

WATER, WATER EVERYWHERE, BUT JUST HOW MUCH IS CLEAN?: EXAMINING WATER QUALITY RESTORATION EFFORTS UNDER THE UNITED STATES CLEAN WATER ACT AND THE UNITED STATES-CANADA GREAT LAKES WATER QUALITY AGREEMENT

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I. INTRODUCTION

If asked to describe what an endangered species is, the average American could likely give a rough definition. Perhaps the World Wildlife Federation and its iconic panda logo comes to mind,¹ or perhaps a favorite endangered species studied in elementary school. But what about an “endangered” river or lake? A definition or an example of an at-risk water body may be more difficult for the average American to describe. While not “endangered” under the same definition as an endangered species, water bodies across the North American continent have been designated as “impaired” or an “Area of Concern” under United States and Canadian legislation.

Regulation of water is of the utmost importance due to the great demands on this resource. A classic example of the importance of water comes from its role in living things. Water comprises up to 60% of the human body, and some organisms derive up to 90% of their body weight from water.² Water bodies are an important resource for human survival because they provide drinking water and support species that humans consume, including aquatic species, land animals, and crops. Water is also crucial to support economic activity, as it is a vital component of industry, energy, agriculture, and transportation. The water used in each of these important functions must meet certain quality standards in order to adequately and safely support human survival.

The U.S. Clean Water Act (CWA)³ celebrated its fortieth anniversary in 2012.⁴ However, approximately 40% of U.S. water bodies are still not clean enough for basic uses.⁵ In 2010, former Environmental Protection Agency (EPA) Administrator Lisa Jackson stated that, U.S. waters are “imperiled as never before.”⁶

¹ WORLD WILDLIFE FED'N, <http://www.worldwildlife.org> (last visited Oct. 2, 2013).

² *The Water in You*, U.S. GEOLOGICAL SURVEY, <http://ga.water.usgs.gov/edu/propertyyou.html>.

³ Clean Water Act, 33 U.S.C. §§ 1251–1387 [hereinafter CWA].

⁴ *Clean Water Act 40th Anniversary*, EPA, <http://water.epa.gov/action/cleanwater40/>.

⁵ *Nonpoint Source Pollution: The Nation's Largest Water Quality Problem*, EPA, <http://water.epa.gov/polwaste/nps/outreach/point1.cfm>.

⁶ Memorandum from Lisa P. Jackson, Adm'r to All EPA Employees (Jan. 12, 2010), <http://yosemite.epa.gov/opa/admpress.nsf/0/bb39e443097b5df5852576a9006a5a86?OpenDocument>; see John Cronin, *Has EPA Given Up on Clean Water?*, PACE UNIV. EARTHDESK BLOG (Oct. 23, 2013), <http://earthdesk.blogs.pace.edu/2013/10/23/has0--epa-given-up-on-clean-water/> [hereinafter Cronin, *Has EPA Given Up on Clean Water?*]; John Cronin, *It's Not Called the Cleaner Water Act*, PACE UNIV. EARTHDESK BLOG (Sept. 25, 2013), <http://earthdesk.blogs.pace.edu/2013/09/25/its-not-called-the-cleaner-water-act/>.

In current Administrator Gina McCarthy's newly released strategy for the EPA, she stated, "progress in advancing clean water and safe drinking water goals in the U.S. is stalled."⁷ McCarthy's strategies to cure this "stall" include clarifying the scope of the CWA and focusing resources on decreasing pollution.⁸ McCarthy has been criticized for using "soft" vocabulary that does not suggest any significant progress will be made on the issue of clean water in the U.S during the current president's administration.⁹

The Great Lakes Water Quality Agreement (GLWQA), a bilateral treaty between the U.S. and Canada, was signed in 1972, the same year the CWA was enacted, with the purpose of restoring the "chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem."¹⁰ In 2012, as the GLWQA celebrated its fortieth anniversary, the U.S. and Canada signed a new 2012 protocol updating the agreement.¹¹

Under the new protocol, "the governments conclude that the 'best means to preserve [the] Great Lakes Basin Ecosystem and improve water quality' is to adopt common objectives [and] cooperative programs."¹² The Canadian co-chair, Joe Comuzzi, stated that the 2012 protocol "stresses action based on science."¹³ American co-chair Lana Pollack claimed "[t]he new protocol comes at a critical time and provides tools needed to address old threats such as pollution and to respond to new ones such as climate change and invasive species."¹⁴ The general takeaway from the 2012 Protocol is a renewed commitment by both parties to their original promises and obligations under the GLWQA.¹⁵ While the renewed promise is a step in the right direction toward water quality restoration in the Great Lakes, "success under the new Agreement will only come with strong implementation . . . [which] will require provision of adequate resources by the governments,

⁷ *EPA's Themes – Meeting the Goal Ahead*, EPA, <http://www2.epa.gov/aboutepa/epas-theme-s-meeting-challenge-ahead>; Cronin, *Has EPA Given Up on Clean Water?*, *supra* note 6.

⁸ *EPA's Themes – Meeting the Goal Ahead*, *supra* note 7; see Cronin, *Has EPA Given Up on Clean Water?*, *supra* note 6.

⁹ Cronin, *Has EPA Given Up on Clean Water?*, *supra* note 6.

¹⁰ Great Lakes Water Quality Agreement of 1972, U.S.-Can., art. II, Nov. 22, 1978, 30 U.S.T. 1383 [hereinafter GLWQA].

¹¹ Great Lakes Water Quality Protocol of 2012, U.S.-Can., Sept. 7, 2012, 2012 U.S.T. Lexis 86 [hereinafter 2012 GLWQ Protocol].

¹² News Release, *Commission Applauds Signing of New Great Lakes Water Quality Agreement Protocol*, INT'L JOINT COMM'N (Sept. 7, 2012), available at http://ijc.org/rel/news/2012/120907_e.htm.

¹³ *Id.*

¹⁴ 2012 GLWQA Protocol, *supra* note 11.

¹⁵ *See id.*

strengthened/expanded legislation and regulations, . . . and adequate opportunities for public and stakeholder engagement.”¹⁶

Currently, U.S. water quality is “imperiled as never before,” with progress on restoring endangered waters “stalled.” These factors, combined with the renewed commitment by the U.S. and Canada to the GLWQA under the 2012 Protocol, make it important to analyze the effectiveness of legislation in these countries at restoring “impaired” water bodies and “Areas of Concern” in North America.¹⁷

Under the U.S. CWA, water bodies that do not meet state-set water quality standards are deemed “impaired” and must be put on an “impaired” waters list.¹⁸ For all impaired waters, each state must develop total maximum daily loads (TMDLs) for pollutants in order to restore impaired water bodies to state water quality standards.¹⁹

Under the GLWQA 1987 Protocol’s procedure to improve waters with advanced contaminants and degradation,²⁰ a location is first designated an “Area of Concern” (AOC) if it fails to meet the GLWQA’s objectives; thereafter, both parties require its state and provincial governments to jointly develop a Remedial Action Plan (RAP) to improve the AOC in compliance with the Protocol’s minimum standards for each RAP.²¹

Both together and separately, the U.S. CWA and U.S.-Canada GLWQA work to restore water bodies that are “impaired” or “Areas of Concern,” with varying methods and rates of success.

