Understanding Environmental Law

CAROLINA ACADEMIC PRESS UNDERSTANDING SERIES

Understanding Administrative Law, Seventh Edition Kristen E. Hickman

Understanding Alternative Dispute Resolution Kristen M. Blankley and Maureen A. Weston

> Understanding Animal Law Adam Karp

Understanding Antitrust and Its Economic Implications, Seventh Edition E. Thomas Sullivan and Jeffrey L. Harrison

Understanding Bankruptcy, Fourth Edition Jeffrey Ferriell and Edward J. Janger

Understanding California Community Property Law, Second Edition Jo Carrillo

Understanding Capital Punishment Law, Fourth Edition Linda E. Carter, Ellen S. Kreitzberg, and Scott W. Howe

Understanding Civil Procedure, Sixth Edition Gene R. Shreve, Peter Raven-Hansen, and Charles Gardner Geyh

Understanding Civil Procedure: The California Edition Walter W. Heiser, Gene R. Shreve, Peter Raven-Hansen, and Charles Gardner Geyh

Understanding Civil Rights Litigation, Second Edition Howard M. Wasserman

Understanding Conflict of Laws, Fourth Edition

William M. Richman, William L. Reynolds, and Chris A. Whytock

Understanding Constitutional Law, Fifth Edition William D. Araiza

Understanding Contracts, Fifth Edition Jeffrey Ferriell

> Understanding Copyright Law, Seventh Edition Marshall A. Leaffer

Understanding Corporate Law, Fifth Edition

Arthur R. Pinto and Douglas M. Branson

Understanding Corporate Taxation, Fourth Edition Leandra Lederman and Michelle Kwon Understanding Criminal Law, Ninth Edition Joshua Dressler

Understanding Criminal Procedure: Vol. 1: Investigation, Eighth Edition Joshua Dressler, Alan C. Michaels, and Ric Simmons

Understanding Criminal Procedure: Vol. 2: Adjudication, Fourth Edition Joshua Dressler and Alan C. Michaels

Understanding Disability Law, Third Edition Mark C. Weber

Understanding Election Law and Voting Rights Michael R. Dimino, Sr., Bradley A. Smith, and Michael E. Solimine

Understanding Employee Benefits Law, Second Edition Kathryn L. Moore

Understanding Employment Discrimination Law, Third Edition Thomas R. Haggard and Bruce N. Cameron

Understanding Employment Law, Third Edition Paul M. Secunda, Richard A. Bales,

and Jeffrey M. Hirsch

Understanding Environmental Law, Fourth Edition

Kevin Anthony Reilly and Philip Weinberg

Understanding Estate and Gift Taxation, Second Edition

Brant J. Hellwig and Robert T. Danforth

Understanding Evidence, Fifth Edition Paul C. Giannelli

Understanding Family Law, Fourth Edition John Gregory, Peter N. Swisher, and Robin Wilson

> Understanding Federal and California Evidence Paul C. Giannelli

Understanding Federal Courts and Jurisdiction, Second Edition Linda Mullenix, Martin H. Redish, and Georgene Vairo

Understanding Federal Income Taxation, Seventh Edition J. Martin Burke and Michael K. Friel Understanding the First Amendment, Seventh Edition Russell L. Weaver

Understanding Immigration Law, Third Edition Kevin R. Johnson, Raquel Aldana, Bill Ong Hing, Leticia M. Saucedo, and Enid Trucios-Haynes

Understanding Insurance Law, Sixth Edition Robert H. Jerry, II and Douglas Richmond

Understanding Intellectual Property Law, Fourth Edition Tyler T. Ochoa, Shubha Ghosh, and Mary LaFrance

Understanding International Business and Financial Transactions, Fourth Edition Jerold A. Friedland

Understanding International Criminal Law, Fourth Edition Ellen S. Podgor, Roger S. Clark, and Lucian E. Dervan

> Understanding International Law, Third Edition Stephen C. McCaffrey

Understanding Jewish Law, Second Edition Steven H. Resnicoff

Understanding Juvenile Law, Fifth Edition Martin Gardner

Understanding Labor Law, Fifth Edition Douglas E. Ray, Calvin William Sharpe,

and Robert N. Strassfeld

Understanding the Law of Terrorism, Second Edition Erik Luna and Wayne McCormack

Understanding the Law of Zoning and Land Use Controls, Third Edition Barlow Burke

Understanding Lawyers' Ethics, Fifth Edition Monroe H. Freedman and Abbe Smith

> Understanding Local Government, Second Edition Sandra Stevenson

Understanding Modern Real Estate Transactions, Fourth Edition Alex M. Johnson, Jr. Understanding Negotiable Instruments and Payment Systems, Second Edition William H. Lawrence

Understanding Nonprofit and Tax Exempt Organizations, Third Edition Nicholas P. Cafardi and Jaclyn Fabean Cherry

> Understanding Partnership and LLC Taxation, Fifth Edition Jerold A. Friedland

Understanding Patent Law, Third Edition Amy L. Landers

Understanding Products Liability Law, Second Edition Bruce L. Ottley, Rogelio A. Lasso, and Terrence F. Kiely

Understanding Property Law, Fifth Edition John G. Sprankling

Understanding Remedies, Fourth Edition James M. Fischer

Understanding Sales and Leases of Goods, Third Edition

William H. Henning, William H. Lawrence, and Henry Deeb Gabriel

Understanding Secured Transactions, Fifth Edition William H. Lawrence, William H. Henning,

and R. Wilson Freyermuth

Understanding Securities Law, Seventh Edition Marc I. Steinberg

> Understanding Sports Law Timothy Davis and N. Jeremi Duru

Understanding Taxation of Business Entities, Second Edition Walter D. Schwidetzky and Fred B. Brown

Understanding Torts, Sixth Edition John L. Diamond, Lawrence C. Levine, and Anita Bernstein

Understanding Trade Secret Law John G. Sprankling and Thomas G. Sprankling

> Understanding Trademark Law, Fourth Edition Mary LaFrance

Understanding Trusts and Estates, Seventh Edition Roger W. Andersen and Susan Garv

Understanding White Collar Crime, Fifth Edition J. Kelly Strader

Understanding Environmental Law

FOURTH EDITION

Kevin Anthony Reilly

PRINCIPAL APPELLATE COURT ATTORNEY (RETIRED) NEW YORK STATE SUPREME COURT APPELLATE DIVISION, FIRST DEPARTMENT & ADJUNCT PROFESSOR OF LAW ST. JOHN'S UNIVERSITY SCHOOL OF LAW

Philip Weinberg

PROFESSOR OF LAW (RETIRED) ST. JOHN'S UNIVERSITY SCHOOL OF LAW ADJUNCT PROFESSOR OF LAW COLUMBIA COLLEGE, COLUMBIA UNIVERSITY



CAROLINA ACADEMIC PRESS Durham, North Carolina Copyright © 2023 Carolina Academic Press, LLC All Rights Reserved

Library of Congress Cataloging-in-Publication Data

Names: Reilly, Kevin, 1955- author. | Weinberg, Philip, author.
Title: Understanding environmental law / by Kevin A. Reilly, Philip Weinberg.
Description: Fourth edition. | Durham, North Carolina : Carolina Academic Press, LLC, [2022] | Series: Understanding series | Includes index.
Identifiers: LCCN 2022018406 (print) | LCCN 2022018407 (ebook) | ISBN 9781531019006 (paperback) | ISBN 9781531019013 (ebook)
Subjects: LCSH: Environmental law--United States.
Classification: LCC KF3817 .W45 2022 (print) | LCC KF3817 (ebook) | DDC 344.7304/6--dc23/eng/20220801
LC record available at https://lccn.loc.gov/2022018406
LC ebook record available at https://lccn.loc.gov/2022018407

> Carolina Academic Press 700 Kent Street Durham, North Carolina 27701 (919) 489-7486 www.cap-press.com

Printed in the United States of America

To my children, Kevin and Alanna, who, everyday, make everything worthwhile, and to my wife Mary. — Kevin A. Reilly

