — INSTITUTIONS AND REGIONAL, STATE, AND WATERSHED APPROACHES

Nonpoint Source Regulation — A Watershed Approach — <i>Thomas E. Davenport</i>	117
Ground Water Recharge: Demonstration Program and Policy Issues — <i>Bruce P. Glenn</i>	123
Implementation of the Nebraska Nitrate Control Legislation — <i>Dayle Williamson</i>	133
Creating Successful Programs: The Innovative Touch — <i>Claire M. Gesalman, Amy L. Marasco, and Maggi Elliott</i>	141
Integrated Resource Management: Region V's Nonpoint Source Control and Clean Lakes Program — <i>Thomas E. Davenport, Donald E. Roberts, Bruce A. Kirschner, and Charles E. Loggins</i>	149
Southeastern Minnesota Cooperates to Develop an Innovative Approach to Nonpoint Pollution — <i>Pamela K. B. Hunt, Arthur C. Persons, Marilyn Lundberg, and Gunnar Isberg</i>	155
An Integrated Experience — The Milwaukee River East-West Branch Watershed Resource Management Plan — <i>Sharon L. Gayan and James D'Antuono</i>	165

IV. URBAN STORMWATER MANAGEMENT — LEGAL AND INSTITUTIONAL ASPECTS

Stormwater Permits — A Point Source Umbrella for Nonpoint Pollution Problems — <i>Vladimir Novotny</i>	173
Stormwater Nonpoint Source Pollution Control — <i>Robert G. Newport and Thomas E. Davenport</i>	183
Maryland's Stormwater Management Program — <i>Robert L. Kort</i>	195

V. INNOVATIVE APPROACHES TO URBAN STORMWATER MANAGEMENT

New Strategies in Urban Drainage and Stormwater Pollution Control in Switzerland — <i>Vladimir Krejci</i>	203
Aesthetic Implementation of Nonpoint Source Controls — <i>Larry A. Roesner</i>	213
Wetlands: A Future Nonpoint Pollution Control Technology — <i>D. L. Hey</i>	225
The Water Quality Performance of a Detention Basin-Wetland Treatment System in an Urban Area — <i>Paul Wotzka and Gary Oberts</i>	237

VI. SURFACE AND GROUND WATER QUALITY IMPACT OF DIFFUSE POLLUTION AND ITS MITIGATION

The NPSP Abatement Program for the Lagoon of Venice — <i>G. Bendoricchio</i>	249
Water Quality and the Conservation Reserve Program: Implications of Targeting Saline Croplands — <i>Marcel P. Aillery</i>	261
Results of Fifteen Years of Continuous Monitoring of Water Quality in the Ruhr River Heavily Affected by Residual Point and Nonpoint Pollution — <i>Detlef R. Albrecht</i>	271
Modeling Nonpoint Pollution at the Watershed Level With the Aid of a Geographic Information System — <i>B. M. Evans and D. A. Miller</i>	283
Irrigation-Induced Water Quality Problems: Policy Implications of DOI Reconnaissance Study Results — <i>Jonathan P. Deason</i>	293
Diffused Groundwater Contamination by Herbicides in an Agricultural Area in Northern Italy — <i>Andrea G. Capodaglio, Marco Baldi, Piergiorgio Valentini, and Gerolamo Bellinzona</i>	303