This Note is organized into four parts, including this introduction. Part II reviews the historical circumstances leading to the enactment of the CWA and GLWQA and describes other relevant environmental legislation in the U.S. and Canada that work with the CWA and GLWQA. It also sets forth the framework of both the CWA and the GLWQA. Part III analyzes the

¹⁶ Michael Murray, *Revised Great Lakes Water Quality Agreement Offers Renewed Guiding Framework for Restoration*, NAT’L WILDLIFE FEDERATION (Sept. 7, 2012), <http://blog.nwf.org/2012/09/revised-great-lakes-water-quality-agreement-offers-renewed-guiding-framework-for-restoration/>.

¹⁷ See *supra* notes 6–9, 11–15 and accompanying text.

¹⁸ CWA, *supra* note 3, § 1313; see Roger Flynn, *New Life for Impaired Waters: Realizing the Goal to “Restore” the Nation’s Waters Under the Clean Water Act*, 10 WYO. L. REV. 35, 40–44 (2010).

¹⁹ CWA, *supra* note 3, § 1313. See Flynn, *supra* note 18.

²⁰ Protocol Amending the 1978 Agreement Between the United States of America and Canada on Great Lakes Water Quality, U.S.–Can., Nov. 18, 1987, 1987 U.S.T. LEXIS 60, Annex 2 [hereinafter 1987 GLWQA Protocol].

²¹ *Id.*; see Brian T. Schurter, Comment, *Great Lakes Water Quality From a Fisheries Perspective*, 26 U. TOL. L. REV. 467, 478–80 (1995).

successes and weaknesses of each program in addressing impaired water bodies and AOCs, respectively. This section also analyzes the federalism principles embodied in both the CWA and the GLWQA and makes suggestions for the future of both pollution control regimes. Part IV draws conclusions regarding both the CWA and the GLWQA's efforts to restore water bodies in North America.

II. BACKGROUND

A. *The United States Clean Water Act*

In 1948, the U.S. Congress enacted the Federal Water Pollution Control Act (FWPCA),²² the predecessor to the modern CWA, in response to water quality concerns.²³ The FWPCA gave states the authority to create water quality regulations and offered financial support,²⁴ but did not have specific guidelines for how states should meet water quality standards.²⁵

The American public developed an increasing environmental awareness in the 1960s and 1970s due to several significant events.²⁶ In 1969, an oil platform exploded off the coast of Santa Barbara, California, spilling a massive amount of oil and creating an oil slick that resulted in the death of marine and avian life.²⁷ The same year, the Cuyahoga River in Cleveland, Ohio caught fire due to chemical pollution.²⁸ Later that year, President Richard Nixon established the EPA.²⁹

This increasing environmental awareness also prompted Congress to alter the FWPCA's state-based system of water quality control.³⁰ The FWPCA Amendments of 1972 established many important aspects of the modern

²² CWA, *supra* note 3, § 1251.

²³ ROBIN KUNDIS CRAIG, *The Clean Water Act and Federalism*, in ENVIRONMENTAL LAW IN CONTEXT 712 (3d ed. 2012).

²⁴ *Id.*

²⁵ Flynn, *supra* note 18, at 38–39.

²⁶ CRAIG, *supra* note 23, at 2.

²⁷ *Id.*

²⁸ *Id.*

²⁹ Reorganization Plan No. 3 of 1970, 3 C.F.R. 1072 (1970), *reprinted in* 5 U.S.C. § 903; *see also* Alexis C. Madrigal, *Gallery: Why Nixon Created the EPA*, ATLANTIC, Dec. 2, 2010, <http://www.theatlantic.com/technology/archive/2010/12/gallery-why-nixon-created-the-epa/67351/>.

³⁰ *See generally* CRAIG, *supra* note 23.

CWA.³¹ The name “Clean Water Act” comes from the FWCPA Clean Water Act Amendments of 1977.³²

The 1972 Amendments imposed two major federal requirements for state water quality standards that continue today.³³ First, the CWA requires states to establish effluent limitations, based on treatment and control technology, that limit wastewater discharges to surface waters and sewage treatment plants.³⁴ Effluent limitations must accord with state water quality standards, which must be established pursuant to the CWA.³⁵ Second, the 1972 Amendments make the “discharge of any pollutant by any person” unlawful and establish permit requirements for all discharges of pollutants.³⁶

It is important to carefully examine the definitions of the terms used by the CWA in order to determine what exactly the CWA regulates. The CWA definition of “discharge of a pollutant” is an addition of any pollutant to “navigable waters from any point source.”³⁷ A “pollutant” includes solid waste, incinerator residue, sewage, garbage, munitions, chemical wastes, biological materials, radioactive materials, and industrial, municipal, and agricultural waste.³⁸ “Navigable waters” are “waters of the United States, including territorial seas,” which extend three miles from the coast.³⁹ A “point source” is any “discernible, confined and discrete conveyance.”⁴⁰ Any person that discharges pollutants under these broad definitions must have a permit to operate legally under the CWA.⁴¹ Notably, “point source” does not include discharges and return flows from agricultural stormwater and irrigated agriculture return flow; therefore, these types of discharges do not need a permit.⁴²

The EPA oversees all permitting, which is comprised of two permit programs: the National Pollutant Discharge Elimination System (NPDES),⁴³

³¹ *See id.*

³² *Id.*

³³ *See generally id.*; *see generally* CWA, *supra* note 3.

³⁴ CWA, *supra* note 3, § 1311; *see Effluent Limitations Guidelines*, EPA, <http://water.epa.gov/scitech/wastetech/guide/index.cfm>; CRAIG, *supra* note 23, at 713.

³⁵ CWA, *supra* note 3, § 1313.

³⁶ *See id.* §§ 1311, 1341–1346; CRAIG, *supra* note 23, at 713.

³⁷ CWA, *supra* note 3, § 1362.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.* § 1311.

⁴² *Id.*

⁴³ *Id.* § 1342.

and Permits for Dredged or Fill Material (Section 404 permits).⁴⁴ Section 404 permits are issued by the U.S. Army Corp of Engineers.⁴⁵ Under the NPDES, states may also submit permitting programs, which are subject to EPA approval.⁴⁶ This command and control regulatory system combines technology-based effluent limits and quality-based permit standards to combat water pollution.⁴⁷

The overall goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”⁴⁸ In addition, the CWA includes a goal to attain “water quality which provides for the protection and propagation of fish, shellfish, and wildlife” by 1983,⁴⁹ accomplished through permits, technology control, and pollution control based on water quality.⁵⁰

Despite the CWA’s original purpose to reform ineffective pre-1972 state-based regulation, Congress reserved most water quality regulation to the states, recognizing, for example, that “nothing in this chapter shall be construed to supersede or abrogate rights to quantities of water which have been established by any State.”⁵¹ However, Congress granted the EPA the responsibility to administer the CWA.⁵² Professor Robin Kundis Craig, a leading scholar on the CWA, refers to this division of state and federal powers, each having distinct functions, as “cooperative federalism.”⁵³ However, the CWA’s division of water quality regulatory authority between the state and federal governments “tips sharply in favor of cooperative states.”⁵⁴ The states’ responsibility to assure that water quality standards are

⁴⁴ *Id.* § 1344.

