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THE CENTENNIAL OF THE BOUNDARY WATERS TREATY: A CENTURY OF UNITED STATES-CANADIAN TRANSBOUNDARY WATER MANAGEMENT

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I. INTRODUCTION

The Boundary Waters Treaty of 1909[1] has now provided the foundation for transboundary United States-Canadian water management for a century. During the one hundred years that the Boundary Waters Treaty has been in place, both the law and the world in which the law operates have changed dramatically. Some of the most relevant and significant changes have been several fold increases in population and thousand fold increases in gross domestic product in North America[2] with correlating increased environmental impacts, the growth of international law and governance institutions, the emergence of modern environmentalism and the resulting creation of domestic and international environmental law, and most recently globalization and new economic trade laws. Despite all of this, the Boundary Waters Treaty has remained totally unchanged, never altered or amended in any way. Yet it continues to be as important and relevant as it was in 1909, and perhaps more so.

In establishing the principles of mutual obligation to protect shared natural resources, institutional governance independent from national self-interest, and dispute resolution through investigation and

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1. Boundary Waters Treaty, U.S.-Gr. Brit. (for Can.), Jan 11, 1909, 36 Stat. 2448 [hereinafter Boundary Waters Treaty].

2. In 1909, the United States had an estimated population of 90,490,000. *See* U.S. Census Bureau, *available at* http://www.census.gov/popest/archives/1990s-/popclockest.txt. (last visited May 24, 2009). By 2008 the estimated population had increased 336%, to 304,059,724. *See* U.S. Census Bureau, *available at* http://www.census.gov/popest/states/NST-ann-est.html (last visited May 24, 2009). During the same period, from 1909 to 2008, the Gross Domestic Product (GDP) of the United States grew from an estimated $32.2 billion to $14,280.7 billion, an increase in 44,350%. *See* Measuring Worth, *available at* http://www.measuringworth.org/usgdp/ (last visited May 24, 2009). From 1909 to 2008, Canada's population increased from an estimated 6,800,000 to 33,441,277, an increase of 492%. *See* Statistics Canada, *available at* http://www.statcan.gc.ca/pub/11-516-x/pdf/5500092-eng.pdf (last visited May 24, 2009). Canadian GDP increased 47,023%, from $3.306 billion in 1909 to $1,564 billion in 2008. M.C. URQUHART, NEW ESTIMATES OF GROSS NATIONAL PRODUCT, CANADA, 1870-1926: SOME IMPLICATIONS FOR CANADIAN DEVELOPMENT, IN LONG-TERM FACTORS IN AMERICAN ECONOMIC GROWTH 14 (Stanley L. Engerman & Robert E. Gallman eds., 1992) *available at* http://www.nber.org/chapters/c9678.pdf (last visited May 24, 2009); *see also* CIA World Factbook, Canada, *available at* https://www.cia.gov/-library/publications/the-world-factbook/print/ca.html (last visited May 24, 2009); Inflation Calculator, Bank of Canada, *available at* http://www.bankofcanada.ca-/en/rates/inflation_calc.html (last visited May 24, 2009) (calculating from $1.787 billion in 1984 Canadian dollars to $3.306 billion in 2008 Canadian dollars).

information exchange, the Boundary Waters Treaty was well ahead of its time and became a model for transboundary resource management. But while the Boundary Waters Treaty and its International Joint Commission were setting the bar in 1909, they may be behind the curve in 2009. Problems of freshwater scarcity, climate change, and ecosystem degradation were not anticipated a hundred years ago, nor were the public's expectations and demands for citizen participation and environmental protection. Like any milestone, the centennial of the Boundary Waters Treaty is a good occasion to acknowledge everything that the treaty has done to protect North America's freshwater and provide a model for transboundary resource management. At the same time, the current challenges demand more than a historical celebration, but also a critical look at how the Boundary Waters Treaty and International Joint Commission must evolve to meet the needs of the next century. This task should not be left to just one person, and fortunately *The Wayne Law Review's* Boundary Waters Treaty Centennial Symposium has gathered over a dozen of the leading experts in the field[3] to learn from the treaty's history and contemplate its future.

This introductory Article has four parts. Part I provides an overview of the history of the Boundary Waters Treaty and its key provisions. Part II examines the direct progeny of the Boundary Waters Treaty, the binational agreements and arbitral decisions that the treaty gave rise to. Part III looks at more recent approaches to U.S.-Canadian transboundary water management and pollution dispute resolution that rely less on the Boundary Waters Treaty and International Joint Commission. Finally, Part IV introduces the excellent contributions by leading scholars and practitioners to this special symposium issue, demonstrating the diverse perspectives on the Boundary Waters Treaty's past successes and future challenges.

II. A BRIEF HISTORY AND OVERVIEW OF THE BOUNDARY WATERS TREATY

The United States and Canada share an approximately 5,000 mile border that crosses 150 rivers and lakes.[4] Included in these boundary rivers and lakes are the Great Lakes and St. Lawrence River, the world's largest surface freshwater system, containing ninety-five percent of the

3. *See* Wayne State University, Wayne Law Review to Host 'Boundary Waters Treaty Centennial Symposium' on Feb. 5, *available at* http://media.wayne.-edu/2009/01/06/wayne-law-review-to-host-boundary-waters (last visited May 24, 2009).

4. *See* Noah D. Hall, *Transboundary Pollution: Harmonizing International and Domestic Law*, 40 U. MICH. J.L. REFORM 681, 682 (2007).

fresh surface water in the United States and twenty percent of the world's supply.[5] Almost half of the waterways flow from the United States to Canada (and just over half flow from Canada to the United States),[6] creating an almost perfect reciprocal balance in the control of water resources that has led to an unusually cooperative binational relationship.

The genesis of the Boundary Waters Treaty dates to 1903, when the United States and Canada first established the International Waterways Commission to address potentially conflicting rights in the countries' shared waterways.[7] The International Waterways Commission soon recommended that the United States and Canada adopt legal principles to govern uses of their shared waters and form an international body to further advance protection of boundary waters.[8] In 1907, the International Waterways Commission drafted a proposed treaty, which was modified through negotiations and eventually led to the Boundary Waters Treaty of 1909.[9]

The Boundary Waters Treaty primarily provides for joint management and cooperation between the United States and Canada for the two countries' shared boundary waters. "Boundary waters" are defined by the treaty as:

> the waters from main shore to main shore of the lakes and rivers and connecting waterways . . . along which the international boundary between the United States and . . . Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.[10]

While tributary rivers and streams, as well as tributary ground waters, are excluded from coverage, the Boundary Waters Treaty does

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5. GREAT LAKES COMMISSION, TOWARD A WATER RESOURCES MANAGEMENT DECISION SUPPORT SYSTEM FOR THE GREAT LAKES-ST. LAWRENCE RIVER BASIN 9 (2003), *available at* http://www.glc.org/wateruse/wrmdss/finalreport/pdf/WR-ExSum-2003.pdf (last visited May 24, 2009).

6. David G. Lemarquand, *Preconditions to Cooperation in Canada-United States Boundary Waters*, 26 NAT. RESOURCES J. 221, 223 (1986).

7. Jennifer Woodward, *International Pollution Control: The United States and Canada—The International Joint Commission*, 9 N.Y.L. SCH. J. INT'L & COMP. L. 325, 326 (1988) (citing INT'L JOINT COMM'N, SIXTH ANNUAL REPORT ON WATER QUALITY 10 (1978)).

8. *Id*.

9. *Id*.

10. Boundary Waters Treaty, *supra* note 1, at preliminary art.

govern four of the five Great Lakes (Lakes Superior, Huron, Erie, and Ontario, as only Lake Michigan sits entirely within the United States), and other rivers and lakes that straddle or cross the United States-Canadian border.[11]

Navigation and access to boundary waters, not water management, were the principle concerns at the time the treaty was negotiated.[12] Nonetheless, the first draft of the proposed treaty included a provision forbidding water pollution having transboundary consequences. The international commission that would administer the treaty would have been vested with "such police powers" to enforce this rule.[13] The United States Secretary of State objected to these provisions, agreeing only to an anti-pollution provision limited to the defined boundary waters and no enforcement jurisdiction for the international commission.[14]

Thus, Article IV of the Boundary Waters Treaty simply provides: "[i]t is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."[15] There was some opposition to even this more limited provision in the United States Senate when ratification was being debated, founded on the risk of creating an international water pollution police power. Canada responded by assuring the United States Senators that the provision would be enforced only in "more serious cases."[16]

While the Boundary Waters Treaty anti-pollution provision is more limited than Canada would have liked, it establishes a clear standard for limiting pollution of shared transboundary waters.[17] Pollution of shared transboundary waters is of course just one form of transboundary water pollution, as transboundary pollution often follows an indirect path of tributaries and different media (e.g., airborne pollution that is eventually deposited into water bodies through precipitation). Nonetheless, the underlying legal principle of Article IV, that one country's pollution should not harm another country, has provided a foundation for United States-Canadian international environmental law.[18]

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11. *See* Noah D. Hall, *Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region*, 77 U. COLO. L. REV. 405, 417 (2006).