> *To Mary, Bill, and Matt.* — Philip Weinberg

Contents

Preface to the Fourth Edition xx	xxiii
Preface to the First Edition x	xxv
Chapter 1 · Administrative, Judicial, and Constitutional Aspects	
of Environmental Law	3
Synopsis	3
§ 1.01 Administrative Decision-Making and Judicial Review	4
[A] Decision-Making	4
[B] Judicial Review	5
[C] Rule-Making	6
§ 1.02 Standing and Related Issues	7
[A] Standing	7
[1] Introduction	7
[2] Economic Injury Not Required	7
[3] Actual Injury Required	8
[4] Standing Is Determined on Case-by-Case Basis	9
[B] Exhaustion of Administrative Remedies	10
[C] Ripeness	10
§ 1.03 Citizen Suit Provisions	11
§ 1.04 Constitutional Basis for Environmental Law	13
[A] Commerce Power	13
[B] Other Congressional Powers	14
[C] The Treaty Power	14
[D] The States' Police Power	14
§ 1.05 Constitutional Restrictions	15
[A] Preemption	15
[B] Burden on Interstate Commerce	16
[1] "Dormant Commerce Clause"	16
[2] When State Is a Market Participant	17
[C] Takings of Property	18
[1] Excessive Regulation of Property Deemed	
a "Taking" Requiring Just Compensation	18
[2] There Are Two Categories of Takings	18
[3] Factors Used in Determining Whether a Taking Has Occurred	18
[a] No Taking If Owner Retains Reasonable Value	18
[b] Landmark Preservation Laws and the Free Exercise Clause	19

[c] No Taking if Regulation Tantamount	
to Abating a Nuisance	20
[d] Reasonable Expectations Measured as of Date of Purchase	21
[e] Regulation Must Have Nexus with Intended Purpose	21
[f] Need for "Rough Proportionality" between Regulation	
and Purpose	21
[g] Parcel Viewed as a Unitary Tract; Partial Restriction	
Not a Taking	22
[h] Physical Invasion May Be a Taking	22
[D] States' Reserved Powers	22
[E] Sovereign Immunity and the Eleventh Amendment	23
[1] Federal Sovereign Immunity Is Limited by Congress	23
[2] States' Sovereign Immunity and the Eleventh Amendment's	
Limits on Suits against States in Federal Courts	24
Chapter 2 · Policy Issues	27
Synopsis	27
§ 2.01 Costs and Benefits: Balancing Environmental Economic Facts;	
Risk Assessment	27
[A] Weighing Economic and Environmental Costs	27
[B] Risk Assessment: Pro and Con	28
[C] Cost-Benefit Analysis	29
[D] Environmental Regulation Adopts Risk Assessment	29
§ 2.02 Technology: Conflict between Setting High Technological Standards	
and the Availability of the Technology to Meet Those Standards	30
[A] Mandating Technological Improvements	30
[B] Cost-Benefit Approach to Hazardous Waste Cleanup	30
§ 2.03 The Carrot or the Stick? "Command and Control" Regulation versus	
Incentives to Foster Voluntary Compliance	31
§ 2.04 Criminal and Civil Sanctions	32
[A] Both Criminal and Civil Penalties Employed	32
[B] Criminal Penalties Raise Constitutional Issues	33
[C] Criteria for Civil Penalties and Abatement Orders	34
§ 2.05 Federal versus State and Local Enforcement	34
[A] Congress Generally Has Not Preempted State Regulation	34
[B] Factors Governing Federal or State Enforcement	35
[C] Land Use Regulation Chiefly Local	36
§ 2.06 Environmental Justice	36
§ 2.07 SLAPP Suits (Strategic Lawsuits against Public Participation)	38
[A] Suits Aimed at Deterring Opponents of Projects	38
[B] First Amendment Protection for Project Opponents	38
[C] State Statutes Restricting SLAPP Suits	39

Chapter 3 · Common Law Remedies	41
Synopsis	41
§ 3.01 Nuisance	42
[A] Introduction	42
[B] Public and Private Nuisance	42
[C] Liability	43
[1] Nuisance Is an Unreasonable Interference with Rights in Land	43
[2] Private Nuisance and the Requirement of Fault	44
[3] Nuisance Must Reach the Property	44
[D] Defenses	45
[1] Objective Standard	45
[2] Limitations and Laches	45
[3] Coming to the Nuisance	45
[4] Effect of Regulatory Statutes	46
[E] Remedies	46
[1] Damages for Permanent or Temporary Nuisance	46
[2] Punitive Damages and Their Limits	47
[3] Injunction Available to Abate Nuisance	47
[4] Courts Balance the Equities in Issuing Injunctions	48
[F] Federal Nuisance	49
[1] Federal Nuisance Approved in 1972 Supreme Court Decision	49
[2] Supreme Court Later Held Federal Nuisance Preempted	49
§ 3.02 Trespass	50
§ 3.03 Strict Liability in Tort	51
§ 3.04 Negligence	52
§ 3.05 Riparian Rights	52
[A] Common Law Riparian Rights	52
[1] Riparian Right to Reasonable Flow	52
[2] No Riparian Right to Pollute	53
[B] Prior Appropriation	53
[C] Rights to Groundwater	54
§ 3.06 Public Trust Doctrine	54
[A] Public Has Right to Underwater Lands	54
[B] Any Citizen of State Has Standing	55
[C] Statutes Codify Public Trust Doctrine	56
[D] Regulation Under Public Trust Not a Taking	56
Chapter 4 · Environmental Quality Review	57
Synopsis	57
§ 4.01 National Environmental Policy Act (NEPA)	58
[A] Importance and Origins	58
[1] Act Requires Federal Agencies to Weigh Impacts	58
[2] Origins of Act in Earlier Court Decisions	59

[B] Environmental Impact Statement (EIS)	60
[1] Draft and Final EIS	60
[2] Environmental Assessment to Decide Need for EIS	61
[3] Context and Intensity of Impacts Determine Whether	
EIS Is Necessary	61
[4] Some Actions Fall Outside NEPA	63
[5] Programmatic and Site-Specific EISs	65
[6] EIS Limited to Reasonably Foreseeable Impacts	65
[7] Lead Agency Responsible for EIS	65
[a] Preparation of EISs	65
[b] Timing of EISs	66
[C] Procedures in Preparing EIS	66
[1] Publication of Notice of Intent	66
[2] Scoping	67
[3] Draft EIS; Time Limits; Other Requirements	67
[4] Record of Decision	68
[D] Alternatives	68
[E] Mitigation Measures	69
[1] Agency Must Discuss, but Need Not Adopt,	
Mitigation Measures	69
[2] Criticism of Act's Limitation to Procedural Requirements	70
[F] Judicial Review	70
[1] Available under Administrative Procedure Act; Standing	70
[2] Standard of Review	71
[3] Injunctive Relief	71
§ 4.02 State Environmental Quality Review Statutes	72
[A] Broad Adoption of Statutes Patterned on NEPA	72
[B] Examples	72
[1] New York	72
[2] California	73
§ 4.03 Environmental Audits	74
[A] Purpose of Audits	74
[B] Common Law Privileges Inapplicable	74
[C] State Privilege Statutes and EPA Ruling	75
Chapter 5 · Air Quality	77
Synopsis	77
§ 5.01 The Clean Air Act: Standards	79
[A] Overview of Act	79
[1] Reasons for Federal Legislation	79
[2] Federal and State Tandem Regulation	80
[B] Federal Criteria and Standards	81
§ 5.02 State Implementation Plans	82
[A] Requirement to Prepare Plans	82
[B] Contents of State Plans	83