⁴⁵ CRAIG, *supra* note 23, at 713.

⁴⁶ CWA, *supra* note 3, § 1342(b).

⁴⁷ William L. Andreen, *Water Quality Today—Has the Clean Water Act Been a Success?*, 55 ALA. L. REV. 537, 537–38 (2004).

⁴⁸ CWA, *supra* note 3, § 1251(a).

⁴⁹ *Id.* § 1251(a)(2).

⁵⁰ Flynn, *supra* note 18, at 39.

⁵¹ CWA, *supra* note 3, § 1251(g).

⁵² Flynn, *supra* note 18, at 40–41.

⁵³ CRAIG, *supra* note 23, at 713; Robin Kundis Craig, *The Clean Water Act’s “Cooperative Federalism” and the Federal/State Regulatory Balance*, in *THE CLEAN WATER ACT AND THE CONSTITUTION* 33 (2d ed. 2009); see also Dietrich H. Earnhart & Robert L. Glicksman, *Discharge Limits Imposed on Discharging Facilities*, in *POLLUTION LIMITS AND POLLUTERS’ EFFORTS TO COMPLY* 35 (2011).

⁵⁴ Craig, *supra* note 53, at 33.

being met under CWA § 303 highlights the significant autonomy that states enjoy.⁵⁵

CWA § 303, “Water Quality Standards and Implementation Plans,” requires the states to set water quality standards for all waters within their boundaries, which must be approved by the EPA.⁵⁶ State water quality standards have three prongs: (1) designated uses of each water body; (2) water quality criteria or thresholds that determine levels of pollutants allowed based on the designated uses; and (3) an anti-degradation policy to prevent non-impaired waters from degrading.⁵⁷

A water body with any pollutant levels that cannot support the water’s designated use(s) is deemed “impaired” pursuant to CWA § 303(d), and is put on an impaired waters list, also known as the “303(d) list.”⁵⁸

For all impaired waters, each state must rank its water bodies in order of priority and develop TMDLs for pollutants in order to restore “impaired” water bodies to water quality standards.⁵⁹ A TMDL specifies the maximum amount of a pollutant that can enter a water body each day before the water body is deemed out of compliance with the state’s water quality standards for specified designated use(s).⁶⁰ The TMDL is divided between natural (or “background”) sources of pollution, nonpoint sources of pollution, and point sources of pollution.⁶¹

States have primary authority to set water quality standards and TMDLs, but if a state refuses to do so, the EPA must assume this responsibility and set both standards for the state.⁶² The EPA must also adjust a water body’s point source permits in consideration of the TMDL.⁶³

⁵⁵ *Id.*

⁵⁶ CWA, *supra* note 3, § 1313; *see* Flynn, *supra* note 18, at 40–44.

⁵⁷ CWA, *supra* note 3, § 1313(c); *Assessing and Reporting Water Quality*, EPA, http://www.epa.gov/waters/ir/attains_q_and_a.html (last updated Oct. 17, 2012).

⁵⁸ CWA, *supra* note 3, § 1313; *Assessing and Reporting Water Quality*, *supra* note 57; *see* Flynn, *supra* note 18, at 40–44.

⁵⁹ CWA, *supra* note 3, § 1313; *see* Flynn, *supra* note 18, at 40–44; CRAIG, *supra* note 23, at 912.

⁶⁰ CRAIG, *supra* note 23, at 912; Earnhart & Glicksman, *supra* note 53, at 41.

⁶¹ CRAIG, *supra* note 23, at 912.

⁶² CWA, *supra* note 3, § 1313(d).

⁶³ *Id.*

B. The United States-Canada Great Lakes Water Quality Agreement

In 1972, the same year the modern CWA was promulgated, the U.S. and Canada signed the GLWQA in an effort to restore the “chemical, physical, and biological integrity of the waters of the Great Lakes Ecosystem.”⁶⁴

The Great Lakes ecosystem is the largest freshwater resource in the world, and maintaining this resource is challenging due to degradation, external stressors, and the bi-nationality of the ecosystem.⁶⁵ The GLWQA was intended to address these challenges.⁶⁶ The purposes of the GLWQA are to prohibit discharge of toxic substances in toxic amounts and eliminate the discharge of persistent toxic substances, to provide financial aid to waste treatment works, and to develop and implement practices that control all sources of pollutants.⁶⁷

In addition to the federal, provincial, and state governments of Canada and the U.S., the International Joint Commission (IJC) also plays a role in the GLWQA.⁶⁸ This includes analysis of water quality and pollution data from the boundary waters of the Great Lakes System and the effectiveness of programs established pursuant to the GLWQA’s objectives.⁶⁹ The IJC also gives advice to the federal, provincial, and state governments of the two countries, including legislation, regulatory requirements, and programs.⁷⁰ In addition, the IJC assists in coordinating GLWQA’s joint activities and research in the Great Lakes Basin Ecosystem.⁷¹ Further, the IJC may conduct investigations of subjects related to the Great Lakes Basin Ecosystem.⁷²

The 1987 Protocol to the GLWQA sets forth the procedure to identify and improve waters with advanced contaminants and degradation.⁷³ First, a location is designated an “AOC” if it fails to meet the GLWQA’s objectives.⁷⁴ Second, both parties require their state and provincial

⁶⁴ GLWQA, *supra* note 10; see Sally Billups et al., *Treading Water: A Review of Government Progress Under the Great Lakes Water Quality Agreement (Part I) A Report to the International Joint Commission*, 1998 TOL. J. GREAT LAKES’ L. SCI. & POL’Y 91, 94.

⁶⁵ Schurter, *supra* note 21, at 467.

⁶⁶ *Id.*

⁶⁷ GLWQA, *supra* note 10, art. II.

⁶⁸ *Id.* art. VII.

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ 1987 GLWQA Protocol, *supra* note 20; see Schurter, *supra* note 21, at 478–80.