12. *See* F.J.E. Jordan, *Great Lakes Pollution: A Framework for Action*, 5 OTTAWA L. REV. 65, 67 (1971).

13. *Id*.

14. *Id*.

15. Boundary Waters Treaty, *supra* note 1, art. IV.

16. Jordan, *supra* note 12, at 67-68.

17. *See* Hall, *supra* note 4, at 693-94.

18. *Id*.

The Boundary Waters Treaty also addresses the taking and diversion of boundary waters. Article III of the treaty provides that neither party may use or divert boundary waters "affecting the natural level or flow of boundary waters on the other side of the [border]line" without the authority of the International Joint Commission.[19] The International Joint Commission is a six member investigative and adjudicative body with the United States and Canada equally represented by political appointees.[20] It is well-respected in both countries and is often "commended for its objectivity and leadership on environmental issues."[21] The International Joint Commission's reports typically rely on "the best available science and [are] free of political biases," making it an important source of information for "the public and decision makers in the United States and Canada."[22]

"Scores of issues have been referred to the International Joint Commission for non-binding investigative reports and studies" pursuant to Article IX of the treaty.[23] "The Boundary Waters Treaty only requires a reference from one of the countries to invoke this process, although as a matter of custom this has always been done bilaterally with the support of both countries."[24] "This bilateral approach has strengthened the credibility of International Joint Commission reports and recommendations, and ensured sufficient funding for its efforts. These non-binding reports and studies, along with the objective recommendations that are often requested, have proven valuable in diplomatically resolving [numerous] transboundary water disputes and crafting" new water protection policies.[25]

III. THE DIRECT PROGENY OF THE BOUNDARY WATERS TREATY

While the Boundary Waters Treaty has remained unchanged and unaltered for a century, a landmark international arbitral decision and several binational agreements between the United States and Canada have supplemented the basic principles of the Boundary Waters Treaty and the work of the International Joint Commission. The Trail Smelter

19. Boundary Waters Treaty, *supra* note 1, art. III.

20. *See* Boundary Waters Treaty, *supra* note 1, art. VII; Hall, *supra* note 11, at 417-418.

21. Hall, *supra* note 11, at 417-18.

22. Hall, *supra* note 4, at 707.

23. *Id*. at 706.

24. *Id*. at 706-07 (citing Boundary Waters Treaty, *supra* note 1, art. IX).

25. *Id*. at 707.

arbitration,[26] while not managed or decided directly pursuant to the Boundary Waters Treaty, applied the treaty's principles in a binding tribunal decision. The Columbia River Treaty,[27] signed in 1961, was a direct result of the deliberations and cooperative work of the International Joint Commission. Finally, the Great Lakes Water Quality Agreement, first entered into in 1972[28] and substantially amended in 1978[29] and 1987,[30] built on the Boundary Waters Treaty and transformed the International Joint Commission into an environmental protection institution.

A. The Trail Smelter Arbitration

The Trail Smelter arbitration concerned transboundary air pollution, not water pollution or management.[31] Nonetheless, any discussion of the Boundary Waters Treaty and U.S.-Canadian transboundary environmental law would be incomplete without recognizing this landmark decision. The decision remains the defining precedent for transboundary pollution liability through any media, including water. The facts of the dispute are best told by quoting directly from the final 1941 arbitration decision:

> In 1896, a smelter was started under American auspices near the locality known as Trail [in British Columbia, located on the Columbia River about seven miles north of the United States border and Washington State.] In 1906, the Consolidated Mining and Smelting Company of Canada, Limited . . . acquired the smelter plant at Trail. . . . Since that time, the Canadian company, without interruption, has operated the Smelter, and from time to time has greatly added to the plant until it has become one of the best and largest equipped smelting plants on

26. Trail Smelter Arbitration Tribunal (U.S. v. Can.), 3 R.I.A.A. 1911 (1938) [hereinafter *Trail Smelter I*]; Further proceedings, 3 R.I.A.A. 1938 (1941) [hereinafter *Trail Smelter II*].

27. Treaty for the Cooperative Development of the Columbia River Basin, Can.-U.S., Jan. 17, 1961, 15 U.N.S.T. 1555 [hereinafter Columbia River Treaty].

28. Great Lakes Water Quality Agreement, U.S.-Can., Apr. 15, 1972, 23.1 U.S.T. 301 [hereinafter 1972 Great Lakes Water Quality Agreement].

29. Great Lakes Water Quality Agreement, as amended, U.S.-Can., Nov. 22, 1978, 30 U.S.T. 1384 [hereinafter 1978 Great Lakes Water Quality Agreement].

30. Protocol on Great Lakes Water Quality, as amended on October 16, 1987, Amending the 1978 Agreement Between the United States of America and Canada, U.S.-Can., Nov. 18, 1987, T.I.A.S. No. 11551 [hereinafter 1987 Great Lakes Water Quality Agreement].

31. *Trail Smelter II*, *supra* note 26, at 1945.

> the American continent. In 1925 and 1927, two stacks of the plant were erected to 409 feet in height and the Smelter greatly increased its daily smelting of zinc and lead ores. This increased production resulted in more sulphur dioxide fumes and higher concentrations being emitted into the air. In 1916, about 5,000 tons of sulphur per month were emitted; in 1924, about 4,700 tons; in 1926, about 9,000 tons—an amount which rose near to 10,000 tons per month in 1930. In other words, about 300-350 tons of sulphur were being emitted daily in 1930. . . . From 1925, at least, to 1937, damage occurred [to private farms and timber lands] in the State of Washington resulting from the sulphur dioxide emitted from the Trail Smelter. . . .
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> Canada and the United States had initially referred the matter to the International Joint Commission for a factual study of the liabilities and damages. In 1931, the International Joint Commission determined that the United States had suffered US $350,000 (equivalent to approximately US $5,000,000 in 2006 dollars) in accrued damages through January 1, 1932, and recommended pollution controls to reduce future harm. Despite the International Joint Commission report, in 1933 the United States was still not satisfied and again complained 'to the Canadian Government that existing conditions were entirely unsatisfactory and that damage was still occurring.'
>
> The subsequent diplomatic negotiations led the United States and Canada to sign and ratify a convention in 1935. Through the convention, the two countries 'agreed to refer the matter to a three-member arbitration tribunal composed of an American, a Canadian, and an independent Chairman (a Belgian national was ultimately appointed).'
>
> The arbitration tribunal's 'most significant charge . . . was to decide whether the Canadian smelter should be required to cease causing damage in the State of Washington in the future, and what 'measures or regime, if any, should be adopted or maintained' by the smelter, in addition to future indemnity and compensation. To answer these questions, the tribunal was directed to 'apply the law and practice followed in dealing with cognate questions in the United States of America as well as International Law and Practice, and shall give consideration to the desire of the High Contracting Parties to reach a solution just to all parties concerned.'

> The arbitration tribunal's ultimate 1941 decision (Trail Smelter II) answering these questions became a historic precedent for international transboundary pollution law. The tribunal first concluded that there was no need to chose between the law of the United States or international law to decide the case, 'as the law followed in the United States in dealing with the quasi-sovereign rights of the States of the Union, in the matter of [transboundary] pollution, whilst more definite, is in conformity with the general rules of international law.' The tribunal first cited a leading international law authority: 'As Professor Eagleton puts it in (Responsibility of States in International Law): A State owes at all times a duty to protect other States against injurious acts by individuals from within its jurisdiction.' The tribunal supplemented this general rule with a comprehensive summary of the United States Supreme Court's decisions on interstate transboundary[32]

water disputes. Taking these decisions as whole, the tribunal stated the following principles for transboundary pollution disputes:

> [N]o state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the cause is of serious consequence and the injury is established by clear and convincing evidence.[33]

> The tribunal further held 'that the Dominion of Canada is responsible in international law for the conduct of the Trail Smelter.' Therefore, it is 'the duty of the Government of the Dominion of Canada to see to it that this conduct should be in conformity with the obligation of the Dominion under international law as herein determined.' Applying these principles to the dispute at hand, the tribunal required the Trail Smelter to 'refrain from causing any damage through fumes in the State of Washington.[34]

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32. Hall, *supra* note 4, at 698 (internal citations omitted).
33. *Trail Smelter II*, *supra* note 26, at 1965.
34. Hall, *supra* note 4, at 698 (internal citations omitted).

