CIVIL SOCIETY REGIMES AND ECOSYSTEM MANAGEMENT: SELECTED PROBLEMS IN LAKE CHAMPLAIN

Anne Drost*
Richard Brooks**

I. INTRODUCTION

Lake Champlain is a logical focus for an article in a conference on civil society and the relations among Canada, Quebec, the First Nations, and the United States. The history of this body of water and its environs calls up not only the memory of Samuel de Champlain and United States–Quebec relations, but also the claims of the Abenaki Indians to whom the Lake and its rocks are so important.[1] The Lake Champlain Basin, stretching from the peaks of the Adirondacks in New York to the Green Mountains in Vermont and north into Quebec,[2] is home to many different groups of people with diverse backgrounds. Originally inhabited by Native Americans, who continue to call Lake Champlain their home, the area now contains several urban populations including Burlington and its suburbs in Vermont and Plattsburgh in New York. Farmers from Vermont and Quebec live and work in the Champlain Valley. The lake is also an important tourist destination for American, Canadian, and international visitors seeking recreation.

Lake Champlain and its borders presently face a number of environmental problems including: (1) toxic pollutants; (2) invasive aquatic plants; (3) phosphorus runoff,[3] and (4) degradation caused by inadequately managed recreational

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* Masters student in Environmental Law at Vermont Law School, Attorney at Martineau Walker in Montreal, Quebec and occasional Sessional Lecturer at McGill University, Faculty of Law. The authors would like to thank Charlyn Krahn for her assistance in researching and writing this article.

** Professor of Law and Coordinator of International, Comparative, and Foreign Law, Vermont Law School. Special thanks to Charlyn Krahn for her valuable assistance.

1. *See* WILLIAM HAVILAND & MARJORIE POWER, THE ORIGINAL VERMONTERS (1981); SAMUEL ELIOT MORRISON, SAMUEL DE CHAMPLAIN: FATHER OF NEW FRANCE (1972).

2. The geographical boundaries of the Lake Champlain Basin differ depending upon the science involved, e.g., geology, limnology, ecology, and the appropriate social and political concerns.

3. These specific problems of mercury toxicity, phosphorus, and land development will be discussed below. Other pollutants include chloride, combined sewer overflows and leaking landfills, and selected sediments with detectable levels of PCBs, DDT, polycyclic aromatic compounds, chromium, nickel, and lead. For a summary, see Jack Archer et al., *A*

development. Any resolution of these environmental problems will depend not only upon federal and state governments,[4] but also the activities of a variety of intermediate groups including: (1) the agricultural industry; (2) the Midwest utilities; (3) nearby municipal waste facilities; and (4) the tourism industry. These groups, which may be considered intermediate players acting between individuals and government organizations, are all, in one way or another, part of the Lake Champlain Basin Program, an organization created to deal with environmental problems in the region.

Using three examples of current issues, viz., the control of mercury, phosphorus, and tourism development, this paper explores the extent to which the natural resource regime analysis of Oran Young[5] can offer the conceptual tools needed for a civil society approach to environmental management.[6] In addition, the use of industry codes in environmental self-regulation[7] offers an alternative means of resolving certain environmental problems of the Lake Champlain Basin (the Basin). Both approaches exemplify the civil society theorists' emphasis upon the use of intermediate institutions to resolve public problems.[8]

There are, however, several problems with the theory of civil society and its reliance upon intermediate institutions to resolve environmental problems. An intermediate resource regime may have jurisdictional boundaries limited to local or regional ecosystems.[9] Such boundaries may fail to capture and control pollution sources outside the region. In order to test the boundary problems of regime analysis, the paper includes a discussion of two pollutants in Lake Champlain and their regulation. In Lake Champlain, one serious pollutant, mercury, comes from

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Proposed Lake Champlain Coastal Management Program, 115-127 (unpublished draft) (on file with author).

4. For a listing of the relevant state and federal agencies whose jurisdictions apply to Lake Champlain, see Archer, *supra* note 3, at 151-213, 279-313.

5. ORAN YOUNG, INTERNATIONAL GOVERNANCE: PROTECTING THE ENVIRONMENT IN A STATELESS SOCIETY (1994).

6. For one of several attempts at taking such an approach in environmental matters, see JOHN DEWITT, CIVIC ENVIRONMENTALISM: ALTERNATIVES TO REGULATION IN STATES AND COMMUNITIES (1994).

7. For a discussion of voluntary environmental codes of conduct see Michael Baram, *Multinational Corporations, Private Codes, and Technology Transfer for Sustainable Development*, 24 ENVTL. L. 33 (1994); SEYMOUR RUBIN & GARY CLYDE, EMERGING STANDARDS OF INTERNATIONAL TRADE AND INVESTMENT: MULTINATIONAL CODES AND CORPORATE CONDUCT (1986); Mark Baker, *Articles, Private Codes of Corporate Conduct: Should the Fox Guard the Henhouse?* 24 U. MIAMI INTER-AM. L. REV. 399 (1993).

8. As a consequence of the failure of ecosystems and regimes based upon ecosystems to control extra-boundary sources, federal and state environmental laws are required, as described below.

9. For a discussion of intermediate institutions, see Richard Brooks, *Law and Civil Society in the United States, Canada, Quebec, and the First Nations*, 15 ARIZ. J. INT'L & COMP. L. 1 (1998).

outside the immediate region and poses problems for the delicate ecosystem of the watershed. In addition, high levels of phosphorus seriously threaten the lake's ecosystem requiring cooperative efforts to reduce this non-point source pollutant. Unlike mercury, phosphorus comes from within the watershed. However, market forces beyond the region may be the ultimate cause of the phosphorus pollution and make regime based regulation difficult.[10]

A third threat to the Basin's ecosystem is recreational development. Recreational development is, in part, the product of national and regional tourism industries promoted and supported for large economic benefits. There is, however, growing concern that the tourism industry threatens irreplaceable natural and cultural resources in the Basin. Environmental industry codes are currently being considered by the Lake Champlain Basin Program as a means of establishing policies and guidelines for appropriate tourism development in the Basin. The problem with such voluntary industry codes is achieving consensus among all the stakeholders on what policies and objectives are to be followed. Those which are ultimately agreed upon may prove difficult to implement and enforce.

II. REGIME THEORY AND LAKE CHAMPLAIN

A. Regimes Defined

Regimes are piecemeal or issue specific arrangements of governance which may or may not be legally binding, which may or may not assign a centralized governance role in one situation, and which may assign important roles to non-state actors. Such regimes in an environmental context are a constellation of rules and roles based upon convergent expectations and patterns of behavior or prior relationships to natural resources and the ecosystem.[11] Lake Champlain and its Basin Program are particularly well suited to being viewed as an emerging natural resource regime. The half century of law and planning focused upon the well being of the lake and the shared interest in the lake's users resulted in the creation of a body of rules that characterize such regimes. Although, in the context of environmental controls, decision making is pluralistic and, at times, contested,[12]

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10. For a history of the effort to control phosphates, especially in regard to detergents, see Chris Knud-Hansen, *Historical Perspective of the Phosphate Detergent Conflict, in* CONFLICT RESOLUTION CONSORTIUM 54-94 (1994) (working paper, University of Colorado) (on file with author).

11. A more recent definition of *regimes* is social institutions composed of agreed-upon principles, norms, rules and decision making procedures that govern the interactions of actors in specific issues areas. *See* ORAN YOUNG & GAIL OSHERENKO, POLAR POLITICS: CREATING INTERNATIONAL ENVIRONMENTAL REGIMES 1 (1993).

12. Since the 1970s, there has been vigorous litigation promoted by citizen groups

there is a growing shift towards more coordinated management of the lake and its resources in order to resolve the lake's environmental problems.

B. The Lake Champlain Basin Regime

One important regulatory mechanism for Lake Champlain is the International Joint Commission, which regulates boundary waters between the United States and Canada. This commission is described as a freshwater regime in another article of the symposium; i.e., Stephen Toope and Jutta Brunnee, *Freshwater Regime: The Mandate of the International Joint Commission.*[13] In this brief article, we do not explore the relations between the regime established by the International Joint Commission and the evolving regime of the Lake Champlain Basin Program.