⁷⁴ 1987 GLWQA Protocol, *supra* note 20; see Schurter, *supra* note 21, at 478–80.

governments to jointly develop a RAP to improve the AOC in compliance with the Protocol's minimum standards for each RAP.⁷⁵

There are three stages of each RAP.⁷⁶ During Stage One, the severity and causes of environmental degradation are assessed.⁷⁷ During Stage Two, goals and recommendations for restoring the AOC are developed.⁷⁸ During Stage Three, these recommendations are implemented and the progress of restoration is measured to assess whether goals have been met.⁷⁹ When all goals of the RAP have been met, Stage Three is complete and the federal and provincial governments "delist" the AOC.⁸⁰

1. The Great Lakes Water Quality Agreement Under the U.S. Clean Water Act

The U.S. recognizes the GLWQA as a program related to the CWA's strategy to combat water pollution, and delegates GLWQA authority to the EPA.⁸¹ The CWA established the Great Lakes National Program Office (GLNPO) within the EPA to regulate the GLWQA.⁸² Under the CWA, the responsibilities of the GLNPO include establishing a Great Lakes surveillance network to monitor the Great Lakes' water quality, specifically focusing on toxic pollutants.⁸³

Congress further required the GLNPO to establish water quality guidance for the Great Lakes System, including numerical limits on pollutants in the waters of the Great Lakes, minimum water quality standards, anti-degradation policies, and implementation procedures.⁸⁴ States boarding the Great Lakes must adopt water quality standards, anti-degradation policies, and implementation procedures for Great Lakes waters consistent with such guidance.⁸⁵ If a Great Lakes state fails to adopt such standards, policies, and procedures, the EPA must promulgate these standards.⁸⁶ The EPA must

⁷⁵ 1987 GLWQA Protocol, *supra* note 20; see Schurter, *supra* note 21, at 478–80.

⁷⁶ 1987 GLWQA Protocol, *supra* note 20.

⁷⁷ *Great Lakes Areas of Concern*, ENV'T CANADA, <http://www.ec.gc.ca/raps-pas/default.asp?lang=En&n=A290294A-1>.

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ CWA, *supra* note 3, § 1268(a)(1).

⁸² *Id.* § 1268(b).

⁸³ *Id.* § 1268(c)(1).

⁸⁴ *Id.* § 1268(c)(2).

⁸⁵ *Id.*

⁸⁶ *Id.*

consider the extent to which a Great Lakes state has complied with the GLNPO when reviewing its water quality plan.⁸⁷

2. *The Great Lakes Water Quality Agreement Under Canadian Legislation*

The Canadian government's implementation of the GLWQA differs from the U.S. approach. The Canadian Federal Great Lakes Program (GLP), enacted in 1989, sets forth the framework for Canada's federal government to comply with the GLWQA, through a Great Lakes Action Plan (GLAP), which provides the financial support to restore the Great Lakes Basin Ecosystem.⁸⁸ Several federal departments partner with the GLP, working together to implement the GLAP and meet Canadian commitments under the GLWQA. These departments include: Agriculture and Agri-Food Canada, Fisheries and Oceans Canada, Health Canada, Natural Resources Canada, Parks Canada Agency, Public Works and Government Services Canada, Transport Canada, and Infrastructure Canada.⁸⁹

The federal government of Canada and the provincial government of Ontario launched the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) in 1971.⁹⁰ The COA provides the framework for how the federal and provincial governments work together to restore the water quality of the Great Lakes and implement the GLWQA.⁹¹ While the COA is an agreement between the governments of Canada and Ontario, it is not binding.⁹² There are three parts of the COA: (1) restoration of degraded areas, (2) habitat protection, and (3) the prevention and control of pollution.⁹³

⁸⁷ *Id.*

⁸⁸ *Canadian Federal Great Lakes Program*, ENV'T CANADA (Dec. 19, 2014), <http://www.ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En&n=B390F88B-1>.

⁸⁹ *Id.*

⁹⁰ *Id.*; see Billups et al., *supra* note 64, at 121.

⁹¹ *Canadian Federal Great Lakes Program*, *supra* note 88; *Canada-Ontario Agreement Respecting the Great Lakes Ecosystem*, ENV'T CANADA (Dec. 19, 2014), <http://www.ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En&n=B903EE0D-1>; see Billups et al., *supra* note 64, at 121.

⁹² Billups et al., *supra* note 64, at 121.

⁹³ *Id.*

III. ANALYSIS

A. The Clean Water Act: Impaired Waters and TMDLs

The CWA requires states to designate waters that do not meet state-set water quality standards as impaired.⁹⁴ For all impaired waters, states must develop TMDLs for pollutants causing the water body's impairment.⁹⁵ While the TMDL program has been part of the CWA since the 1972 amendments, the program was generally ignored by the states for many years.⁹⁶ A slew of citizen suits in the mid-1980s required the EPA and/or states to set TMDLs for waters listed as impaired.⁹⁷

Currently, 42,494 water bodies are on the impaired waters list.⁹⁸ These impaired water bodies may have one or multiple causes of impairment.⁹⁹ The 42,494 impaired waters bodies in the U.S. collectively reflect 74,897 causes of impairment.¹⁰⁰ The most common causes of impairment are pathogens, mercury, other metals, nutrients, and sediment.¹⁰¹

A TMDL may address multiple causes of impairment. Since October 1, 1995, the EPA has approved 68,429 TMDLs for various pollutant groups that address 71,443 causes of impairment.¹⁰² Despite the high number of waters on the impaired list, very few water bodies are taken off the impaired list each year.¹⁰³ In the past twelve years, only 2,618 waters were determined to be "attaining all uses" and no longer impaired.¹⁰⁴ In 2010, the year in which the most water bodies were removed from the list, 350 impaired water bodies attained water quality standards.¹⁰⁵ The lowest number of waters attaining

⁹⁴ See *supra* notes 56–58 and accompanying text.

⁹⁵ See *supra* notes 59–61 and accompanying text.

⁹⁶ Steven T. Miano & Kelly A. Gable, *Total Maximum Daily Loads: Section 303(d)*, in *THE CLEAN WATER ACT HANDBOOK* 207 (Mark A. Ryan ed., 3d ed. 2011); Dianne K. Conway, Note, *TMDL Litigation: So Now What?*, 17 VA. ENVTL. L.J. 83, 93–94 (1997).

⁹⁷ Miano & Gable, *supra* note 96, at 207.

⁹⁸ *National Summary of Impaired Waters and TMDL Information*, EPA, http://ias.pub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T.

⁹⁹ *Id.*; Miano & Gable, *supra* note 96, at 208.

¹⁰⁰ *National Summary of Impaired Waters and TMDL Information*, *supra* note 98.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *National Summary of State Information*, EPA, http://ofmpub.epa.gov/waters10/attains_nation_cy.control (last visited July 13, 2015).

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

water quality standards was in 2003, where only four water bodies were removed from the impaired list.¹⁰⁶

This low rate of de-listing impaired waters calls into question the effectiveness of the TMDL system as a method for restoring impaired waters. In order to assess the TMDL system, it is important to walk through the steps necessary for an impaired water to become a restored water. According to the EPA, this process has five steps: (1) listing; (2) planning; (3) implementing; (4) improving; and (5) recovery.¹⁰⁷

The first step, listing, has already been discussed in this Note. In 2006, the EPA issued guidance to the states “to improve the timeliness of this reporting.”¹⁰⁸ Under CWA § 305(b), in addition to the requirements of § 303, the states must submit a biennial report to the EPA listing the water quality of all navigable water bodies in the state, including whether designated uses for these water bodies are met.¹⁰⁹ In the same way the impaired water list is called the “303(d) list,” this report is called a “305(b) list.”¹¹⁰ The 2006 Guidance encourages states to develop “a single document that integrates the reporting requirements of the Clean Water Act sections 303(d) [and] 305(b).”¹¹¹ These 305 reports are an example of Congress’s reliance on states for information on national progress regarding water quality.¹¹²

A state’s second step in the TMDL timeline is planning, which “involves developing and completing TMDLs . . . for the waters identified during the listing stage.”¹¹³ TMDLs are based on scientific monitoring and modeling.¹¹⁴ States typically hire technical consultants at this stage to collect and assess

¹⁰⁶ *Id.*

¹⁰⁷ *TMDL Program Results Analysis*, EPA, http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/results_index.cfm (last visited July 13, 2015).