The liability rule of the Trail Smelter arbitration has become a defining principle of international environmental law.[35] It was incorporated into Principle 21 of the United Nations Conference on the Human Environment Stockholm Declaration of 1972[36] and later reaffirmed in Principle 2 of the United Nations Conference on Environment and Development Rio Declaration of 1992.[37] It should also be noted that:

> while the principle is often declared, it has not been applied to actually prohibit all transboundary harm. Instead, the principle is often considered to be limited to 'significant or substantial' transboundary harm [which is not well defined under international law environmental law], and perhaps further limited to include only a duty by the source state to 'undertake due diligence' to prevent significant or substantial transboundary pollution harm.[38]

Yet even with these modifying limitations, the Trail Smelter arbitration has provided a foundation for international transboundary pollution policy in North America and throughout the world.

B. The Columbia River Treaty

The deliberations of the International Joint Commission have at times led to the negotiation of a new treaty specifically addressed to a particular basin or problem. The leading example is the Columbia River Treaty,[39] which was signed in 1961 after more than a decade of negotiations. The treaty governs flood control and hydroelectric power development in the Columbia River basin.[40] Fifteen percent of the Columbia River basin is in Canada, and the remainder is in the United States.[41] The river itself originates in the American state of Montana,

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35. *Id*. at 699.

36. Report of the United Nations Conference on the Human Environment, U.N. Doc. A./CONF. 48/14, *reprinted in* 11 I.L.M. 1416, 1420 (1972).

37. *See* U.N. Conference on Environment and Development, Rio de Janeiro, Brazil, June 3–14, 1992, *Rio Declaration on Environment and Development*, princ. 2, U.N. Doc. A/CONF.151/26, 31 I.L.M. 874, 876 (1992).

38. Hall, *supra* note 4, at 700 (citing John H. Knox, *The Myth and Reality of Transboundary Environmental Impact Assessment*, 96 AM. J. INT'L L. 291, 294 (2002)).

39. Columbia River Treaty, *supra* note 27.

40. *Id*. at A Proclamation.

41. *See* ROBERT E. BECK, 5 WATERS AND WATER RIGHTS 198 (1991 ed., 2006, replacement vol.).

flows north into the Canadian province of British Columbia, then south into the American state of Washington before forming a portion of the state border between Washington and Oregon.[42]

The high volume and precipitous descent of the river make it particularly well-suited for power generation.[43] However, the seasonal flows of the Columbia are out of phase with power demand in the Pacific Northwest.[44] The peak power demand in the Pacific Northwest is in the winter when the Columbia's flow (and power potential) is at a low.[45] Maximum flow on the river, which can be forty times the minimum, occurs in May. As a result, large storage reservoirs in both the United States and Canada are needed in order to realize the full electricity-generating potential of the Columbia.[46] In 1944 and again in 1959, the United States and Canada asked the International Joint Commission for input on how to best develop the waters of the Columbia River.[47] As the International Joint Commission deliberated, disputes between the two countries over how to share costs and benefits of development continued for almost two decades. The two countries signed the Columbia River Treaty on January 17, 1961, and following some clarifications and adjustments, the treaty was finally ratified by both the United States and Canada in 1964.[48]

One of the principal subjects of the treaty is flood control. The Columbia River Treaty uses an 1894 flood—the largest Columbia River flood on record—as a reference point.[49] In order to control a flood like the 1894 flood, storage capacity of 17,300,000 acre-feet is required.[50] Another reference point used by the treaty is the flow of the Columbia at a town called the Dalles, in the American state of Oregon.[51] The Dalles is approximately 75 miles upriver from Portland.[52] If 17,300,000 acre-feet of storage had been available and used during the 1894 flood, peak flow at the Dalles would have been 800,000 cubic feet per second.[53]

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42. *Id*.
43. *Id*.
44. *Id*. at 199.
45. *Id*. at 198.
46. *Id*. at 199.
47. BECK, *supra* note 41, at 199-201.
48. *Id*. at 201-02.
49. *Id*. at 202.
50. *Id*.
51. *Id*.
52. *See, e.g.*, Distance from Portland, Oregon to The Dalles, *available at* http://www.distance-calculator.co.uk/usa-distance-portland-to-the_dalles.htm (last visited May 24, 2009).
53. BECK, *supra* note 41, at 202.

When the Columbia River Treaty was being negotiated, the United States Army Corps of Engineers established a storage goal of 32,500,000 acre-feet.[54] At the time the treaty was signed, only about 10,800,000 acre-feet of usable storage existed on the river.[55] The treaty, thus, requires Canada to provide 15,500,000 acre-feet of additional storage.[56] Of the 15,500,000 acre-feet, 8,450,000 acre-feet was to be provided at the outset and to be maintained for sixty years from the date of ratification.[57] The remainder is to be provided if after all U.S. storage facilities are used it is still not possible to limit flow at the Dalles to 600,000 cubic feet per second.[58] However, even after the sixty-year period expires, the United States can call on Canada for help in controlling floods for as long "as the flows in the Columbia River in Canada continue to contribute to potential flood hazard in the United States."[59] The treaty also provides for payment schedules for the storage, with the United States paying specific sums to Canada as well as providing Canada with electric power equal to what Canada lost as a result of operating the storage necessary for flood control.[60]

Closely related to flood control is hydroelectric power. The Columbia River drops 1,288 feet between the Canadian border and the Pacific Ocean.[61] The dams that utilized this drop around the time the treaty was signed, however, had little or none of the storage capacity required by the high winter energy demands in the Pacific Northwest.[62] The (up to) 15,500,000 acre-feet of storage provided by Canada under the Columbia River Treaty remedies this problem. Since the Canadian storage accrues a significant benefit to the United States, the two countries agreed to divide all downstream benefits equally.[63] This results in a power allotment to Canada that is more than it needs. Therefore, the treaty allows Canada to sell surplus power, which in turn gives the United States the ability to supplement its power supply during shortages.[64]

The Columbia River Treaty also bans diversions (even those within the Columbia River basin) unless they are made with the consent of the

54. *Id*. at 202-03.
55. *Id*. at 203.
56. Columbia River Treaty, *supra* note 27, at annex A.
57. *Id*. at art. IV(2).
58. *Id*.
59. *Id*. at art IV(3).
60. BECK, *supra* note 4142, at 204-05.
61. *Id*. at 205.
62. *Id*.
63. *Id*. at 206.
64. *Id*. at 207.

other country.[65] However, there are a few specific exceptions.[66] First, diversions for consumptive uses are allowed.[67] Consumptive uses under the treaty include domestic, municipal, stock watering, irrigation, mining, or industrial (but not hydroelectric) uses.[68] Also, the treaty provides for certain specified diversions of stream flow from one tributary of the Columbia into another (or the main stem of the Columbia).[69]

The Columbia River Treaty established two permanent bodies to administer development of the Columbia River basin: (1) a joint Canadian-American agency consisting of two "operating entities; and (2) the Permanent Engineering Board."[70] The operating entities have several responsibilities, including: calculating the amount of hydroelectric power due to Canada; calculating payments due under the treaty; calculating the value of downstream benefits; and coordinating flood control and hydroelectric operating plans.[71] The treaty provides operating plans, but it also gives the operating entities the flexibility to prepare plans that will be more advantageous to the two countries in the future.[72] The Permanent Engineering Board is composed of two members from each country and works in cooperation with the operating entities.[73] The Board's responsibilities include recording river flows, making inspections, reporting deviations in flood-control and operating plans, making recommendations for remedial action, reconciling technical differences that arise between the operational entities, and settling disputes over flood control storage.[74]

If the countries are unable to resolve a dispute under the Columbia River Treaty, either party may refer the dispute to the International Joint Commission pursuant to the Boundary Waters Treaty.[75] The International Joint Commission, which can act at the request of only one party, has three months (unless otherwise agreed upon by the parties), to settle the dispute.[76] If it cannot, either country may refer the matter to an

65. Columbia River Treaty, *supra* note 27, art. XIII(1).
66. BECK, *supra* note 41, at 208.
67. *Id.*
68. Columbia River Treaty, *supra* note 27, art. I(1)(e).
69. BECK, *supra* note 41, at 208-09.
70. Columbia River Treaty, *supra* note 27, arts. XIV, XV.
71. BECK, *supra* note 41, at 211.
72. *Id.*
73. *Id.*
74. *Id.*
75. Columbia River Treaty, *supra* note 27, art. XVI.
76. *Id.*

arbitration board.[77] The arbitration board consists of three members: one chosen by each the United States and Canada, and one chosen jointly by the two nations.[78] Any difficulties in selecting the members of the arbitration board are to be resolved by the International Court of Justice.[79] The tribunal's decisions are final and binding.[80] The treaty also permits the United States and Canada to craft alternative dispute resolution procedures. The two nations have done so several times on a variety of issues including new storage construction, reservoir filling schedules, and ecological flow management.[81]