[C] Submission of Plans	83
[D] Time for Attaining Primary Standard	84
[E] Revisions of State Plans	84
[F] SIPS Addressed to Parks and Wilderness Areas	84
§ 5.03 Stationary Sources	85
[A] New Source Regulation	85
[1] New Sources Subject to Stringent Controls	85
[2] Permit Requirements	86
[3] Performance Standards	87
[4] Prevention of Significant Deterioration of Air Quality	87
[B] Existing Sources and the Bubble Concept	87
[C] Acid Rain	88
[1] Origins of Acid Rain	88
[2] Effects of Acid Rain; Causes	89
[3] Attempts to Reduce Acid Rain	89
[D] Hazardous Air Pollutants	90
[1] Background	90
[2] Act's Current Approach	90
[3] Work Practice Standards	91
[4] Accidental Releases	91
§ 5.04 Mobile Sources	92
[A] Introduction	92
[B] Emission Standards for New Vehicles and Engines	93
[1] Requirements Generally Applicable	93
[a] Vehicle Categories	93
[b] Pollutants Regulated	93
[c] Averaging of Emissions among a Manufacturer's	
Vehicle Classes	93
[d] Time Period before Revised Standards Apply	94
[e] Temporary Waiver of Standards	94
[2] Light-Duty Vehicles	94
[3] Heavy-Duty Vehicles and Engines	94
[4] Manufacturers Have a Four-Year Lead Time to Comply	
with New Standards	95
[C] Ensuring Manufacturers' Compliance	95
[1] Testing and Certification for New Vehicles and Engines	95
[2] Testing and Certification for Older Vehicles and Resales	95
[3] Hearing Requirement for Vehicles or Engines	
That Fail to Comply	96
[4] Testing of Emission Control Systems	96
[5] Recall of Noncomplying Vehicles	96
[6] Warranties and Certifications by Industry	96
[7] Manufacturer Is Required to Provide Information	97
[8] Site Inspections	97

[D] State Standards	97
[E] Regulation of Fuel	98
[1] Regulation of Fuels by EPA	98
[a] EPA May Prohibit Commerce in Harmful Fuels	98
[b] Lead	99
[c] Reformulated Gasoline in Ozone Nonattainment Areas	99
[d] Carbon Monoxide Nonattainment Areas	100
[2] New Fuels	100
[3] Preemption of State Regulation	101
[F] Urban Buses	101
[G] Clean Fuel Vehicles	101
[1] Types of Clean Fuels; Standards	101
[2] California's Pilot Program	102
[3] Conversion of Vehicle Fleets	102
§ 5.05 Enforcement	102
[A] Air Quality and Emission Limitations	102
[B] Prevention of Significant Deterioration	103
[C] Mobile Sources	103
[1] Violations, Generally	103
[2] Violations for Vehicles Imported and Exported	104
[3] Exemptions	104
[4] Injunctive Relief	104
[5] Civil Penalties	104
[D] Emergency Powers	104
[E] Citizen Suits	105
[1] Introduction	105
[2] Types of Citizen Suits	105
[3] Disposition of Penalties	106
[4] Notice Requirements	106
[5] Costs and Fees	107
[6] No Preemption of Other Statutory or Common Law Claims	107
Chapter 6 · Water Pollution	109
Synopsis	109
§ 6.01 Overview of Provisions Regulating Water Pollution	115
§ 6.02 Legislative History of Federal Water Pollution Statutes	116
[A] Early Federal Attempts to Control Water Pollution	116
[1] Historical Background	116
[2] Rivers and Harbors Act	116
[a] Overview of the Act	116
[b] Supreme Court Cases Construing the Rivers and	
Harbors Act: Antecedents to Enactment of Federal	
Water Pollution Policy	117
[c] Permitting Scheme	118

\$

[3] Congressional Preferences for State Regulation	
of Water Pollution	119
[4] Water Pollution Control Act	119
[5] Water Quality Improvement Act of 1965	119
[B] Early State Attempts to Control Water Pollution —	
Promulgation of Water Quality Standards for	
Different Classifications of Water Bodies	120
[C] Delay in Enacting National Policy Can Have Serious Consequences	121
[D] Federal Water Pollution Control Act of 1977 — Modern Clean	
Water Act (CWA)	122
6.03 Clean Water Act (CWA)	123
[A] Scope and Legislative Background of CWA	123
[1] CWA Regulates Discharges of Pollutants into Surface Waters	123
[2] Legislative Purposes of the CWA	124
[3] International Aspirations of the CWA	125
[4] EPA's Authority under the CWA	125
[B] Basic Terms Defined	126
[1] Terms Triggering Applicability of the CWA	126
[a] Terms Interlock and Are Interpreted Broadly	126
[b] Discharge	126
[c] Pollutant	128
[d] Point Source	129
[e] Non-Point Source Pollution/Stormwater Runoff	132
[f] Navigable Waters of the United States	133
[g] Permit	137
[h] Source, Outfall, and New Source	138
[2] Water Quality Standards versus Effluent Limitations	138
[a] Water Quality Standards	138
[b] Effluent Limitations or Technology-Based Standards	140
[C] National Pollutant Discharge Elimination System	1 4 1
(NPDES) Program	141
[1] NPDES Permits Are Required for Discharges of Pollutants,	1 4 1
and Are Subject to Other Environmental Laws	141
[2] Obtaining Permits for Toxic Wastes	142
[3] Discharges from Publicly Owned Treatment Works (POTWs)	144
[a] Direct Discharges	144
[b] Indirect Discharges	144
[c] Secondary Treatment	145
[d] Sludge Is Regulated as an End-Product of POTW	145
Wastewater Treatment	145
[4] State Certification of Compliance with Water Quality Standards Is Required	146
Standards Is Required [5] Persons and Conduct Covered by NPDES	
[3] reisons and Conduct Covered by INPDES	147

[6] Permit Application: Contents and Procedures	148
[a] Filing the Application	148
[b] Contents of Application	149
[c] Specific Types of Applications	150
[i] Concentrated Animal Feeding Operation and	
Concentrated Aquatic Animal Production Facility	150
[ii] Publicly Owned Treatment Works (POTWs)	151
[7] NPDES Permits: Terms and Conditions	151
[a] Overview	151
[b] Effluent Limitations May Be Set Out in the Permit	
in Different Ways	153
[c] Standard of Performance for Dischargers Requires Use	
of Best Available Demonstrated Control Technology	154
[d] Other Conditions Apply to Different Classes of	
Discharges and Categories of Pollutants	155
[8] Monitoring and Reporting Requirements	155
[a] Primary Monitoring Responsibilities Are Imposed	
on Permittee	155
[b] Public Disclosure Is Required with Limited Protection	
for Trade Secrets	155
[c] General Record Keeping Requirements	
and Reporting Obligations	156
[d] Additional Reporting Obligations for Publicly Owned	
Treatment Works (POTWs)	157
[D] State Pollutant Discharge Elimination System (SPDES) Programs	158
[1] Overview of State Permitting Programs	158
[2] State Program Requires EPA Approval:	
Process and Requirements	159
[3] SPDES Programs May Be Revised by the State or EPA	162
[4] EPA Approval of SPDES Programs May Be Withdrawn	162
[E] Enforcement	163
[1] Overview	163
[a] Enforcement Goals	163
[b] How Violations Occur	163
[c] Discharge of Pollutants into a Treatment Works May	
Place Treatment Works in Violation	163
[2] Enforcement Authority	164
[a] State Has Enforcement Authority Under SPDES Program;	
Otherwise, EPA Enforces	164
[b] State Has Limited Time Period to Undertake Enforcement	164
[c] Systematic Nonenforcement by the State;	
EPA's Resumption of Enforcement Authority	164
[3] Enforcement Options	165
[a] Compliance Order; Notice of Violation	165

[b] Administrative Enforcement	165
[i] Public Notice; Public's Opportunity to Comment	165
[ii] Public Hearing; Witnesses May Be Subpoenaed	165
[iii] Penalties	166
[c] Civil Remedies	166
[d] Criminal Enforcement	167
[i] Overview	167
[ii] Criminal Negligence	167
[iii] Knowing Violations	168
[iv] Knowing Endangerment	168
[F] Citizen Suits	169
[1] Overview; Purpose Is to Ensure Compliance with the CWA	169
[2] Enforcement Goals: Violations of Permit, Effluent Limitations,	
Water Quality Standards, Compliance Orders	170
[3] Citizen Suits May Address Only Present Violations	170
[4] Statutory and Common Law Remedies May Still Be Pursued	170
[5] EPA May Be Sued for Its Failure to Comply with the CWA	171
[6] Standing	171
[7] Target of Suit; Suit Subject to Eleventh Amendment	172
[8] Bar to Commencement of Suit: 60 Days Notice; Contents	
of Notice; EPA Diligently Prosecuting Enforcement Action	173
[9] Intervention	175
[10] "Substantially" Prevailing Plaintiff May Recover Attorney	
and Expert Witness Fees	175
[11] Penalties Are Paid to U.S. Treasury; Some Courts Allow	
Earmarking for Environmental Projects	176
§ 6.04 Water Resources	177
[A] Background	177
[1] What Are the Sources of Ground Water Contamination?	177
[2] How Does the Hydrologic Cycle Affect Ground	
Water Contamination?	178
[B] Ground Water Contamination Is Regulated by Several Statutes	179
[C] Safe Drinking Water Act	180
[1] Background and Jurisdiction	180
[2] Regulation of Public Water Systems:	
Water Quality Requirements	181
[a] Maximum Contaminant Levels	181
[i] Drinking Water Regulations	181
[ii] Primary Drinking Water Regulations	181
[iii] Secondary Drinking Water Regulations	182
[b] What Is a Public Water System?	183
[c] Variances	183
[d] Exemptions	184