¹⁰⁸ *Impaired Waters 303(d) Listings*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/listing.cfm> (last visited July 13, 2015); see *2006 Integrated Report Guidance*, EPA, http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/2006IRG_index.cfm (last visited July 13, 2015); see generally EPA, *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (July 29, 2005), <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/2006irg-report.pdf> [hereinafter EPA 2006 Guidance].

¹⁰⁹ CWA, *supra* note 3, § 1315(b).

¹¹⁰ Miano & Gable, *supra* note 96, at 209.

¹¹¹ *2006 Integrated Report Guidance*, *supra* note 108.

¹¹² Craig, *supra* note 53, at 33.

¹¹³ *Total Maximum Daily Loads (303d) Planning*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/planning.cfm> (last visited July 13, 2015).

¹¹⁴ *Id.*

data on the discharge of pollutants.¹¹⁵ A TMDL calculation is the sum of waste-load allocation, load allocation, and margin of safety.¹¹⁶ The waste-load allocation represents the total amount of the given pollutant from point sources.¹¹⁷ The load allocation is the total amount of the pollutant from nonpoint and naturally occurring background sources.¹¹⁸ The margin of safety may be either an explicit percentage factor or an implicit factor taken into account when calculating the TMDL.¹¹⁹

The EPA describes the third stage of TMDL, implementation, as “applying the pollution control practices necessary to reduce the pollutant loads to the extent determined necessary in the TMDL.”¹²⁰ While the EPA has extensive data on the number of planned TMDLs,¹²¹ it claims that there is “uncertainty” regarding how many TMDLs have actually been implemented and that tracking all implementation actions under all TMDLs would be particularly complex and expensive.¹²² Significantly, while CWA § 303(d) provides the process for establishing TMDLs, it does not provide express guidelines for TMDL implementation.¹²³ However, pursuant to § 303(e), each state must have a continuing planning process approved by the EPA including plans for the implementation of TMDLs.¹²⁴ States typically plan to implement TMDLs through point-source permits and nonpoint-source management.¹²⁵

The fourth step in the TMDL timeline, improving, is described by the EPA as a two-part process.¹²⁶ The first step is “allowing time for the implemented pollution control practices to take effect,” and the second step

¹¹⁵ Miano & Gable, *supra* note 96, at 210.

¹¹⁶ *Basic Course: Supplemental Topics – TMDL Development: The Basic Calculation*, EPA, <http://water.epa.gov/learn/training/standardsacademy/page9.cfm> (last visited July 13, 2015).

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ *TMDL Implementation and Tracking*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/implement.cfm> (last visited July 13, 2015).

¹²¹ See *National Summary of Impaired Waters and TMDL Information*, *supra* note 98; see also *National Summary of State Information*, *supra* note 103.

¹²² *TMDL Implementation and Tracking*, *supra* note 120.

¹²³ See CWA, *supra* note 3, § 1313(d); Miano & Gable, *supra* note 96, at 210.

¹²⁴ CWA, *supra* note 3, § 1313(e). See Miano & Gable, *supra* note 96, at 210.

¹²⁵ *TMDL Implementation and Tracking*, *supra* note 120; Miano & Gable, *supra* note 96, at 210–11; Craig, *supra* note 53, at 33.

¹²⁶ *Total Maximum Daily Loads (303d) Water Quality Improvements*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/improve.cfm> (last visited July 13, 2015).

is “monitoring to detect improvements.”¹²⁷ In regards to tracking water quality improvements the EPA claims, “tracking improvements in tens of thousands of waters is an expensive and formidable task that has not been possible for states and EPA alone to carry out on all recovering waters.”¹²⁸

The fifth and final stage of the TMDL timeline, recovery, signals that a water body has attained all uses and meets all water quality standards.¹²⁹ The EPA argues that this recovery is concluded “several years [following] TMDL development, implementation of control practices, and gradual improvement as those practices take effect. Although several years may have elapsed, a properly calculated TMDL and feasible, well-implemented controls from years earlier are eventually crucial to full recovery of the impaired water body.”¹³⁰

Implementation of pollution control, the third stage of the delisting process, is the stage which is most studied by the EPA, states, and third parties.¹³¹ Because implementation must be completed before a body of water can move to the stages of monitoring and recovery,¹³² the implementation stage is also arguably the most critical source of failure as states attempt to de-list water bodies from the impaired list.¹³³ For this reason, the EPA developed the TMDL Program Results Analysis Project, which has analyzed implementation data, tracking capacity, and provided grants for independent studies of implementation rates.¹³⁴ However, the TMDL Program Results Analysis Project is not tasked with reporting on the improving or recovery stages.¹³⁵ These studies have shown low implementation rates. For example, a recent study of EPA region 5 found that approximately 80% of TMDLs in the region were partially implemented, but full implementation was rare.¹³⁶

State autonomy in implementing TMDLs under § 303 is one possible explanation for low rates of full implementation. While many states favor

¹²⁷ *Id.*

¹²⁸ *Id.*

¹²⁹ *Total Maximum Daily Loads (303d) Water Body Recovery*, EPA, <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery.cfm> (last visited July 13, 2015).

¹³⁰ *Id.*

¹³¹ *TMDL Implementation and Tracking*, *supra* note 120.

¹³² *Id.*

¹³³ See Conway, *supra* note 96, at 109–10.

¹³⁴ *Id.*; see *TMDL Program Results Analysis*, *supra* note 107.

¹³⁵ *Total Maximum Daily Loads (303d) Water Quality Improvements*, *supra* note 126.

¹³⁶ EPA OFFICE OF WATER, FACT SHEET: ANALYSIS OF TMDL IMPLEMENTATION RATES IN EPA REGION 5 (2009).

the current system that allows for a large amount of state autonomy and relatively low federal involvement, “they have ever been eager to implement water quality standards though section 303(d).”¹³⁷ Creating a TMDL does not, by itself, require the EPA or the states to implement restrictions or reduce the discharge of pollutants to an impaired water.¹³⁸ The CWA does not contain any independent requirement that the EPA or the states implement TMDLs.¹³⁹ This aspect of the TMDL system has been criticized, as the lack of any mechanism to enforce or implement the loading restrictions of the TMDL “implies that TMDLs are the proverbial toothless tigers when it comes to actually ‘restoring’ impaired waters.”¹⁴⁰

One possible solution to the implementation problem is to make implementation schedules a required aspect of TMDLs to be approved by the EPA.¹⁴¹ In addition, the federal government could provide examples of effective TMDL enforcement.¹⁴² The federal government owns approximately 29% of the nation’s land.¹⁴³ If the U.S. prioritized its agencies’ implementation of TMDLs on federally-owned land, two positive outcomes could occur: first, states may follow suit in implementing TMDLs;¹⁴⁴ second, the implementation of TMDLs on these lands would begin to improve water quality in connected water bodies.