The Columbia River Treaty is terminable by either country sixty years after ratification.[82] Written intent must be given ten years before termination.[83] Certain rights and obligations would survive termination. For example, Canada must operate storage facilities to meet flood control needs so long as flows in the Canadian portion of the Columbia contribute to potential flood hazard in the United States.[84] Further, compensation provisions for these flood control facilities remain in force.[85] In addition, if the treaty is terminated before the end of the useful life of Libby Dam (the storage reservoir of which extends into Canada), Canada will continue to make available land for the storage reservoir subject to a Canadian option to divert the waters of the Kootenay River into the headwaters of the Columbia.[86] Finally, the provisions of Article II of the Boundary Waters Treaty[87] remain in effect unless the parties have exercised other alternatives under Article XVII of the Columbia River Treaty.[88]

The United States and Canada explicitly agreed that the Columbia River Treaty is not precedent applicable to their other shared waters.[89] Canada insisted on this provision, fearing that the treaty would establish an inflexible precedent, which could inhibit its freedom to develop other international rivers.[90] Nonetheless, any party may choose to use the treaty as an example, and both the Columbia River Treaty and the

77. *Id*.
78. *Id*.
79. *Id*.
80. *Id*.
81. Columbia River Treaty, *supra* note 27, art. XVI.
82. BECK, *supra* note 41, at 213-14.
83. *Id*.
84. *Id*.
85. *Id*.
86. *Id*. at 215.
87. Boundary Waters Treaty, *supra* note 1, art. II.
88. BECK, *supra* note 41, at 213-14.
89. *Id*. at 215.
90. *Id*.

Boundary Waters Treaty have been frequently cited in international law.[91]

C. The Great Lakes Water Quality Agreement

The evolution of the Boundary Waters Treaty into an environmental protection agreement and the International Joint Commission into an environmental protection institution began in the years following World War II, when citizens and scientists became increasingly alarmed about water pollution in the Great Lakes.[92] In response to these concerns, the United States and Canada issued a joint reference to the International Joint Commission in 1964 regarding pollution in Lakes Erie and Ontario.[93] It took the International Joint Commission nearly seven years, but in 1970 it issued a report recommending new water quality control programs and the need for a new agreement for cooperative action in response to pollution.[94] Two years of negotiations followed, and in 1972 Prime Minister Pierre Trudeau and President Richard Nixon signed the Great Lakes Water Quality Agreement.[95]

As stated in the 1972 Great Lakes Water Quality Agreement, the two countries were:

> [s]eriously concerned about the grave deterioration of water quality on each side of the boundary to an extent that is causing injury to health and property on the other side, as described in the 1970 report of the International Joint Commission on Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River.[96]

The 1972 Great Lakes Water Quality Agreement sets forth general[97] and "specific water quality objectives,"[98] provides for "programs and other measures" that are "directed toward the achievement of the water quality objectives,"[99] and defines the "powers, responsibilities and

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91. *Id.*
92. *See* Hall, *supra* note 4, at 711.
93. INT'L JOINT COMM'N, POLLUTION OF LAKES ERIE, LAKE ONTARIO AND THE INTERNATIONAL SECTION OF THE ST. LAWRENCE RIVER 3 (1971).
94. *See id.* at 1, 9.
95. 1972 Great Lakes Water Quality Agreement, *supra* note 28, at 301.
96. *Id.* at 302.
97. *Id.* art. II.
98. *Id.* art. III.
99. *Id.* art V.

functions of the International Joint Commission."[100] However, the two federal governments (specifically the U.S. Environmental Protection Agency and Environment Canada), not the International Joint Commission, have primary responsibility for implementing the programs and achieving the objectives of the Great Lakes Water Quality Agreement.[101]

The 1972 Great Lakes Water Quality Agreement focused on phosphorous pollution, and as sewage treatment improved and phosphate detergent bans were adopted in both countries, progress was made towards reducing the transboundary harms from this pollutant.[102] This success was tempered by new scientific discoveries and resulting public pressure to address persistent organic chemicals that "were already affecting the health of wildlife and could be a threat to human health."[103] In response, the United States and Canada amended the Great Lakes Water Quality Agreement in 1978 with a new purpose:

> [T]o restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem. In order to achieve this purpose, the Parties agree to make a maximum effort to . . . eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System.
>
> Consistent with the provisions of this Agreement, it is the policy of the Parties that . . . [t]he discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated.[104]

Nine years later the parties again revised the Great Lakes Water Quality Agreement after a comprehensive review and signed the 1987 Protocol.[105] The 1987 Protocol created provisions for "Remedial Action Plans" for "Areas of Concern" and "Lakewide Management Plans" which focused on critical pollutants and drew upon broad local community involvement.[106] While the Agreement has not been revised

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100. *Id*. art.VI.

101. *See generally* 1972 Great Lakes Water Quality Agreement, *supra* note 28.

102. Joseph DePinto et al., *Great Lakes Water Quality Improvement*, ENVTL. SCI. & TECH. 20, 752-753 (1986).

103. LEE BOTTS & PAUL MULDOON, EVOLUTION OF THE GREAT LAKES WATER QUALITY AGREEMENT 27 (2005).

104. 1978 Great Lakes Water Quality Agreement, *supra* note 28, art. II.

105. *See generally* 1987 Great Lakes Water Quality Agreement, *supra* note 30.

106. *Id*. art. VIII.

since 1987, the two countries and the International Joint Commission recently conducted a comprehensive review of the Great Lakes Water Quality Agreement to address emerging threats to the health of the Great Lakes.[107]

Despite the lofty goals of the Great Lakes Water Quality Agreement, its implementation has been undermined by its sub-treaty status—it was never subject to approval in the United States Senate—and its failure to contain enforcement provisions.[108] Attempts by citizens to enforce the Great Lakes Water Quality Agreement in court have not been particularly successful.[109] However, while the Great Lakes Water Quality Agreement lacks legally enforceable status in domestic courts, it has given citizens an increased role in shaping policy to address transboundary pollution in the Great Lakes.[110]

Prior to the 1972 Great Lakes Water Quality Agreement, the International Joint Commission held public hearings on specific topics but essentially conducted its business in private.[111] Under increased citizen pressure, resulting from the growing environmental movement, the Great Lakes Water Quality Agreement changed this custom and opened the International Joint Commission up to the public.[112] The increased public involvement in the implementation of the Great Lakes Water Quality Agreement became one of its most significant results.[113] The International Joint Commission affirmed its commitment to public participation in its Ninth Biennial Report:

> The public's right and ability to participate in governmental processes and environmental decisions that affect it must be

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107. *See* Media Release, International Joint Commission, *IJC recommends a new Great Lakes Water Quality Agreement for the 21st Century* (Oct. 24, 2006), *available at* http://www.ijc.org/rel/news/061024_e.htm (last visited May 24, 2009).

108. *See generally* Edith Brown Weiss, *New Directions for the Great Lakes Water Quality Agreement: A Commentary*, 65 CHI.-KENT L. REV. 375, 377 (1989).

109. *See*, *e.g.*, Lake Erie Alliance for the Prot. of Coastal Corridor v. U.S. Army Corps of Eng'rs, 526 F. Supp. 1063, 1077 (W.D. Pa. 1981) ("Since it does not appear . . . that inadequate consideration was given to this matter, we find no reason to interfere in the discretionary duties of the Army Corps of Engineers."); *see also* Am. Iron & Steel Inst. v. EPA, 115 F.3d 979, 1001 (D.C. Cir. 1997) (denying the petition "insofar as it challenges the reasonable potential procedures").

110. *See* David L. Markell, *Governance of International Institutions: A Review of the North American Commission for Environmental Cooperation's Citizen Submissions Process*, 30 N.C. J. INT'L L. & COM. REG. 759, 759-760 (2005).

111. *See* BOTTS & MULDOON, *supra* note 103, at 39.

112. *See id*. at 39-40.

113. *See id*. at 39; *see also generally* THOMAS PRINCEN & MATTHIAS FINGER, ENVIRONMENTAL NGOS IN WORLD POLITICS 71 (1994).

> sustained and nurtured. . . . The Commission urges governments to continue to effectively communicate information that the public needs and has come to expect, and to provide opportunities to be held publicly accountable for their work under the Agreement.[114]

The increased opportunity for public participation in decision-making compensates, to some extent, for the Great Lakes Water Quality Agreement's failure to contain specific enforcement provisions. With increased public participation comes increased accountability on the part of both federal governments to comply with their joint responsibilities under the Great Lakes Water Quality Agreement. Equally important, the Great Lakes Water Quality Agreement has helped create an informed and engaged citizenry on both sides of the border.

IV. BEYOND THE BOUNDARY WATERS TREATY

While the Boundary Waters Treaty and its direct progeny laid the foundation for transboundary water management and pollution dispute resolution between the United States and Canada, more recently new approaches have emerged that minimize the role of the Boundary Waters Treaty and International Joint Commission. While some of these approaches are collaborative, other examples demonstrate the growing reliance on domestic litigation. This part briefly discusses several recent developments to illustrate this trend. Two cases, one involving potential biological water pollution coming from the United States to Canada, and the other involving ongoing water pollution and contamination that flowed from Canada to the United States, demonstrate how the Boundary Waters Treaty and International Joint Commission have been ignored in favor of domestic litigation. In contrast, the recent signing of the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement[115] by the Governors and Premiers and the American and Canadian Great Lakes states and provinces illustrates that cooperation along the border is alive and well, albeit at a sub-national level.