[3] Regulation of Ground Water Sources of Drinking Water	185
[a] Restrictive Land Use Regulation	185
[b] Protection of Sole Source Aquifers	185
[c] Injection Wells	186
[d] Wellhead Protection	188
[D] Underground Storage Tanks	189
§ 6.05 Marine Protection	191
[A] Generally	191
[B] Point Source Discharges	192
[1] Relationship between § 403 and Other Provisions of	
the Clean Water Act	192
[2] Where NPDES Permits under § 403 Operate	193
[3] Criteria Governing Issuance of Marine Discharge Permits	193
[a] Congress' Concerns	193
[b] How EPA Evaluates the Permit Application	194
[i] If There Is an Unreasonable Degradation of the	
Marine Environment, the Permit Will Be Denied	194
[ii] Factors Considered by EPA in Determining Whether	
There Is an Unreasonable Degradation	194
[C] Ocean Dumping	195
[1] Background	195
[2] Jurisdiction	196
[a] Purpose and Prohibitions	196
[i] What Did Congress Intend the Act to Accomplish?	196
[ii] What Is "Dumping"?	196
[b] Geographic Jurisdiction	197
[c] Regulatory and Enforcement Jurisdiction	197
[3] Scope of Coverage	198
[a] Materials Subject to Permitting Requirements	198
[b] Materials for Which No Permit May Be Granted	199
[c] Dumping of Sewage Sludge and Industrial Waste:	
Forbidden by the Statute	200
[4] Permitting Criteria	200
[a] Dumping May Not Unreasonably Degrade Marine	
Environment or Endanger Human Health	200
[b] General Criteria	200
[c] Dump Site Designation in Permit	201
[5] Issuance of Permit	202
[a] Public Notice	202
[b] Permit Conditions	202
[c] Public Record	203
[6] Enforcement and Penalties	203
[a] Generally	203
[b] Emergency Dumping: No Enforcement Sanctions	203
[c] Citizen Plaintiffs	204

§ 6.06 Oil Discharge and Liability	204
[A] Background	204
[B] Regulation under the Clean Water Act	205
[1] "Discharges" Covered by § 311	205
[2] Liable Parties Include Owners and Operators of Vessels	
and Facilities	205
[3] "Person in Charge" Must Immediately Notify Coast Guard	
of Discharge of Oil	206
[4] Penalties for Discharge or Failure to Comply	
with Cleanup Order	207
[5] Boarding Vessels, Entry of Facilities; Inspections	207
[6] Removal and Mitigation	207
[7] Third Party Liability; Defenses; Cost Recovery by	
Innocent Owner or Operator	208
[8] National Response System Facilitates Prevention	
and Speedy Cleanups	209
[C] Oil Pollution Act of 1990	210
[1] Introduction	210
[2] Responsible Parties Include Owners and Operators of Vessels,	
Facilities, and Pipelines	210
[3] Third Party Liability; Defenses	210
[4] Indemnification Agreements Are Enforceable, but Are Not	
a Statutory Defense	211
[5] Responsible Party Is Liable for Removal Costs and Damages	211
[6] Recoverable Costs Include Natural Resource Damages;	
Subsistence Use of Natural Resources	211
[7] Additional Recoverable Costs: Lost Tax Revenues; Lost Profits;	
Cost of Public Services	212
[8] Monetary Limitations on Damages	212
[D] Oil and Gas Drilling on the Outer Continental Shelf:	
Outer Continental Shelf Lands Act	213
[1] Congressional Purpose	213
[2] Federal versus State Roles	213
[3] Lease Program	214
[4] Development and Production Plans	216
[5] Citizen Suits	217
[6] Enforcement	218
[E] Tanker Design and Operation	218
[1] The Ports and Waterways Safety Act	218
[2] Preempts State Laws on Tanker Design	219
[3] Double Hulls Required by 1990 Amendment	220
[4] Proof of Compliance and Penalties	220
[5] State Laws on Deballasting and Tanker Performance	221
[F] Pilotage	221
[G] International Agreements	222

§ 6.07 Dredge and Fill Operations	222
[A] Introduction	222
[1] "Dredge" and "Fill" Definitions	222
[2] Dredge and Fill Activities Are Governed by § 404 of	
the Clean Water Act	223
[B] Army Corps of Engineers Is Primary Regulatory	
and Enforcement Agency	226
[1] Overlapping Jurisdiction with Rivers and Harbors Act	226
[2] Overlapping Jurisdiction with EPA	226
[3] State Jurisdiction versus Army Corps Jurisdiction	227
[C] Statutory Criteria Triggering Need for a Permit	228
[1] Basic Requirements: Discharge into Waters of	
the United States	228
[2] "Discharge" of Dredged or Fill Materials: How Construed	228
[a] Addition Required	228
[b] Dredging Itself Not Covered	229
[3] Activities Traditionally Not Treated as Discharges	229
[a] Land Clearing	229
[b] Draining of Water Bodies or Wetlands	230
[c] Pilings	230
[4] Specification of Disposal Sites	230
[D] General Policies for Evaluating Permit Applications	231
[1] Public Interest Review	231
[2] Effect on Wetlands	231
[3] Effect on Fish and Wildlife	232
[4] Water Quality	232
[5] Historic, Cultural, Scenic, and Recreational Values	232
[6] Effect on Property Interests	233
[7] Activities in Coastal Zone, Marine Sanctuary	233
[E] Bases upon Which Permit Will Be Denied	233 233
[1] Generally	233 234
[2] Practicable Alternative Has Less Impact[3] Degradation of Waters of the United States	234
[4] State Water Quality Standards	235
[4] State Water Quarty Standards [5] Toxic and Pretreatment Effluent Standards	236
[6] Adverse Effect on Regulated Species or Habitat	236
[7] Marine Sanctuaries	236
[F] Discharges of Dredge or Fill Materials That Are Exempted	250
from § 404 Permitting	237
[1] Generally	237
[2] Statutory Exempt Activities	237
[2] Suitutory Exemptified (12) [a] Agriculture/Silviculture	237
[i] "Normal" Farming, Silvicultural, or Ranching Use	237
[ii] Farming, Silvicultural, or Ranching Use	207
Must Be "Ongoing"	237
	/