The strategies under the CWA for implementing TMDLs also partially explain the general failure of the TMDL approach to restore impaired water bodies.¹⁴⁵ The text of the CWA clearly authorizes the EPA to issue permits for point source pollution.¹⁴⁶ Where a water body has a TMDL for a pollutant, the EPA must issue permits consistent with the TMDL.¹⁴⁷ Implementation of TMDLs through the point source permitting system has

¹³⁷ Andreen, *supra* note 47, at 539 n.13; see OLIVER A. HOUCK, *THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION* 63 (2d ed. 2002).

¹³⁸ Flynn, *supra* note 18, at 47.

¹³⁹ *Id.*; Conway, *supra* note 96, at 114.

¹⁴⁰ Flynn, *supra* note 18, at 47; see Conway, *supra* note 96, at 114.

¹⁴¹ Conway, *supra* note 96, at 115.

¹⁴² *Id.* at 116.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.* at 103.

¹⁴⁶ See *supra* notes 36–42 and accompanying text.

¹⁴⁷ Miano & Gable, *supra* note 96, at 210–11; *The Clean Water Act’s “Cooperative Federalism,” supra* note 53, at 33.

been relatively successful due to the existing structure of the point source permitting program.¹⁴⁸

Implementation of TMDLs has been more challenging in the context of nonpoint source regulation.¹⁴⁹ The EPA claims that nonpoint source pollution is the largest source of water quality problems in the U.S. and the main reason why 40% of U.S. water bodies do not meet basic water quality standards.¹⁵⁰ Nonpoint source pollution results from rainfall or other water running over land, picking up pollutants, and depositing those pollutants into water bodies.¹⁵¹

The plain language of § 303(d) does not clearly indicate whether TMDLs apply to nonpoint source pollution.¹⁵² The EPA argued that TMDL requirements applied to all impaired waters, and therefore all sources of impairment, including point sources and nonpoint sources. However, in *Pronsolino v. Marcus*, the Ninth Circuit challenged the EPA's authority to require bodies with solely nonpoint source pollution to have state-set TMDLs.¹⁵³ The Ninth Circuit gave deference to the EPA's interpretation and upheld its ability to regulate nonpoint source pollution under TMDLs.¹⁵⁴ However, this did not give the EPA any additional authority to enforce implementation of TMDLs, an enforcement power the EPA lacks for all TMDLs.¹⁵⁵ Despite the holding in *Pronsolino*, nonpoint source pollution continues to be a huge issue for water quality in the U.S.

A common criticism of the TMDL system and the CWA in general is that it is concentrated on individual water bodies.¹⁵⁶ An alternative approach that the EPA has used within the existing framework of the CWA is a watershed or ecosystem based strategy.¹⁵⁷ This strategy "is a process that emphasizes addressing all stressors within a hydrologically-defined drainage basin, rather than addressing individual pollutant sources on a discharge-by-discharge

¹⁴⁸ See Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons from the Clean Air Act*, 23 HARV. ENVTL. L. REV. 203, 225–26 (1999).

¹⁴⁹ See Miano & Gable, *supra* note 96, at 211; *Nonpoint Source Pollution: The Nation's Largest Water Quality Problem*, *supra* note 5.

¹⁵⁰ *Nonpoint Source Pollution: The Nation's Largest Water Quality Problem*, *supra* note 5.

¹⁵¹ *Id.*

¹⁵² See generally CWA, *supra* note 3, § 1313; Miano & Gable, *supra* note 96, at 211.

¹⁵³ 91 F. Supp. 2d 1337 (N.D. Cal. 2000); see Miano & Gable, *supra* note 96, at 211.

¹⁵⁴ *Pronsolino*, 91 F. Supp. 2d at 1352; see Miano & Gable, *supra* note 96, at 211.

¹⁵⁵ *Pronsolino*, 91 F. Supp. 2d at 1348; see Miano & Gable, *supra* note 96, at 211.

¹⁵⁶ See Miano & Gable, *supra* note 96, at 212.

¹⁵⁷ *Id.*

basis.”¹⁵⁸ The Great Lakes Water Quality Agreement between the U.S. and Canada regarding the Great Lakes Basin Ecosystem is an example of this alternative watershed-based approach to implementation.

B. The Great Lakes Water Quality Agreement: Areas of Concern and Remedial Action Plans

1. Joint International Efforts Between Canada and the United States and General Progress of Areas of Concern

As discussed in Part II of this Note, the 1987 Protocol to the GLWQA established the procedure of designating water with advanced contaminants and degradation an AOC if it fails to meet the GLWQA's objectives.¹⁵⁹ Both parties jointly develop a RAP to improve the AOC to meet the Protocol's minimum standards.¹⁶⁰ The 1987 Protocol identified forty-two AOCs, and one was added later for a total of forty-three total AOCs between the U.S. and Canada.¹⁶¹ Of the forty-three original AOC, four have been delisted. Of the remaining thirty-nine AOCs, five are shared by both countries, twenty-five are in the U.S., and nine are in Canada.¹⁶² As the forty-three AOCs were identified more than twenty-five years ago and only five have been delisted, the effectiveness of the RAP system is open to question.

The RAP timeline has three stages.¹⁶³ First, the severity and causes of environmental degradation are assessed; second, goals and recommendations for restoring the AOC are developed; third, recommendations are implemented and progress of restoration is measured to assess whether goals have been met.¹⁶⁴ At the completion of stage three, the AOC will be delisted.¹⁶⁵ For the AOCs that are in both countries, pursuant to the advice of

¹⁵⁸ *Id.* (internal quotations omitted) (quoting EPA, WATERSHED-BASED NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING TECHNICAL GUIDANCE, No. 833-B-07-004 (2007), available at <http://cfpub.epa.gov/npdes/wqbasedpermitting/wspermitting.cfm>).

¹⁵⁹ See *supra* notes 73–74 and accompanying text.

¹⁶⁰ See *supra* note 75 and accompanying text.

¹⁶¹ *Great Lakes Areas of Concern*, *supra* note 77.

¹⁶² *Id.*

¹⁶³ See *supra* notes 76–80 and accompanying text.

¹⁶⁴ See *supra* notes 76–80 and accompanying text.