The Lake Champlain Basin Program was originally set up in 1949, as the New York-Vermont Interstate Commission on Lake Champlain. In the 1970s, in response to the nationally authorized river basin program, the New England River Basin Commission conducted a study of various environmental issues in Lake Champlain.[14] In 1988, the Governors of Vermont and New York and the Premier of Quebec opened a new era of cooperation on lake management when they signed a Memorandum of Understanding on Environmental Cooperation on the Management of Lake Champlain.[15] This agreement creates a mechanism for the exchange of information and encourages cooperative dependant planning for environmental protection. In effect for a period of four years, this agreement has been renewed by the signatories in 1992 and 1996. In 1990, Congress passed the Lake Champlain Special Designation Act which established a Management Conference charged with pollution prevention and the creation of a restoration and management plan for the Lake Champlain Basin.[16] The plan identifies goals, objectives and priorities on various issues regarding environmental restoration and protection in the Basin.[17]

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in an effort to control various sources of pollution of the lake. This litigation involved tort suits by lakeside owners against a paper mill on the lake in New York state. For detailed accounts of the early litigation, see *The Battle of Lake Champlain-Interstate Pollution and the Inadequacy of the Judicial Process: Vermont v. New York*, 1 VT. L. REV. 175 (1976).

13. *See* Stephen J. Toope & Jutta Brunnée, *Freshwater Regime: The Mandate of the International Joint Commission,* 15 ARIZ. J. INT'L & COMP. L. 273 (1998).

14. For an account, see CHARLES FOSTER, EXPERIMENTS IN BIOREGIONALISM (1984).

15. MEMORANDUM OF UNDERSTANDING ON ENVIRONMENTAL COOPERATION ON THE MANAGEMENT OF LAKE CHAMPLAIN (1988, 1992, 1996) [hereinafter MEMORANDUM ON ENVIRONMENTAL COOPERATION].

16. *See* Great Lakes Critical Programs Act of 1990, Pub. L. No. 101-596, 104 Stat. 3000.

17. *See* LAKE CHAMPLAIN MANAGEMENT CONFERENCE, OPPORTUNITIES FOR ACTION: AN EVOLVING PLAN FOR THE FUTURE OF THE LAKE CHAMPLAIN BASIN (1996) [hereinafter

The 1990 Lake Champlain Special Designation Act mandates the Lake Champlain basin program to coordinate the activities set out in the Act. The themes of the restoration plan include the establishment of partnerships among the differing agencies and organizations acting in the Basin, an ecosystem-based planning and management approach within the watershed area, and the integration of environmental and economic goals with an emphasis upon flexible pollution prevention.[18] The priorities identified in the plan include: the reduction of phosphorus; the prevention and control of persistent toxic contaminants; and the control of nuisance non-native aquatic species such as zebra mussels.

This legal history of Lake Champlain does not fully reflect the complex natural and cultural levels of description important to understanding the lake. Even an oversimplified description would identify at least three levels: (1) a natural level characterized by an ecosystem approach; (2) a cultural level, expressing the perceptions, values, and practices of the people in the river basin; and (3) the legal level, i.e., the formally authorized plan and obligations to follow up implementation. Not only is there considerable ambiguity and pluralism within each level, but there are interactions between the levels themselves. The regime theory employed in this paper represents a necessary abstraction and simplification of the complex multi-layered reality of the governance of Lake Champlain.

III. SELECTED ENVIRONMENTAL PROBLEMS OF LAKE CHAMPLAIN[19] AND CORRESPONDING LEGISLATION

Because Lake Champlain is presently encountering problems of pollution by airborne mercury, high phosphorus loads from non-point source runoffs, and damage to natural and cultural resources caused by tourism development, a brief description of these problems and the present legal response is in order.

A. Mercury

1. The Mercury Problem

The Lake Champlain Management Conference identified mercury, along with PCBs, as a toxic substance with highest priority concern of those found in Lake

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RESTORATION PLAN].

18. *See id.*

19. Note 3, *supra*, lists the range of pollution problems in Lake Champlain. However, the environmental issues extend beyond these, to include soil erosion, developments in wetlands, developments in fragile areas, failure to protect wildlife resources, and eutrophication.

Champlain's biota, sediments and water. The Environmental Protection Agency (EPA) recently identified many anthropogenic sources of mercury in the United States, and attempted to quantify emissions where possible. Major sources appear to be combustion sources, such as municipal waste combustors, coal-burning utility boilers, medical waste incinerators, and commercial-industrial boilers. Manufacturing sources, such as primary lead production, secondary mercury production, and chlor-alkali plants are also significant emitters of mercury.[20]

Industrial processes release mercury in particulate and gaseous states. Studies indicate that a high percentage of particulate forms may deposit within a regional-scale area (e.g. within a thousand kilometers), while elemental mercury vapor travels on a much larger (possibly global) scale.[21] The atmospheric lifetime of elemental mercury is relatively long, estimated to be about one year.[22] During this time, mercury can travel great distances on the prevailing winds. According to EPA predictions, the northeastern United States is subject to one of the highest annual rates of total mercury deposition in North America.[23] Major contributors to mercury deposition (referred to as "loadings") in the Lake Champlain basin are likely to be coal-fired utilities in the Midwestern states and municipal waste combustors in the Northeast.[24] Additional mercury may be deposited from sources in southeastern Canada by winds crossing the Basin.[25] There are no significant sources of mercury within the state of Vermont.[26]

Once mercury has been deposited into the aquatic system it continues its complex processes of chemical transformation and movement, which are not completely understood. Mercury may be released back to the atmosphere as vapor, flow out of the system in streams, or be retained in sediments and biota. Studies of forested watersheds, such as Lake Champlain's, indicate that a large portion of atmospherically deposited mercury may be retained in the watershed,[27] although a

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20. For a discussion of air pollution sources of mercury, see Amendments to Standards for Asbestos & Mercury, 40 Fed. Reg. 48,292, 48,302 (1975).

21. *See, e.g.*, I. Olmez, et al., Upstate New York Trace Metals Program, Vol. I., MIT Rep. No. MIDNRL-064 (1996).

22. *See* Background, History and Current Applications of Low Level Mercury Measurement 4 (on file with author).

23. *See* Amendments to Standards for Asbestos & Mercury, 40 Fed. Reg. at 48,292, 48,302.

24. *See* NORTHEASTERN STATES FOR COORDINATED AIR USE MANAGEMENT (NESCAUM), NORTHEAST REGIONAL MERCURY STUDY (1997) (in progress).

25. *See* Olmez, *supra* note 21, at iii.

26. Vermont has one medical waste incinerator, Safety Medical Systems, Inc., located in Colchester. It has excellent controls and mercury emissions are minuscule or nil. *See* Telephone Interview with Brian Fitzgerald, Air Pollution Control Division, Vt. Agency of Natural Resources (April 17, 1997).

27. See SCHERBATSKOY, DEPOSITION AND WITHIN FOREST PROCESSING OF ATMOSPHERIC MERCURY (1994), indicating that mercury import exceeded mercury export in

significant part of this may be re-emitted to the atmosphere.[28] Soils and sediments provide large mercury reservoirs. As a result, mercury may continue to be recycled from the forest and lake bottom back into the aquatic ecosystem, possibly for hundreds of years.[29]

Methylation is the process by which bacteria converts inorganic mercury into organic compounds, from which it enters the food web. This process may take place in sediment and in the water column. Not all mercury compounds in the lake are methylated; however, nearly one hundred percent of the mercury that bioaccumulates in fish is methylated.[30] Methyl mercury accumulates in the muscle tissue of fish.[31] Methyl mercury increasingly concentrates as it moves through the food web through a process known as biomagnification. Consequently, organisms at the top of a food chain, such as eagles and humans, receive exponentially greater amounts of Methyl mercury.

Methyl mercury is of great concern because of its persistence in the environment, its ability to bioaccumulate, and its toxicity. The primary exposure route is through consumption of contaminated fish. Because Methyl mercury is stored in the muscle tissue of fish, it is not removed by cleaning.[32]

Mercury is a known human toxicant and Methyl mercury is one of its most toxic forms. Neurotoxic effects of poisoning include: (1) impairment of vision or blindness; (2) sensory disturbances; (3) coordination difficulties; (4) impairment of speech, hearing, and walking; (5) mental disturbances; and (6) death.[33] Children and fetuses are particularly vulnerable due to nervous system development and immaturity. Infants born to mothers who have consumed Methyl mercury may show

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the Nettle Brook watershed in Vermont. Note also that through fall represents a significant regular addition of mercury to the forest. *See id.* at 7.

28. *See* S. E. LINDBERG, AIR/SURFACE EXCHANGE OF MERCURY VAPOR IN FORESTS: THE IMPORTANCE OF DRY DEPOSITION AND RE-EMISSION IN THE OVERALL BIOGEOCHEMICAL CYCLE OF MERCURY, CANADIAN MERCURY NETWORK WORKSHOP (1995) [hereinafter MERCURY STUDY].