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114. *See* International Joint Commission, *Ninth Biennial Report on Great Lakes Water Quality: Perspective and Orientation* (1998), *available at* http://www.ijc.org/php-/publications/html/9br/fs6.html (last visited May 24, 2009).

115. Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement (Dec. 13, 2005) *available at* http://www.cglg.org/projects/water/docs/12-13-05/Great_Lakes-St_Lawrence_River_Basin_Sustainable_Water_Resources_Agreement.-pdf (last visited Apr. 6, 2009) [hereinafter Great Lakes Agreement].

A. Transboundary Litigation to Protect and Restore Water Resources

Transboundary litigation has emerged as an effective and relatively efficient approach to protect and restore transboundary water resources. Two recent cases involving contentious water pollution disputes in the Columbia River and the Hudson Bay-Souris River-Red River Basin illustrate this trend.[116] In both cases, decisions by various branches of the United States federal government encouraged or facilitated using domestic litigation rather than the Boundary Waters Treaty and International Joint Commission to resolve the disputes.[117] Ultimately, while American environmental laws enforced by United States federal courts have provided the plaintiffs with some legal relief, the cases risk damaging the binational relationship and the strength of the International Joint Commission for addressing future problems.

The first case involves the same Trail Smelter facility that was the focus of the historic arbitration.[118]

> While the historic arbitration involved transboundary air pollution, the more recent dispute was over "the hundreds of thousands of tons of slag (the waste material that comes from the metal smelting and refining process) that the Trail Smelter plant dumped into the . . . Columbia River annually from the early 1900s until 1995, when it discontinued the dumping." The dumping occurred about ten river miles north of the international border and Washington State. The plant is now owned and operated by Teck Cominco Metals, Ltd., a Canadian corporation. It is one of the world's largest zinc and lead refining facilities. It is also a tremendous source of toxic pollution and waste. According to one report, in 1994 and 1995 the copper and zinc discharges from Trail Smelter exceeded the cumulative total for all US companies, and in recent years its annual mercury discharges were equivalent to as much as [57] percent of all United States releases into water.
>
> Not surprisingly, these toxic releases have made their way ten miles down the Columbia River and into the United States. The upper Columbia River and connected Lake Roosevelt are now

116. *See Trail Smelter I*, *supra* note 26; *Trail Smelter II*, *supra* note at 26, at 1938.

117. *See generally Trail Smelter I*, *supra* note 26; *Trail Smelter II*, *supra* note 26, at 1938.

118. *Trail Smelter I*, *supra* note 26, at 1911.

> seriously contaminated. Even the beaches contain toxic sediments, which can blow in the wind and migrate throughout the area. The area is home to the Confederated Tribes of the Colville Reservation, a federally recognized Native American tribe. The Confederated Tribes petitioned the U.S. Environmental Protection Agency ("EPA")[119]

to address the problem.[120] "After negotiations between the EPA and Teck Cominco broke down, the EPA issued a Unilateral Administrative Order to Teck Cominco pursuant to the U.S. Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA)[121] for remedial investigation."[122] CERCLA establishes "strict liability for generators of hazardous materials found at hazardous waste sites."[123] "Teck Cominco responded to the EPA's order by disputing the [domestic agency's] jurisdiction to assert U.S. law against a Canadian corporation."[124] "When the EPA failed to bring an enforcement lawsuit, two members of the Confederated Tribes of the Colville Reservation sued Teck Cominco in U.S." federal court.[125] "Invoking CERCLA's 'citizen suit' provision, the plaintiffs sought to enforce the EPA's order."[126] The ensuing litigation focused on the applicability of CERCLA to the transboundary pollution.[127] The U.S. Court of Appeals ruled that the plaintiffs' claim did not give rise to an extraterritorial application of CERCLA, since the offending pollution was located in the United States.[128]

The second case originates in North Dakota, where water diversions have created controversies and conflicts between the United States and Canada for decades.[129]

> Historically, much of the attention was centered on the Garrison Diversion project, which involved construction of the Garrison dam in 1955, creating Lake Sakakawea to provide irrigation

119. Hall, *supra* note 4, at 733 (internal citations omitted).
120. *Id*.
121. U.S. Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C.A. §§ 9601–9675 (2000) [hereinafter CERCLA].
122. Hall, *supra* note 4, at 734.
123. *Id*.
124. *Id*.
125. *Id*.
126. *Id*.
127. Pakootas v. Teck Cominco Metals, Ltd., 452 F.3d 1066 (9th Cir. 2006).
128. *Id*. at 1082.
129. *See* Sheryl A. Rosenberg, *A Canadian Perspective on the Devils Lake Outlet: Towards an Environmental Assessment Model for the Management of Transboundary Disputes*, 76 N.D. L. REV. 817, 820–40 (2000).

> water for lands in the Hudson Bay-Souris River-Red River Basin and hydroelectric power throughout North Dakota. Canada has consistently raised concerns about the impact of resulting water diversions on water quality in Hudson Bay-Souris River-Red River Basin. To some extent, these concerns have historically been addressed under the Boundary Waters Treaty through joint references to the International Joint Commission, as well as through other diplomatic and bilateral processes. But when a recent dispute over a related water diversion project was not resolved through either the International Joint Commission or other diplomatic means, concerned Canadians (joined by some American allies) turned to domestic litigation in United States courts.
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> The case *Manitoba v. Norton*, involves a dispute over the U.S. Bureau of Reclamation's proposed Northwest Area Water Supply ("NAWS") project in North Dakota. Congress authorized the NAWS project in the Dakota Water Resources Act of 2000. It would be the first federal project to transfer Missouri River water across the north-south continental basin divide, essentially bringing water that would eventually flow into the Gulf of Mexico to Canada's Hudson Bay. The project would divert over three and one-half billion gallons of Missouri River water annually (approximately ten million gallons per day) through a series of pipelines to eight counties in North Dakota for municipal, rural, and industrial water supply. The communities that would receive the water are north of the Continental Divide, and the water would drain into the Hudson Bay Basin, which includes large portions of North Dakota, as well as Lake Winnipeg and Hudson Bay in Canada. If completed, this $145 million (U.S.) project would serve about 81,000 people.
>
> The federal government of Canada, the Province of Manitoba, and numerous citizens and [non-governmental organizations] from both countries have consistently objected to the project because it would biologically pollute Canadian waters (and tributaries in the United States) by introducing non-native invasive species from the Missouri River basin into Lake Winnipeg and the Hudson Bay.[130]

130. Hall, *supra* note 4, at 727 (internal citations omitted).

Introduced pathogenic bacteria and viruses could devastate Canadian fisheries.[131] Opponents of the project challenged the lack of an environmental impact assessment under the National Environmental Policy Act in a lawsuit in U.S. federal court.[132] The court ruled in favor of the project opponents, determining that:

> [The Missouri River and Hudson Bay] basins have distinct ecological characteristics and contain different species of fish and other aquatic organisms, as well as pathogenic species such as bacteria, viruses, protozoa, fungi, and other microscopic organisms . . . The co-mingling of untreated water from one basin into another can result in the introduction of biota-the various life forms of a particular region or habitat-that may be invasive and dangerous to indigenous biota. The effect upon fish of 'interbasin biota transfer'. . . can be devastating.[133]

The case demonstrates the need to consider emerging environmental issues in transboundary water management. Invasive species were obviously not a concern at the time the Boundary Waters Treaty was signed, and the issue has only recently reached any level of prominence with policy makers and the public. Yet as our scientific understanding of ecological impacts from water diversions improves, transboundary water management must evolve. If the International Joint Commission does not address invasive species issues adequately, citizens will continue to turn to domestic litigation and other approaches to provide protection and relief.

B. The Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

The Great Lakes are the world's largest surface freshwater system, containing ninety-five percent of the fresh surface water in the United States and twenty percent of the world's supply.[134] The five Great Lakes—Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario, along with the St. Lawrence River and connecting channels—contain about 5440 cubic miles of fresh surface water, with

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131. *Manitoba*, 398 F. Supp. 2d at 45-50.

132. *See* Hall, *supra* note 4, at 729.

133. *Manitoba*, 398 F. Supp. 2d at 45.

134. *See* Great Lakes Commission, *Toward a Water Resources Management Decision Support System for the Great Lakes-St. Lawrence River Basin* 9 (2003), *available at* http://www.glc.org/advisor/03/wrmdssinsert.pdf (last visited May 24, 2009).

another 1000 cubic miles of stored ground water in the basin.[135] About forty million Americans and Canadians rely on Great Lakes basin water for their drinking supply.[136] Simply put, more fresh water is at stake in the management of the Great Lakes than any other single freshwater resource in the world.