¹⁶⁵ See *supra* note 80 and accompanying text.

the IJC, the federal governments, local stakeholders, and RAP participants will decide whether to delist the AOC.¹⁶⁶

Each RAP must

define the environmental problem, including the geographic extent, identify impaired beneficial uses, describe the causes of the problems and identify all known sources of pollutants, identify remedial actions proposed to restore beneficial uses, set a schedule for implementing remedial actions, identify jurisdictions responsible for implementation and regulation and evaluate the remedial programs once underway.¹⁶⁷

The beneficial uses impairment(s) (BUIs) that each RAP must identify as defined by the 1987 Protocol means any change in the “chemical, physical or biological integrity of the Great-Lakes System sufficient to cause” one or more of fourteen defined impairments.¹⁶⁸ These impairments include, among others, restrictions on fish and wildlife consumption, restrictions on drinking water consumption, and beach closings.¹⁶⁹ For the five bi-national AOCs, each party can designate different BUIs in the RAP.¹⁷⁰

These “beneficial uses” for AOCs under the GLWQA are similar to the “designated uses” that states must identify for each water body under the U.S. CWA.¹⁷¹ However, unlike under the CWA, where designated uses for each water body and appropriate water quality standards for such uses are identified by the state and followed by an immediate impaired designation if water quality standards are violated, under the GLWQA, there is no requirement that water bodies have pre-designated uses before determining that the water body has a BUI and should therefore be listed as an AOC.

¹⁶⁶ INT’L JOINT COMM’N, ASSESSMENT OF PROGRESS MADE TOWARDS RESTORING AND MAINTAINING GREAT LAKES WATER QUALITY SINCE 1987: 16TH BIENNIAL REPORT ON GREAT LAKES WATER QUALITY AND ACCOMPANYING TECHNICAL REPORTS 169 (2013), available at <http://www.ijc.org/files/publications/16th%20BR%20long%2020130514.pdf>.

¹⁶⁷ Schurter, *supra* note 21, at 480 n.97 (citing John H. Hartig & Michael A. Zarull, *A Great Lakes Mission*, in UNDER WRAPS: TOWARD GRASSROOTS ECOLOGICAL DEMOCRACY IN THE GREAT LAKES BASIN 13 (John H. Hartig & Michael A. Zarull eds., 1992)).

¹⁶⁸ 1987 GLWQA Protocol, *supra* note 20, at Annex 2(1)(c).

¹⁶⁹ *Id.*

¹⁷⁰ INT’L JOINT COMM’N, *supra* note 166, at 168.

¹⁷¹ See *supra* notes 56–57 and accompanying text.

The RAP system is considered a more “bottom-up” approach to water quality restoration, as opposed to the “top-down” approach of TMDLs.¹⁷² RAPs broaden the approach to water quality restoration “from pollution abatement to ecosystem management.”¹⁷³

Public participation in RAP planning allows for the representation of environmental, economic, and social interests and is critical to a RAP’s success.¹⁷⁴ Like TMDLs, RAPs also require scientific research on the AOC’s ecosystem, allowing stakeholders to identify the water quality issues that must be addressed.¹⁷⁵

Theoretically,

[t]he benefit of the RAP approach is that it allows for local input into solving the AOC problem, which increases the likelihood that an appropriate solution for the region can be determined because the individuals involved in the planning are the ones with a stake in the future of the area.¹⁷⁶

However, some of the problems with RAPs are similar to the problems with TMDLs, including the lack of enforcement authority.¹⁷⁷

The IJC does retain advisory authority in the RAP program, but lacks any meaningful enforcement authority.¹⁷⁸ The IJC completes its first review of RAPs after the first RAP stage, which identifies the cause(s) of the environmental degradation.¹⁷⁹ It subsequently reviews the RAP after the second stage, where remedial methods have been developed, and the third stage, after the RAP has been implemented and the AOC has been restored, respectively.¹⁸⁰

In addition to reviewing RAPs, the IJC submits triennial reports (previously biennial reports prior to the 2012 Protocol) to the federal, state, and provincial governments of the U.S. and Canada about the progress of the

¹⁷² See Schurter, *supra* note 21, at 480.

¹⁷³ *Id.* at 481.

¹⁷⁴ *Id.* at 480.

¹⁷⁵ See *id.* at 480–81.

¹⁷⁶ *Id.* at 481.

¹⁷⁷ See *id.*

¹⁷⁸ See *id.* at 483.

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

GLWQA's objectives and the effectiveness of programs enacted pursuant to the Agreement.¹⁸¹

In its most recent report on the Great Lakes water quality released in April of 2013, the IJC described AOCs as an "indicator of performance" to assess how well the governments of Canada and the U.S. have met the 1987 Protocol objectives.¹⁸² This assessment of progress is particularly important in order to provide useful recommendations for progress under the 2012 Protocol.¹⁸³

An important objective of the 2012 Protocol is delisting AOCs and removing individual BUIs at sites that have been partially remediated.¹⁸⁴ In the remaining thirty-nine listed AOCs, about 25% of BUIs have been removed due to restoration efforts.¹⁸⁵ However, these efforts appear to be concentrated by both countries on AOCs that are exclusively in their respective jurisdictions: zero of the five original shared AOCs have been delisted and few BUIs have been removed by either party.¹⁸⁶

The IJC notes that "the governments have made progress implementing restoration actions to delist AOCs and remove BUIs, but this work needs to be accelerated."¹⁸⁷ Key challenges for the governments to implement RAPs include unclear geographic boundaries, a lack of accountability and responsibility among agencies, and obtaining resources to implement the RAP.¹⁸⁸ The IJC recommends that each federal government should make adequate resources available and that accountability and responsibility should be assigned to specific agencies, but does not provide much guidance beyond this soft policy statement.¹⁸⁹

Like the principles of cooperative federalism at work in the U.S. CWA,¹⁹⁰ the discretion afforded to the state and provincial governments of the U.S. and Canada under the GLWQA supports "cooperative interstate federalism"

¹⁸¹ 2012 GLWQA Protocol, *supra* note 11, art. VII(1)(k); *see generally* *Biennial Reports*, INT'L JOINT COMM'N, available at http://ijc.org/en/Biennial_Reports (last visited July 13, 2015).

¹⁸² INT'L JOINT COMM'N, *supra* note 166, at iv–v.

¹⁸³ *Id.* at vii.

¹⁸⁴ *Id.* at 173.

¹⁸⁵ *Id.* at 5–6.

¹⁸⁶ *Id.* at 171.

¹⁸⁷ *Id.* at 194.

¹⁸⁸ INT'L JOINT COMM'N, STATUS OF RESTORATION ACTIVITIES IN GREAT LAKES AREAS OF CONCERN: A SPECIAL REPORT 4–5 (2003), available at http://www.ijc.org/files/tinymce/uploaded/documents/reportsAndPublications/aoc_report-e%202003.pdf.

¹⁸⁹ INT'L JOINT COMM'N, *supra* note 166, at 12.