29. *See id.* at 2-4.

30. *See id.* at 2-5.

31. Lake Champlain has a pH of less than 5.5. Note also the implications of acid rain deposition. *See id.* at 3-26.

32. For example, inhalation exposure to elemental mercury vapor may take place in certain occupational fields. *See id.* at 2-6.

33. Two major epidemics of Methyl mercury poisoning through fish consumption have occurred, including a mass poisoning at Minimata Bay, Japan, beginning in 1956. Methyl mercury released from a chemical factory accumulated in fish and shellfish, which were subsequently consumed. That Methyl mercury can cause human disease through fish consumption has therefore been established with the highest degree of scientific certainty. *See id.* at 3-16. Methyl mercury does not appear to be carcinogenic. *See* ENVIRONMENTAL PROTECTION AGENCY, CARCINOGENICITY ASSESSMENT FOR LIFETIME EXPOSURE, SAB REVIEW DRAFT, B-48 (1996).

nervous system damage even though the mother is only slightly affected.[34] The EPA has set a reference dose (RfD) for Methyl mercury at .1*ug*/kg of body weight/day.[35] Generally, an organism's position in the aquatic food chain determines its exposure to Methyl mercury. Fish-eaters and animals which prey on fish-eaters accumulate greater quantities due to biomagnification.[36] Effects on wildlife include: (1) convulsions; (2) erratic movements; (3) flying difficulties in birds; (3) behavioral deficits; and (4) possibly reproductive deficits.[37] Because of these effects, the presence of mercury in the food web may have broad implications for populations and species.

Since the Lake Champlain Basin extends through two states, one province, and two countries, many people and jurisdictions have an interest in the health of Lake Champlain. In total, the basin involves 227 regional, state, or federal government entities.[38] A full review of these organizations is beyond the scope of this paper, but a brief sampling of the types of mechanisms being used to address the mercury issue is useful.

2. Traditional National and State Law

a. The Federal Clean Air Act

Several sections of the United States Clean Air Act are pertinent to airborne mercury control and may be used to address the issue of mercury in the Lake Champlain Basin. These federal and state provisions not only offer a traditional regulatory approach, but also offer support to a regime-based approach. Mercury pollution by Midwestern utilities and northeastern waste combustors results in probable health effects to Canadians as well as Americans. Mercury emissions emitted in the United States, which may be reasonably anticipated to endanger public health or welfare in Canada, may be grounds for action by the EPA

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34. *See* MERCURY STUDY, *supra* note 28, at 3-17.

35. The EPA's RfD is within the range of uncertainty of the Federal Department of Agriculture's tolerable daily intake (TDI) of .47*ug*/kg/day and the World Health Organization's estimated daily intake that will not cause any adverse effects to adults of .48 *ug*/kg/day. The EPA's RfD is set lower to reflect the sensitivity of pregnant women and children. These levels translate to limitations of approximately one serving per week of species with Methyl mercury levels around 1ppm, for adults other than women of child-bearing age.

36. A study in Florida revealed extremely high mercury levels (100ppm in the liver of one dead panther) in a small group of Florida panthers that eat fish-eating raccoons instead of the usual diet of deer and wild pigs. *See* John Carey, *Looking for Lessons From Loons,* NAT'L WILDLIFE, Aug. 18, 1996, at 12.

37. *See* MERCURY STUDY, *supra* note 28, at 3-37.

38. *See* LAKE CHAMPLAIN BASIN PROGRAM ANNUAL REPORT 2 (1991-92).

Administrator (the Administrator) under § 115. In this case, § 115 of the Clean Air Act[39] may be invoked,[40] if two conditions are met. First, the pollution must be found to endanger Canadians, and second, Canada must have reciprocity with the United States. Upon receipt of such information from an international agency, the Administrator may give notice to the Governor of the state in which emissions of "any pollutant" originate. The notice is deemed a finding requiring a revision of the State's Implementation Plan that must be adopted under the Clean Air Act.[41]

Section 129 of the Clean Air Act requires the Administrator to set performance standards for certain new and existing categories of solid waste combustors,[42] which are significant sources of mercury. The performance standards must specify numerical emission limitations for certain listed substances, including mercury.[43] The section requires the maximum degree of reduction in emissions of air pollutants that the Administrator determines is achievable for new and existing units in each category.[44] In setting these standards, the Administrator must take into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements.[45] The EPA promulgated final rules for municipal waste combustors.[46] In addition, standards have been proposed for medical waste incinerators[47] and hazardous waste combustors.[48] These national emission standards apply to pollution sources outside of Lake Champlain.

Section 112 of the Clean Air Act[49] is the primary mechanism by which the federal Clean Air Act addresses mercury deposition in Lake Champlain. Mercury is one of the pollutants listed as hazardous under § 112(b).[50] Mercury is addressed specifically in § 112(c)(6), which directs the Administrator to list categories of

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39. *See* 42 U.S.C. § 7415 (1995).

40. The specific requirements for reciprocity have not been set forth by the EPA. It would appear to require a case-by-case determination. For a passing discussion of Section 115, see Her Majesty the Queen in Right of Ontario v. EPA, 912 F.2d 1525 (D.C. Cir. 1990).

41. *See* 42 U.S.C. § 7415(b).

42. Including large and small municipal waste combustors, medical waste incinerators, and commercial or industrial combustors. *See* Clean Air Act § 129(a)(1), 42 U.S.C. § 7429(a)(1) (1995).

43. *See* 42 U.S.C. § 7429(a)(4).

44. *See* 42 U.S.C. § 7429(a)(2).

45. *See id.*

46. *See* Standards of Performance for Municipal Waste Combustors, 60 Fed. Reg. 65, 382 (1995) (to be codified at 40 C.F.R. pt. 60).

47. *See* Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Medical Waste Incinerators, 60 Fed. Reg. 10, 654 (1995) (to be codified at 40 C.F.R. pt. 60) (proposed Feb. 27, 1995).

48. *See* Revised Standards for Hazardous Waste Combustors, 61 Fed. Reg. 17, 358 (1996) (to be codified at 40 C.F.R. pts. 60, 63, 260, 261, 265, 266, 270, 271) (proposed Apr. 19, 1996).

49. *See* 42 U.S.C. § 7412.

50. *See* 42 U.S.C. § 7412(c)(6).

sources by 1995, ensuring that sources accounting for at least ninety percent of the aggregate mercury emissions are subject to the technology-based standards of § 112(d) by the year 2000.[51] There are three significant features of § 112: (1) technology-based standards; (2) residual risk standards; and (3) report requirements. The technology-based standards target maximum achievable emission reduction, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements. Technology-based standards are defined differently depending on whether the point source[52] category represents new or existing sources.[53] In addition, if a health threshold has been established for a particular pollutant, the Administrator may consider such a threshold level, with an ample margin of safety, when establishing the emission standards under this section.[54]

Several reports are required by § 112 that are relevant to mercury emissions control. Sub-section (m), the most directly applicable to Lake Champlain, requires the EPA to identify and assess the extent of atmospheric deposition of hazardous air pollutants to the Great Lakes, Chesapeake Bay, coastal waters, and Lake Champlain. By 1993, the EPA was to produce a report (the "Great Waters" Report) on the results of its studies, including an assessment of: (1) the contribution of atmospheric deposition to pollution loadings; (2) the environmental and public health effects of any pollution which is attributable to atmospheric deposition; (3) the sources of such pollution; (4) whether pollution loadings cause or contribute to violations of drinking water standards; and (5) a description of any revisions of the requirements, standards, and limitations pursuant to the Clean Air Act and other applicable Federal laws as are necessary to assure protection of human health and the environment.[55] The Administrator is to determine whether the other provisions of § 112 are adequate to prevent serious adverse effects to public health and widespread environmental effects associated with atmospheric deposition, taking into

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51. Electric utility steam generating units (major mercury emitters) are excerpted, and are dealt with separately in § 112(n). *See* 42 U.S.C. § 7412(n).

52. Point sources emit the vast majority of mercury. *See* Appendix B. Section 112(d)(5) also defines a technology-based standard for area sources. *See* 42 U.S.C. § 7412(d)(5).

53. ACT for new sources must not be less stringent than the emission control that is achieved in practice by the best controlled similar source. ACT for existing sources must not be less stringent than the average emission limitation achieved by the best performing 12% (or the best performing 5, if the category contains fewer than 30) of existing sources. *See* 42 U.S.C. § 7412(d)(3).