The Great Lakes system covers eight states and two provinces within the United States and Canada: Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, New York, Ontario, and Quebec. Numerous tribes and first nations and thousands of local governments and municipalities also share legal responsibilities. Management of Great Lakes water is necessarily an exercise in cooperation among multiple jurisdictions and levels of government, with many potentially overlapping legal regimes.

To better manage Great Lakes water within the region, and strictly limit diversions outside of the basin, the Great Lakes states and provinces have entered into the Great Lakes-St. Lawrence River Basin Water Resources Compact (Great Lakes Compact)[137] and companion Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement (Great Lakes Agreement).[138] The Great Lakes Agreement is a non-binding policy between the American states and the Canadian provinces, implemented in Canada by the provinces and in the United States through the Great Lakes Compact. The Great Lakes Compact is a binding agreement between the eight American states that have jurisdiction over the Great Lakes.[139]

Under the Great Lakes Compact and Great Lakes Agreement, the world's largest freshwater resource is protected and managed pursuant to minimum standards administered primarily under the authority of individual states and provinces.[140] The Great Lakes Compact and Great Lakes Agreement put riparian water use rules and environmental

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135. N.G. Grannemann et al., *The Importance of Ground Water in the Great Lakes Region* 1 (2000), *available at* http://water.usgs.gov/ogw/pubs/WRI004008/ (last visited May 24, 2009).

136. International Joint Commission, *Protection of the Waters of the Great Lakes: Final Report to the Governments of Canada and the United States* (Feb. 1, 2000), *available at* http://www.ijc.org/php/publications/html/finalreport.html (last visited May 24, 2009).

137. Great Lakes-St. Lawrence River Basin Water Resources Compact, Pub. L. No. 110–342, 122 Stat. 3739 (Dec. 13, 2005), *available at* http://www.cglg.org/projects-/water/CompactImplementation.asp (last visited May 24, 2009) [hereinafter Great Lakes Compact].

138. Great Lakes Agreement, *supra* note 115.

139. Great Lakes Compact, *supra* note 137.

140. *See generally* Hall, *supra* note 11 (discussing the Great Lakes Compact and Great Lakes Agreement).

protection standards into a proactive public law regime.[141] The standards represent numerous advances in the development of water use law, including uniform treatment for ground and surface water withdrawals, water conservation, return flow, and prevention of environmental impacts.[142] A thorough analysis of the Great Lakes Compact and Great Lakes Agreement is beyond the scope of this Article and has been provided elsewhere.[143] What is most relevant for purposes of evaluating the past and future of the Boundary Waters Treaty is a brief discussion of the shortcomings of the Boundary Waters Treaty for Great Lakes water management and the resulting "cooperative horizontal federalism"[144] approach developed by the Great Lakes states and provinces.

The first limitation of the Boundary Waters Treaty for Great Lakes water management is evident from the scope of its coverage. By definition, "boundary waters" subject to the Boundary Waters Treaty only include four of the five Great Lakes—Superior, Huron, Erie, and Ontario.[145] Lake Michigan sits entirely within the United States' borders and is thus not considered a "boundary water" under the terms of the Boundary Waters Treaty.[146] Further, the hundreds of tributary rivers and streams, as well as tributary ground water, upon which the boundary Great Lakes depend are also excluded from coverage under the Boundary Waters Treaty.[147]

In addition to the Boundary Waters Treaty's limited scope of coverage, its standard for protection offers little practical value. The respective parties may not use or divert boundary waters "affecting the natural level or flow of boundary waters on the other side of the [border]line" without the authority of the International Joint Commission.[148] The problem with this standard lies in the size and scale of the Great Lakes. With the enormous volume of water in the Great Lakes, most diversions would not have any measurable effect on the

141. *See id*. at 435-39.
142. *See id*.
143. *See generally id*.
144. *Id*.
145. Boundary Waters Treaty, *supra* note 1, at preliminary article.
146. While Lake Michigan is not subject to most of the treaty terms because it is not a boundary water, the Boundary Waters Treaty does extend its guarantees to the mutual right of free navigation to the waters of Lake Michigan. *See* Boundary Waters Treaty, *supra* note 1, at art. I. The express extension of the Article I protections for navigation to Lake Michigan makes the exclusion of Lake Michigan from the rest of the Boundary Waters Treaty provisions more strikingly evident. *See* Daniel K. DeWitt, Note, *Great Words Needed for the Great Lakes: Reasons to Rewrite the Boundary Waters Treaty of 1909*, 69 IND. L.J. 299, 306-07 (1993).
147. *See* Hall, *supra* note 11, at 417.
148. Boundary Waters Treaty, *supra* note 1, art. III.

levels or flow of the Great Lakes.[149] Almost no water uses and diversions from the boundary Great Lakes have had a measurable effect on Great Lakes levels and flows, at least individually.[150] Cumulatively, the hundreds of Great Lakes withdrawals and diversions may have had an overall effect, but this concern has never led to any formal allegations of Boundary Waters Treaty violations.[151] While individual withdrawals and diversions from tributary rivers and streams often do have a measurable effect on these waters, these waters are not protected under the Boundary Waters Treaty.[152]

Finally, while many scholars have recognized the International Joint Commission's objectivity and leadership on environmental issues,[153] its ultimate adjudicative power is severely limited. A reference is required by both countries for a dispute to be submitted to the International Joint Commission for a binding arbitral decision.[154] By the terms of the Boundary Waters Treaty, the consent of the U.S. Senate is required for such action.[155] As may be expected, the Senate has never consented to refer a matter to the International Joint Commission for a binding decision in the history of the Boundary Waters Treaty.[156]

Despite these limitations, the Boundary Waters Treaty and International Joint Commission have played a critically important role in studying potential threats to the waters of the Great Lakes and informing both the public and decision makers in the United States and Canada.[157] However, the inherent limitations of the Boundary Waters Treaty and International Joint Commission necessitate additional protections and management programs for Great Lakes water resources on both sides of

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149. *See* Hall, *supra* note 11, at 417. It took the largest Great Lakes diversion to cross this threshold. The Chicago diversion at its maximum—and subsequently prohibited—level of 8500 cubic feet per second (cfs) was found to have lowered water levels in Lakes Michigan and Huron by 6 inches; *see also* Wisconsin v. Illinois, 278 U.S. 367, 407 (1929).

150. *See* Hall, *supra* note 11, at 417.

151. *See id*. at 417 n.67.

152. *See id*. at 417.

153. *See, e.g.*, Barry Sadler, *The Management of Canada-U.S. Boundary Waters: Retrospect and Prospect*, 26 NAT. RESOURCES J. 359, 370–72 (1986).

154. Boundary Waters Treaty, *supra* note 1, art. X.

155. *Id*. The consent of the U.S. Senate would require a two-thirds majority vote; *see also* U.S. CONST. art II, § 2, cl. 2. If the International Joint Commission, with its equal U.S. and Canadian representation, is unable to decide the matter with a majority vote, then an umpire is chosen in accordance with the provisions of the Hague Convention of 1907. *See* Boundary Waters Treaty, *supra* note 1, art. X.

156. *See* Hall, *supra* note 11, at 418.

157. *See id*.; *see also* A. Dan Tarlock, *The International Joint Commission and Great Lakes Diversions: Indirectly Extending the Reach of the Boundary Waters Treaty*, 54 WAYNE L. REV. 1671 (2008).

the international border.[158] Canada first took such action domestically at the federal level, enacting new bans on all water diversions and comprehensive water management programs, some as direct applications of the Boundary Waters Treaty.[159] While Canada's domestic efforts are commendable, management of the shared Great Lakes obviously requires cooperation and coordination, and thus a process began for negotiating and drafting a new agreement.

State-provincial cooperation in Great Lakes management had been a regional goal for decades, implicitly promised by the Great Lakes Charter[160] and the 2001 Annex to the Great Lakes Charter[161] and expressly encouraged by Congress.[162] State cooperation with Canadian provinces in the Great Lakes region has obvious ecological and policy benefits, but raises fundamental legal and political concerns. The Compact Clause of the Constitution, included in Article I, Section 10, provides that "[n]o State shall, without the Consent of Congress . . . enter into any Agreement or Compact with another State, or with a foreign Power."[163] The same constitutional section also provides that "[n]o State shall enter into any Treaty, Alliance, or Confederation."[164] Thus, the prohibition on states entering into a "Treaty, Alliance, or Confederation" is absolute, while the prohibition on states entering into an "Agreement or Compact," even with a foreign government, is limited only by the political decision of Congress to consent.[165]

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158. For historical background on conflicts regarding Great Lakes water diversions, *see generally* PETER ANNIN, GREAT LAKES WATER WARS (2006).