[c] Farm, Forest, and Mining Roads23[d] Structures in the Water: Maintenance and Repair23[e] Sedimentation Basins at Construction Sites24[a] New Use of Water Body24[b] Activity Impairs Flow or Circulation24[G] Nationwide or "General" Permits24[G] Nationto Solid and Hazardous Wastes24[G] Permits24[G] Nations24[G] Pen Umping Is Prohibited25[I] Open Dumping Is Prohibited25[I] Open Purping	[b] Ponds or Ditches Relating to Agriculture 2	239
[d] Structures in the Water: Maintenance and Repair23[e] Sedimentation Basins at Construction Sites24[3] When Statutory Exemptions Are Inapplicable24[a] New Use of Water Body24[b] Activity Impairs Flow or Circulation24[G] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24Synopsis24§ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[4] Open Dumping Is Prohibited25[5] Open Dumping Is Prohibited25[6] Widlife Habitat25[7] Widlarfe Habitat25[8] Water25[9] Groundwater25[1] Groundwater25[1] Open Dumping Is Prohibited25[2] Dispical Activities and Facilities25[3] Surface Water25[4] Water25[5] Open Burning25[6] Moreur Landfills25[7] Open Gurning Landfills25[8] Open Burning25[9] General Safety Hazards25		239
[e] Sedimentation Basins at Construction Sites24[3] When Statutory Exemptions Are Inapplicable24[a] New Use of Water Body24[b] Activity Impairs Flow or Circulation24[G] Nationwide or "General" Permits24Chapter 7 · Solid and Hazardous Wastes24Synopsis24§ 7.01 Introduction to Solid and Hazardous Wastes24[G] Nationwide or "General" Permits24Chapter 7 · Solid and Hazardous Wastes24§ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] Flood Plains25[6] Widlife Habitat25[7] Mater25[8] Water25[9] Forod Vater25[9] Ketlands25[1] Toxic Substances25[1] Popen Burning25[2] [1] Open Burning25[3] General Safety Hazards25	ç	239
[a] New Use of Water Body24[b] Activity Impairs Flow or Circulation24[c] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24[B] Definitions24[G] Regulatory Structure of RCRA and CERCLA24[G] Regulatory Structure of RCRA and CERCLA24[G] Pasic Terms25[I] How Solid Is "Solid" Waste?25[I] How Solid Is "Solid" Waste?25[I] How Solid Is "Solid" Waste?25[C] Sanitary Landfills25[C] Sanitary Landfills25[I] Open Dumping Is Prohibited25[I] Open Dumping Is Prohibited25[I] Open Dumping Is Prohibited25[I] Surface Water25[I] Water25[I] Water25[I] Open Burning25[I] Open Burning	[e] Sedimentation Basins at Construction Sites 2	240
[b] Activity Impairs Flow or Circulation24[4] Certain Government Projects Are Exempted24[G] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24Synopsis24\$ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other26[D] Regulatory Structure of RCRA and CERCLA22\$ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] [6] Waste25[6] Widlife Habitat25[7] How Sultary Use of Sewage Sludge25[8] Watands25[9] Agricultural Use of Sewage Sludge25[1] Toxic Substances25[1] Open Burning25[1] Open Burning25[1] Open Burning25[2] General Safety Hazards25	[3] When Statutory Exemptions Are Inapplicable 2	240
[4] Certain Government Projects Are Exempted24[G] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24Synopsis24\$ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24\$ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] Flood Plains25[6] Wildlife Habitat25[7] Mot Substances25[8] Wastes Excluded from Federal Sewage Sludge25[9] Groundwater25[1] Open Burning25[2] Criteria Governing Sanitary Landfills25[3] Surface Water25[4] Water25[5] [6] Open Burning25[6] Open Burning25[7] Open Burning25[8] General Safety Hazards25	[a] New Use of Water Body 2	240
[4] Certain Government Projects Are Exempted24[G] Nationwide or "General" Permits24[G] Nationwide or "General" Permits24Synopsis24\$ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24\$ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] Flood Plains25[6] Wildlife Habitat25[7] Mot Substances25[8] Wastes Excluded from Federal Sewage Sludge25[9] Groundwater25[1] Open Burning25[2] Criteria Governing Sanitary Landfills25[3] Surface Water25[4] Water25[5] [6] Open Burning25[6] Open Burning25[7] Open Burning25[8] General Safety Hazards25	[b] Activity Impairs Flow or Circulation 2	240
Chapter 7 · Solid and Hazardous Wastes24Synopsis24§ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] Hood Plains25[6] Wildlife Habitat25[6] Wildlife Habitat25[1] Toxic Substances25[1] Toxic Substances25[1] Open Burning25[1] Open Burning25[2] [2] Criteria Safety Hazards25		240
Synopsis24§ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[4] Open Dumping Is Prohibited25[5] Criteria Governing Sanitary Landfills25[6] Water25[6] Wildlife Habitat25[6] Wildlife Habitat25[7] Groundwater25[8] Water25[9] Groundwater25[1] Open Burning25[1] Open Burning25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[4] Water25[5] Groundwater25[6] Mater25[7] Open Burning25[8] Open Burning25[9] General Safety Hazards25	[G] Nationwide or "General" Permits	241
§ 7.01 Introduction to Solid and Hazardous Wastes24[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[3] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[4] Open Dumping Is Prohibited25[5] Criteria Governing Sanitary Landfills25[6] Water25[7] Wildlife Habitat25[6] Water25[6] Water25[7] Surface Water25[8] Waten25[9] Toxic Substances25[1] Toxic Substances25[1] Open Burning25[1] Open Burning25[2] [2] General Safety Hazards25	er 7 · Solid and Hazardous Wastes 2	243
[A] Background24[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[ii] Groundwater25[iii] Wetlands25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[i] Open Burning25[i] General Safety Hazards25[i] General Safety Hazards25	Synopsis 2	243
[B] Definitions24[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[i] Open Burning25[j] General Safety Hazards25	2.01 Introduction to Solid and Hazardous Wastes 2	247
[C] RCRA and CERCLA Complement Each Other24[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[6] Flood Plains25[7] Wildlife Habitat25[8] Water25[9] Groundwater25[1] Open Burning25[1] Open Burning25[1] Open Burning25[1] Open Burning25[2] Open Burning25[3] General Safety Hazards25	[A] Background 2	247
[D] Regulatory Structure of RCRA and CERCLA24§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[6] Flood Plains25[7] Wildlife Habitat25[8] Surface Water25[9] Grundwater25[10] Toxic Substances25[11] Toxic Substances25[12] Open Burning25[13] Open Burning25[14] Wetlands25[15] Open Burning25[16] Open Burning25[17] Open Burning25[18] General Safety Hazards25[19] General Safety Hazards25	[B] Definitions 2	248
§ 7.02 Federal Regulation of Solid Waste25[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[3] Sanitary Landfill Defined25[6] Flood Plains25[7] Wildlife Habitat25[6] Water25[1] Surface Water25[1] Groundwater25[1] Toxic Substances25[1] Pathogens25[1] Open Burning25[2] General Safety Hazards25	[C] RCRA and CERCLA Complement Each Other 2	249
[A] Basic Terms25[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[I] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[ii] Surface Water25[iii] Wetlands25[iii] Wetlands25[ii] Pathogens25[ii] Pathogens25[g] General Safety Hazards25	[D] Regulatory Structure of RCRA and CERCLA 2	249
[1] How Solid Is "Solid" Waste?25[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[ii] Surface Water25[iii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[g] General Safety Hazards25	2.02 Federal Regulation of Solid Waste 2	250
[2] Disposal Activities and Facilities25[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[ii] Groundwater25[iii] Wetlands25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[g] General Safety Hazards25	[A] Basic Terms 2	250
[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal25[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[ii] Surface Water25[iii] Groundwater25[iii] Wetlands25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[1] How Solid Is "Solid" Waste? 2	250
[C] Sanitary Landfills25[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[g] General Safety Hazards25	[2] Disposal Activities and Facilities 2	251
[1] Open Dumping Is Prohibited25[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[j] General Safety Hazards25	[B] Wastes Excluded from Federal Regulation of Solid Waste Disposal 2	252
[2] Criteria Governing Sanitary Landfills25[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[C] Sanitary Landfills 2	253
[a] Sanitary Landfill Defined25[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[ii] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[1] Open Dumping Is Prohibited 2	253
[b] Flood Plains25[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[iii] Wetlands25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[2] Criteria Governing Sanitary Landfills 2	254
[c] Wildlife Habitat25[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[a] Sanitary Landfill Defined 2	254
[d] Water25[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[b] Flood Plains 2	254
[i] Surface Water25[ii] Groundwater25[iii] Wetlands25[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[c] Wildlife Habitat 2	255
[ii] Groundwater25[iii] Wetlands25[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[d] Water 2	255
[iii] Wetlands25[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[i] Surface Water 2	255
[e] Agricultural Use of Sewage Sludge25[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[ii] Groundwater 2	255
[i] Toxic Substances25[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[iii] Wetlands 2	255
[ii] Pathogens25[f] Open Burning25[g] General Safety Hazards25	[e] Agricultural Use of Sewage Sludge 2	256
[f] Open Burning25[g] General Safety Hazards25	[i] Toxic Substances 2	256
[g] General Safety Hazards 25	[ii] Pathogens 2	256
-6- /	[f] Open Burning 2	257
[D] Groundwater Monitoring and Corrective Action 25	[g] General Safety Hazards 2	257
	[D] Groundwater Monitoring and Corrective Action 2	258
§ 7.03 Municipal Solid Waste Disposal Facilities 25	7.03 Municipal Solid Waste Disposal Facilities 2	259
[A] Governing Rules 25	[A] Governing Rules 2	259
		259
[1] What Is "Municipal" Solid Waste? 25	[1] What Is "Municipal" Solid Waste? 2	259
[2] Municipal Solid Waste Management Units:	[2] Municipal Solid Waste Management Units:	
Definition and Requirements 26	Definition and Requirements 2	260