54. The EPA's RfD for Methyl mercury was calculated based upon data from 81 Iraqi children who had been exposed *in utero*. That study has been criticized, among other reasons, for its small sample size. New studies are underway which may yield considerable new data on health effects; however, they have not yet been subjected to rigorous scientific review. *See* MERCURY STUDY, *supra* note 28, at 3-20.

55. *See* 42 U.S.C. § 7412(m)(5).

consideration the tendency of the pollutants to bioaccumulate. If not, the Administrator must promulgate additional measures by 1995 to prevent such effects, including effects due to bioaccumulation and indirect exposure pathways.[56] This study, as well as the others mandated by the Clean Air Act, could be extremely valuable in formulating strategies to combat mercury deposition in Lake Champlain. The Great Waters First Report to Congress was released in May, 1994, six months after it was due. Although further reports were due biennially thereafter, a second report has yet to be submitted. While the first report recognized the seriousness of hazardous air pollutants in the nation's waters and the pivotal role of atmospheric deposition, it failed to assess whether § 112 was adequate to prevent serious adverse effects to health and the environment, and if not, to identify additional measures which may be necessary. Consequently, the Administrator has not promulgated any such additional measures.

A study on mercury was completed by EPA but has yet to be released, ostensibly because the EPA wants to consider information from ongoing mercury studies. The EPA is facing increasing pressure from lawmakers, who point out that neither Congress nor the EPA can use the report's findings to support legislation or rule-making until it has been officially sent to Congress.[57] In particular, it seems highly unlikely that the EPA will regulate utilities until the relevant studies have been completed.

b. Vermont's Clean Air Act

Unlike the United States Clean Air Act, the State of Vermont has set ambient air standards for mercury at .02 *ug*/m3.[58] These standards are based on direct inhalation exposure, which is not a key exposure route for mercury. Consequently, the standards are very stringent and of limited value. Since the vast majority of the mercury that ends up in Lake Champlain comes from beyond state boundaries, Vermont's regulations, which do not apply to out-of-state sources, will have little effect on the water quality of the lake.

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56. *See* 42 U.S.C. § 7412(m)(6).

57. *See, e.g., Lawmakers Demand Mercury Report Be Sent to Congress Immediately*, AIR/WATER POLLUTION REP.'S ENVT. WK., Oct. 28, 1996. *See also, Leahy Wins Pledge on Mercury Study*, BURLINGTON FREE PRESS, April 9, 1997.

58. *See* Control of Hazardous Air Contaminants, § 5-261, Vt. Envtl. Bd., Health and Safety Regs.; Hazardous Air Contaminants, App. B., Vt. Envtl. Bd., Health and Safety Regs.; Hazardous Ambient Standards, App. C, Vt. Envtl. Bd., Health and Safety Regs.; Method for the Derivation of Hazard Limiting Values, App. D, Vt. Envtl. Bd., Health and Safety Regs.

3. Regime Approaches

a. Regional Regimes

Despite national statutes and regulations, regional organizations, i.e., "regimes," may also play an important role in formulating solutions to the problem of atmospheric mercury loadings to Lake Champlain. However, these regimes extend beyond the geographic limits of the Basin. One example is the Northeastern States for Coordinated Air Use Management (NESCAUM), a consortium of air quality agencies which has undertaken a northeast regional mercury study to refine and update the EPA's emission inventory. NESCAUM is working on the project in concert with the Northeast Waste Management Officials Association (NEWMOA) and the New England Interstate Water Pollution Control Commission (NEIWPCC) for an integrated, multi-media approach to pollution control. The project also works with the eastern Canadian provinces on developing collaborative monitoring programs. Another example of a regional regime is the Lake Champlain Basin Program, described above.[59]

These regional organizations clearly play important roles, particularly because of their focus on ecosystems and because they involve numerous and diverse interests, encouraging a higher level of participation than bureaucratic regulation. Such organizations may increase coordination among various levels of government, the private sector, and citizens, eliminating duplication of efforts and taking advantage of local knowledge. Regimes may create effective processes for the regular exchange of information and cooperative research, data gathering, and scientific analysis. In addition, they may have greater political clout in representing Lake Champlain's interests than would smaller, single-purpose organizations acting individually or larger organizations with multiple purposes and a complex agenda.[60]

b. Regional Transnational Regimes

Agreements with Canada or Quebec are critical to addressing the mercury problem in Lake Champlain, since the mercury affects fishing interests on both sides of the border and since the lake is otherwise "managed" by both nations. As stated above, the Memorandum of Understanding on Environmental Cooperation on the Management of Lake Champlain was signed in 1988 (renewed in 1992 and 1996) by the governors of Vermont and New York and the premier of Quebec to establish

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59. See text at *supra* note 15.

60. For a discussion of the factors contributing to the formation of effective regimes, see YOUNG & OSHERENKO, *supra* note 11, at 2 and pages following. For a discussion of the factors affecting the effectiveness of regimes, see ORAN YOUNG, ET AL., GLOBAL ENVIRONMENTAL CHANGE AND INTERNATIONAL GOVERNANCE (1996).

a forum for cooperative management of Lake Champlain and its watershed. A Steering Committee was formed under the Memorandum and participated in the formulation of the Lake Champlain Basin Program's plan for Lake Champlain. Although the Memorandum's objectives are laudable, it is written in relatively soft language and it may be terminated by any party upon six months notice.[61]

The United States and Canada have also been working together on a number of bilateral initiatives. For example, under the Great Lakes Water Quality Agreement,[62] President Clinton and Prime Minister Chretien committed to a joint strategy to virtually eliminate persistent toxic substances, particularly those which accumulate, from the Great Lakes basin. To this end, the "Great Lakes Binational Toxics Strategy" was signed on April 7, 1997.[63] Under the Strategy, the United States committed to reducing national mercury releases by fifty percent by 2006. This accord, as well as other international accords such as the United States-Canada Air Quality Accord of 1991, offers similar potential strategies for addressing air pollutants in Lake Champlain.

B. Non-Point Source Runoff: Reducing Phosphorus

1. The Phosphorus Problem

As with mercury, phosphorus causes significant degradation to the waters of Lake Champlain. Phosphorus is the nutrient posing the greatest threat to clear and nuisance-free water in Lake Champlain. Nutrients act as fertilizers, promoting rapid growth of algae and plants. Human activities can greatly increase nutrient inputs to the lake. These cultural nutrient sources accelerate eutrophication, the natural aging process of lakes in which biological and chemical material accumulates, causing lakes to produce algae and other aquatic plants. When the amount of phosphorus entering the lake increases and remains high over time, the lake becomes over-fertilized and produces excessive amounts of these aquatic plants. Algal blooms turn water green, reduce water transparency, deplete the oxygen supply, and create odor problems. Ultimately, these blooms alter fish and wildlife habitat, impair scenic views, reduce recreational appeal, impair water supplies, and lower property values.

Phosphorus levels are elevated in many parts of Lake Champlain, and in some areas levels compare to those found in the most polluted parts of the Great

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61. *See* MEMORANDUM ON ENVIRONMENTAL COOPERATION, *supra* note 15, § 9.

62. *See* Great Lakes Water Quality Agreement of 1978, Nov. 22, 1978, U.S.–Can., 30 U.S.T. 1383.

63. *See U.S., Canada Agree to Eliminate Toxics in Great Lakes by 2006*, INSIDE E.P.A. WKLY. REP., April 11, 1997, at 10.

Lakes (Saginaw Bay and the western end of Lake Erie) during the 1970s.[64] Missisquoi Bay, St. Albans Bay and the South Lake are the segments of Lake Champlain with the highest phosphorus levels. Nuisance algal conditions exist nearly half of the time in these areas.[65]

Wastewater treatment and industrial discharges are the main point sources of phosphorus, contributing approximately thirty percent of the total phosphorus entering Lake Champlain. Nonpoint sources, which account for seventy percent of the phosphorus loading, include: (1) lawn and garden fertilizers; (2) dairy manure and other agricultural wastes; (3) pet wastes; and (4) exposed or disturbed soil. At the local level, nonpoint sources may include malfunctioning septic systems and streambank erosion.