159. *See* International Boundary Waters Treaty Act, R.S.C., ch. I17 (1985), *amended by* 2001 S.C. ch. 40 (Can.), *available at* http://laws.justice.gc.ca/en/showfulldoc/cs/I-17///en (last visited May 24, 2009).

160. The Great Lakes Charter: Principles for the Management of Great Lakes Water Resources (Feb 11, 1985), *available at* http://www.cglg.org/projects/water/docs-/GreatLakesCharter.pdf (last visited May 24, 2009).

161. The Great Lakes Charter Annex: A Supplementary Agreement to the Great Lakes Charter (June 18, 2001), *available at* http://www.cglg.org/projects/water/-docs/GreatLakesCharterAnnex.pdf (last visited May 24, 2009).

162. *See* Water Resources Development Act of 2000, Pub. L. No. 106-541, § 504, 114 Stat. 2572, 2644–45 (codified as amended at 42 U.S.C. § 1962d-20(b)(2) (2000)).

163. U.S. CONST. art. I, § 10, cl. 3.

164. *Id*. cl. 1.

165. Despite the plain language of the Compact Clause, congressional consent may not be necessary for interstate compacts relating to matters in which the United States has no possible interest or concern or that do not increase the states' political power. *See* Virginia v. Tennessee, 148 U.S. 503, 519 (1893) ("Looking at the clause . . . it is evident that the prohibition is directed to the formation of any combination tending to the increase of political power in the states, which may encroach upon or interfere with the just supremacy of the United States.").

The question of what constitutes a "Treaty, Alliance, or Confederation" versus an "Agreement or Compact" can in theory open the door to major constitutional issues of separation of powers and federalism.[166] In the case of the Great Lakes, there is a sensible answer. Congress has already exercised its treaty powers in this area through the Boundary Waters Treaty, and it could view any attempt by the states to enter into a binding management arrangement with the provinces on a related subject as an impermissible treaty.[167] Further, even if Congress viewed such an arrangement with the provinces as a compact rather than a treaty, it would likely reject either the entire compact or the inclusion of the provinces. This lesson has already been learned in the Great Lakes; when the Great Lakes states proposed including the provinces in the original Great Lakes Compact over fifty years ago, Congress rejected the provincial participation and only approved the compact among the states.[168]

While Congress would not likely allow a binding agreement between the states and provinces, it has stated a desire for the states to work "in consultation with" the provinces to develop a Great Lakes water management agreement.[169] The states were wise to interpret this congressional encouragement not as permission to negotiate a compact with the provinces, but rather to develop a non-binding cooperative approach to Great Lakes water management that involves the provinces. Thus, the domestic Great Lakes Compact incorporates the Canadian provinces through the Great Lakes Agreement's "Regional Body," comprised of representatives from each state and province.[170] The primary mechanism for achieving this purpose is the "Regional Review" procedure conducted by the Regional Body.

The Regional Body's authority could be fairly described as procedural rather than substantive, and its determinations described as

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166. It is left to Congress to determine whether a proposed arrangement is a prohibited "Treaty, Alliance, or Confederation" or a permissible "Agreement or Compact." *See* Felix Frankfurter & James M. Landis, *The Compact Clause of the Constitution—A Study in Interstate Adjustments*, 34 YALE L.J. 685, 694-95 (1925). This determination may elude a rigid legal analysis since it is "in a field in which political judgment is, to say the least, one of the important factors." *Id*. at 695 n.37.

167. Congress has already refused to authorize the Great Lakes states from entering into any arrangement with Canadian jurisdictions that could be viewed as a treaty or limitation of the United States' treaty-making powers when it approved the original Great Lakes Basin Compact. *See* Great Lakes Basin Compact Pub. L. No. 90-419, 82 Stat. 414 (1968).

168. *See id*.

169. Water Resources Development Act of 2000, Pub. L. No. 106-541, § 504, 114 Stat. 2572, 2644–45 (codified as amended at 42 U.S.C. § 1962d-20(b)(2) (2000)).

170. *See* Great Lakes Compact, *supra* note 136, § 1.2 (defining "Regional Body").

advisory rather than final. The Regional Body's role includes notice, consultation, and public participation, but stops short of final decision-making.[171] The party states and Compact Council need only "consider," but not follow, Regional Review findings.[172] The Regional Review process is also limited to "regionally significant or potentially precedent setting" proposals (as determined by a majority of the members of the Regional Body) and considering exceptions to the general prohibition on diversions.[173] The Regional Review process thus avoids infringing on federal treaty powers, but still gives the provinces an evaluative and procedural role that may prove useful for affecting major decisions.

V. THE FUTURE OF THE BOUNDARY WATERS TREATY

The recently litigated disputes in the Columbia River basin and prairie region, and cooperative policy developments in the Great Lakes, demonstrate that transboundary water management and pollution prevention remain as relevant and potentially contentious as ever before. Further, the broad consensus of scholars and policymakers alike is that the Boundary Waters Treaty and International Joint Commission are valuable and important institutions for continuing the spirit of cooperative boundary water management between the United States and Canada. The challenge is to take these one hundred-year-old institutions and adapt them to meet our collective current demands. Substantively, issues of freshwater scarcity, climate change, and ecosystem degradation must be addressed. Procedurally, the public's expectations and demands for citizen participation and environmental protection must be recognized. There is significant consensus on both of these general challenges, and an intriguing diversity of views and proposals to meet them.

Professor B. Timothy Heinmiller provides a historical and geographic examination of the successes and failures of the Boundary Waters Treaty and International Joint Commission.[174] Like all of the authors in this volume, Professor Heinmiller acknowledges that the Boundary Waters Treaty was remarkably ambitious for its time.[175] Notably, the scope of the Boundary Waters Treaty, applying to all shared

171. *See id*. § 4.5.

172. *Id*. § 4.5(5)(i).

173. *See id*. §§ 4.5(1)(c), 4.5(1)(f). A state may, at its discretion, and after consulting with the proposal applicant, seek Regional Review for any other proposal within its jurisdiction. *Id*. § 4.5(2)(c)(ii).

174. B. Timothy Heinmiller, *The Boundary Waters Treaty and Canada-US Relations in Abundance and Scarcity*, 54 WAYNE L. REV. 1499 (2008).

175. *Id*.

waters along the 5000 mile border, remains impressive.[176] However, with the benefit of one hundred years of experience, Professor Heinmiller examines how well the Boundary Waters Treaty and International Joint Commission have met the challenges of international water conflict management.[177] His research demonstrates that the conflict management procedures of the Boundary Waters Treaty have been generally more successful in managing Great Lakes water conflicts than prairie region (e.g., Manitoba and North Dakota) water conflicts.[178] Professor Heinmiller further argues that this varied effectiveness is primarily attributable to innate differences in water conflicts between these two regions, with conflicts in the Prairie region generally being more intractable and less amenable to consensual resolution than those in the Great Lakes.[179]

Professor John H. Knox focuses on the primary environmental provision of the Boundary Waters Treaty—Article IV.[180] While acknowledging that most of the Boundary Waters Treaty does not concern environmental protection, Professor Knox views Article IV as one of the Boundary Waters Treaty's most significant contributions to international law.[181] Article IV incorporates environmental concerns into the basic premise of the Boundary Waters Treaty, to allow Canada and the United States to use their boundary waters in ways that would not unduly interfere with one another.[182] Professor Knox demonstrates that Article IV was a harbinger of the international environmental movement that began six decades later, especially with a focus on transboundary environmental harm.[183] Since the Boundary Waters Treaty, many different types of transboundary environmental degradation have led to numerous international treaties, from those addressing harms that threaten the environment of the entire planet, such as climate change and ozone depletion, to those addressing regional harms such as long-range air pollution and pollution of shared bodies of water, to bilateral agreements focusing on a transboundary harm of local concern.[184] Professor Knox credits the Boundary Waters Treaty for first introducing the general principles for the duties of states with regard to

176. Boundary Waters Treaty, *supra* note 1.
177. Heinmiller, *supra* note 174.
178. *Id.*
179. *Id.*
180. John H. Knox, *The Boundary Waters Treaty: Still Ahead of Its Time*, 54 WAYNE L. REV. 1591 (2008); *see also* Boundary Waters Treaty, *supra* note 1, art. IV.
181. Knox, *supra* note 180, at 1594.
182. Boundary Waters Treaty, *supra* note 1, art. IV.
183. Knox, *supra* note 180, at 1591.
184. *Id.* at 1591-92.

transboundary environmental harm that is seen in most of these subsequent treaties.[185]

Professor Bradley C. Karkkainen focuses on the importance of the U.S.-Canadian relationship and the countries' shared natural resources.[186] For both countries, Professor Karkkainen argues that it is the single most important bilateral relationship.[187] While Canadians may understand this implicitly, he fears that those in the United States do not fully appreciate it, taking Canada, and the good relationship with it, for granted.[188] The critically important and valuable shared natural resources cannot be adequately managed without meaningful cooperation. Thus, Professor Karkkainen makes clear that the strains in the binational relationship, which have been badly neglected, must be addressed.[189]

Professor Itzchak E. Kornfeld takes a critical and ultimately positive look at the International Joint Commission.[190] Professor Kornfeld questions why the United States has grown weary of the International Joint Commission in recent years.[191] He believes that concerns about maintaining sovereignty have undermined the role that the International Joint Commission can and must play in protecting shared waters and ensuring a cooperative relationship.[192] Professor Kornfeld demonstrates that the International Joint Commission can best employ the "concept of polycentricism" to resolve complex disputes between the United States and Canada. Thus, Professor Kornfeld recommends renewed confidence and reliance on the International Joint Commission.[193]

Professor Marcia Valiante considers the flexibility of the Boundary Waters Treaty in incorporating twenty-first century knowledge and principles.[194] She examines this fundamental question by looking at one of the most controversial issues currently facing the International Joint Commission—developing an appropriate response to the issue of fluctuating water levels in the Great Lakes-St. Lawrence River Basin.[195]

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185. *Id*. at 1588.