¹⁹⁰ *See supra* notes 53–55 and accompanying text.

between the parties.¹⁹¹ This cooperative interstate federalism “has the virtue of imposing collective, but locally defined, standards without unduly interfering with a state’s right to manage its own affairs . . . while accommodating the transboundary nature of the problems without treading upon the supremacy of, or becoming overly dependant [sic] on distant federal law.”¹⁹²

This naked guidance from the IJC and minimal progress on shared AOCs between the U.S. and Canada supports the argument that the agreement is more of a “let’s keep in touch” agreement between the parties than a regulatory scheme that will have any real effect on large-scale cooperative interstate efforts.¹⁹³

The GLWQA does not delineate the means for which governments should implement RAPs, but it does require governments to make sure the plans are implemented.¹⁹⁴ Therefore, the RAP implementation approaches in Canada and the U.S. are different.¹⁹⁵ Of course, water quality in the AOCs is also affected by contamination originating outside the AOCs, and therefore, water quality regulation by both Canada and U.S. outside of implementing RAPs affects the AOCs.¹⁹⁶

In general, “RAPs are both one of the greatest successes and one of the greatest failures of the GLWQA.”¹⁹⁷ Successes of implementing RAPs by both parties include long-term public awareness and participation.¹⁹⁸ However, RAPs require a huge amount of time and planning that delay implementation practices. Further, governments often struggle to obtain funding sources for remediation efforts.¹⁹⁹

The failures of RAPs are therefore similar to the failure of TMDLs in that the governments struggle to implement TMDLs. The lack of implementation could be remedied by the U.S. seeking greater authority to enforce implementation of RAPs under the GLWQA through its authority under the

¹⁹¹ Joseph W. Dellapenna, *International Law’s Lessons for the Law of the Lakes*, 40 U. MICH. J.L. REFORM 747, 796 (2007) (citing Noah D. Hall, *Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region*, 77 U. COLO. L. REV. 405, 432–56 (2006)).

¹⁹² *Id.*

¹⁹³ *Id.* at 796–97.

¹⁹⁴ INT’L JOINT COMM’N, *supra* note 188, at 3.

¹⁹⁵ *Id.*

¹⁹⁶ *Id.* at 19.

¹⁹⁷ Billups et al., *supra* note 64, at 162.

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

CWA. In addition, the GLWQA should be amended to allow the IJC authority to enforce implementation of RAPs.

2. *Canadian Implementations of RAPs*

Three out of twelve original Canadian AOCs have been delisted, while fifty-four BUIs have been removed and 100 BUIs remain.²⁰⁰ Canada removed most of these BUIs in the early years following the 1987 Protocol.²⁰¹ Canada primarily implements RAPs under the COA.²⁰²

Each AOC is assigned to a federal or provincial coordinator as well as a government contact.²⁰³ However, in the past, local stakeholders and governments have lacked the communication necessary to implement RAPs.²⁰⁴

The COA, which attempts to address the problems with implementation of RAP, defers to the provincial government to implement remediation strategies.²⁰⁵

3. *United States Implementation of RAPs*

Only one of twenty-six original American AOCs has been delisted, and only thirty-three of 255 BUIs have been removed.²⁰⁶ While slower to start than Canada, the pace of restoration of U.S. AOCs has picked up due to investment from the U.S. Great Lakes Restoration Initiative and the Great Lakes Legacy Act.²⁰⁷ Some restoration efforts in U.S. AOCs have not been pursuant to RAPs. Rather, they have been pursued under other federal programs and were not always reported to RAPs.²⁰⁸ It should also be noted that the need for restoration in U.S. AOCs is much more severe than those in Canada.²⁰⁹

²⁰⁰ INT'L JOINT COMM'N, *supra* note 166, at 171.

²⁰¹ *Id.* at v.

²⁰² *See supra* notes 90–91 and accompanying text; INT'L JOINT COMM'N, *supra* note 166, at 19.

²⁰³ INT'L JOINT COMM'N, *supra* note 188, at 32.

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ *Id.* at 16.

²⁰⁹ *Id.* at 3.

Many AOCs have both federal contacts and state coordinators.²¹⁰ However, accountability for RAP implementation has been a challenge, as “agencies view local community groups as being responsible for Remedial Action Plan implementation, while the community groups view the agencies as being responsible.”²¹¹

The U.S. federal and state governments primarily rely on other federal programs for Great Lakes restoration efforts, including the CWA.²¹² This remediation strategy involves a “polluter pays” approach, requiring the parties responsible for the original pollution to fund restoration efforts.²¹³

Reliance on the CWA has proven problematic, as pollution continues to be a serious problem. AOCs are due in part to the pollution control strategy of the CWA and its failure to address all sources of pollution.²¹⁴ The CWA does not address, as called for by the GLWQA, the elimination of total input of toxic substances to the Great Lakes System or create comprehensive integrated controls.²¹⁵ The “pollution control” approach of TMDLs falls short of the U.S. commitments under the GLWQA, which instead calls for a “reduction-elimination” approach to achieve zero discharge of persistent toxic substances.²¹⁶

IV. CONCLUSION

The CWA and GLWQA represent large-scale commitments by the governments of the U.S. and Canada to address abysmal water quality. These legislative programs represent very different restoration strategies. The CWA’s “impaired” water body designations and restoration efforts through Total Maximum Daily Loads reflect a narrow top-down, pollution-control based strategy focused on individual water bodies. In contrast, the GLWQA contemplates a more bottom-up, reduction-elimination approach that has a broader, more comprehensive ecosystem-based focus on larger Areas of Concern and Remedial Action Plans. However, both programs reflect “cooperative federalism” approaches, which tend to defer to state and provincial governments for implementations of goals.

²¹⁰ *Id.* at 31.

²¹¹ *Id.*

²¹² *Id.* at 19.

²¹³ *Id.*

²¹⁴ Billups et al., *supra* note 64, at 134.

²¹⁵ *Id.*

²¹⁶ *Id.*

While both programs have enjoyed minor victories, neither the CWA nor the GLWQA have experienced high rates of success in being able to de-list an area from its impaired water or Area of Concern list.

The failures of the TMDL restoration efforts are generally traceable to the implementation stage. While the CWA requires states to promulgate TMDLs for impaired waters, subject to EPA approval, it does not contain an independent requirement for the EPA or states to actually implement TMDLs. A requirement of implementation schedules in TMDL applications to be approved by the EPA could help remedy low implementation rates.

The TMDL system also experiences problems in regulating nonpoint sources, which are not regulated by CWA permits. While TMDL regulation of nonpoint source pollution has been upheld, the EPA still lacks enforcement power over such regulations, and nonpoint source pollution continues to be a huge issue for water quality in the U.S.

The GLWQA represents a multi-national ecosystem-based restoration strategy by the U.S. and Canada, focused on the Great Lakes ecosystem and Areas of Concern. The restoration strategy of RAP development reflects cooperation not only between the two governments, but also with the public.

Despite stated cooperation objectives by the parties, restoration efforts appear to be concentrated on non-shared AOCs. The RAP strategy exhibits problems similar to those that occur in the implementation of TMDLs, including the lack of enforcement authority. The IJC does advise the parties in developing RAPs, but lacks any meaningful enforcement authority. A lack of accountability and responsibility among agencies also presents significant barriers to RAP implementation. Further, the planning process for RAPs requires a large amount of time that delays implementation.

In order to restore water quality, the U.S. and Canada should consider revising their respective frameworks for restoration. One necessary revision is stricter implementation requirements with respect to TMDLs and RAPs. The U.S. federal government and IJC should also seek enforcement roles in the CWA and GLWQA, respectively, to ensure that water restoration programs are indeed implemented.