The major categories of land use within the Basin are agricultural land (twenty-eight percent of Basin area), forested land (sixty-two percent of Basin area), and urban and other developed land (three percent of Basin area). Agricultural activities contribute approximately sixty-six percent of the annual nonpoint phosphorus load to the lake. Forests cover a majority of the Basin's surface area but are estimated to contribute only sixteen percent of the average annual nonpoint source phosphorus load to the lake. Urban land produces approximately eighteen percent of the average annual non-point source phosphorus load to the lake but contributes much more phosphorus per unit area than either agricultural or forested land. Natural background sources of phosphorus are estimated to account for only twenty-four percent of the present day total load, indicating that human activities in the Basin have increased phosphorus loading to the lake four-fold over the original pre-development levels.

2. Traditional Controls

While phosphorus loads to Lake Champlain were not well monitored in the 1970s and 1980s, Vermont point source loads are estimated to have been reduced by at least forty percent between the 1970s and 1991 as a result of banning phosphate detergents and regulating wastewater treatment plants and industrial discharges. Additional reductions are presumed to have resulted from New York's phosphate detergent ban, although amounts have not been documented. The 1992 Vermont Phosphorus Reduction Statute (requiring improved phosphorus treatment at larger municipal treatment plants), along with decreased phosphorus discharges from several New York communities, resulted in an additional forty-three percent (107 metric tons per year) reduction between 1991 and 1995. The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service models estimate

64. *See* VERMONT AGENCY OF NATURAL RESOURCES, LAKE CHAMPLAIN PHOSPHORUS REDUCTION: VERMONT IMPLEMENTATION PLAN (1996).

65. *See id.*

reductions in the phosphorus loads from nonpoint sources have been reduced at more than sixty-five metric tons per year (approximately ten percent) since the 1970s through voluntary pollution control efforts on farms supported by the USDA cost-share funds. The agricultural community strongly supports these cooperative conservation programs.

3. Transnational Regimes

In 1993, New York, Vermont, and Quebec signed a Water Quality Agreement (WQA) which provides for adoption of a consistent approach to phosphorus management. The WQA defines in-lake phosphorus concentration criteria for thirteen different segments of the lake. The states of Vermont and New York subsequently completed a study to measure point and nonpoint source phosphorus loads in the lake, to develop a phosphorus budget for the entire lake, and to develop a load reduction strategy to attain the in-lake criteria. The results of this study indicate the annual phosphorus load to the lake needs to be reduced by another fifty-seven metric tons (relative to the 1995 load) in order to attain the in-lake criteria. This reduction represents about 11% of the estimated 1995 total of 496 metric tons. The challenge is to continue to reduce phosphorus loads from both point and nonpoint sources and to allocate load reductions throughout the Basin in a fairer, more efficient, and cost-effective manner.

In 1995, New York and Vermont developed an optimization procedure to determine the cost-effectiveness of various strategies for attaining the in-lake phosphorus criteria. Designed for use with the Diagnostic-Feasibility Study, the optimization procedure takes into account the costs of potential phosphorus reductions achievable from point and nonpoint sources, as well as the manner in which changes to phosphorus levels in each lake segment are expected to affect phosphorus levels in all other lake segments. The procedure allows one to sort through the multitude of possible combinations of point and nonpoint source reductions predicted to attain the in-lake criteria in order to choose the optimum controls.[66]

In early 1996, representatives from Vermont and New York and the EPA used the phosphorus model and optimization procedure to develop a new bi-state process for phosphorus reduction. Following extensive analysis of numerous reduction scenarios, the group selected a load reduction process considered both fair and cost-effective. The agreed upon process distributes the responsibility for phosphorus reductions among nineteen watersheds. The Lake Champlain Management Conference endorsed the process based on the following principles and agreements:

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66. *See id.*

1. Lake Champlain is a priority for protection;

2. The interim management goals specified in the 1993 New York, Vermont, and Quebec Water Quality agreement are suitable goals for developing loading targets for Lake Champlain. The goals may be revised in the future, as appropriate, based on new information.

3. The Lake Champlain Diagnostic-Feasibility Study model in combination with the optimization procedure (referenced above) is a suitable tool for developing interim phosphorus loading targets for Lake Champlain. The EPA, New York State Department of Environmental Conservation and the Vermont Department of Environmental Conservation will develop a program to enhance the model and to revise/finalize the phosphorus loading targets, as necessary, within five years.

4. The point and nonpoint source phosphorus loading targets for lake segment watersheds will be adopted by the States of New York and Vermont. These loading targets were generated by the phosphorus model and optimization procedure described above. The State of Vermont will seek an agreement with the Province of Quebec to ensure that both entities contribute to the attainment of the necessary phosphorus reductions in Missisquoi Bay.

5. Each state will have the opportunity to adjust its total loading targets by contributing watershed as it sees fit, as long as the adjusted loads continue to meet the in-lake phosphorus concentration goals. During this stage, each state will keep the other state's allowable loads fixed. The adjusted loads for each state will then be checked together to ensure that the in-lake goals will be achieved.

6. Each state will reduce the difference between existing (1995) loads by contributing watershed, and target loads by contributing watershed, by at least twenty-five percent per five year period for the next twenty years.

a. The first twenty-five percent reduction must be incorporated in specific nonpoint source actions or specific point source permit modifications to be identified by October 1, 1996, and implemented in the next five years;

b. The states are free to choose the appropriate mix of point and nonpoint source actions to be implemented in each contributing watershed;

c. The specific actions to achieve the remaining seventy-five percent reduction will be identified within five years.[67]

As of March 1997, Vermont and Quebec agreed to the following:

> The State of Vermont and the Province of Quebec agree that phosphorus reduction in Missisquoi Bay should be a high priority for the management of water quality in Lake Champlain. In 1993, the Province of Quebec and the States of Vermont and New York signed a Lake Champlain Water Quality Agreement endorsing a phosphorus criterion of 0.025 mg/l for Missisquoi Bay. In 1996, the Lake Champlain Management Conference approved a plan calling for a reduction in the phosphorus loading to Missisquoi Bay from Vermont and Quebec down to a target level of 109.7 metric tons per year.
>
> In order to implement the phosphorus reductions necessary in Missisquoi Bay, the State of Vermont and the Province of Quebec have agreed to the formation of a Missisquoi Bay Phosphorus Reduction Task Force. The Task Force will be composed of staff from the Vermont Agency of Natural Resources, the Quebec Ministry of the Environment and Wildlife, and other agencies as appropriate. The Task Force will accomplish the following items and report back to the Lake Champlain Steering Committee by March 1999.
>
> 1. Review and reach technical concurrence on the phosphorus loading data and modeling analyses used to establish load reduction targets for Missisquoi Bay.

67. *See id.*

Propose and conduct additional research if necessary.

2. Assess the magnitude of phosphorus loading to Missisquoi Bay from Vermont and Quebec, and from each source category and sub-watershed. Develop additional land use data and watershed phosphorus modeling analyses as necessary to support this assessment.

3. Review the policies and programs in Vermont and Quebec that are in effect or available to implement point and nonpoint source phosphorus reductions in the watershed of Missisquoi Bay.

4. Propose a fair and practical division of responsibility between Vermont and Quebec for achieving the target load reductions for Missisquoi Bay. Identify specific point and nonpoint source management actions and schedules within each jurisdiction to achieve the target loads.[68]

The Vermont Agency of Natural Resources determined that:

> Until better information is available on the relative magnitude of phosphorus loading to Missisquoi Bay from Vermont and Quebec, it is necessary to apply some simple assumptions. Approximately half of the watershed of Missisquoi Bay is in Vermont and half is in Quebec. For the purpose of the present plan, it will be assumed that half of the total 152 mt/yr nonpoint source phosphorus load to Missisquoi Bay measured in 1991 was derived from Quebec, and that half of the total 39 mt/yr phosphorus reduction requirement for Missisquoi Bay should be accomplished by Quebec.[69]

Among the next steps in the process is the reconciliation of Vermont's non-point source pollution reduction program law and regulations[70] and Quebec's

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68. *See* Agreement on the Formation of a Missisquoi Bay Phosphorus Reduction Task Force, Mar. 25, 1997, Vt.-Que., at 1.

69. *See* MEMORANDUM ON ENVIRONMENTAL COOPERATION, *supra* note 15.