[3] Exclusion of Small Landfills	260
[4] Municipal Incineration of Solid Waste	260
[C] Limitations that Apply to a Municipal Landfill's Siting and Location	261
[1] Wetlands	261
[2] Flood Plains	261
[3] Seismic Zones	262
[4] Airports	262
[5] Unstable Areas	262
[D] Design and Operating Requirements	263
[1] Design Criteria	263
[2] Operating Restrictions	263
[3] Recordkeeping	264
[4] Groundwater Monitoring	264
[E] Closure and Post-Closure Requirements	265
[1] Purpose of Requirements	265
[2] Cover System	265
[3] Closure Plan and Other Closure Requirements	265
[4] Post-Closure Care	265
[F] Financial Assurances	266
[1] General Requirements	266
[2] Estimates	266
[3] Financing Mechanisms	266
§ 7.04 State and Local Control of Solid Waste Disposal	267
[A] State Plans	267
[1] Federal Encouragement of State Plans	267
[2] Minimum Requirements of State Plans	267
[3] Additional Components of State Plans	268
[a] Open Dumps	268
[b] Used Oil	269
[4] Implementation of State Plans	269
[B] Restrictions on State and Local Solid Waste Disposal	270
[1] Commerce Clause Considerations	270
[2] Flow Control Ordinances: Local Attempts to Control Solid	
Waste Disposal	272
[3] Market Participation by the State	273
§ 7.05 Hazardous Waste Management: The Resource Conservation	
Recovery Act (RCRA)	275
[A] RCRA Goals	275
[B] Wastes Subject to RCRA Regulation Because They	
Are "Hazardous"	276
[1] Defining Hazardous Wastes	276
[2] Hazardous Waste Criteria	277
[3] Materials "Mixed With" Hazardous Wastes	277
[4] Exclusions	277

[C] Generators	279
[1] Requirements	279
[2] Generators that Act as Treatment, Storage,	
and Disposal Facilities	279
[3] Small Generators	280
[D] Transporters	280
[1] Custody and Tracking of Hazardous Waste Shipments	280
[2] Spills During Transport	280
[E] Treatment, Storage, and Disposal (TSD) Facilities	281
[1] Definitions	281
[a] "Facility"	281
[b] "Storage"	281
[c] "Disposal"	282
[d] "Treatment"	283
[2] TSD Permits	283
[F] TSD Facility Standards	285
[1] Tracking and Identification	285
[2] Safety	285
[3] The "Land Ban"	285
[4] Groundwater Protection, Monitoring, and Corrective Action	286
[a] Groundwater Protection Obligation	286
[b] Detection Monitoring	286
[c] Compliance Monitoring	287
[d] Corrective Action	287
[5] Financial Assurance	287
[G] Closure and Post-Closure Requirements	287
[H] Inspections, Reporting, and Monitoring	288
[I] Delegation to States	288
[J] Enforcement	289
[1] Administrative and Civil Enforcement	289
[2] Criminal Penalties	289
[3] Abatement Orders for Imminent Hazards	290
[4] Citizen Suits	291
[a] Bases for Suits; Remedies	291
[b] Notice Requirements	291
[c] When Suits Are Barred	292
[d] Fees to Prevailing Party	292
§ 7.06 Hazardous Waste Sites: Comprehensive Environmental Response,	
Compensation and Liability Act (CERCLA)	293
[A] Remediation under CERCLA	293
[1] Introduction	293
[2] Facility Defined	294
[3] Release, Threatened Release, or Disposal; Exclusions	294
[4] Section 106 Orders	295

xxiii

[5] Use of CERCLIS, Preliminary Assessments, the Hazard	
Ranking System, and the NPL	295
[6] Remediation: Response Actions, Removal, Monitoring,	
and Mitigation	296
[a] Definitions	296
[b] Remedial Investigation, Feasibility Study,	
and Record of Decision	296
[c] What Remediation Involves	297
[d] EPA versus Private Party Cleanups	297
[e] National Contingency Plan Requirements	298
[f] Recovering Costs of Cleanup	298
[7] Notice and Record Keeping Requirements	298
[B] Responsibility for Cleanup	299
[1] Statutory Categories of Responsible Parties	299
[2] Generators	299
[3] Owners and Operators of Disposal Sites	300
[a] Owners and Operators Subject to Liability	300
[i] Joint and Several Liability	300
[ii] Owner and Operator Defined	300
[iii] Partnerships and Corporate "Owners" and Operators	300
[iv] U.S. Government May Be an Owner or Operator	302
[v] Liability of State and Local Governments	302
[vi] Liability of Past and Present Owners and Operators	303
[vii] Successor Liability	304
[b] Secured Creditor Exemption	305
[c] Fiduciary Exemption	306
[4] Parties Who Arrange for Disposal	306
[5] Parties Who Arrange for Recycling May Be Exempt	
from CERCLA Liability	309
[6] Transporters	310
[7] Strict, Joint, and Several Liability	311
[C] Cleanup Costs: Who Pays Whom?	312
[1] Cost Recovery Actions versus Contribution Actions	312
[2] Cost Recovery Actions	316
[3] Contribution Actions	317
[D] Defenses	318
[1] Three Defenses, Generally	318
[2] Acts of God and War	319
[3] Act or Omission of Third Party	319
[4] Innocent Purchaser Defense	320
[E] Settlement and Protection from Contribution	320
[F] Insurance	322
[1] Pollution Exclusion Clauses	322

[2] "Sudden and Accidental" Releases	322
[3] "Absolute" Pollution Exclusion	323
[G] State Cleanup Statutes	324
[H] Effect of Responsible Party's Bankruptcy	324
[1] Bankruptcy Petition Stays Actions for Money Judgments,	
but Not Governmental Enforcement Actions	324
[2] Discharging Environmental Claim in Bankruptcy	325
§ 7.07 Brownfields: Redevelopment of Moderately Contaminated Sites	326
[A] Of "Brownfields" and "Greenfields"	326
[B] The Awakening Federal Interest	328
[C] Factors Relevant to Brownfields Policies and Redevelopment	331
[1] Protection for New Owners	331
[2] Financing of Brownfields Purchases	331
[3] Restrictions on Future Use	332
[4] Public Economic Benefits	332
[5] Coordination between State Brownfields Redevelopments	
and EPA	333
[D] State Laws: Examples	333
§ 7.08 Emergency Planning and Community Right to Know Act	335
[A] Requirements and Purposes of Act	335
[B] Emergency Planning	335
[1] Local Responsibilities for Emergency Planning	335
[2] Emergency Response Plan	336
[C] Emergency Notification	336
[D] Reporting Requirements	337
[1] Material Safety Data Sheets	337
[2] Inventory Forms	337
[3] Toxic Chemical Release Forms	337
[4] Medical Emergencies	338
[E] EPA as a Data Clearinghouse	338
[1] EPA Must Maintain Records on National Movement	
of Chemicals	338
[2] EPA Must Maintain List of Toxic Chemicals	338
[3] Citizens May Petition to Add a Chemical to EPA's List	338
[F] Enforcement	339
[1] Compliance Orders and Penalties	339
[2] Citizen Suits	339
[a] Grounds for Suit	339
[b] Notice; Suits for Past Violations	339
[c] Standing	340
[d] Costs and Fees; Intervention	340
[3] Suits by State or Local Authorities	341