186. Bradley C. Karkkainen, *The Great Lakes and International Environmental Law: Time for Something Completely Different?*, 54 WAYNE L. REV. 1571 (2008).

187. *Id*. at 1571.

188. *Id*. at 1572.

189. *Id*.

190. Itzchak E. Kornfeld, *Polycentrism and the International Joint Commission*, 54 WAYNE L. REV. 1695 (2008).

191. *Id*. at 1697.

192. *Id*.

193. *Id*. at 1699.

194. Marcia Valiante, *How Green is My Treaty? Ecosystem Protection and the 'Order of Precedence' under the Boundary Waters Treaty of 1909*, 54 WAYNE L. REV. 1525 (2008).

195. *Id*. at 1530.

Professor Valiante recognizes that this issue has tested the limits of the Boundary Waters Treaty and the resources of the International Joint Commission in finding a consensus among all interested parties on both sides of the border.[196] This raises the legal question of to what extent can developments in international environmental law be used under the Boundary Waters Treaty regime. Specifically, does the Boundary Waters Treaty allow for priority to be given to environmental concerns in making decisions about the management of shared waters? Professor Valiante makes a compelling argument that the International Joint Commission can legally incorporate environmental protection principles and continue to comply with the Boundary Waters Treaty.[197] However, she recognizes that a wholesale change in the order of precedence of management goals in favor of environmental protection cannot be accomplished without renegotiating and amending the Boundary Waters Treaty.[198]

Lee Botts and Paul Muldoon, authors of the recent book *Evolution of the Great Lakes Water Quality Agreement*,[199] propose a new task for the International Joint Commission.[200] They note with disappointment that the role of the Boundary Waters Treaty and its offspring, the Great Lakes Water Quality Agreement, in guiding and assisting governments, has declined over time.[201] Despite the decline, they argue that current circumstances demand a critical look at the adequacy of Great Lakes governance arrangements, and the Boundary Waters Treaty can overcome the challenge of preserving the ecological integrity of the Great Lakes in the twenty-first century.[202] As a specific recommendation, they propose a reference to the International Joint Commission to undertake a study and evaluation of the Great Lakes governance regime and make recommendations in coordination with the ongoing review of the Great Lakes Water Quality Agreement.[203]

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196. *Id*. at 1526.
197. *Id*. at 1548.
198. *Id*. at 1550.
199. LEE BOTTS & PAUL MULDOON, EVOLUTION OF THE GREAT LAKES WATER QUALITY AGREEMENT (2005).
200. Lee Botts & Paul Muldoon, *Using the Boundary Waters Treaty for the 21st Century: Revitalizing the Great Lakes Governance Regime*, 54 WAYNE L. REV. 1553 (2008).
201. *Id*. at 1554.
202. *Id*.
203. *Id*.

A widely respected environmental attorney and advocate, Robert V. Wright, offers a complementary proposal.[204] He argues that the Boundary Waters Treaty is out of step with modern international environmental agreements because it lacks specific tools for public participation, accountability, and access to justice.[205] These shortcomings will be compounded by new environmental and social stresses on boundary waters, including pollution, invasive species, flow and lake level disruptions, and climate change.[206] His proposed solution is a public submission process that would give added "push" to the International Joint Commission and domestic governments where and when it is most needed.[207]

Professor A. Dan Tarlock provides an insightful (insider's) perspective on how the Boundary Waters Treaty and International Joint Commission have affected Great Lakes water management policy development.[208] Professor Tarlock focuses on the Boundary Waters Treaty regime's ability to evolve through state practice beyond its original dispute resolution function.[209] While the International Joint Commission has been challenged by inconsistent support for its involvement in transboundary water issues in the United States, and the Boundary Waters Treaty has been severely criticized in Canada for its limitations, Professor Tarlock sees the regime as continuing to play a significant role in meeting current challenges.[210] Professor Tarlock examines the recent role of the International Joint Commission in constructively influencing the development of the Great Lakes Agreement and Great Lakes Compact as an example of the power of the International Joint Commission to overcome the Boundary Waters Treaty's limitations by using its respected status.[211]

Professor Robert H. Abrams looks for lessons from the Boundary Waters Treaty and International Joint Commission for domestic interstate water management and dispute resolution in the United States.[212] The

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204. Robert V. Wright, *The Boundary Waters Treaty: A Proposed Public Submission Process to Increase Public Participation, Accountability and Access to Justice*, 54 WAYNE L. REV. 1609 (2008).

205. *Id*. at 1609-10.

206. *Id*. at 1610.

207. *Id*.

208. A. Dan Tarlock, *The International Joint Commission and Great Lakes Diversions: Indirectly Extending the Reach of the Boundary Waters Treaty*, 54 WAYNE L. REV. 1667 (2008).

209. *Id*. at 1668.

210. *Id*.

211. *Id*.

212. Robert H. Abrams, *The Boundary Waters Treaty of 1909 as a Model for Interjurisdictional Water Governance*, 54 WAYNE L. REV. 1635 (2008).

U.S.-Canadian border and Great Lakes are obviously not the only places in the United States with complex and contentious transboundary water management challenges. Professor Abrams examines three other ongoing disputes: (1) a relatively simple cross-border complaint by a downstream state (South Carolina) that an upstream state (North Carolina) is using more than its share of water; (2) a complex basin-wide dispute regarding water use and allocation in the Apalachicola-Chattahoochee-Flint Basin shared by Georgia, Alabama, and Florida; and (3) a very recent claim by the state of Mississippi that urban growth in Memphis, Tennessee is putting unreasonable stress on the shared groundwater of the Sparta Aquifer (also known as the Memphis Sands Aquifer). While acknowledging that differences in the resources subject to management, the sovereigns, the eras, the institutional capabilities of the parties, and the political feasibility of reaching a binding agreement in these settings makes wholesale adoption of the Boundary Waters Treaty and International Joint Commission undesirable and unlikely, Professor Abrams sees many useful aspects of the regime for these current disputes.[213]

Each of these articles, authored by scholars and practitioners with tremendous knowledge and experience in the field, sings the praises of the Boundary Waters Treaty for its advancements one hundred years ago. But from this shared historical acknowledgement come diverse views about the continuing relevance of the Boundary Waters Treaty and International Joint Commission. While there is consensus regarding the substantive challenges facing boundary water management and the need for renewed attention to governance, the authors present a spectrum of views regarding the extent of reform needed. Some advocate modest changes that can be made within the existing framework while others see the need for more fundamental changes that would almost certainly require amending the Boundary Waters Treaty. As with all policy challenges, open and informed discussion is the foundation for finding solutions, and collectively these articles provide policymakers and scholars with a comprehensive and diverse study of the role of the Boundary Waters Treaty and International Joint Commission in protecting North America's shared freshwater resources.

VI. CONCLUSION

One hundred years ago, the United States and Canada came together and crafted a model for transboundary water management. The Boundary

213. *Id*. at 1636.

Waters Treaty and its International Joint Commission were decades ahead of their time and, as a result, helped to shape international environmental law. The Boundary Waters Treaty and International Joint Commission also produced a significant list of accomplishments along the U.S.-Canadian border, with the result being a level of peace and environmental protection that is often taken for granted. But 2009 is no time to rest on historical laurels. The challenges and new stresses on natural resources demand an ongoing search for improved solutions. One characteristic of successful institutions is the ability to adapt to new circumstances and evolve accordingly. The Boundary Waters Treaty and International Joint Commission have remained relevant for a century by adapting and evolving as new challenges arise and new values emerge, and this must obviously continue. All parties must work towards a goal of again celebrating the Boundary Waters Treaty a century from now with peace, prosperity, and environmental protection shared by the United States and Canada.