70. *See* 6 VT. STAT. ANN. 4810-55 (Supp. 1997); Accepted Agricultural Practice Regulations (effective June 29, 1995); Best Management Practice Regulations (effective Jan. 27, 1996).

legislation and regulations respecting pollution from agricultural operations.[71]

C. Tourism Development

1. The Tourism Problem

Tourism is one of the primary industries in the Lake Champlain Basin, generating an estimated total annual revenue of over $2.2 billion (U.S.).[72] This is not surprising given that among the principal motivations attributed to tourists in deciding their destinations are interests in the environment, history, and culture.[73] The 8,200 square miles that make up the Basin contains 435 square miles of surface water and 587 miles of lakeshore. The area is bounded on three sides by mountain ranges. This natural setting draws visitors all year round for diverse outdoor recreational activities. The region's rich cultural heritage resources are also an important attraction for tourists.[74] Heritage sites in the Basin date from over ten thousand years ago and include: (1) sacred aboriginal sites; (2) the largest and most intact collection of ship-wrecks in North America; (3) forts; and (4) cultural landscapes marking the history of English and French exploration, military conflict, farming, and industrial development.[75]

Marketing strategies to better promote these resources so as to attract even larger numbers of local and foreign tourists and to collect greater financial returns from the tourism industry are actively being developed.[76] The financial benefits of tourism are not, however, without their costs. One of the most serious consequences of un-checked tourism is the degradation of historic and natural sites. There are many examples around the world where over-tourism so seriously threatened the protection of sites that without a reduction in tourist traffic the sites would be lost forever. Consider, for example, Stonehenge in the United Kingdom, where the erosion of soil in the circular paths caused some of the large stones to topple over,

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71. An Act to Preserve Agricultural Land, R.S.Q. c. P-4.1; Regulation Respecting Water Pollution in Livestock Operations, ss. 20, 31, 47, 70, 124.1, 127.

72. *See* RESTORATION PLAN, *supra* note 17, at 43.

73. *SEE* DONALD E. HAWKINS & J. R. BRENT RITCHIE, TRENDS AND FORECASTS, WORLD TRAVEL AND TOURISM REVIEW IX (1991); DAVID L. EDGELL, INTERNATIONAL TOURISM POLICY 115 (1990).

74. A market study carried out in 1996 by MarketReach Inc. on behalf of the Lake Champlain Basin Program indicates that approximately 60% of the visitors are interested in the Basin's historic and cultural sites: *See* 1996 LAKE CHAMPLAIN BASIN CULTURAL HERITAGE: TOURISM SURVEY AND MARKETING PLAN 1 (1997) [hereinafter MARKETING PLAN].

75. For a description of the Basin's cultural resources, see the report prepared by Argus for the Lake Champlain Basin Program: THE LAKE CHAMPLAIN BASIN: CULTURAL RESOURCES PLANNING NEEDS ASSESSMENT (1995).

76. See examples of marketing strategies in MARKETING PLAN, *supra* note 74.

and eventually led to the closure of the site. Similarly, officials barred tourists from visiting the pre-historic paintings dating from 15,000 to 13,000 B.C. found in the Caves at Lascaux, France after serious deterioration caused by moisture and carbon dioxide exhaled by the hundreds of thousands of visitors entering the caves each year became evident.[77] The relationship between tourism and natural and cultural resources may thus be classified as both symbiotic and precarious with each relying on the quality of the other for survival.

2. Traditional Controls

Tourism is a fragmented, complex and rapidly evolving industry. Environmental damage caused through tourism may result from many diverse sources. These sources include: (1) a lack of or inappropriate site planning and management; (2) intentional damage due to vandalism; and (3) over-estimations of the "carrying capacity" of respective environments, i.e., the number of visitors and related impacts a given site is capable of sustaining.[78] It is very difficult to establish a fixed formula for carrying capacities, due to the subjective values involved. In addition, the various sources of problems have a cumulative effect manifesting over a period of time and making the link between cause and damage difficult to establish and regulate. Without verifiable information to justify controls, legislators are hesitant to impose restrictions on the tourism industry, an industry which, in many cases, is perceived as the key to future survival and economic viability of the region.[79]

Managing the development of tourism would entail the adoption of planning strategies and guidelines to control and mitigate the negative impacts of tourism without sacrificing its benefits.[80] This is a challenge that will require

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77. *See Heritage Sites at Risk, reprinted in* THE MONTREAL GAZETTE, Oct. 18, 1997, at C12; *see also* World Monuments Fund (visited Feb. 2, 1998) <http://www.-worldmonuments.org>.

78. *See* LAKE CHAMPLAIN MANAGEMENT CONFERENCE, OPPORTUNITIES FOR ACTION: AN EVOLVING PLAN FOR THE FUTURE OF THE LAKE CHAMPLAIN BASIN 4 (1994); *see also* INT'L INST. FOR SUSTAINABLE DEVELOPMENT, REPORT OF THE INTERNATIONAL WORKING GROUP ON INDICATORS OF SUSTAINABLE TOURISM TO THE ENVIRONMENTAL COMMITTEE OF THE WORLD TOURISM ORGANIZATION (1993).

79. For an interesting analysis on the politics of tourism planning, see COLIN MICHAEL HALL, TOURISM AND POLITICS: POLICY, POWER & PLACE (1994).

80. The Ecotourism Society defines "sustainable tourism" or "eco-tourism" as "responsible travel that conserves the natural environment and sustains the well-being of local people." Megan Epler Wood, *Introduction to Ecotourism Guidelines for Nature Tour Operators* (1993) <http://www.eco-tourism.org>. On the general subject of sustainable tourism, see also: COLIN HUNTER & HOWARD GREEN, TOURISM AND THE ENVIRONMENT: A SUSTAINABLE RELATIONSHIP (1995); EDWARD INSKEEP, TOURISM PLANNING: AN INTEGRATED

flexibility and collaboration, two elements not traditionally associated with land use planning and resource management.[81] Traditional legal tools, such as municipal zoning, environmental, and heritage legislation are constrained by a variety of factors, including geographical limitations, limits in authority to control site access and visitor use,[82] and limited financial resources.

3. The Regime of Industry Codes

Without an adequate public regime of controls, it is necessary to plan for and provide rational order to such a diverse and dynamic industry by developing policies to assist the industry's decision-makers.[83] Recourse to environmental codes of conduct is a growing response by organizations around the world to a perceived need for a new approach to tourism planning.

a. Industry Codes of Conduct

Before looking specifically at tourism codes in the Lake Champlain Basin and some of the challenges presented by this approach, a brief discussion of the use of environmental codes of conduct is instructive.

Voluntary codes of conduct are non-legally binding guidelines that have received international recognition as important tools in environmental preservation. Agenda 21, tabled at the United Nations Conference on Environment and

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AND SUSTAINABLE DEVELOPMENT APPROACH (1991); CHRISTINA CAMERON, TOURISM AND THE ENVIRONMENT: CHALLENGES AND CHOICES FOR THE 1990S 3 (1992). For an excellent general guide to sustainable environmental planning see INT'L COUNCIL FOR LOCAL ENVTL INITIATIVES (ICLEI) & INT'L DEVELOPMENT RES. CENTRE (IDRC), THE LOCAL AGENDA 21 PLANNING GUIDE (1996).

81. Respecting collaborative tourism planning, see Tazim B. Jamal & Donald Getz, *Collaboration Theory and Community Tourism Planning*, 22 ANNALS OF TOURISM PLANNING 186-204 (1995); PETER E. MURPHY, TOURISM: A COMMUNITY APPROACH (1985); S. Selin & K. Beatson, *Interorganizational Relations in Tourism*, 18 Annals of Tourism Research 639-52 (1991); Jon Linton, *Protected Areas Planning and Management: Alternative Approaches in Canada*, Ecotourism & Resource Conservation: A Collection of Papers (1st & 2nd International Symposium, 1989 & 1990).

82. For example, regulations adopted by government agencies to restrict tourist activities or exclude tourists from sites to permit the practice of sacred rituals by Native Americans have been challenged as violating the Establishment Clause in the First Amendment. *See* Badoni v. Higginson, 638 F.2d 172 (1980); Bear Lodge Multiple Use Association v. Babbitt, No. 96-CV-063-D, <http://www.hamline.edu/law/sacred/-bearlodge.htn> (D. Wyo. 1996).

83. *See* Edgell, *supra* note 73, at 7.

Development at Rio in 1992, includes Chapter 30 entitled "Strengthening the Role of Business and Industry" which makes specific reference to the use of codes of conduct by industry to promote best environmental practice.[84] The Code of Conduct adopted in 1991 by the International Chamber of Commerce (ICC) is cited in Chapter 30 as a good example of environmental guidelines applicable to all industries to improve environmental performance.[85] The ICC Code contains guidelines encouraging businesses to adopt "integrated management" policies to improve environmental performance using legal regulations as a "starting point."[86] Businesses are further encouraged to contribute to the common good by developing and supporting intergovernmental programs and educational initiatives that will "enhance environmental awareness and protection."[87]

Explicit in the ICC guidelines is the importance of education and the notion that voluntary codes of conduct supplement legal regimes and take the industry further along the road towards sustainable development. Legal requirements are thus seen as minimum standards beyond which industries should aspire to develop in accordance with technological advances and community expectations.