xxv

Chapter 8 · Toxic Substances	343
Synopsis	343
§ 8.01 Pesticides	345
[A] Regulation of Pesticides	345
[B] Registration	347
[1] Registration Requirements, Generally	347
[2] Information Required to Achieve Registration	348
[3] Registration Is for General or Restricted Use	348
[4] Original Registration Is for Exclusive Use	349
[5] State Registration	349
[6] Suspension and Cancellation	349
[7] Experimental Use Permits and Variances	349
[8] Public Access to Information	350
[C] Labeling	350
[1] General Labeling Requirements	350
[2] Preemption	350
[D] Pesticide Residues in Foods	351
[E] Enforcement	352
§ 8.02 Regulating Toxic Substances: The Toxic Substances	
Control Act (TSCA)	353
[A] Purposes of Act	353
[B] Chemicals Included in and Excluded from TSCA	354
[C] Testing Requirements	354
[1] When Testing Is Required	354
[2] Standards Used for Testing	355
[3] Actions to Prevent or Reduce Risk	356
[D] Manufacturing and Processing Notices for New Chemicals	
or New Uses	356
[1] Ninety Day Notice Requirement; Exemptions	356
[2] Required Contents of Notice	356
[3] Issuance of Interim Order; Injunctive Relief	357
[E] Regulation of Hazardous Chemicals	357
[1] EPA's Promulgation of Rules	357
[2] Balancing of Risks	358
[3] Emergency Rule-Making Power	358
[4] Regulation of Polychlorinated Biphenyls (PCBs)	358
[5] Imminent Hazards	359
[F] Compilation of Information	359
[1] Reporting and Record Keeping by Regulated Parties	359
[2] EPA's Inventory of Toxic Chemicals	359
[3] Inspections	360
[4] Confidential Data	360
[G] Exports and Imports	360

[H] Enforcement	360
[1] Criminal and Civil Penalties	360
[2] Other Civil Remedies	361
[3] Citizen Suits	361
§ 8.03 Toxic Tort Litigation	362
[A] Liability	362
[1] Background	362
[2] Standards of Liability	363
[a] Strict Liability	363
[b] Negligence; Interference with Commercial Expectations;	
Emotional Distress	363
[c] Product Liability and Failure to Warn	364
[3] Causation	364
[a] Duty of Care	364
[b] Burden of Proof	364
[c] Multiple Defendants	365
[4] Suits against Government Bodies	365
[B] Damages	366
[C] Defenses	367
[1] Statute of Limitations	367
[2] Government Contractor Defense	368
[3] Workplace Toxic Torts	369
[4] Bankruptcy	369
[D] Procedure and Evidence	370
[1] Class Actions	370
[2] Jurisdiction	371
[3] Discovery	371
[4] Expert Testimony	372
[E] Liability Insurance	372
[1] "Sudden and Accidental" Limitation	372
[2] Duty to Defend	373
[3] Liability of Insurer at Time of Exposure	373
§ 8.04 Radon	373
[A] Health Risks	373
[B] Regulation of Radon as a Toxic Substance	374
[1] EPA's Responsibility to Provide Information	374
[2] Construction Standards	374
§ 8.05 Asbestos	375
[A] Background of Problem; Regulation under State and Federal Law	375
[B] Regulation under Toxic Substances Control Act	376
[1] Asbestos in Schools	376
[2] Asbestos Abatement	377
[C] Occupational Safety and Health Act Regulation	377
[D] Clean Air Act	378

§ 8.06 Chlorofluorocarbons (CFCs) and Other Ozone Depleting Chemicals	378
[A] Background of Problem	378
[B] Regulation under Clean Air Act	379
[1] CFC Listing	379
[2] Labeling	379
[3] CFC Ban	379
[C] Environmental Tax on CFCs	380
§ 8.07 Lead	380
[A] Background of Problem; Regulations	380
[B] Lead Exposure Reduction under Toxic Substances Control Act	382
[C] Residential Lead-Based Paint Hazard Reduction Act	383
[1] Purposes of Act	383
[2] Disclosure of Lead Hazards Prior to Conveyance	
of Residential Target Housing	384
[3] Accreditation	384
[4] Occupational Exposure to Lead Hazards	385
[D] Regulation of Lead Emissions under the Clean Air Act	385
Chapter 9 · Noise	387
Synopsis	387
§ 9.01 Noise Control Act	387
[A] Background of Act	387
[B] Congressional Finding; General Requirements of Act	388
[C] Maximum Ambient Standards for Noise	389
[D] Warranty Requirement and State Regulation of Noise	389
[E] Labeling Requirements	390
[F] Recordkeeping Requirements	390
[G] Remedies	390
§ 9.02 State and Local Laws	391
§ 9.03 Aircraft Noise	393
[A] Inverse Condemnation Suits	393
[B] Nuisance Actions	394
§ 9.04 Aircraft Noise: FAA Regulations	395
§ 9.05 Aircraft Noise: State and Local Airport Controls	395
§ 9.06 Occupational Noise	397
Chapter 10 · Fish and Wildlife	399
Synopsis	399
§ 10.01 Hunting and Fishing Laws	399
§ 10.02 Deep Sea Fishing	401
[A] Background	401
[B] License Requirements	401
[C] International Treaties	401
[D] Drift Nets	402

§ 10.03 Endangered Species Act and Related Statutes	402
[A] Background of Endangered Species Act	402
[B] Tennessee Valley Authority v. Hill and the Creation	
of Endangered Species Committee	403
[C] "Taking" of Endangered Species Is Prohibited	403
[D] Lesser Protection Exists for Threatened Species	403
[E] Preemption Issues	404
[F] Enforcement, Standing, and ESA's Citizen Suit Provision	404
[G] Other Wildlife Protection Statutes	404
§ 10.04 State Statutes	405
§ 10.05 International Controls	406
§ 10.06 Voluntary Creation of Wildlife Habitat	407
Chapter 11 · Land Use	409
Synopsis	409
\$ 11.01 Overview	410
§ 11.02 Critical Areas: Wetlands, Coastal Zones, Shorelands,	
and Submerged Lands and Floodplains	410
[A] Wetlands	410
[B] Coastal Zones, Shorelands, and Submerged Lands	412
[1] State and Local Statutes	412
[2] Coastal Zone Management Act	413
[3] Underwater Lands	414
[C] Floodplains	414
§ 11.03 State Regional Planning	415
[A] Local Zoning and Its Environmental Implications	415
[B] Need to Protect Environmentally Critical Areas	416
[C] State Planning and Land Use Statutes	416
§ 11.04 Historic Preservation	417
[A] Municipal Controls Protecting Landmarks	417
[B] Landmarks and Taking Claims	418
[C] Religious Buildings and Free Exercise Claims	419
[D] Maintenance and Rehabilitation	420
[E] National Register of Historic Places	420
§ 11.05 Wilderness Areas and Public Lands	420
[A] National Forests	421
[B] Bureau of Land Management Property	422
[C] National Parks and Wildlife Refuges	422
[D] Wilderness Protection	422
§ 11.06 Power Plant Siting	423
[A] In General	423
[B] Hydroelectric Power Plants	423
[C] Nuclear Power Plants	424
[D] State Power Plant Siting Statutes	424