Long before the penning of Agenda 21 in 1992, international tourism organizations promoted the development of tourism in harmony with environmental, cultural, and political considerations through voluntary initiatives such as the Charter of Cultural Tourism of the International Council of Monuments and Sites (ICOMOS) adopted in 1976[88] and the Manila Declaration of 1980.[89] Since 1992, a proliferation of voluntary tourism codes appeared around the world, as a form of environmental self-regulation.[90]

State and local governments, international and regional tourism groups, and environmental organizations are the primary initiators of codes of conduct targeting industry, tourists, and host communities. Codes are typically cast in terms of large principles and objectives, but may also be specifically directed to a site or an activity. The following are excerpts of selected codes from around the world illustrating the general nature and diversity of these instruments:

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84. *See* U.N. Conference on Env't & Dev., Agenda 21, U.N. Doc. A/CONF.151/26, 31 I.L.M. 814 (1992).

85. *See* ICC BUSINESS CHARTER FOR SUSTAINABLE DEVELOPMENT, PRINCIPLES FOR ENVIRONMENTAL MANAGEMENT, *reprinted in* JOHN R. SALTER, CORPORATE ENVIRONMENTAL RESPONSIBILITY: LAW AND PRACTICE 260 app. (1992).

86. *See id.*

87. *See id.*

88. *See* International Council on Monuments and Sites, ICOMOS CHARTER OF CULTURAL TOURISM (Nov. 1976).

89. *See* Manila Declaration on World Tourism, World Tourism Conference (Sept. 27-Oct. 10, 1980).

90. For a survey of tourism codes, see UNITED NATIONS ENVIRONMENT PROGRAMME/ INDUSTRY & ENVIRONMENT, TECHNICAL REPORT NO. 29, ENVIRONMENT CODES OF CONDUCT FOR TOURISM (1995) (hereinafter UNEP REPORT).

Canada's Code of Ethic & Guidelines for Sustainable Tourism (for Industry)[91]

Strive to achieve tourism development in a manner which harmonizes economic objectives with the protection and enhancement of our natural and cultural environment.
Practice and encourage the conservation and efficient use of natural resources including energy and water.

American Society of Travel Agents: Ten Commandments on Eco-Tourism[92]

Respect the frailty of the earth. Realize that unless all are willing to help in its preservation, unique and beautiful destinations may not be here for future generations to enjoy. Do not take away souvenirs from historical sites and natural areas.

Trinidad and Tobago - Guide for Turtle Watching[93]

Precautions observers should note to ensure that turtles are not hindered: make a minimum of noise–speak softly, no radios. When turtles emerge from the sea, there should be absolute silence and no lights should be put on. Turtles turn back to the sea very easily at this stage. A distance of fifteen meters should be kept until the nest is prepared and the laying process has begun. This is the only time when photographs can be taken.

Codes of conduct may be categorized as "soft law,"[94] drafted in terms of "should" as opposed to "shall" and encouragements as opposed to prescriptions. To those familiar with "hard" or "black-letter" law, these ethical guidelines may appear as utopian ideals set out on paper. But unlike "hard" laws, the force of voluntary codes of conduct is not dependent on interpretation and policing, but, rather, it comes from the collaborative process used to adopt and implement codes of conduct.

The merit of voluntary codes of conduct in the tourism industry is two-fold,

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91. *See* TOURISM INDUSTRY ASSOCIATION OF CANADA & THE NATIONAL ROUND TABLE ON ENVIRONMENT AND ECONOMY, CODE OF ETHICS & GUIDELINES FOR SUSTAINABLE TOURISM (1992).

92. *See* UNEP REPORT, *supra* note 90, at 33.

93. *See id.* at 35.

94. *See* Pierre-Marie Dupuy, *Soft Law and the International Law of the Environment,* 12 MICH. J. INT'L. L. 420 (1991). *See also* Baram, *supra* note 7.

(1) they serve as a catalyst for dialogue and building partnerships among government agencies, the various industry sectors, community interests, special interest groups and other stakeholders in tourism development;[95] and (2) they provoke changes of behavior and practices through education and raising awareness as to the importance of sound environmental management and encourage promotion of a quality environment and quality tourism.[96]

b. Tourism Codes in the Lake Champlain Basin

The Lake Champlain restoration plan identifies the following goals for managing recreational development and protecting cultural heritage resources:

> Manage Lake Champlain, its shorelines and its tributaries for a diversity of recreational uses while its natural and cultural resources.[97]
>
> To identify and preserve the irreplaceable cultural heritage resources of the Champlain Basin for the Public benefit, now and for future generations to come, and to promote an appreciation of their value as a vital aspect of the Basin's economic and community life.[98]

The plan states that programs to implement these goals should be flexible to allow for change and adaptation in accordance with emerging issues, resources, and technologies.[99] Education is preferred over regulation with action at a local level as a primary means for implementation.[100] Voluntary environmental codes of conduct meet these criteria, and are therefore being considered by the Lake Champlain Basin Program as a tool to achieve certain objectives consistent with the common goals.

The process of adopting a tourism code of conduct in the Lake Champlain Basin is not yet underway but is likely to commence in 1998. The process used to establish the guidelines contained in a code will be the key to the initial success of this approach. It is proposed that the Cultural Resource Working Group, an advisory

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95. *See* Steven R. Salbu, *True Codes versus Voluntary Codes of Ethics in International Markets: Towards the Preservation of Colloquy in Emerging Global Communities*, 15 U. PA. J. INT'L BUS. L. 327 (1994).

96. *See* UNEP Report, *supra* note 90, at 8.

97. *See* RESTORATION PLAN, *supra* note 17, at 43.

98. *See id.* at 50.

99. *See id.* at 4, 62-68.

100. *See id.* at 5.

sub-committee of the Lake Champlain Basin Program, will act as facilitator. It will seek to achieve the collaboration and consensus among key stakeholders to identify issues and solutions related to tourism and to articulate goals for the development of tourism in the community.[101] This has been the approach taken by the Lake Champlain Basin Program over the last five years in carrying out its mandate from the Lake Champlain Management Conference to, *inter alia*, address issues of tourism and its impacts upon natural and cultural resources. Given the nature of the tourism industry and the divergent interests and values held by different stakeholders respecting the development of tourism in the community, a facilitator will have the critical role of ensuring that there is equal representation of all the parties and that each has an opportunity to contribute.[102] Only in this manner may the values articulated in a code reflect the public interest and be acceptable for adoption by private sector industry interests.

c. Implementation and Enforcement

Beyond acting as a catalyst for dialogue and creating partnerships among stakeholders during the adoption process, codes of conduct must be implemented if their potential benefits are to be realized. To date, implementation of tourism codes has been relatively unsuccessful.[103] Methods which may be used to implement codes include: (1) education and training; (2) wide dissemination and publicity campaigns; (3) publications; (4) seminars and conferences; (5) pilot projects; (6) awards; and (7) technical assistance by international tourism organizations.[104] Consistent with the voluntary nature of these codes, the suggested methods for implementation are soft, which may explain the perceived lack of success in implementing codes. On the other hand, as those involved in the tourism industry are increasingly being reminded of their dependancy upon the environment for the continued well-being and growth of the industry (as evidenced by the decline in tourism in areas where the environment has already been damaged[105]), sound preservation practices instilled through the use of codes over time are steadily gaining acceptance as being in the industry's best, long-term interests.

The implementation process is not to be achieved overnight, and even when

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101. On collaborative community-based tourism planning see J. R. Brent Ritchie, *Crafting a Destination Vision: Putting the Concept of Resident Responsive Tourism into Practice*, 14 TOURISM MGMT. 29, 29-38 (1990); *see also* URBAN LAND INSTITUTE, PULLING TOGETHER: A PLANNING AND DEVELOPMENT CONSENSUS-BUILDING MANUAL (1994).

102. *See* HALL, *supra* note 79, at 167 (discussing the power struggles which arise over such issues as land use and locations for tourism infrastructure).

103. *See* UNEP REPORT, *supra* note 90, at 45-50.