§ 11.07 Aesthetic Controls	425
§ 11.08 Agricultural Lands	426
§ 11.09 Conservation Easements and Land Trusts	427
Chapter 12 · Energy Production and Mineral Extraction	429
Synopsis	429
§ 12.01 Solar Energy and Wind Power	430
[A] Background	430
[B] Solar Energy	430
[C] Wind Power	432
§ 12.02 Nuclear Energy	433
[A] Atomic Energy Act	433
[B] Licensing Power Plants	433
[C] Evacuation Plans	435
[D] Radioactive Waste Disposal	435
[1] Nuclear Waste Policy Act	435
[2] Low Level Radioactive Waste Policy Act	437
[3] Transporting Radioactive Waste	437
[E] State Controls and Preemption Issues	438
[F] Liability Issues	438
§ 12.03 Geothermal Energy	439
§ 12.04 Coal and Mineral Surface Mining	440
[A] Surface Mining Control and Reclamation Act	440
[1] Act Needed to Supplement State Controls	440
[2] Act Works in Tandem with State Regulation	440
[3] Act Requires Reclamation and Restoring of Land	441
[4] Act Upheld as Valid Exercise of Congressional Power	441
[B] Laws to Prevent Subsidence of Surface Lands	442
§ 12.05 Synthetic Fuels	442
[A] Government Sponsorship of Alternative Fuel Research	442
[B] Federal Subsidies for Biomass Energy and Ethanol	443
[C] Compressed Natural Gas, Electric, and Hydrogen	
Powered Vehicles	444
§ 12.06 Energy Conservation	445
[A] Automotive Fuel Efficiency	445
[B] Appliance Efficiency	447
[C] Electricity Conservation	447
[1] Public Utility Regulatory Policies Act	447
[2] Fostering Small Power Producers	448
Chapter 13 · International Aspects of Environmental Protection	451
Synopsis	451
§ 13.01 Basic Principles	451
[A] Treaties Governing Environmental Issues	451
[B] Applicable Principles of International Law	452

[C] Sustainable Development and Population Increase	453
[D] Conflicting Interests of Developed and Developing Countries	453
[E] War and the Environment	453
§ 13.02 Global Climate Change	454
[A] Causes and Effects of Global Warming	454
[B] The Climate Change Convention	456
§ 13.03 Ozone Layer Protection	458
§ 13.04 Basel Convention on Hazardous Waste Shipment	459
§ 13.05 The Environment and Free Trade	460
§ 13.06 Biodiversity	461
[A] Importance of Maintaining Biodiversity	461
[B] Convention on Biological Diversity	463
[C] Use of Genetic Resources: Who Profits?	463
[D] Debt-for-Nature Swaps	464
Chapter 14 · Innovations and Trends	465
Synopsis	465
§ 14.01 Introduction	466
§ 14.02 The Long After-Lives of Chemical Products in Everyday Use	466
[A] Plastics That Won't Go Away	467
[B] The Endemic Dangers of "Forever Chemicals"	468
§ 14.03 Community-Based Programs	469
§ 14.04 Locational Innovations for Generating Alternative Energy	471
§ 14.05 Environmental Management Principles for Federal Agencies	473
[A] Code of Environmental Management Principles	473
[B] Core Principles	473
§ 14.06 Incentives for Self-Policing	474
§ 14.07 Voluntary Partnerships between Businesses and EPA	474
§ 14.08 Resource Conservation Challenges	476
[A] Solid Waste	476
[B] "Green" Electronics, Recycling and Safe Disposal	477
[C] "Green" Buildings	477
§ 14.09 ISO 14001 and Environmental Management Systems	478
[A] International Organization for Standardization ("ISO")	478
[1] Background and Environmental Goals	478
[2] International Trade Aspects of ISO 14001	479
[3] Industry Response to ISO Standards	479
[4] No Performance Standards for ISO 14001	479
[5] Features of ISO 14001	480
[B] Certification of Compliance with ISO Standards	481
[C] Environmental Management Systems	481
[1] Goal of an Environmental Management System	481
[2] Stages of an Environmental Management System	
under ISO 14001	481

§ 14.10 The Equator Principles	482
§ 14.11 Emerging Trends in Energy Production and Transmission	485
[A] Alternative Energy May Be Picking Up Steam, Fueled from Below	485
[B] Extreme Changes in Weather May Focus the Public on Climate	
Change and the Need to Modify Energy Policies	488
[C] Unconventional Means of Reaching Conventional	
Energy Supplies	489
Excerpts from EPA Terms of Environment: Glossary, Abbreviations,	
and Acronyms	493
Introduction	493
EPA Terms	494
Table of Cases	503
Table of Statutes	523
Index	535

This fourth edition of *Understanding Environmental Law* is being prepared a quarter century after Professor Philip Weinberg, a generous friend since my law student days, asked me to co-author this book with him. Philip Weinberg had already achieved an eminent reputation as a young lawyer in the young but growing field of Environmental Law in New York, which he had helped to shape in government service before departing to teach law. Interestingly, Phil's call to me in 1996 was about a quarter century after some of the formative federal environmental laws addressed in this book were enacted, some a bit earlier and some amendments a bit later, but I think that the early 1970s can be looked back on as a seminal period in the history of Environmental Law. So, a half century later, Environmental Law has moved from novelty to mainstream. It has invaded countless once-staid traditional legal realms, among them real estate and banking, corporate transactions and securities law, land use planning and local governance, and it has partnered with public health policies; it has grafted on a new branch of administrative law, coopted or supplemented many traditional common law remedies when pollution caused injury or crossed boundaries, and has initiated new constitutional inquiries and occasionally required a reconsideration of seemingly settled principles of constitutional law. However, beyond this, the practice of environmental law often draws upon various subfields of civil engineering, hydrology, biology, chemistry, physics, other sciences, land use, demographics, economics, and so on. Increasingly, climate science and debates over its policies, extant and proposed, have been crowding their way onto the public and the political radar screens. Moreover, federal Environmental Law, which is the focus of this book, has parented numerous and sundry laws among the fifty states with countless land use ramifications at more local levels. And, of course, environmental lawyers will often have to be in close contact with local officials and remain familiar with the nuances of local landscapes, economic as well as natural. It can be fascinating, but it can also be challenging. Environmental Law, it is safe to say, has become a very complicated and comprehensive body of statutes, regulations and policies, and by the third decade of the 21st century, it demands acknowledgment as a significant branch of American jurisprudence.

This book is intended to serve as a primer for lawyers or even law students who hope to get a handle on how the field's major statutes and agency regulations work, and how they have been reshaped over the years to be more effective and, often, to address new urgencies. The goal is to outline basic principles, avoid excessive details that are more appropriate for a treatise, yet to provide sufficient depth where necessary so that the reader can achieve an adequate understanding — the ambition is set forth in the book's title itself — of what these statutes are expected to achieve and how they operate towards that end. Hopefully, readers will find this book helpful in undertaking their introduction to the field.

Readers who have used earlier editions of this book should be aware that parts of Chapters 9, 12, 13 and 14 have been substantially revised to reflect developments in the law. Lesser portions of Chapters 5 and 6 have been updated to address recently evolving policies and jurisprudence. Chapter 7 pertains to hazardous wastes, an actively litigated area, as to which lawyers will want to pay continuing attention to some of its subtopics.

Kevin Anthony Reilly

As the historian Barbara Tuchman sagely observed, "the best book is a collaboration between author and reader."* We have endeavored to keep our end of the bargain by furnishing students and practitioners with a concise, direct introduction to the burgeoning field of environmental law.

Environmental law, an increasingly significant area of legal study and practice, encompasses a full range of issues from tort law through property law to constitutional considerations. This volume attempts to present this mosaic, as its title suggests, in an understandable way. We have tried to avoid either undue concentration on the individual titles or an equally inappropriate focus on generalities.

The book covers not only the traditional terrain of air and water quality, solid and hazardous waste, and pesticides, but also the environmental implications of land use, energy generation and use, and the increasingly important area of international environmental law. It also tries to connect environmental law with the political and constitutional bases for the statutes and court decisions it examines.

Environmental law does not presuppose a background in science, and the references in this book to chemistry, biology and hydrogeology are kept simple and, we hope, understandable — a task rendered easier by the authors' own lack of scientific expertise.

As the reader will see, environmental law was not born fully-grown, like Botticelli's Venus, with the advent of the modern regulatory statutes. It stems from tort law, property law and related concepts that trace their roots to the common law. This book attempts to relate those common-law principles to today's regulatory framework, from which modern environmental law directly descends.

Readers should know that Kevin Reilly wrote chapters seven and fourteen and the bulk of chapters five, six, and eight. Philip Weinberg wrote chapters one through four and nine through thirteen, as well as minor portions of chapters five, six, and eight.

We earnestly hope this book will prove useful to the reader in achieving precisely what its title proffers: understanding environmental law.

Philip Weinberg Kevin A. Reilly

^{*} BARBARA TUCHMAN, PRACTICING HISTORY 24.