104. *See id.*

105. *Supra* note 77.

codes are put into practice, much of the language is cast in such general terms that it is difficult to determine whether the goals are being respected. Such abstract articulation of goals leaves open a large margin of discretion provoking some commentators to demand more specificity in codes to facilitate implementation and on-going monitoring.[106] Too much specificity, however, may undermine the benefits of voluntary codes as flexible instruments capable of evolving as community values and concerns develop.[107] It may be difficult to achieve consensus if guidelines are drafted in precise terms, or even worse, if consensus is to be achieved, it may be at the cost of higher environmental standards. Ideally, codes should draw a balance between visionary objectives cast broadly and more precise criteria that serve as guidelines to achieve the objectives over time.

Compliance with a code of conduct is voluntary, not mandatory. An early United Nations report on voluntary codes notes that although codes are not legally imposed, they "act as an instrument of moral persuasion, strengthened by the authority of international organizations and the support of public opinion."[108] The effectiveness of moral persuasion and education as compliance mechanisms for voluntary standards is well-illustrated in the debate over conflicting uses at the Devil's Tower Monument in Wyoming between mountain climbers and Native Americans.[109] In this case, the National Parks Service adopted a policy for "voluntary closure" of the site to mountain climbers during the month of June to permit the undisturbed practice of religious rituals. It is estimated that eighty-five of the climbers complied with this policy in 1995, its first year following adoption of the policy.[110] The National Parks Service is allowing the voluntary program five years to be effective, failing which it may reconsider alternative approaches to the problem. Other forms of enforcement, such as sanctions, may be conceived if necessary. The United Nations Environmental Program concludes in its report on environmental tourism codes of conduct by suggesting that eventually codes may "need to become to some degree, enforceable if they are to become primary management tools."[111] The Antarctic Tour Operators Code is an example of an

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106. *See* Baram, *supra* note 7, at 51-60; Baker, *supra* note 7, at 418.

107. *See* Salbu, *supra* note 95. The need for aspirational goals and suggestive standards balanced with tighter rules in the context of professional codes of ethics is discussed in Reed Loder, *Tighter Rules of Professional Conduct: Saltwater for Thirst?*, 1 GEO. J. LEGAL ETHICS 311 (1987).

108. *See The Impact of Multinational Corporations on Development and on International Relations*, U.N. Dep't of Economics and Social Affairs, at 55, U.N. Doc. ST/ESA/6, U.N. Sales No. E.74.II.A.5 (1974), *cited in* Salbu, *supra* note 95, at 356.

109. *See* Candy Hamilton, *One Man's Rock is Another's Holy Site*, CHRISTIAN SCIENCE MONITOR, June 12, 1996. See also the Wyoming District Court's decision on mandatory closure of Devil's Tower. *See supra* note 82.

110. *See* Hamilton, *supra* note 109. See also the Wyoming District Court's decision on mandatory closure of Devil's Tower. *See supra* note 82.

111. *See* UNEP REPORT, *supra* note 90, at 59.

association that expels any members that do not adhere to their tourism code.[112] To reach this stage of coercive enforcement, if this is indeed desirable, it would appear that there must be a certain degree of specificity in the code and community consensus as to the values and goals to be promoted through the codes.

As space does not permit further analysis of the issue of enforcement, we conclude this section in stating that a voluntary code may be adopted without coercive means of enforcement and without precise standards and still serve a useful purpose in developing community values around such contentious issues as the proper management of tourism in the Lake Champlain Basin. In this sense, a voluntary code may be evidence of a regime in the making; one that has not yet reached the status of a community contract,[113] but is moving towards a model of cooperation.

IV. CONCLUSION

The Lake Champlain Basin Program and its various agreements exemplify a slowly emerging natural resource regime. The three case studies used in this paper help to identify some of the difficulties in regime formation and serve to illustrate both the complexity and diversity of natural resource regimes.

Perhaps the most significant missing variable considered important in the process of regime formation[114] is a strong public response to the problems of mercury and phosphorus pollution in the lake, as well as to the impacts of tourism development and recreational land use along its borders. Such public response, often resulting from a serious environmental crisis or perceived crisis, will often force the hands of the government partners to act in establishing and enforcing rules, as in the case of setting mercury and phosphorus levels, and may support voluntary compliance with non-mandatory rules set out in codes of conduct. Other criteria viewed as contributing to the establishment of a set of coherent rules for inter-jurisdictional management of environmental issues: (1) scientific convergence as to the cause and sources of damage; (2) individual leaders playing key roles in facilitating the process; (3) a willingness to favor common interests over the interests of one group or one state; and (4) the availability of effective compliance mechanisms.[115] These criteria are present only to a limited extent in the case of Lake Champlain, as illustrated in the case studies.

The examples of mercury and phosphorus pollution also illustrate the difficulty of establishing the boundaries of such a regime.[116] The sources of the

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112. *See id.* (discussing the Antarctic Code).

113. On achieving regime "closure" see YOUNG & OSHERENKO, *supra* note 11, at 2.

114. For a description of factors facilitating or impeding regime formation, see *id.* at 223-256.

115. *See id.*

116. The problem of fixing boundaries in regimes regulating ecosystems is both a

lake's environmental problems are well beyond the watershed boundary. Consequently, the solutions to these problems must be initiated by institutions whose locus extends beyond the geography of the lake. The Quebec farmers union, the markets for agricultural products, the diverse and extensive tourism industry, the Midwestern utilities, and the municipalities using waste incineration are some of these civic institutions. The scope of the required regulation extends beyond the lake to embrace state, province, and locality, as well as the two nations. Thus supplementary federal and state law is required to control out-of-state air pollution sources. In addition, provincial and state regulations will continue to regulate phosphorous runoff. Local land use regulation and voluntary codes may serve to manage tourism development and guide appropriate environmental practice.

The three theoretical responses to understanding such a complex situation include: (1) administrative federalism; (2) pluralism; and (3) civic society. Administrative federalism seeks to establish tidy inclusive boundaries, beginning with national laws and delegating downward or preempting local regulation. Such an approach has not appeared to work well in the past.

A second ad hoc response revels in the pluralism of associations and seeks to develop appropriate agreements among the associations, coordinating and incorporating each other's standards when appropriate.[117] Memoranda of understanding, reverse consistency, and extra-territorial powers are some of the legal instruments which are employed. Generally, this approach is based on economics with associations and their relations treated instrumentally as if they were a public market place. The complexity of such pluralistic arrangements makes it difficult to arrange to determine what is going on.

The third response to understanding the effort to meet the problems of Lake Champlain is to view the effort as an emerging natural resource regime which is part of a civil society. Although partially discrete with some formal institutions conducting part of its operation and with multiple institutional arrangements that participate in governance, the resource regime assumes at least some institutional coherence. This regime, however, is also partially integrated into the prevailing parts of society and its social systems. In the words of Edward Shils:

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problem of boundary fixing within science and within policy and law. There is now a mass of literature on both. For the former, see TIMOTHY ALLEN & THOMAS HOEKSTRA, TOWARD A UNIFIED ECOLOGY (1992); T. F. ALLEN & THOMAS STARR, HIERARCHY: PERSPECTIVES FOR ECOLOGICAL COMPLEXITY (1982). For a discussion of the latter in the context of ecosystem management, see T. Anderson & R. Hamann, *Ecosystem Management and the Everglades: A Legal and Institutional Analysis,* 11 J. LAND USE ENVT. L. 473 (1996). For one of many discussions of boundary problems as applied to coastal areas, see STANLEY SCOTT, GOVERNING CALIFORNIA'S COAST (1975). For a more general discussion of boundaries and the law, see the Stanford Law Review symposium, *Surveying Law and Borders*, 48 STAN. L. REV. 1037 (1996).

117. *See* VINCENT OSTROM, THE MEANING OF FEDERALISM: CONSTITUTING A SELF-GOVERNING SOCIETY (1991).

> The integration of society is a number of different components and conditions linked with each other in manifold and complex ways. Self denomination, territorial boundaries, orientation and linkage with the center, the system of allocation of valued things, such as income, wealth, deference, etc. community of culture, and normative solidarity are the main elements which constitute the integration of society.[118]

Resource regimes are part of integrated society. Hence, the Lake Champlain Basin Program must be viewed in its relationship to the farmers of the basin, the tourism industry, the Midwest utilities, the fishermen, and the myriad of other segments of society on both sides of the U.S.–Canadian border. Institutions dealing with the problems of Lake Champlain must be supported by governments to facilitate agreements among pluralistic entities and by laws and voluntary initiatives promoting cooperative activities by the myriad of groups and institutions which affect the future of the lake.

118. *See* EDWARD SHILS, THE CONSTITUTION OF SOCIETY (1982). The major theorists of civil society, both classic and modern, were deeply interested in how discrete organizations and groups could be integrated within society.